REPUBLIC OF KENYA

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COUNTY GOVERNMENT OF KAKAMEGA

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WATER, ENVIRONMENT, NATURAL RESOURCES AND CLIMATE CHANGE

SECTOR PLAN

2023-2032

A Climate Resilient Development For Healthy Environment And Safe Water

Sector Plan (2023 – 2032)

Water Environment Natural Resources & Climate Change

Prepared by:

The Department of Finance and Economic Planning and
Department of Water Environment Natural Resources & Climate Change

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VISION

"A leading provider of water services, clean, healthy, safe and sustainably managed environment and Natural resources

MISSION

"To promote, conserve and protect the environment and improve access to water while mainstreaming climate change into development programmes for resilience and sustainable development."

STATEMENT FROM THE COUNTY EXECUTIVE COMMITTEE MEMBER OF FINANCE, ECONOMIC PLANNING AND ICT.

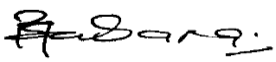
The Kenyan Government adopted Kenya vision 2030 as the long term development blue print in 2008 which is being implemented through a Five year Medium Term Plans (MTPs). With the inception of the two tier governments under the constitution of Kenya 2010, the development framework for the county government required the implementation of the projects and programmes through the County Integrated Development Plans (CIDPs) implemented through the Annual Development Plans (ADPs). The County Government of Kakamega has so far implemented the First and Second generation County Integrated Development Plans with the Third generation being implemented between 2023-2027.Equally the County Government Act, 2012 Section 109 requires the development of a ten year County Sectoral Plan as component part of the County Integrated Development Plan which shall be revised every five years but updated annually. The County Government developed Ten Sector plans by the established Ten Sector Working Groups which provide the background information for the third generation CIDP.

The Sector Plans provide in greater detail the outline of specific plans to be implemented in each sector during the 2023-2032 Plan period with provision for revision every Five years as provided by Section 109 of the County Government Act, 2012.The Sector Plans have been prepared through a participatory and inclusive process which involved representatives from both the National as well as the County Government Departments, Private Sector, NGOs, Civil Society Organizations, Faith Based Organizations, Academia and Research Organizations, Professional Organizations as well as the Organizations representing Women, Youth and Differently Abled Persons among other stakeholders. All the sector priorities have incorporated views from the Community areas, Ward, Sub-County and County forums which captured the views and priorities of the residents of Kakamega in different levels. The Sector Plans have also taken into consideration the broad priorities outlined in the National and County policies including the Governors Manifesto.

The Third generation CIDP, the Spatial Plans, Departmental and Agencies Strategic Plans 2023-

2027 as well as future plans will be aligned to the Sector Plans. In addition, the implementation of the plans will be linked to the Result Based Management Framework through the Performance Contract, Staff Performance Appraisal System and other performance management tools for effective service delivery. To ensure tracking of progress, my Department will put in place a robust Monitoring, Evaluation and Reporting Framework constituting the County Integrated Monitoring and Evaluation System (CIMES) and the electronic Project Monitoring Information System (e-CIPMIS). These will be fully integrated in the County Government Financial System that will boost public investment and confidence.

Finally, I take this opportunity to sincerely thank H. E the Governor and Deputy Governor for their visionary leadership, guidance and direction that enabled this process to be undertaken. I also appreciate the County staff who formed part of the Ten Sector Working Groups for their valuable inputs. In addition, I commend the Department of Economic Planning and Investments staff led by the Chief Officer Planning for the effective co-ordination of the Sector plan preparation process.



Dr. Beatrice A. Sabana, Ph.D.
County Executive Committee Member,
Finance, Economic Planning and ICT.

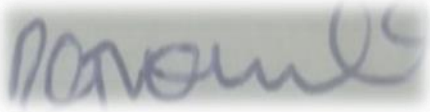
FOREWORD

The Water, Environment, Natural Resources and Climate Change Sector is honoured to present the Sector Plan 2023 - 2032.The Plan is informed by the sector mission which is; to promote sound utilization of natural resources, conserve and protect the environment and improve access to adequate, safe water and sewerage services for resilience and sustainable development.

Water coverage in the entire county will be enhanced by constructing bulk water supply projects, building storage reservoirs, rehabilitation of existing projects, and hybridization of existing water supply projects. Increased access to sanitation will be ensured through expanding sewerage network, construction of sewerage systems and Construction of non-sewered sanitation systems. This will enable the sector to provide adequate, safe and reliable water and sewerage services to the residents. Sustainable utilization of natural resources will be achieved through promotion of utilization of alternative livelihoods, adoption of nature based enterprises, and rehabilitation of degraded landscapes. Protection and conservation of the environment will be achieved through ensuring enforcement and compliance of existing legislation, adoption of modern solid waste management technologies and capacity building of stakeholders.

Despite the many challenges encountered, including limited and irregular flow of financial resources, the County has achieved tremendous development milestones in the last ten years. I therefore wish to thank partners who have supported the sector in achieving its mission as stipulated in the document by bridging the funding. I also call upon development partners to take advantage of the existing opportunities and support the sector to enable the county to realize the sustainable development goals no. 6,12,13,15 and 17

Lastly, I wish to commend all those who were involved in preparation of this Sector Plan; The County Executive Committee Member, Chief Officers, Directors, Sector Technical staff, Planning Secretariat and all stakeholders involved for their commitment. I am grateful to the people of Kakamega County for their unity of purpose, collaboration and the support they have continuously accorded the Government which has resulted in the tremendous progress realized so far.



Mrs. Rhoda Masaviru,
County Executive Committee Member,
Water, Environment, Natural Resources & Climate Change

PREFACE

The County's Sector Plan has been prepared in consultation with sector stakeholders in line with the Constitution of Kenya (2010) and the County Government Act 2012, Article 109 that requires counties prepare 10-year County Sectoral plans as component parts of the County Integrated Development Plan, that shall be programme based and form the basis for budgeting and performance management of the sector. The plan is aligned to Sustainable Development Goals (SDGs), Agenda 2063 and Kenya Vision 2030.

Water is a basic human right as enshrined in the constitution of Kenya 2010 that devolves water service provision to county governments. The county government of Kakamega is therefore committed in ensuring that all its residents sustainably access water that meet the World Health Organization (WHO) standards with ease and at affordable rates. The key issues to be addressed include inadequate access to affordable safe water and sanitation services, management of waste, land degradation and climate change.

The Sector plan contains detailed analysis of the sector covering: the various challenges experienced; the emerging issues affecting the performance of the sector; the environment through which the plan will be implemented; and key developmental issues within the county with the relevant interventions has informed the formulation of the programmes. The plan shall mainstream various cross cutting issues and clearly has outlined the implementation framework as well as the monitoring, evaluation and reporting mechanism.

It is envisaged that the effective implementation of this plan will immensely contribute towards the realization of the aspirations of the Kenya Vision 2030 and the county transformative agenda. This will in turn contribute to balanced growth and development throughout the county.

Dan Borter
Chief Officer
Economic Planning and Investment

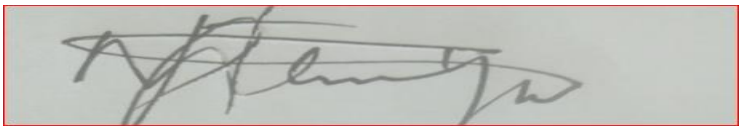
ACKNOWLEDGEMENT

We acknowledge the valuable leadership and support of H.E The Governor and H.E The Deputy Governor for taking a personal interest in the entire process of supporting the sector planning process. Their guidance and general goodwill enabled the process to be completed in good time.

Special thanks go to the County Executive Committee Member in charge of the sector Mrs Rhodah Masaviru, my fellow Chief Officer in charge of Natural resources, Environment and Climate change Mr Eugine Milimo, respective directors and the technical staff for their support and cooperation throughout the process of developing this plan.

Appreciation goes to the department of Finance, Economic Planning and ICT through the Chief Officer-Economic Planning and Investments, Mr. Dan Borter, Chief Officer-Finance, CPA Samson Otieno, Director-Economic Planning Mr. Ondari Cyrus and the Sector Planning Officer, Mr. Oscar Simon Nyangweso for organizing public participation workshops and giving professional guidelines.

I also wish to thank the stakeholders including our development partners, county water service providers (KACWASCO & KACRUWASCO), the relevant National Government ministries and line agencies for all their input in the development of this plan.



Eng. Philip Otenyo,
Chief Officer,
Water, Environment, Natural Resources & Climate Change.

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ABBREVIATIONS AND ACRONYMS

BAT	Bottleneck Analysis Tool
C4D	Communication for Development
CBOs	Community Based organizations
CECM	County Executive Committee Member
CoK (2010)	Constitution of the Republic of Kenya, 2010
CPSB	County Public Service Board
CSOs	Civil Society Organizations
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Coordination Act
GDP	Gross Domestic Product
HRBA	Human Rights-based Approach
HRWS	Human Rights to Water and Sanitation
ICT	Information and communication technology
IWRM	Integrated Water Resource Management
LCCA	Life Cycle Costing Approach
KACWASCO	Kakamega County Water and Sanitation Company
KACRUWASCO	Kakamega County Rural Water and Sanitation Company
KEWI	Kenya Water Institute
KEFRI	Kenya Forestry Service Research Institute
KFS	Kenya Forestry Services
KNCC	Kenya National Chamber of Commerce
KWS	Kenya Wildlife Service
KWTA	Kenya Water Towers Agency
LVNWWDA	Lake Victoria North Water Works Development Agency
M&E	Monitoring and Evaluation
MDGs	Millennium Development Goals
MoWS	Ministry of Water and Sanitation
MUS	Multi Use Services
NEMA	National Environmental Management Authority

NGOs	Non-Governmental Organizations
NRW	Non-revenue water
PESTLE	Political, Economic, Social, Technological Legal and Environmental Stakeholder Analysis
PPPs	Public-Private Partnerships
PSP	Private Sector Participation
SDGs	Sustainable Development Goals
SWAP	Sector Wide Approach
SWOT	Strength, Weakness, Opportunities and Threats Analysis
USAID-KIWASH	USAID-Kenya Integrated Water, Sanitation and Hygiene Project
VfM	Value for Money
WASH	Water Sanitation and Hygiene
WASH BAT	WASH Bottleneck Analysis Tool
WASREB	Water Services Regulatory Board
WENR	Water, Environment and Natural Resources
WRA	Water Resources Authority
WRUAs	Water Resource User Associations
WSTF	Water Sector Trust Fund

BASIC CONCEPTS AND TERMINOLOGIES

Activities: Actions taken through which inputs are utilized to produce outputs.

Baseline: A value that shows the initial state of an indicator at the start of a phase/ project/ programme, against which progress can be assessed or comparisons made.

Development Issue: The key constraint/emerging concern in a sector that needs to be addressed or tapped into through various interventions and programmes.

Emerging Issues: Recent occurrences/events/phenomena which might impact a sector negatively or positively. They range from environmental, policy, legal, technological, economic, political, social and cultural.

Flagship/Transformative Projects: Projects with high impact in terms of employment creation and increasing county competitiveness and revenue generation, among others.

Green Economy: An economy that aims at reducing environmental risks and ecological scarcities, and that aims at sustainable development without degrading the environment.

Inclusivity: The practice of ensuring all stakeholders are involved at all stages of the plan preparation, implementation, monitoring and evaluation processes.

Inputs: The financial, human, material and information resources used to undertake activities to produce outputs.

Mainstreaming: Integration of cross cutting actions into various stages of decision making (design, implementation, monitoring and evaluation of development policies and programmes).

Outcome Indicator: This is a specific, observable, and measurable characteristic or change that will represent achievement of the outcome. Outcome indicators include quantitative and qualitative measures. Examples: Enrolment rates, transition rates, mortality rates, customer satisfaction levels, etc.

Outcome: The intermediate results generated relative to the objective of a programme or intervention.

Output: The immediate tangible or intangible result (products, services etc) achieved directly from the implementation of an activity.

Participatory: Ensuring engagement of stakeholders in decision making at various stages of the plan preparation, implementation, monitoring and evaluation processes.

Performance indicator: A measurable variable that assesses the progress of a particular project/ programme.

Programme: A grouping of related projects and/or services performed by a Ministry, Department or Agencies to achieve a common objective. The Programmes must be mapped to strategic objectives.

Project: A set of coordinated activities implemented to meet specific objectives within defined time, cost and performance parameters/deliverables.

Result: A measurable change in state expected to be achieved from implementation of an intervention. Results are at three levels: outputs, outcomes and impact.

Sector Plan: A framework for identification of development issues, challenges and opportunities in a given sector with the aim of setting policy initiatives and strategies towards achievement of the set goals.

Sector: A composition of departments, agencies and organizations that are grouped together according to services and products they provide. They produce or offer similar or related products and services, and share common operating characteristics.

Sub-sector: An individual department, agency or organization that provide specific service/ product.

Sustainable Development: Development that meets the needs of the present, without compromising the ability of future generations to meet their own needs.

Synergy: The benefit that results when two or more sectors work together to achieve set targets, they could not have achieved at individual sector level.

Target: A level of result desired to be achieved within a given time frame.

EXECUTIVE SUMMARY

The Sector endeavours to provide a climate resilient development for a healthy environment safe water and sanitation. It plays a critical role in securing the stewarding and sustaining the natural capital of the County. Investment in this Sector will therefore ensure delivery of direct and indirect goods and services that are the backbone for the main productive sectors namely Agriculture, Tourism, Manufacturing and the Energy sector that present great potential in the attainment of the targeted annual GDP growth rate of 10% as stipulated in the Kenya Vision 2030.

In line with Article 42 of the constitution, the sector is required to provide for a clean and healthy environment for every person with Article 69 requiring the State to ensure to ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits. This plan highlights the achievements in the sector since the advent of devolution (2013 to 2022). The plan also prioritizes the programmes, initiatives and projects to be implemented in the in the period 2023 to 2032 with clear responsibilities and resources indicated for the entire period.

Despite the efforts to improve the management and conservation of environment and natural resources, the sector continues to face several challenges. Key among these challenges include effects of climate change, dwindling water sources, increasing population, expansion of agriculture and settlements into fragile ecosystems. This leads to biodiversity loss and unsustainable land-use practices thereby posing serious threats to the attainment of a clean and secure environment.

Sustainable management of water resources continues to be key in the realization of the social pillar in Kenya Vision 2030. Climate change is increasing the forces that degrade the environment and land in general. It must be re-emphasized that the management and conservation of water resources require a responsive and adaptable approach to climate change.

The sector has aligned its plan to the achievement of the Sustainable Development Goals (SDGs), Vision 2030, Regional, International and global commitments relating to the sector.

Chapter One provides an overview of the County and Sector background information, highlighting the composition and mandate. It also provides the rationale, linkage of the plan to other plans and the methodology.

Chapter Two analyzes the Sector's situation and provides the achievements, challenges and lessons learnt since the inception of devolution. The sector's development issues, causes and opportunities are also analyzed, in addition to the cross cutting & emerging issues and stakeholder analysis.

Chapter Three outlines the sector's objectives, strategies and interventions which cannot be realized without a budgetary allocation which is well provided in this same chapter.

Chapter Four provides the mechanisms through which the strategies will be implemented. The success of the Plan is attributed to the institutional arrangement, coordination framework, sources of funds and the management of risks. It is important to note that the areas listed depend on each other.

Chapter Five provides the Monitoring and Evaluation element. It outlines the reporting structures, data sources and collection method, types of reports to be produced, dissemination and feedback mechanism and how to review and update the sector Plan. The Plan will be evaluated annually, after five years and at the end of the plan period. The reports prepared will outline the achievements in comparison to targets, facilitating factors, challenges faced and lessons learnt.

CHAPTER I: INTRODUCTION

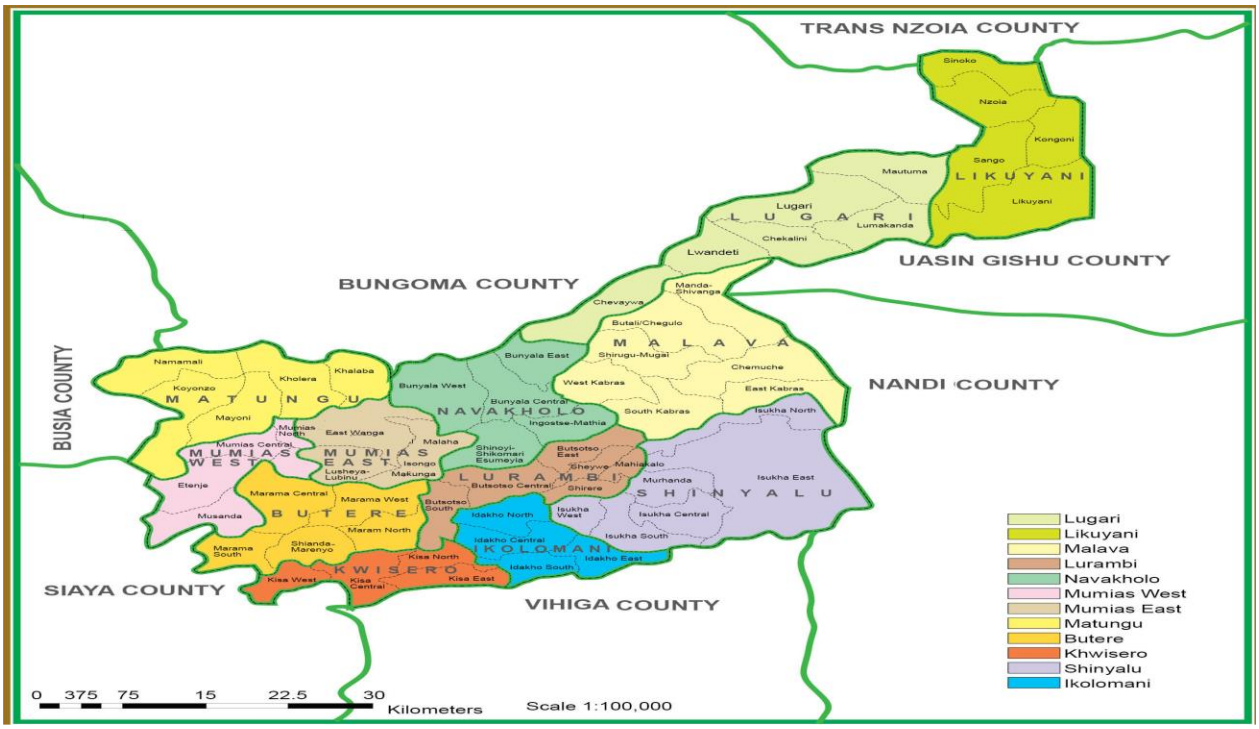
1.1 Overview of the County

1.1.1 Location and Size

The Constitution of Kenya, 2010 created a decentralized system of government; the national government and forty-seven (47) county governments, as provided for under Article 6 and specified in the First Schedule,[1]. Kakamega County is located in the Western part of Kenya bordering Vihiga County to the South, Siaya County to the West, Bungoma and Trans Nzoia Counties to the North and Nandi and Uasin Gishu Counties to the East.

The County covers an area of 3,051.3 Km^2 and is the fourth populous county after Nairobi, Kiambu and Nakuru with the largest rural population. Map 1 below shows the County administrative units and their boundaries.

Map 1: Map of Kakamega County Showing the Administrative Units



Source: Kakamega County Administrative Boundaries Committee, 2017

[1] http://kenyalaw.org/kl/index.php?id=3979

1.1.2 Administrative Units

The County administrative units comprise 12 Sub-counties, 60 wards, 187 Village Units and 400 Community Areas. This information is provided in table 1.

Table 1: Administrative Units in the County

S/No.	Sub-county	No. of Wards	No. of Village Units	No. of Community Areas
1.	Likuyani	5	14	31
2.	Lugari	6	20	43
3.	Malava	7	23	49
4.	Navakholo	5	14	32
5.	Lurambi	6	17	35
6.	Ikolomani	4	12	26
7.	Shinyalu	6	19	38
8.	Khwisero	4	11	25
9.	Butere	5	17	38
10.	Mumias West	4	13	26
11.	Mumias East	3	11	23
12.	Matungu	5	16	34
	Total	**60**	**187**	**400**

Source: Kakamega County Integrated Development Plan, 2018 – 2022

1.1.3 Physiographic and Natural Conditions

The county altitude ranges from 1240 metres above sea level. The southern part of the county is hilly and is made up of rugged granites rising in places to 1950metres above sea level. The Nandi Escarpment forms a prominent feature on the county`s eastern border, with its main scarp rising from the general elevation of 1700metres to 2000metres. There are also several hills in the county as such Misango, Imanga, Eregi, Butieri, Sikhokhochole, Mawe Tatu, Lirhanda, Kiming`ini among others. There are several rivers in the county namely; Nzoia, Yala, Lusumu, Isiukhu, Sasala, Viratsi, Nambilima, Kipkaren , Kamehero, Lukusitsi and Sivilie.

There are two main ecological zones in the county namely; the Upper Medium (UM) and the Lower Medium (LM).The Upper Medium covers the Central and Northern parts of the county such as Ikolomani, Lurambi, Malava, Navakholo and Shinyalu that practice intense maize, tea, beans and horticultural production mainly on small-scale; and Lugari and Likuyani where maize and dairy farming is done on large scale.The second ecological zone, the Lower Medium (LM), covers Mumias West and Matungu. In this zone, the main economic activity is sugarcane production with some farmers practicing maize, sweet potatoes, tea, ground nuts and cassava production.

The annual county rainfall ranges from 1280.1mm to 2214.1mm per year. The rainfall pattern is evenly distributed all year round with March and October receiving heavy rains while on December and February receives light rains.
The temperatures ranges from 18℃ to 29℃.The temperatures in January and February are relatively high compared to other months except for July and August which have relatively cold spells. The county has an average humidity of 67 per cent.

1.1.4 Demographic Features

1.1.4.1 Size and Composition

Knowledge of the population and its distinct features is an important aspect while planning. Based on 2019 Population and Housing Census, the County population was 1,867,579 consisting of 897,133 males and 970,406 females with a population distribution of 48.04% and 51.96% for male and female respectively. The county population is growing at a rate of 1.1% and is projected to increase to 2,107,751 by the end of the year 2032. The population below 4 years represents 12.1% of the total population, indicating the need to provide child care facilities, healthcare, investment in ECDE and provision of social amenities. Another important statistic is the school going population aged between 5 and 19 years who make up 42.81% of the population.

The youthful population aged between 15 and 34 years comprises 33.16% of the total population. The rapid increase of the youth population calls for quick government intervention in terms of job creation to minimize unemployment, increased establishment of training institutions such as youth polytechnics to equip the youth with necessary life skills and help reduce dependency ratio and vices such as drug use, alcoholism and crime. The labor force, aged between 15 and 64 years comprises of 53.28% of the total population. The high labor force implies that the government should put appropriate policies in place to create employment and encourage setting up of private enterprises to absorb this labor force. The analysis of County population by age group is presented in table 2.

Table 2: County Population by Age Group

Age Group	2019 Census			2022			2027			2032		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Total	**897,133**	**970,406**	**1,867,539**	**927,232**	**1,002,964**	**1,930,196**	**968,941**	**1,048,080**	**2,017,021**	**1,012,526**	**1,095,225**	**2,107,751**
0 - 4	112,360	113,559	225,919	116,130	117,369	233,499	121,354	122,649	244,002	126,813	128,166	254,978
05-09	134,230	134,555	268,785	138,733	139,069	277,803	144,974	145,325	290,299	151,495	151,862	303,358
10-14	144,975	147,002	291,977	149,839	151,934	301,773	156579	158768	315347	163622	165910	329533
15-19	120,265	118,406	238,671	124,300	122,379	246,679	129,891	127,884	257,775	135,734	133,636	269,371
20-24	70,440	79,144	149,584	72,803	81,799	154,603	76,078	85,479	161,557	79,500	89,324	168,825
25-29	50,363	63,950	114,313	52,053	66,096	118,148	54,394	69,069	123,463	56,841	72,176	129,016
30-34	50,695	66,096	116,791	52,396	68,314	120,709	54,753	71,387	126,139	57,216	74,598	131,813
35-39	41,408	43,063	84,471	42,797	44,508	87,305	44,722	46,510	91,232	46,734	48,602	95,336
40-44	38,070	42,651	80,721	39,347	44,082	83,429	41,117	46,065	87,182	42,966	48,137	91,103
45-49	30,545	33,453	63,998	31,570	34,575	66,145	32,990	36,130	69,120	34,474	37,755	72,230
50-54	24,415	29,797	54,212	25,234	30,797	56,031	26,369	32,182	58,551	27,555	33,630	61,185
55-59	22,399	27,417	49,816	23,150	28,337	51,487	24,191	29,612	53,803	25,280	30,944	56,223
60-64	19,330	23,048	42,378	19,979	23,821	43,800	20,878	24,893	45,770	21,817	26,012	47,829
65-69	14,387	17,267	31,654	14,870	17,846	32,716	15,539	18,649	34,188	16,238	19,488	35,725
70-74	10,503	12,321	22,824	10,855	12.734	23,590	11,343	13,307	24,651	11,854	13,905	25,760
75-79	5,649	8,419	14,068	5,839	8,701	14,540	6,102	9,092	15,194	6,376	9,501	15,878
80-84	3,879	5,278	9,157	4,009	5,455	9,464	4,189	5,700	9,890	4,378	5,957	10335
85-89	2,105	3,276	5,381	2,176	3,386	5,562	2274	3,538	5,812	2,376	3,697	6074
90-94	746	979	1,725	771	1,012	1,783	806	1,058	1,863	842	1,105	1,947
95-99	306	554	860	316	573	889	330	599	929	345	626	971
100+	47	156	203	49	161	210	51	168	219	54	176	229

Source: KNBS National Population and Housing Census Report, 2019

1.1.4.2 Population Density and Distribution

The County population density is 612 persons per square kilometer, which is projected to increase to 691 persons per square kilometer by 2032. The population distribution per administrative unit is indicated in table 3. From the table, Lurambi Sub-county is the most densely populated with a population density of 1,164 people per square kilometer. This high population density can be attributed to urbanization and several higher learning institutions within Lurambi which hosts Kakamega town.

On the other hand, Shinyalu Sub-county has the lowest population density of 376 people per square kilometer. The low population density can be attributed to the presence of Kakamega Forest that covers a large part of the Sub-county. Population density is an important parameter while planning for services to be provided in different localities. The high population density in Lurambi and other urban areas like Mumias, Malava, Butere, Lumakanda, Moi's Bridge and Matunda has led to sub-division of parcels of land into uneconomical sizes that have reduced

agricultural productivity, leading to high levels of unemployment and pressure on the available infrastructural and social facilities.

Table 3 Population Distribution by Sub-County

S/No.	Sub-County	(Km^2)	2019 (Census)	
			Population	Population Density (Km^2)
1.	Lurambi	161.7	188,206	1,164
2.	Navakholo	258	153,970	597
3.	Ikolomani	143.6	111,743	778
4.	Shinyalu	445.5	167,637	376
5.	Malava	427.2	238,325	558
6.	Butere	210.4	154,097	732
7.	Khwisero	145.6	113,473	779
8.	Mumias West	165.3	115,353	698
9.	Mumias East	149.2	116,848	783
10.	Matungu	275.8	166,936	605
11.	Likuyani	302	152,051	503
12.	Lugari	367	188,900	515
	Total	**3,051.30**	**1,867,539**	**612**

Source: KNBS National Population and Housing Census Report, 2019

1.2 Sector Background Information

The Sector comprises of Water, Environment, Natural Resource and Climate Change Sub Sectors. The main functions of the Sector are; ensuring access to clean, safe and affordable water, provision of Sanitation and sewerage services, ensuring a clean and safe environment, increasing the County tree cover, coordination, development and implementation of adaptation and mitigation policies, strategies and plans on Climate Change and developing legislative frameworks to govern operations of the sector. The Sector's mandate is presented table 4.

Table 4: Department's Mandate

SECTION	MANDATE
Water	• Increase access to reliable, quality, affordable water and sewerage services; • Facilitate effective management and coordination of water services
Environment	• Ensure access to clean and safe environment

	● Protect, conserve and sustainably manage the environment
Natural Resources	● Increase the county tree cover ● Ensure biodiversity conservation ● Optimal utilization and sustainable management of the County Natural Resources
Climate Change	● Coordinate, develop and implement adaptation and mitigation policies, strategies and plans on Climate Change to enhance adaptation and mitigation actions in the county

Nationally, the Sector contributes about 42.4% to gross domestic product (GDP) and promotes socio-economic development geared towards achieving Vision 2030 aspirations of becoming a globally competitive economy. The Sector has direct and indirect linkages with other sectors which promote socioeconomic development and also contributes immensely to life support systems by providing goods and services to the county. The sector is critical in providing climate information service, affordable clean and safe water; and raw materials for value chain, renewable energy, s good practices in waste management and adequate forest cover.

1.3 Rationale for Preparing the Sector Plan

The Constitution of Kenya, 2010 is the basis for the process of devolution in Kenya. To implement devolution and realize its objectives, the National Assembly enacted the County Government Act, 2012 and the Public Finance Management Act, 2012. Part XI of the County Governments Act, 2012 requires County governments to prepare development plans which include County Spatial Plans, Sector Plans, County Integrated Development Plan (CIDP), and Cities and urban areas plans. These plans form the basis for all budgeting and spending in the County. This plan therefore set priorities and define indicators that measure progress in line with its mandate and is developed to align to new emerging issues, the CIDP 2023-2027 and Manifesto.

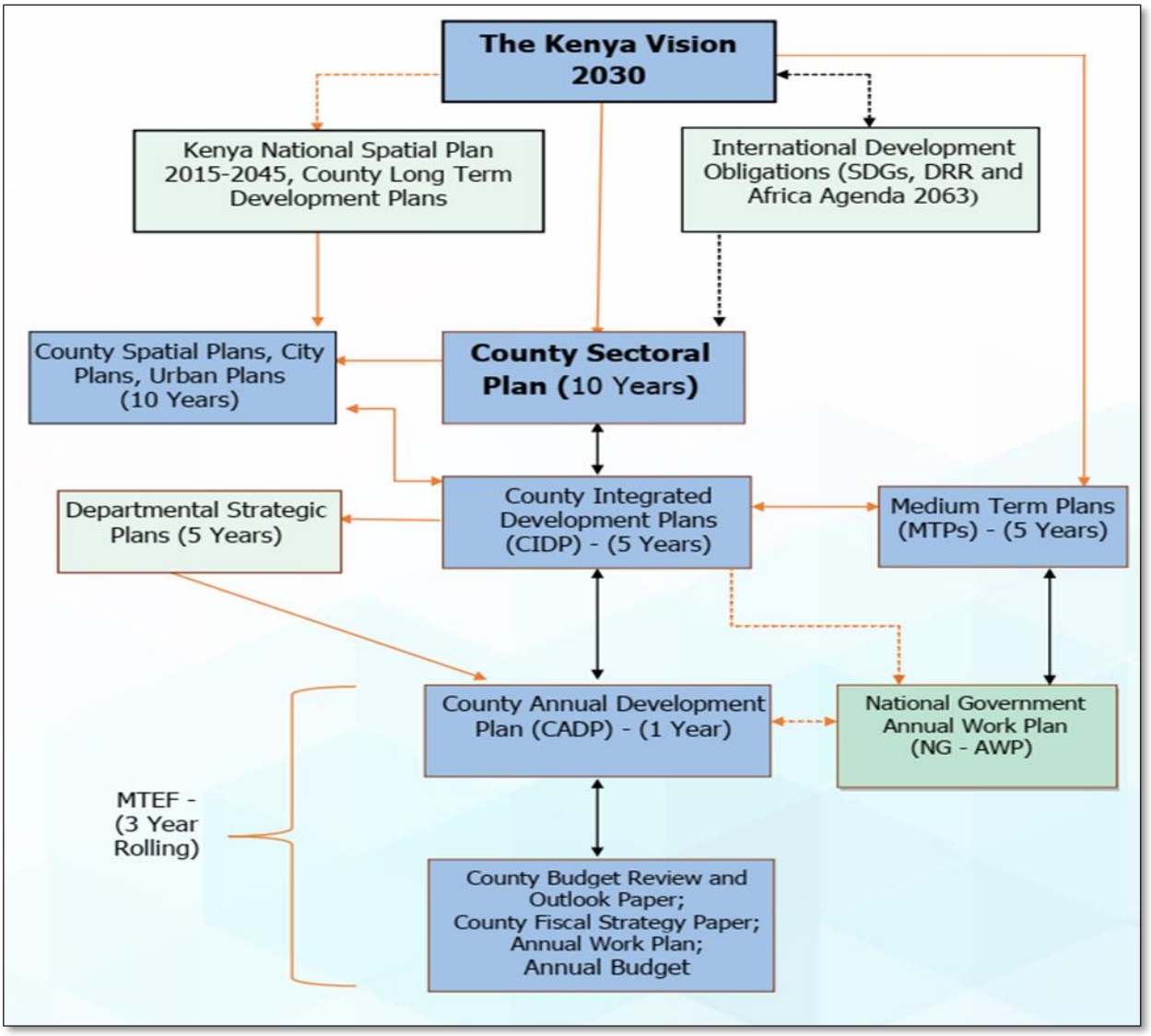
1.4 Linkage between the Sector Plan and other development Plans

The plan is linked to other development plans to ensure that efforts by the County Government, National Government and other relevant stakeholder are coordinated and integrated to achieve

all-inclusive and desired development and efficient, timely and quality service delivery. The Kenya Vision 2030 is the national blueprint that forms the national development agenda that is being implemented through a series of 5-year Medium Term Plans (MTPs) at the National level. At the County level, the Kenya Vision 2030 is implemented through 10-year long-term plans (Sector Plan). The Sector Plan identifies programmes for implementation over the ten-year period which are then presented in the CIDP for a 5-year period and then an annual development plan prepared to implement projects and programmes identified in the CIDP.

Figure 1 provides a diagrammatic presentation of the link between the Sector plan, Kenya Vision 2030, the CIDP, the ADP, the budget, and other plans.

Figure 1: Linkage of the Sector Plan with other Plans



1.5 Methodology

Sector Planning has become an indispensable and standard feature of management in Government offices and marks a major paradigm shift for operations in the Public Service. Some of the hallmarks of such a plan include clearly measurable interventions (inputs) and results (output) over a specified period of time.

This Sector Plan is a product of extensive consultation and participatory preparation. The process of preparing this Sector Plan began in March 2022 with a meeting with the County Planning v cwhich gave birth to a concept note which provided a road map for the plan. The next meeting was held with County Health Management Team (CHMT) to help them familiarize with the structure of the sector plan.

The first Public participation forum was held in the sub-counties being attended by the chairs of the Community councils. The meeting came up with various resolutions on the objectives and specific programmes that should be included in the plan. Further, a consultative meeting with the health sector stakeholders was held and their inputs incorporated into the plan.

A draft document was prepared, shared and validated by the relevant stakeholders. This gave rise to Draft One which was exposed to a County Forum for further validation after analyzing and making additional comments. A final document is prepared after making the changes captured during validation. The document is then forwarded to the cabinet and later to the county assembly for approval.

CHAPTER II: SITUATION ANALYSIS

2.1 Sector Context Analysis

This section discusses the environment within which the sector operates. This includes macro-economic, political (administration), socio-cultural, demographics, environmental, technological issues among others. It highlights the intra-county data variations and key factors influencing the performance of the sector.

2.1.1 Macro-economic

As at 2019 Kakamega County's poverty rate was 35.8%. Main livelihoods for the communities in the county include farming, livestock keeping, artisanal mining and to some extent employment. Over 84% of the County population is rural based and therefore depends directly or indirectly on agriculture. Residents grow both food crops and cash crops.

The county's population also relies on self-employment activities such as Jua Kali artisans, cottage industries and boda boda. Artisanal mining is also another economic activity in the county since the county is endowed with various minerals including gold, iron in form of pyrites and hematite, quartz, ballast and sand among others.

2.1.2 Political (administration)

In light of devolution in Kenya, it is apparent that providing the rights to, and achievement of global and national goals relating to water, environment, natural resources and climate change, is dependent on the commitment and investment of county governments in the same. The county government of Kakamega has therefore purposed to invest in these sectors both as political commitment to the people and as a county development agenda. This provides the basis for the development of this Sector Plan. The mission of the County is "To improve the welfare of the people of Kakamega County through formulation and implementation of all-inclusive multi-Sectoral policies". Environment, Water, Sanitation, Natural Resources and Climate Change are critical to the achievement of the County Mission. Besides, it is important to have proper National & County relationships to avoid disruption of development activities and politicization of the processes.

2.1.3 Socio-cultural

Socially, there is rapid urbanization and rising of informal settlements such as Majengo which is attributed to rapid population growth. This has contributed to increased environmental

degradation as a result of poor disposal of effluent, poor solid waste management and erection of illegal structures in fragile ecosystems. High poverty index and low rate of employment among communities bordering sensitive and/or important ecosystems also leads to either encroachment into these resources, degradation or unsustainable utilization.

Culturally, there exists cultural and tourist sites ('Crying stone' not crying anymore) these sites are being lost due to unsustainable socio-economic practices as now most of the cultural areas which are environmentally sensitive but are being converted to suit human desires. Also, some cultural practices have a direct impact on natural resources/climate change and vice versa. For instance, burning of crop residues before planting affects grazing land and loss of biodiversity that are considered culturally important. Finally, other socio-cultural orientations may lead to resistance of implementation of beneficial programmes. For instance, some indigenous trees cannot be used for farm forestry as some communities attach negative influence from them.

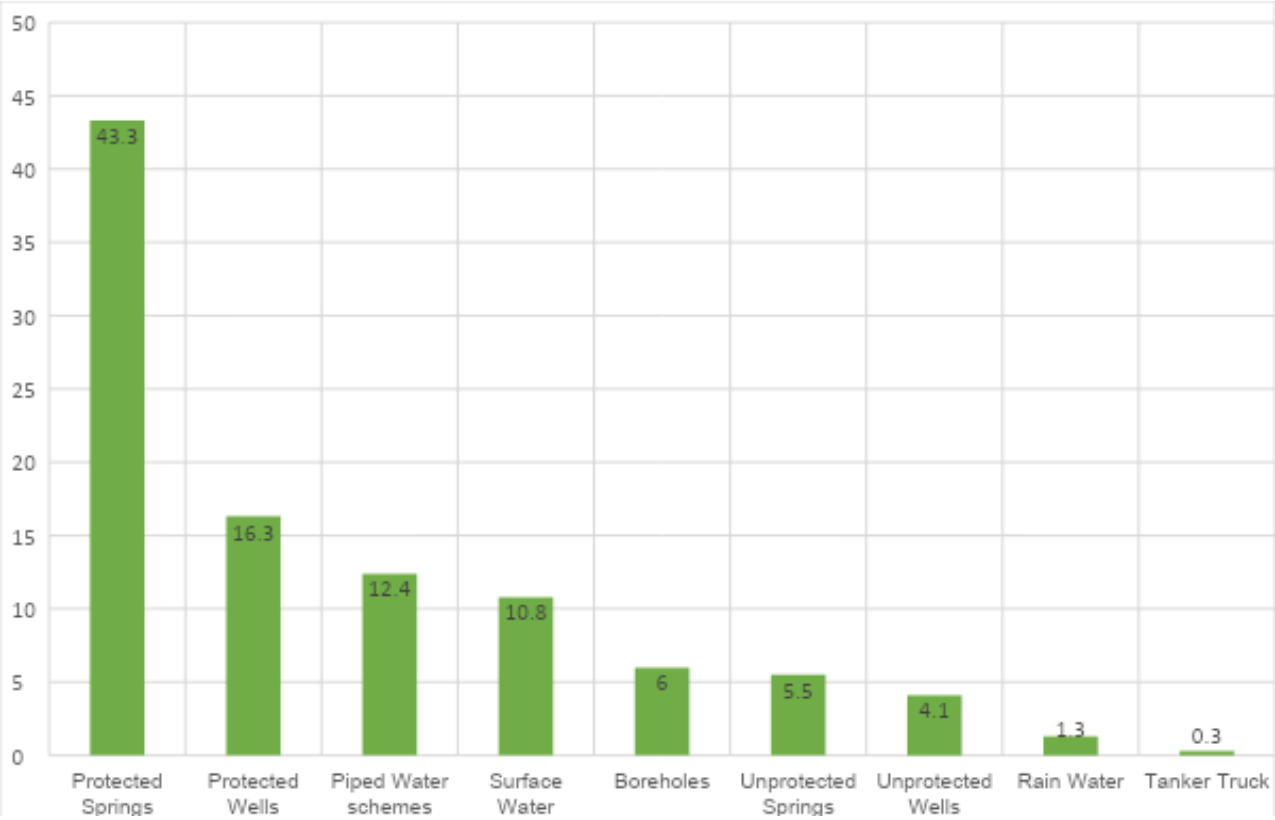
2.1.4 Water access and supply status in Kakamega County

While Kakamega County is rich in diversity of water resources in the form of rivers, streams, springs and ground water exploited through hand dug wells and boreholes, water access level is still significantly low.

According to KNBS National Population and Housing Census Report, 2019, sustainable access to safe water in Kakamega County is estimated at around 61.7%.

Residents of the county mainly access water from springs, boreholes and hand-dug wells, piped water schemes, harvested rain water and water tankers. The graph in Figure 2 below shows various forms of water supply in the county.

Figure 2: Water source comparison in Kakamega County



Status of water access in the county also varies from Sub- County to another and even within sub-counties there is variation from one Ward to another. Field assessment of water resources in the county reveals that the most water scarce sub-counties are Likuyani, Mumias West, Shinyalu and parts of Butere. In Mumias West, residents of Central Ward are under acute water scarcity as the area has no piped water, most springs have dried up and those that exist have very low yields while boreholes are malfunctioning due to faulty pumps or decreased water table.

2.1.4.1 Historical Water Use

Kakamega County has witnessed an increasing growth in population, water use and consequently water demand. According to a feasibility study conducted for the then Kakamega Municipality in 2005, a combined water demand was estimated at 12,381m^3/day.[2] This mainly included residential, institutional, and industrial water demand as segregated in table 5.

[2] *Water Supply and Sanitation Programme for Nzoia Cluster: Phase II Towns – Kakamega, Busia, Nambale –Feasibility Report Kakamega*

Table 5: Kakamega water demand in 2005

Category		2005
High Variant - 4.5% Growth Rate of Population		
Population		97088
Domestic Water Demand		8796
Health/ Education/ Institution		1618
Commercial/ Industrial	10%	880
Unaccounted for Water - 25%	25%	2823
Treatment Works Losses - 5%	5%	706
Total Water Demand		**14823**
Medium Variant - 2.5% Growth Rate of Population		
Population		86109
Domestic Water Demand		7607
Health/ Education/ Institution		1382
Commercial/ Industrial	10%	761
Non-Revenue Water - 25%	25%	2437
Treatment Works Losses - 5%	5%	609
Total Water Demand		**12796**
Low Variant - 1.5% Growth Rate of Population		
Population		81095
Domestic Water Demand		7347
Health/ Education/ Institution		1351
Commercial/ Industrial	10%	735
Unaccounted for Water - 25%	25%	2358
Treatment Works Losses - 5%	5%	590
Total Water Demand		**12381**

Source: Water Supply and Sanitation Programme for Nzoia Cluster Feasibility Study report

Over the years, the county water use and demand have increased drastically. With a current population of 2,079,669, water demand has increased with Kakamega town alone presenting a daily demand of 10,000m^3 which was almost the same amount of water demand for the entire region 13 years ago. Despite this current demand, daily supply for the town is at 8,700m^3 creating a deficit of 1,300m^3 per day for the town center alone.[11]

Currently, it is estimated that total water demand for the county is 14,800 m^3/day which total current water production is not able to meet. These statistics are evidence to the water crisis in the county which is already a concern for stakeholders, and that will continue to increase if no substantive interventions are undertaken.

2.1.4.2 Water use analysis and Future Demand projection

2.1.4.2.1 Water Demand Projection

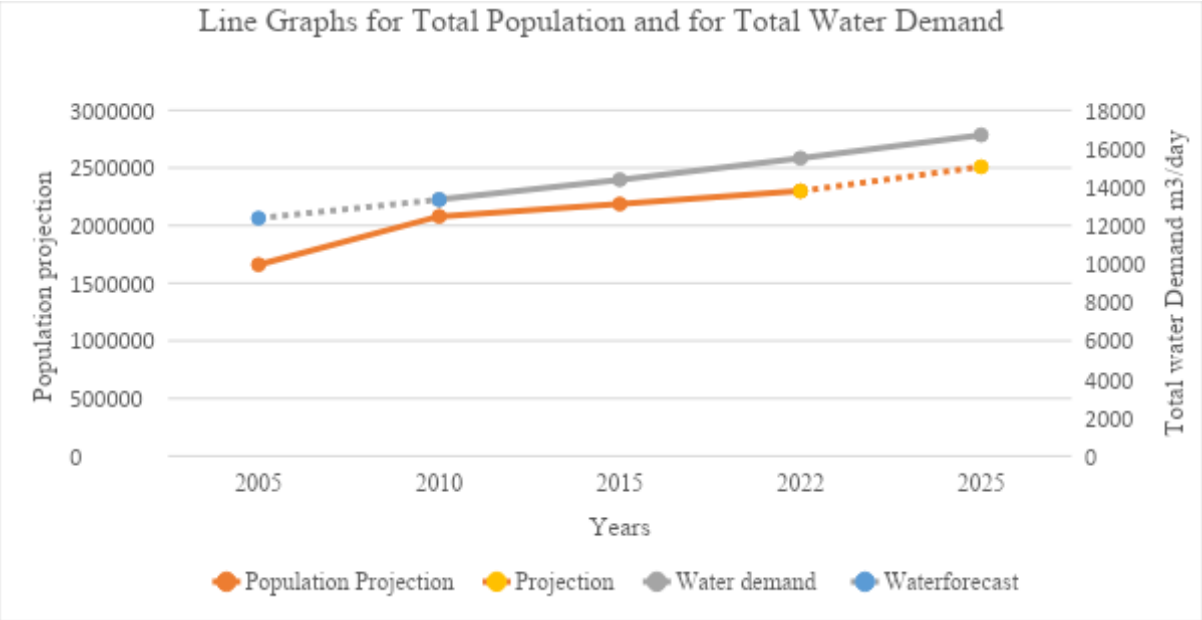
The desired approach for the development of a five-year water demand for the county would have been to combine separate demand forecasts for all water use demands (components of total demand) in the county. This is because different components of demand vary in their patterns of use and demand growth rates, and are influenced by different factors. This was to be achieved by applying historical growth rates for various water use categories while considering dry period situations. The formula that would be used is as follows:

> ***Water demand projections by use category = (Per Capita Water Use for a system in a Dry Year) Minus (Water Conservation Savings) Multiplied by (Projected Population).***

However, this formula could not be applied for this analysis due to data limitation. There was no historical or current data on water use over the years whether in totality or segregated per component. It was therefore impossible to develop forecasts of future demand for each component of demand and sum up to develop a cumulative component consumption. In this respect, the total water demand has been estimated using line graph reconstruction method.

Using available population and total water demand projections in a feasibility report conducted in 2005[10], a line graph was developed using both projected values in literature and through extrapolation. A line of best fit for the population as estimated for 2018 and 2022 was developed and used to estimate total water demand for these points. This is shown in the figure 3.

Figure 3: Reconstruction for Total Water Demand Estimation



Based on this analysis the total demand for the year 2018 is approximated to be 14,800 m^3/day while it is projected that it will rise to approximately 15,500 m^3/day in 2022. It is important to note that these projections are just lines of best fit estimations and are based on the assumption that population growth will continue in the same trend and that water use per capita in all demand components will also have a uniform pattern of growth. Generally, Kakamega County's water demand is expected to grow proportionate to the population.

2.1.5 Environmental

The environment protection and natural resource management comprises of Environment, Natural Resources, Climate Change and Mining. Nationally, the Sector contributes about 42.4% to gross domestic product (GDP) and promotes socio-economic development geared towards achieving Vision 2030 aspirations of becoming a globally competitive economy. The Sector has direct and indirect linkages with other sectors which promote socioeconomic development and also contributes immensely to life support systems by providing goods and services to the county. The sector is critical in providing weather, wildlife, and food production, source of energy, good environmental practice and proper disposal of wastes. In addition, the sector provides clean and safe water for domestic and industrial use, raw materials for industrial development and medicinal products for human and animal use.

Despite its importance, the environment sector in Kakamega County is faced by a myriad of challenges ranging from air and water pollution, deep quarries caused by unsustainable extraction, declining land fertility, dwindling water resources and quality and increasing siltation in water reservoirs/rivers resulting in eutrophication and high cost of water treatment. Pollution in the county is evident through improper solid waste management, leachates/effluents,

deteriorating air quality. Other challenges include population pressure, inadequate funding, inadequate human resources and equipment, inadequate inventory of natural resources, climate change effects, , encroachment in fragile ecosystems including forests, wetlands and riparian corridors and delays in enactment of policy and legal framework. Poverty is another major cause and consequence of environmental degradation and resources depletion. The overdependence of poor on natural resources for livelihoods, highly degrade them resulting in declining fertility and erosion. land degradation affect all other sectors and almost all spheres of county development.

Main drivers of environmental health risks are rapid population growth, rural-urban migration leading to overstretched solid and liquid waste management services, poor disposal of bio-medical wastes, rapid growth of industrial and commercial enterprises, and proliferation of slums or unplanned settlements. This exerts pressure on natural resources and the available infrastructure, impacting on health services, housing, sanitation, education, water services, transport and waste management.

2.1.5.1 Waste and Waste management

Solid waste management is one of the major urban development challenges in Kakamega County. About 2400 tons of waste is generated in the county daily, of which 68 % is from Kakamega town. Of this amount, only between 1100-1500 tons is collected and disposed in open dumpsites which are still the primary means of managing solid waste in the County. It is therefore not uncommon to find piles of waste perched within urban centres..

There exist two open disposal sites in Kakamega County namely: Roasterman measuring approximately 6 Acres and located on the outskirts of Kakamega Town and Matawa measuring approximately 1 acre and is the existing dump site for mixed waste generated from Mumias Town, since 2012.

It has also been noted that waste management practices such reuse and recycling is still very limited except for metallic wastes. Poor waste management is associated with land degradation and pollution of water bodies in the county.

The county is currently engaging services of private companies and youth groups in waste collection, transportation and disposal. With the urban centres in the county together with their populations expected to increase exponentially in the near future, waste generation and the challenges associated with it is expected to increase. The county's population is projected to hit about 2.3 million people by 2022. This, coupled with expected increase in living standards and household income, lifestyles will certainly change and consequently lead to increased waste

generation. In addition, all the 280 markets in the county will be expected to be active by 2022 hence waste management will require serious attention by the county government.

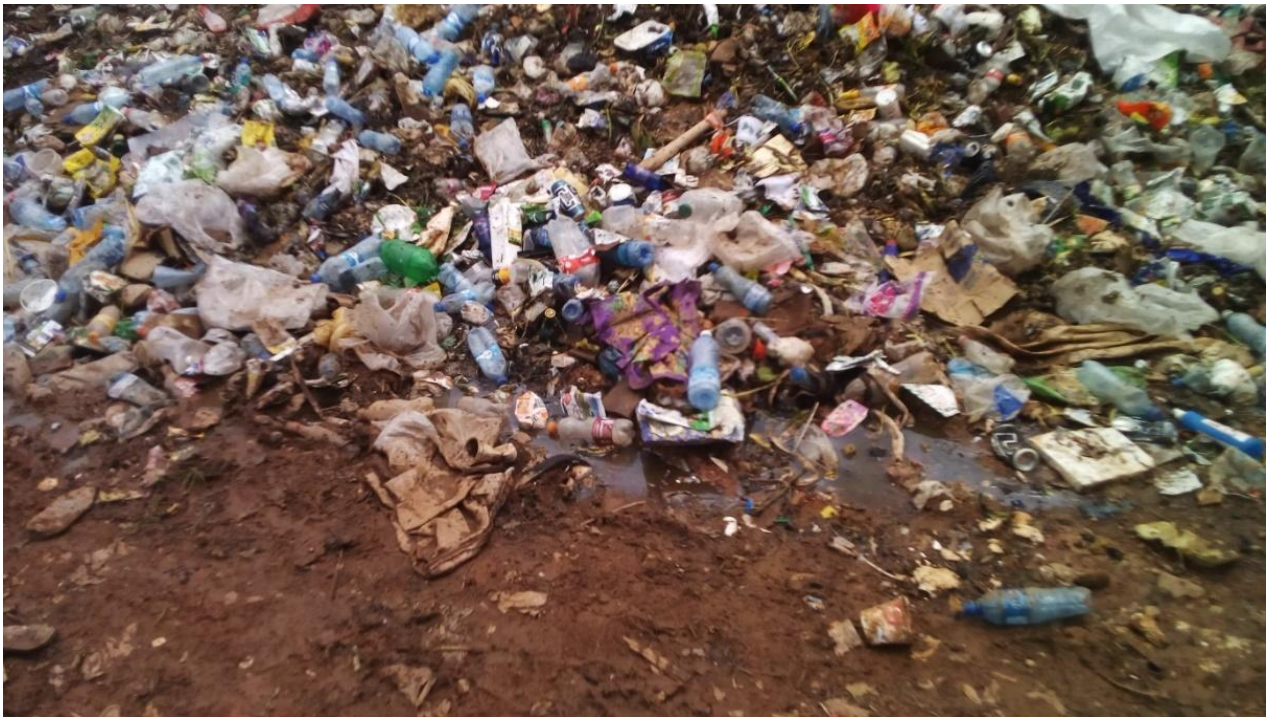


Photo 1: Kakamega Roasterman dumpsite

2.1.5.2 Air

Generally, air quality in Kakamega County remains fairly safe. However this remains a potential threat to the environment. Air pollution is the introduction of particulates, biological molecules or other harmful materials into earth's atmosphere, causing diseases, death to humans, damage to other living organisms such as animals and food crops, or natural or built environment. Kakamega County Environmental Management Bill 2007 defines air pollution as any change in the composition of the air caused by smoke, soot, dust, fly ash, cinders, solid particles of any kind, gases, fumes, aerosols and odorous substances as defined by Environmental Management Co-ordination Act, No. 8 of 1999.

Major cause of outdoor air pollution in the county are motor vehicles through emission of smoke and other pollutants. Key air pollutants in the county include tropospheric ozone—the principal component of smog, fine particles in the air known as particulate matter, and air toxics—chemicals in the air that can cause cancer and other health problems. Other minor sources of

pollution but which have potential of causing major pollution in the county include Sugar factories and mining sites that emits dust and particulate matter. Although impacts of outdoor air-pollution are not of significance in the county, indoor air pollution remains a concern due to the fact that over 80% of the population still depend on three-stone cook-stove characterized by emission of smoke.

2.1.5.3 Land

Land degradation is a slow onset disaster which has long-term negative implications on agriculture, ecosystems and human livelihoods, as well as the economy of the country. In the county land degradation contributed to loss of agricultural productivity, a biodiversity and ecosystems, which portends negative effects on the environment, food security, livelihoods and national economy.

2.1.5.4 Natural Resources

2.1.5.4.1 Forests

The County forest cover stands at 9.8%, just slightly falling below the 10% the Constitutional target as provided under Article 69. There are seven gazetted forests namely Kakamega forest, Kakamega Forest National Reserve, Malava, Bunyala, Lugari Forest Station, Turbo Forest Station and Misango Hills, all which covers a total of 32,712.6 hectares. Un-gazetted forests in the county are mainly found on hill-tops Kambiri, Misango, Khuvasali and Ingolomosio. Table 6 below indicate the forests and their sizes in the county:

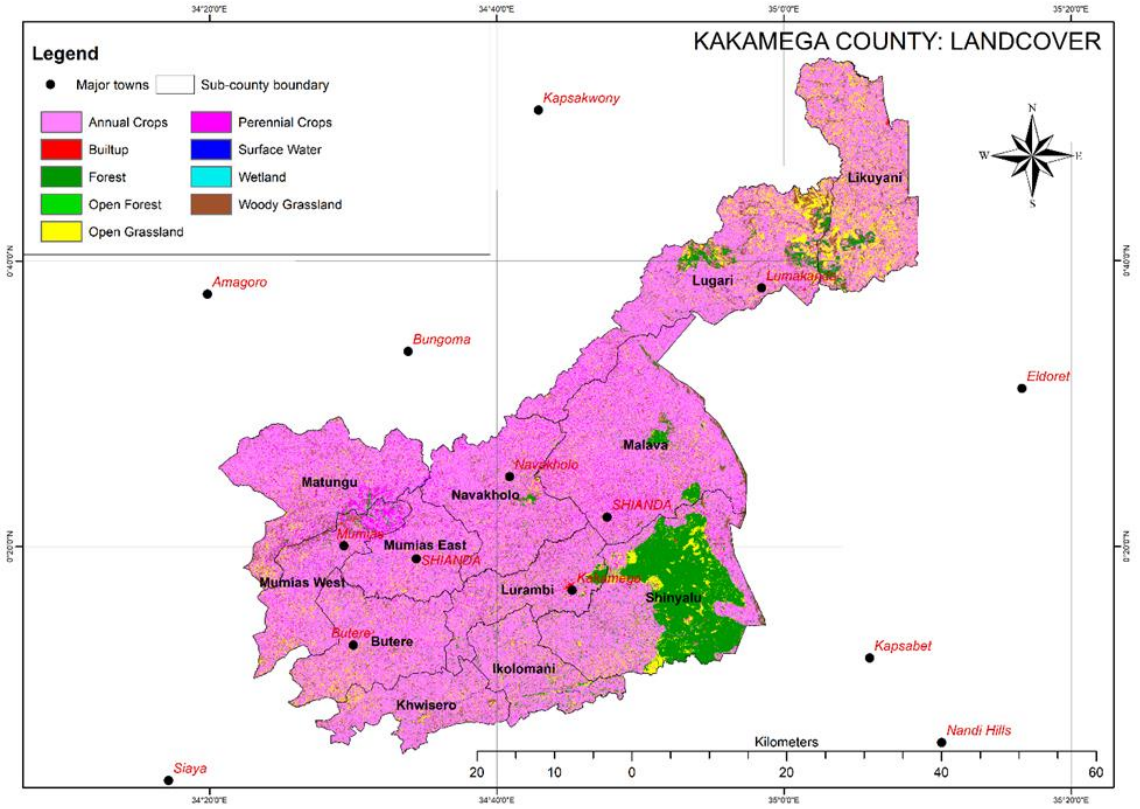
Table 6 : Gazetted forest in the county and their sizes

No.	Name of Forest	Indigenous Area(ha)	Plantation Area (ha)	Total Area (ha)
1	Kakamega forest	13593.6	1789	15382.6
2	Malava	431	287.8	718.8
3	Bunyala	268.8	556.8	825.6
4	Lugari	769.5	1393.5	2163
5	Turbo	6135.8	3398.2	9534
6	Misango	103.7	0	103.7
7	Kakamega Forest National Reserve	3984.9	0	3984.9
8	Kisere	471	0	471
Total		**25758.3**	**7425.3**	**33183.6**

Kakamega Forest Ecosystem comprises of Kakamega, Lugari, and Butere/Mumias Forest Zones. The Kakamega zone has Kakamega Forest the only remaining tropical rainforest in Kenya that is a relic of the Guineo-Congolean forest belt rich in Biodiversity ideal for ecotourism. Malava, Kisere and Bunyala forests are also in this zone. Lugari Forest Zone has Turbo, Lugari and Nzoia forests which specialize in sawn timber and production of transmission poles, fuelwood and pulp and paper working circles. The Butere/Mumias Zone covers a total area of about 939.3 square kilometers and has only one gazetted forest which is a hill called Misango and measures about (103.7Ha). The hill is in Khwisero Sub County and is under rehabilitation owing to degradation due to past activities.

In the riverine and around water sources, farmers in the have adopted the growing of Bamboo. The Kenya Forest Research has demonstration nurseries, farms and has rolled out an extension approach that includes training farmers' groups on bamboo propagation and utilization. This is summarized in figure 4.

Figure 4 ***: Land use map showing land-cover in Kakamega County***



The Kakamega forest is a tropical forest and is the only Guinea Congolian type of rain forest remaining in Kenya. This forest is rich in biodiversity and hosts over 45 species of mammals, 510 species of butterflies and 488 bird species.

While forests are recognized for their social, economic and environmental importance, deforestation, forest degradation and fragmentation of forests have undermined their capacity for sustainable delivery of these key services. Forests are under threat of degradation due to increasing population around it, high poverty rates, encroachment and human activities including heavy harvesting of trees and grazing.[3] The growing demand for forest resources and ecosystem services will continue to exert great pressure on the remaining forest fragments. The details are summarised in table 7.

Table 7 : Land cover percentage in Kakamega County

Land-Cover	*Area (Ha)*	*% Cover*
Annual Crops	218,102.81	72.28%
Built-up	655.72	0.22%
Forest	22,740.94	7.54%
Open Forest	0.87	0.0003%
Open Grassland	23,630.32	7.83%
Perennial Crops	13,388.68	4.44%
Surface Water	530.08	0.18%
Wetland	536.71	0.18%
Woody Grassland	22,149.80	7.34%
Total	***301,735.91***	***100.00%***

2.1.5.4.2 *Minerals*

While mining is an important economic activity in Kakamega especially gold mining and sand harvesting, these activities pose great environmental threat in the area. Mining occurs in various parts of Kakamega and is generally associated with negative environmental effects, disrupting the natural landscapes physically, chemically and biologically. Scarification of land surface by

[3] *Forecasting hotspots of forest clearing in Kakamega Forest, Western Kenya*

mining activities, including extraction of building stones from quarries leaves unsightly craters on the surface. Methods and practices of mining are unsustainable and cause a lot of destruction to the environment. Many rivers such as Shatsala, Yala and Isiukhu have been degraded in quality due to alluvial sand mining activities. The National government has instituted safeguards for environmental conservation through the Mining Act.

2.1.5.4.3 Climate Change

The issue of climate change as witnessed in the 21st century is a major threat facing humanity. Global Climate Modelling (GCM) data suggests an increased temperature for Kenya with projection showing an increase of 3^0C by 2100. In addition the GCMs suggest with greater confidence that the proportion of annual rainfall that occurs in heavy events will increase.[4]

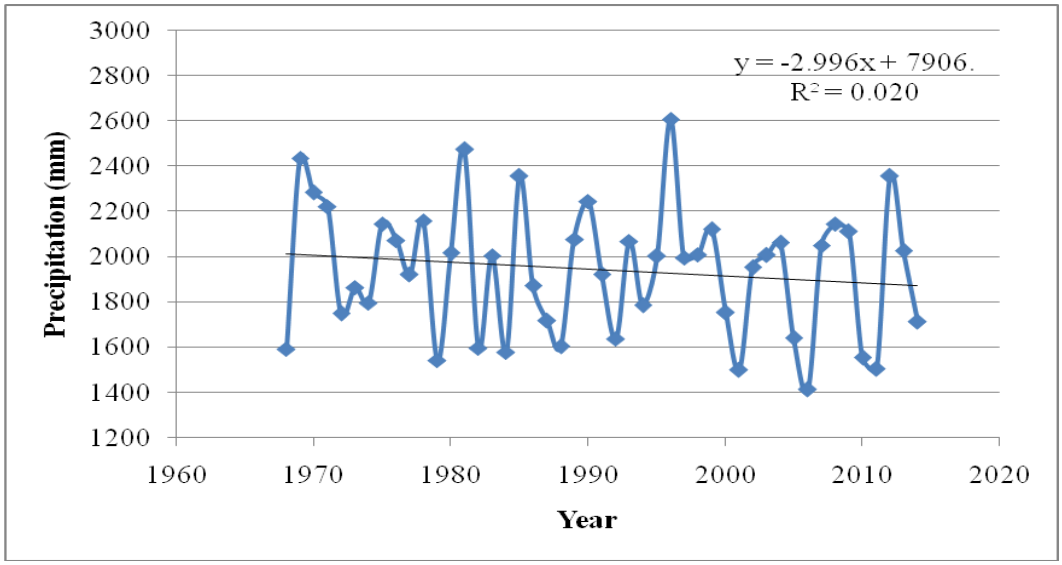
In Western Kenya, which includes Kakamega County, temperatures and rainfall levels are expected to increase according to recent climate models.[5] Specific to Kakamega County, the main climate risk is the change in precipitation characteristics. Recent trends show a remarked increase in inter-annual variability and distribution of rains, with an increase in the number of consecutive dry days and shorter but more intense periods of rainfall resulting in an increase in frequency of floods. On the other hand, other analysis done based on past rainfall data indicate that the County is generally experiencing decline in rainfall amount. This implies that as the years went by, the annual precipitation reduced and for every additional year, the precipitation reduced by 3.00mm and based on this data it can be projected that rainfall amounts will reduce as shown in Figure 5.[6]

[4] *Government of Kenya. 2016. Kenya National Adaptation Plan: Enhanced climate resilience towards the attainment of Vision 2030 and beyond*

[5] *African Development Bank Climate Models for Kenya*

[6] *Mulinya C., Ang,awa F. and Tonui K. 2017. Factors Affecting Small Scale Farmers Coping Strategies To Climate Change In Kakamega County In Kenya. IOSR Journal Of Humanities And Social Science (IOSR-JHSS) Volume 22, Issue 2, Ver. II*

Figure 5: Annual Rainfall projection for Kakamega County



Source: Mulinya et al, 2017[8]

Changes in climate in the county are causing negative impacts in the county and may get worse in the future. Reduction in rainfall quantities will lead to increased spells of droughts affecting agriculture as well as causing water scarcity. Already residents are experiencing declining agricultural production due to spatial and temporal rainfall variability. Coupled with declining soil fertility, climate change will continue to impact on crop production, and hence affect food security especially among small scale farmers.

These impacts will impact across all the sub-counties. It is therefore critical for the county government to focus on building community adaptation and resilience among communities as well as institutional capacity to deal with these impacts.

The county has developed climate change Act 2020 that establishes climate change governance structures in the county, establishes climate change Fund and provides structures for climate Information Service. This puts the county in a vantage point to implement locally led climate change actions.

2.1.5.4.4 Water Sector Overview

Water is a critical resource for human existence. It is not only an important compound in human body but it is also an important factor for production and sanitation (including disposal of effluent and excreta) which is the most important requirement for human health. Kakamega County is densely populated and faces enormous challenges in providing sustainable access to

safe water, adequate and reliable water, sewerage systems and basic sanitation for its fast-growing population.

Sustainable access to safe water is estimated at around 61.7% in the county.[1] Missing baseline data and sustainable information systems hinder obtaining a clear county picture and thus, coverage can only be estimated. However in general, sustainable access to safe water and basic sanitation is still very low in terms of quality and quantity.

Rapid population growth and the associated increases in economic activities, has intensified demand for water for domestic use, food security and industrial development. Declining water availability, exacerbated by the degradation of water resources due to changing land-use systems. This calls for an integrated approach to managing water resources and delivery of water services to bridge the supply-demand gap.

Simultaneously, degraded water catchments and the effects of climate change are reducing the amounts of freshwater available in surface and groundwater resources.

Provision of water throughout the year presents a major challenge for Kakamega County government, with inadequate water resource exploitation and harvesting being partly responsible for regional imbalance in water security. In many parts of the county, there is a lot of water during rainy seasons, most of which is left untapped yet during dry season water scarcity sets in. This imbalance is compounded further by inadequate water storage infrastructure and erratic weather patterns which contribute to flooding and, subsequently, adverse socio-economic impacts on the population.

Water demand in the county is expected to rise particularly due to envisioned increase in population, agricultural activity, and industrial development. On the other hand, catchments and recharge areas for river flow and groundwater are increasingly under threat of degradation.

Although Water Supply systems play a very significant role in enabling communities' access safe water for their domestic use, sustainability of rural community piped water supplies continues to remain a challenge for both donors and the government with the value for investment involved being hard to realize. New water supplies developed stop functioning within a few years after implementation because of technical, institutional, financial, social and environmental factors.

From the data available, Kakamega County has more than 140 Community Water Projects that are operated and managed by community themselves. These projects face several and significant challenges that often impede proper functioning. Such challenges include; poor scheme management as a result of lack of adequate management and technical capacity leading to misuse of finances, poor revenue collection, and unwillingness of consumers to pay for water services rendered making them unsustainable.

In the rural areas, excessive cultivation of water catchment areas results in soil erosion and pollution from effluents of agricultural pesticides and heavy metals affecting water sources. The cascade effect is increasing eutrophication and siltation of lakes, dams and pans. The impacts of pollution on water resources are manifested by poor water quality which causes toxicity to humans, animals and aquatic life, loss of aesthetic value and habitat destruction.

Climate change is already altering the hydrologic cycle, leading to more frequent extreme weather events, including both droughts and floods, and causing sea-level rise, which has a variety of impacts, including quality and quantity of surface waters and groundwater aquifers. These changes will exacerbate issues that create water risk, such as water scarcity, pollution (because of decreased environmental flows and therefore higher concentrations of contaminants), and competition among water users.

It will likely have greater impacts on companies in areas which lack climate resilient infrastructure to adapt to these changes or a lack of government capacity or will to invest in changes. Though mitigation and adaptation efforts for climate change are much broader than water-related management issues, SWM does play a role in adapting to climate change. Reduced water use will decrease the effects of drought and pollution and help prevent competition among water users. Policies that reduce the GHG emissions will help reduce the effects of climate change (and the subsequent impacts on water resources), and therefore are a strategy for promoting SWM.

The department of water has continued to receive frequent requests for monetary assistance from community managed projects across the County after their water supply stalled either due to technical failure or disconnection of electricity. There is therefore need to shift focus to renewable energy sources that can bring down operational costs.

2.1.6 Technological

2.1.6.1 Research and Development

The sector has mapped key water sources in the county and developed a GIS map for water network. To enhance service delivery, there is need to invest in emerging technologies for instance water monitoring, leakage detection, water pressure management, sewer overflows and flooding to water quality, water meter data collection. Other grey areas include provision of green energy options such as solar; improved tools and gadgets for reduced turn-around-time such as smart water meters; information management options such as GIS among others. The sector should thus invest in, adopt the best practices and innovations and promote research on new technologies.

2.1.6.2 Legal Framework

The section discusses the existing sector policy and legal framework and how they influence the performance of the sector. They include national and county policies, regional and international obligations.

2.1.1.1.1 Sustainable Development Goals (SDGs')

The (SDGs) agenda is a plan of action for people, planet, peace, prosperity and partnership that seeks to build on the millennium development goals. The SDGs were agreed upon at the UN General Assembly and adopted as the post 2015 development agenda in September 2015. Access to clean water and sanitation, climate action, environmental conservation and sustainable exploitation of natural resources are key result areas in the SDGs as captured by goal 6- clean and water sanitation, 13-climate action, 14- life below water and 15-life on land. Kenya being a global citizen has an obligation to mainstream and contribute to attainment of the SDGs. The county Government of Kakamega will play a role in the provision of water and environmental services to aid the above identified SDGs.

2.1.1.1.2 Water Action Decade (2018-2028)

Water is at the heart of recent milestone agreements such as the 2030 Agenda for Sustainable Development. The General Assembly proclaims the period from 2018 to 2028 the International

Decade for Action, "Water for Sustainable Development" (the "Decade")7, to further improve cooperation, partnership and capacity development in response to the ambitious 2030 Agenda. The resolution states that the objectives of the Decade should be a greater focus on:

- The sustainable development and integrated management of water resources for achievement of social, economic and environmental objectives;
- The implementation and promotion of related programmes and projects; and
- The furtherance of cooperation and partnerships at all levels to achieve internationally agreed water-related goals and targets, including those in the 2030 Agenda for Sustainable Development.

2.1.1.1.3 Human Right to Water and Sanitation

The United Nations General Assembly explicitly recognized the human right to water and sanitation and acknowledged that clean drinking water and sanitation are essential to the realization of all human rights. The Resolution calls upon States and international organizations to provide financial resources, help capacity-building and technology transfer to help countries, in particular developing countries, to provide safe, clean, accessible and affordable drinking water and sanitation for all. Kenya as a ratified state recognizes this so does the County Government of Kakamega.

2.1.1.1.4 The Constitution of Kenya (CoK, 2010)

Devolution under Kenya's new 2010 Constitution has wide-ranging implications for the water sector. The Constitution recognizes that access to safe and sufficient water is a basic human right. Article 438 of the Constitution entrenches water as a constitutional right by establishing a right to reasonable standards of sanitation and clean and safe water in adequate quantities and Article 21which places an obligation on the government to take steps to progressively realize this right. It also assigns responsibility for water supply and sanitation provision to 47 newly established counties. To effect these changes, new laws were put in place including the Water Act 2016 and the County Governments Act, which gives counties the power9 to establish service delivery entities including water service providers.

[7]Source: United Nations Secretary-General's Plan: Water Action Decade 2018-2028

[8]www.Kenyalaw.org

[9]Part XII of the County Governments Act deals with delivery of county public services. Section 114 restates the obligation of the county government to deliver public services within its designated area of jurisdiction.

2.1.1.1.5 County Government Act (2012)

The County Governments in accordance with Article 185 of the Constitution are empowered to develop county legislations and therefore able to regulate devolved functions provided for in Article 186 and assigned in the Fourth Schedule of the Constitution10.

2.1.1.1.6 Public Finance Management Act (PFMA, 2012)

The Public Finance Management Act (PFMA) 2012 emphasizes on importance of planning and the use of the plans in budgeting process. The PFMA (Part IV (126) section (1)) requires both a long-term and medium-term plans. According to the PFMA, a budget process starts with development planning process, which contain both short term and medium-term plans. Budgets are based on projects and other expenditure contained in the plan11.

2.1.1.1.7 The Water Act 2016

The Water Act 2016 aligns the water sector with the COK 2010. The Act defines roles and responsibilities in the delivery of water and sanitation services. Under the Act, county governments will appoint or establish Water Service Providers to serve as licensed water operators. Section 78. (1) of the Act12 states that a water services provider shall be responsible for:

a) The provision of water services within the area specified in the license; and
b) The development of county assets for water service provision.

2.1.1.1.8 Environment Management and Coordination Act, 2015,

This is the principle environment and natural resource management law in Kenya. It guides environmental management and provides guidance on issues such as solid waste management, environmental pollution, protection and restoration of the degraded environment. The Act establishes the County Environment County, which Kakamega has actualized and the County will apply the regulations and tools developed under the Act to conserve the environment and sustainably manage the natural resources working with the residents and other stakeholders through public participation.

[10] http://www.kenyalaw.org/lex/actview.xql?actid=No.%2017%20of%202012

[11] http://kippra.or.ke/wp-content/uploads/2018/04/SP18.pdf

2.1.1.1.9 The 5th Draft Sessional Paper on National Water Policy 2018

The goal of the policy is to guide the achievement of sustainable management, development and use of water resources in Kenya. It provides a framework for sustainable management and financing of water resources; water harvesting and storage; and for equitable, efficient, and universal access to water supply and reasonable standards of sanitation, for domestic, economic use and ecosystem sustenance. It provides guidance for aligning the water sector to the Constitution of Kenya especially with respect to the establishment of mechanisms to guide intergovernmental and, institutional coordination for better delivery of respective functions[13].

National Forest Policy (NFP)

The NFP proposes to increase the country forest cover, boost the forest sector's contribution to the national economy, enhance resilience to climate change, and improve livelihoods.

2.1.1.1.10 Kenya Vision 2030

Kenya's Vision 203014 is an economic blueprint that seeks to create "a globally competitive and prosperous nation with a high quality of life by 2030". The Vision aims to transform the country into a newly industrializing, middle-income country providing a high quality of life to all its citizens in a clean and secure environment. The Vision is anchored on three key pillars: economic; social; and political. The Vision aspires to ensure that improved water and sanitation are available and accessible to all, and that the country has a clean, secure and sustainable environment by 2030. The Vision for Water and Sanitation is to ensure that improved water and sanitation are available and accessible to all by 2030.

2.1.1.1.11 The National Climate Change Action Plan, 2018 -2022

The National Ministry of Environment & Forestry has been implementing a resilience framework to support climate change adaptation in Lake Victoria Environment Management Programme (LVEMP); Planning for Resilience in East Africa through policy, adaptation, research and economic development program (PREPARED); Climate for Development in Africa Programme; Catalysing Forest and Landscape; rehabilitation for climate resilience and biodiversity conservation in East Africa and Global Early Warning System for Climate Change project. The department through proposed plans will contribute to climate change adaptation plan, mitigation and resilience initiatives that are being undertaken in the national climate change action plan. The department will also operationalize the Climate Change Act, 2016 and contribute to Kenya's goals in the Nationally Determined Contribution to actualize Paris climate accord and other National Climate Change policies or plans.

[13] http://www.water.go.ke/downloads/

[14] www.vision2030.go.ke

2.1.1.1.12 Other Obligations

a) The Green Economy Strategy and Implementation Plan (GEISP)

The GEISP lays emphasis on mitigating the socio-economic challenges facing the achievement of the Kenya vision 2030. These are; food insecurity, poverty, inequalities, unemployment, poor infrastructure, environmental degradation, climate change and variability. The plan seeks to guide Kenya's transformational path way in five key areas namely; sustainable infrastructure development, building resilience, sustainable natural resources management, resource efficiency, social inclusion and sustainable livelihood. This Strategic plan seeks to achieve the aspirations of GEISP.

b) The Lake Region Economic Blue-Print

The blueprint is designed to guide development efforts by leveraging on existing assets, addressing constraints and defining key steps that leaders and citizens can take to transform the shared vision of the bloc. The Counties that constitute the bloc are Bungoma, Busia, Vihiga, Kakamega, Trans Nzoia, Bomet, Nandi, Kisumu, Siaya, Homabay, Migori, Kisii, Nyamira and Kericho. The blueprint was born out of the understanding that strategic connections between counties with shared interests can be an effective and intelligent means of creating notable development whose impact can be felt across different Counties. Other reasons for the blueprint are access to new and expanded markets, economies of scale, leveraging on comparative county strengths, use of shared resources like Lake Victoria, River Yala, River Nzoia, Mt. Elgon and other shared values.

c) The National Spatial Plan (NSP) Framework

Kenya has prepared a thirty-year spatial plan that aims at harmonizing development in the country. The plan envisages optimal productivity, sustainability, efficiency and equitability in the use of the scarce land in Kenya and the territorial space. This plan outlines strategies and policies for optimal and sustainable utilization of this resource for agriculture agricultural production, forestry, creating niches for tourism, renewable energy and water sources.

d) Performance Management

The Vision and Mission statements, the core values and the strategic objectives identified in this plan have been incorporated in the Performance Management Framework being implemented by the County Government. The Strategic Issues, Strategic Objectives and Strategies identified forms the foundation for developing the targets to be achieved through the performance contract. The Strategic Plan serves as a foundation for the implementation of the Performance Management System and it is the basis for Performance Agreements (PAS) expected of each staff member.

e) African Agenda 2063

The African Union developed a road map for “an integrated, prosperous and peaceful Africa, driven by its own citizens and representing a dynamic force in the international arena.” This

agenda has become the overarching guide for the future of the African continent. The agenda lays emphasis on a strong desire to see a continent where women and the youth have guarantees of fundamental freedoms to contribute and benefit from a different, better and dynamic Africa by 2063, and where women and youth assume leading roles in growth and transformation of African societies. This will steer the continent to prosperity, well-being, unity and integration, freedom and security.

f) Others Summarized

The Convention on **Biological Diversity (CBD)** is treaty with three main goals: conservation of biodiversity; sustainable use of biodiversity; fair and equitable sharing of the benefits arising from the use of genetic resources. Its overall objective is to encourage actions, which will lead to a sustainable use of resources for future generations.

The **Nagoya Protocol** on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity aims at sharing the benefits in an equitable way.

The **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)** requires conservation and patenting of genetic resources for communities to benefit.

The **Kyoto Protocol** is an international agreement linked to the United Nations Framework Convention on Climate Change, which commits member countries to reduce GHG emissions by setting internationally binding emission reduction targets. Kenya has committed to reduce its emissions by 20% by the year 2030. To achieve this, the country is adopting a green developmental trajectory, promoting afforestation and uptake of alternative energy sources.

The **Ramsar Convention (Convention on Wetlands of International Importance)** provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. Kakamega County has diminishing wetlands and therefore need to be rehabilitated and conserved.

REDD + has been evolving within the country as an attractive means to reduce forest sector carbon emissions through appropriate forest management practices and enhanced forest governance. The Forest Carbon Partnership Facility (FCPF) Process was one of these efforts supporting developing countries and which Kenya joined. The department will significantly contribute to addressing similar components as targeted by REDD+.

2.2 Review of Sector Financing

The Water, Environment, Natural Resources and Climate Change sector is funded by monies from equitable share from the National government, own source revenue, conditional grants from both the national government & development partners and appropriations in aid. The department has received a total of Kshs. 2,942,998,858 between financial years 2014/15 and 2020/21. Of the total budget allocation, Kshs. 1,457,822,275 was actually spent translating to 52.5% absorption

rate. Figure 6 provides an analysis of variations in budget allocation and expenditure for the financial years 2014/15 to 2020/21, while figure 7 shows the budget allocation as compared with the absorption rates. On the other hand figure 8 shows the total revenue for the sector as compared total receipts. Table 8 provides the funding trends for the sector over the years as compared with the actual receipts and the aggregate County funding.

Table 8: Source of Sector Budget Financing

Financing	FY 2013/2014	FY 2014/2015	FY 2015/2016	FY 2016/2017	FY 2017/2018	FY 2018/2019	FY 2019/2020	FY 2020/2021	FY 2021/2022
Total Sector financing	284,463,240.00	157,268,000.00	244,843,288.00	234,047,694.00	281,543,890.00	370,380,408.00	587,116,460.00	412,118,394.00	675,867,761.00
Actual sector Expenditure	36,573,645.00	90,510,088.00	167,493,726.00	129,442,205.00	70,018,932.00	219,671,704.00	290,642,127.00	285,988,849.00	247,131,152.00
Total county Financing	**321,036,885.00**	**247,778,088.00**	**412,337,014.00**	**363,489,899.00**	**351,562,822.00**	**590,052,112.00**	**877,758,587.00**	**698,107,243.00**	**922,998,913.00**

Figure 6: Budget allocation versus expenditure

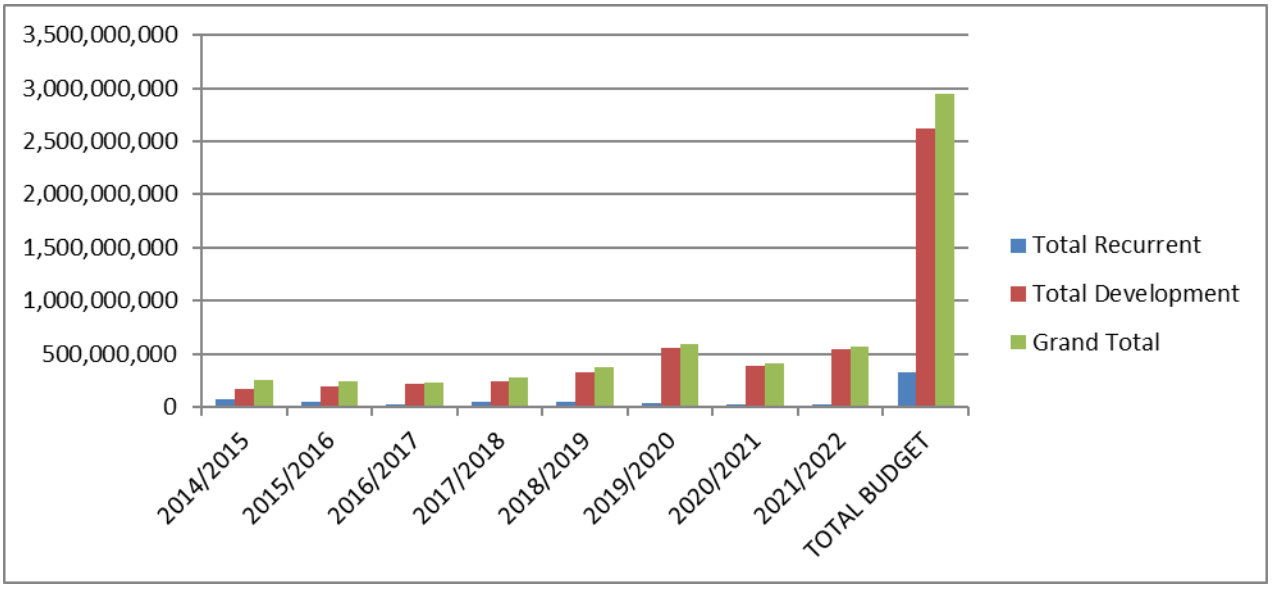


Figure 7 Budget allocation versus absorption

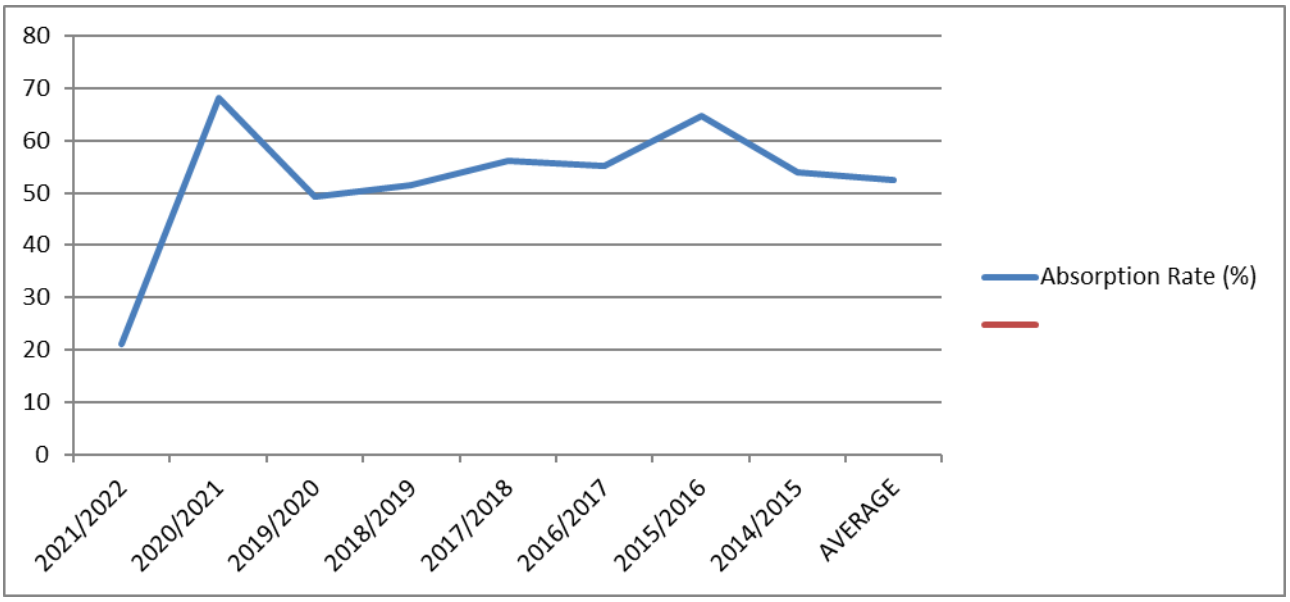
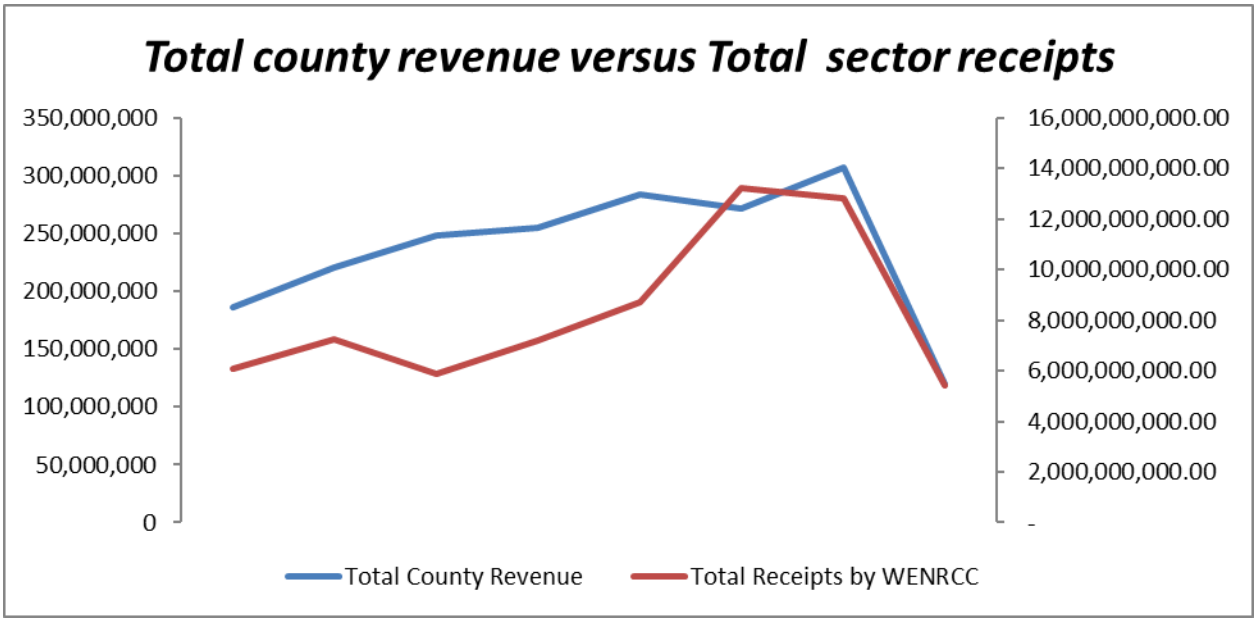


Figure 8 Total county revenue versus Total Sector receipts



2.3 Sector Performance Trends and Achievements

The section provides an analysis of the sector performance trends based on the key sector statistics (outcomes).It also highlights the key achievements of the sector within the last ten year period as well as lessons learnt.

2.2.1 Key Achievements

Since the inception of devolution, the county has recorded major milestones which have generally improved service delivery in the county.

- Established KACWASCO as a water service provider operating scheme in Kakamega, Mumias, Shinyalu, Butere, Navakholo, Malava and Lugari serving 33,936 households.
- In order to enhance access to clean and safe water and sanitation services in rural areas, established Kakamega County Rural Water and Sanitation Company (KACRWASCO) serving 2,672 households;
- Prepared a County Water Master Plan 2018 – 2022 and in collaboration with KIWASH, developed a data base for all water sources which has facilitated planning for development and management of the water sector;
- Adopted the containerized water treatment technology that is currently being implemented in Musembe dam in Lugari, Lumino dam in Likuyani, Yala Butwehe in Ikolomani and Maloha/Firatsi in Butere.
- Through support of World Bank, constructing major water supply schemes at Kuvasali in Malava, Nandamanywa in Shinyalu, Lwakhupa in Navakholo and in partnership with Kenya Red Cross, constructed Misango hills water supply project in Khwisero.
- Drilled fifty-seven (57) and rehabilitated forty-three (43) boreholes across the County that has increased access to clean and safe water;
- Solarized thirty-one (31) water supply projects which has reduced operational costs;
- Constructed 87 rain water harvesting and storage systems at public institutions including schools, polytechnics, health centres across the County in collaboration with partners;
- Protected and developed 810 springs and in collaboration with Evidence Action, installed 4,124 chlorine dispensers in vicinity of springs, wells and other water sources (used for drinking but not chlorinated) which has improved access to clean and safe water;
- In collaboration with the National government, a gold refinery plant is being constructed at Lidambiza in Ikolomani sub-county. The plant will come as a great relief to artisanal miners who were being exploited by middle-men buying their gold at very low prices.
- Increased the County tree cover by planting over 492,200 trees in selected public institutions, riparian areas and hilltops under the County Greening programme;
- Mapped county natural resources including wetlands and mining sites;
- In collaboration with the National Environmental Management Authority (NEMA), Directorate of Occupational Safety and Health Administration (DOSH) and the Ministry of Mining, sensitized artisanal miners across the County on sustainable land use management and safety;

- Through the Kazi Mashinani Program, the County government engaged 262 youth and women to offer cleaning services in County markets, urban areas and County offices;
- Fabricated and installed one hundred and fifty-six (156) elevated separation at source litter bins in various locations across the County;
- Constructed nine (9) refuse chambers in selected market centres for temporal holding of solid waste before transportation to the final disposal site.
- Established Climate Change Unit in the County to act as a secretariat for Climate change matters
- Established County Climate Change Fund to mobilize and pull together resources in one envelope to finance climate change interventions

Impact

Increased access to clean and safe water from 29.5% in 2013 to 71.2% in 2022 and conservation of the environment has reduced prevalence of waterborne diseases, improved productivity and quality of life.

Photo 2: The Misango Community Water Supply Project in Khwisero Sub-County co funded by the Kenya Red Cross Society

Photo 3: H.E. inspecting the floating pontoon at Musembe Dam Water Supply Project at its commissioning

Photo 4: Augmented &Rehabilitated 6M wide intake Weir and Raw water mains and Gravity Raw Water (160M long) 180MM diameter at Kuvasali Water Project-100% done

Photo 5: A containerized treatment plant Musembe Dam Water Supply Project

Challenges

The Sector has faced the following challenges:

i) Inadequate funding which has negatively impacted on the sector's ability to meet development needs;
ii) Delayed disbursement of funds from the exchequer has interfered with implementation of projects;
iii) Political interference in project planning and implementation;
iv) Inadequate feasibility studies, design and planning for projects
v) High costs of land acquisition process for projects;
vi) Land disputes that delay the commencement of projects;
vii) Inadequate skilled personnel both at County head office and field offices,
viii) High poverty prevalence;
ix) Poor public perception towards project implementation leading to vandalism and court case
x) Not in My Backyard Phenomenon (NIMBY), that entails community's opposition to the locating of something considered undesirable in their neighbourhood particularly effluent treatment works or solid waste disposal sites

Lessons Learnt

i) Need to enhance collaboration with development partners, other agencies and the Community to ensure smooth implementation of projects;
ii) Project planning & designs, implementation and supervision should always adhere to provided timelines;
iii) Need to lobby for increase in budgetary allocation for development needs;
iv) There is need to enhance resource mobilization strategies through establishment of strategic partnerships to bridge revenue shortfall.
v) Enhanced public participation can help mitigate the challenge of political interference and changing public perception towards the projects;

2.4 Sectoral Development Issues

The development issues, their causes and available opportunities as identified during stakeholder meetings are presented in table 9.

Table 9 : Sector Development Issues, Causes, and Opportunities

Sub-Sector	Development Issues	Causes	Opportunities
Water Services	Low coverage to clean and safe water .	Inadequate/dilapidated/obsolete water infrastructure	Presence of water aquifers Development partners.
		Prohibitive cost to access water	Long rain Seasons New Technologies e.g., green energy, Presence of gravity schemes
		Diminishing water resources	Presence of dams; long rains
		Upstream watersheds/water sources degradation	Collaboration among development partners
		Land related issues	New technologies in water treatment that do not require large land.
		Low uptake of the state-of-the-art technology	Access to development partners
		Destruction of water infrastructure during road construction	Existence of the water Act 2021 Existence of devolved governance structure such the community area councils

Sub-Sector	Development Issues	Causes	Opportunities
		Competing uses of way leave for public utilities hence affecting pipe laying of water supply schemes	Existence of mapping software's and online platforms that can provide accurate information pipeline location
		Poor governance	Presence of two water service providers. Existence of private water providers. County Policies and legislations. Existence of Development partners.
		Illegal water connections	Smart metering New technologies that can detect leakages and any diversions
		Inadequate compliance to existing legislations	Presence of enforcement units; existing legislations
		high-volume of unaccounted water	Leak detective machines Use of modern non-revenue tools and equipment
	Diminishing water sources	Encroachment into water catchment and riparian corridors resulting into siltation and high costs of treatment	Fencing of Kakamega forest Water Act Enhanced access to sanitation services in pro poor areas partners in Conservation of water catchment areas emergence of blue economy
		Prolonged dry spell and climate variability	climate change mitigation and adaptation initiatives Climate change Fund Partners
		Over abstraction of ground water	Presence of a regulator - Water Resources Authority (WRA)
		Weak enforcement of legislations related o conservation of water catchment	legislations on water conservation Community area Councils
		Destruction of water sources	Emergence of new monitoring technologies and systems; presence of water resources

Sub-Sector	Development Issues	Causes	Opportunities
			monitoring institutions such as WRA and NEMA emergence of "payment for ecosystem services principle"
Waste water and sewerage	Low coverage of sewerage	Inadequate sewerage infrastructure	Expansion of sewerage systems Partners
		Scarcity of land for development of new sewerage systems	Availability of investment partners
		Ungranted wayleave to pass sewerage networks	Political goodwill
		Prohibitive costs of new waste water treatment systems	Availability of development partners
		Low uptake of modern waste water treatment technologies	Emerging technologies in Effluent treatment plants like Effluent Treatment Plant (ETP) and biodigesters
	Inadequate access to sanitation services in pro poor areas	Prohibitive costs	Existence of Development partners willing to support
Environment	Poor waste Management	Lack of proper land use planning	presence of willing actors partnership in preparation of land use plans
		poor solid waste management practices for example crude dumping	Adoption of the 5Rs principle; Embracing of circular economy -ZERO WASTE PRINCIPLE Private investors in waste management e.g. waste to energy plant;
		Low level of material recovery from solid waste	Presence of private investors in establishing material recovery centres; presence of modern and improved ways of handling waste
		Inadequate waste management infrastructure/ facilities/ equipment	Presence of development partners; demand for the infrastructure Political good will
		Scarcity of land for	Availability of investment

Sub-Sector	Development Issues	Causes	Opportunities
		establishing solid waste disposal sites	partners Emergence of circular economy
		negative public perception on siting of sanitary facilities;	Presence of governance structures
		Low level of public awareness on proper solid waste management practices	Presence of local media stations; presence of online platforms of creating awareness; new research findings, innovations and practices
		Weak enforcement and compliance with existing legislation on solid waste management	Existing legislations; presence of enforcement officers; existence county governance structures at the village level
		Lack of a County integrated solid waste management strategy/plan	Presence of technical staff; presence of supportive stakeholders
	High environmental pollution	Low levels of compliance to environmental and social safeguards	Existing legislations; presence of enforcement officers; presence of governance structures to the village level Polluter pay principle
		Unsustainable economic activities	Research, development and innovations; Research institutions
		Improper effluent management	Presence of local media stations; presence of online platforms of creating awareness; new research findings, innovations and practices
		Low level of public awareness on environmental goods and services	Presence of local media stations; presence of online platforms of creating awareness; Emergence of Environmental valuation; new research findings, innovations and practices
		Lack of baseline data on status of pollution in the county	Presence of efficient data collection, analysis, presentation and storage

Sub-Sector	Development Issues	Causes	Opportunities
			tools and technologies and systems
Natural Resources	Low level of county tree/forest cover	Deforestation of gazetted and plantation forests in the county	Presence of development partners; alternative sources of income Carbon credit market Climate Fund Ecosystem rehabilitation Fund Landscape restoration map
			County greening programmes Non-wood programmes; High value trees initiatives to promote non-consumptive use of forest products
		Illegal extraction of wood forest resources (Logging, charcoal burning, firewood collection)	Presence of development partners; alternative sources of livelihoods
		Encroachment and conversion of gazetted and plantation forests in the county (Human settlement, livestock, crop farming and bee keeping)	Presence of development partners; alternative sources of income Conservative legislations
		Low awareness levels on importance of tree cover and forest resource	Presence of local media stations; presence of online platforms of creating awareness; new research findings, innovations and practices
		Low levels of compliance to existing legislative framework	Existing legislations; presence of enforcement officers; presence of governance structures to the village level
		Lack of baseline data on status of county tree/forest cover	Presence of efficient data collection, analysis, presentation and storage tools and technologies and systems
	Landscape degradation	Poor land use practices	Presence of development partners; availability of new technologies; alternative

Sub-Sector	Development Issues	Causes	Opportunities
			sources of income
		Over dependence on land resource for livelihoods	Presence of development partners; alternative sources of livelihoods
		Low levels of compliance	Existing legislations; presence of enforcement officers; presence of governance structures to the village level
		Low awareness levels on importance of conservation	Presence of local media stations; presence of online platforms of creating awareness; new research findings, innovations and practices
		Lack of baseline data on status of degradation in the county	Presence of efficient data collection, analysis, presentation and storage tools and technologies and systems
	Loss of biodiversity	Encroachment of fragile ecosystems, including wetlands, hilltops and forests	Presence of development partners
		Loss of biodiversity habitats	Presence of development partners
		Over dependence on fragile ecosystems for livelihoods	Presence of development partners; alternative sources of income
		Low awareness levels on importance of biodiversity	Presence of local media stations; presence of online platforms of creating awareness; new research findings, innovations and practices; presence of indigenous knowledge
		Low levels of compliance	Existing legislations; presence of enforcement officers; presence of governance structures to the village level
		Lack of baseline data on status of county forest cover	Presence of efficient data collection, analysis, presentation and storage tools and technologies and

Sub-Sector	Development Issues	Causes	Opportunities
			systems
	Over/unsustainable extraction of natural resources (Sand, Clay, Murram, Quarry stones, gold)	High dependence on artisanal mining and quarrying activities for livelihoods	Presence of development partners; availability of new technologies; alternative sources of income
		Lack of baseline data on status of natural resources in the county	Presence of efficient data collection, analysis, presentation and storage tools and technologies and systems
		Low uptake of modern natural resource sustainable utilization technologies	Presence merging technologies
		low levels of compliance	Existing legislations; presence of enforcement officers; presence of governance structures to the village level
	Natural resources-based conflicts e.g., human wildlife conflicts	Porous Forest Boundary	Presence of development partners; existing legislations; presence of enforcement officers; presence of governance structures to the village level
		Proximity of human settlements to forests and major rivers	Presence of relevant stakeholders; existing legislations; presence of enforcement officers; presence of governance structures to the village level;
Climate Change	Destruction of carbon sinks e.g. forests, wetlands	Encroachment of fragile ecosystems, including wetlands, hill slopes and forests	Presence of relevant stakeholders; existing legislations; presence of enforcement officers; presence of governance structures to the village level;
		Overreliance on biomass energy (wood –based fuel) leading to deforestation	Presence of development partners; alternative sources of income
		Low awareness levels on climate change issues	Presence of local media stations; presence of online platforms of creating

Sub-Sector	Development Issues	Causes	Opportunities
			awareness; new research findings, innovations and practices
		Low levels of compliance to existing legislative framework	Existing legislations; presence of enforcement officers; presence of governance structures to the village level
		Lack of baseline data on climate change risk and hotspots in the county	Presence of efficient data collection, analysis, presentation and storage tools and technologies and systems
	Low level of participation in climate actions	Inadequate access to climate information service	Presence of efficient data collection, analysis, presentation and storage tools and technologies and systems Climate Fund
		Low awareness levels on climate change actions	Presence of local media stations; presence of online platforms of creating awareness; new research findings, innovations and practices Climate Fund
		Low levels of dissemination and compliance to existing legislative framework	Existing legislations; presence of enforcement officers; presence of governance structures to the village level
		Low level community participation in identification of climate risks prioritization and planning	Existence of climate change legal, frameworks and governance structures (e.g. Community area councils)
	Emergence of invasive species, evasive species, pests and diseases	Limited research on climate change issues	Willing research institutions
		Inadequate access to climate information service	Presence of efficient data collection, analysis, presentation and storage tools and technologies and systems
		Low awareness levels on	Presence of local media

Sub-Sector	Development Issues	Causes	Opportunities
		climate change issues	stations; presence of online platforms of creating awareness; new research findings, innovations and practices
			Existence of humanitarian organizations supporting early warning early actions
	Increase in occurrence of extreme climate events and related disasters (e.g., Dry spell, flooding, drought)	Change in seasonality including erratic weather patterns	Willing research institutions
		Low level of climate-proofed infrastructure	Existing climate proofing technologies and information Climate Fund
		Insufficient rapid response initiatives	Presence of willing stakeholders Climate Fund
		Low awareness levels on climate change related disasters and disaster risk reduction mechanisms	Presence of local media stations; presence of online platforms of creating awareness; new research findings, innovations and practices
		Low levels of compliance to existing legislative framework	Existing legislations; presence of enforcement officers; presence of governance structures to the village level
		Lack of baseline data on county risk to disaster	Presence of efficient data collection, analysis, presentation and storage tools and technologies and systems

2.4 Crosscutting Issues

The cross-cutting issues as identified by the sector stakeholders are presented in table 10. The main cross-cutting issues discussed are HIV&AIDS, Persons Living with Disabilities, Nutrition, ICT, Poverty, Drug and Substance Abuse, Gender based violence, teenage pregnancies, Disaster Management and Risk Reduction, Environment and Climate Change, Women, Youth and PWD and Mental health. For each issue, the discussion presents the current situation, how it is

affecting the sector, the existing gaps (policy, legal and institutional), measures, and recommendations for addressing the gaps.

Table 10: Sector Cross-Cutting Issues

Cross- cutting Issue	Current Situation	Effects of the Issue on the sector	Gaps (policy, legal and institutional)	Measures for addressing the gaps
HIV&AIDS	HIV prevalence is 4.0%. The prevalence among women is higher (4.9%) than that of men (3.0%)	Reduction in budgetary allocation	HIV&AIDS policy does not cover all sub-sectors	Domestication of the National Policy to county specific Awareness creation
Disaster Management and Risk Reduction	Major disasters include road accidents from trailers and boda boda, collapse of mines and quarries, lightning, fires, floods along major rivers and landslides	Diversion of budgetary allocation to mitigate the effects of the disaster	Inadequate funding of mitigation strategies; Lack of early warning systems; Lack of disaster risk, reduction preparedness plans.	Develop and implement disaster risk reduction preparedness plan
Empowerment of Vulnerable groups (Women, Youth and PWD)	Low rate of participation in governance	Lack of inclusivity and participation in community development	Lack of community awareness	Creating awareness to facilitate women and youth to participate and benefit equally from governance systems
Mental health	Increasing cases of mental stress among teachers and learners	Compromised service delivery and increased school drop-out rates	Inadequate guiding and counselling services and work-related sensitization	Undertake periodic guiding and counselling services and work-related sensitization

2.5 Emerging Issues

The emerging issues and the interventions in place or proposed to mitigate the negative effects or harness the positive effects are presented in table 11.

Table 11: Analysis of Sector Emerging Issues

S/No	Emerging issues	Measures to mitigate the negative effects or harness the positive effects
1.	Covid-19	• Immunization • Awareness creation • increase access to clean water • Enhance covid bio- medical waste handling mechanisms/protocols

CHAPTER THREE: SECTOR DEVELOPMENT STRATEGIES AND PROGRAMMES

3.1 Introduction

This chapter discusses the strategic objectives that the Water, Environment, Natural Resources and Climate Chang Sector has identified, and on which it will focus on, in order to achieve its mission and vision. The strategic objectives and the strategies to be pursued will be at the core of the sector's daily functions over the next ten years. The success of this sector plan will depend on the strategic areas that are key variables or conditions which have a tremendous impact on how effectively the department meets its mission and goals.

3 Sector Vision, Mission and Goal

3.1.1 Sector Vision

A leading County in provision of sustainable access to adequate and safe water in a clean and healthy environment.

3.1.2 Sector Mission

To promote sound utilization of natural resources, conserve and protect the environment and improve access to adequate, safe water and sanitation services for sustainable development.

3.1.3 Sector Goal

The goal of the sector is to enhance access to clean, safe and affordable water in a clean and healthy environment as well as ensure optimal and sustainable exploitation of natural resources.

3.3 Sector Development Objectives and Strategies

The sector development issues identified by stakeholders, the development objectives, and strategies to be used are presented in table 7.

3.4 Sector Programmes and Interventions

This section provides the programmes, their objectives, and the key interventions for the plan period 2022 – 2032.

3.4.1 Water and Urban Sanitation service provision and management

Development Issue 1: Low access to clean and safe water

Development Issue 2: Diminishing water sources/ degradation of upstream watersheds/water sources.

Development Issue 3: Low coverage of sewerage

Development Issue 4: Inadequate access to sanitation services in pro poor areas

3.4.2 Environmental Conservation

Development Issue 7: Poor waste Management

Development Issue 8: High environmental pollution

3.4.3 Natural Resource Management

Development Issue 9: Low level of county tree/forest cover

Development Issue 10: Landscape degradation

Development Issue 11: Loss of biodiversity

Development Issue 12: Over/unsustainable extraction of natural resources (Sand, Clay, Murram, Quarry stones, gold)

3.4.4 Climate Change, Mitigation and Adaptation

Development Issue 13: Destruction of carbon sinks e.g. forests, wetlands

Development Issue 14: Low level of participation in climate actions

Development Issue 15: Emergence of invasive species, evasive species, pests and diseases

Development Issue 16: Increase in occurrence of extreme climate events and related disasters (e.g., Dry spell, flooding, drought)

3.5 Sector Flagship Projects

The sector flagship projects are presented in table 12.

Table 12: Sector Flagship Projects

Project Name: (Location)	Objective	Outcome	Description of Key Activities	Time Frame	Beneficiaries (No.)	Estimated Cost	Source of Funds	Implementing Agency
Financing Locally Led Climate Change Actions (FLLoCA)	To reduce vulnerability of communities to effects of climate change through funding of locally led climate actions	Mitigation and adaptation to climate change	Ward-based climate actions proposals; identification of climate actions to implement; Prioritization and proposal development; funding; implementation; M&E	2023-2032	60 wards	10B	World Bank; National Treasury; County	DWENRCC
Ileho Gravity Water Supply Scheme	To enhance access to safe and clean water	Increased access to safe and clean water	Intake weir construction Raw water pipeline, 600m DN160mm HDPE Pump house and Office block, staff house, guard house Plinth for containerized treatment plant unit Rising mains, 9.7km DN90mm HDPE	2023-2032	1,000HH	45 Million	CGK& Development Parners	DWENRCC

Project Name: (Location)	Objective	Outcome	Description of Key Activities	Time Frame	Beneficiaries (No.)	Estimated Cost	Source of Funds	Implementing Agency
			Elevated steel storage tank 50m3 at Chirobani Market Elevated steel tank 150m3 at Ileho Pri Sch Distribution networks, 7km (Chirobani Market tank return line, Dr Kisia and Kambiri tank return line Rehabilitation of existing distribution network Supply and installation of consumer meters and accessories					
Solarization of Bulk water Supply Schemes	To reduce water the cost of water production and increase access to safe and clean water	Increased access to safe water	Supply and Installation	2023-2032	200,000HH	1,000	CGK & development Partners	DWENRCC and Development Partners

3.6 Cross-Sectoral Linkages

In implementation of the sector plan, there will be cross-sector linkages and therefore need to develop mechanisms/actions on building synergies and addressing adverse effects. For each programme, the considerations that will be made in respect to harnessing cross-sector synergies

and mitigation measures that may be adopted to avoid or manage potential adverse cross-sector effects are presented in table 13.

Table 13: Cross-Sectoral linkages

Programme Name	Linked Sector	Cross-sector Linkages		Measures to Harness or Mitigate the Impact
		Synergies	**Adverse impact**	
Water and sewerage services	Health Services	- Increased access to clean and safe water for domestic use reduces incidences of waterborne, water based and water washed diseases		- Increase number of households accessing clean and safe water
			- Water pollution	- Control water pollution
	Agriculture, Livestock, Fisheries and Cooperatives Trade, Industrialization and Tourism	- Availability of adequate water increases agricultural and industrial activities	-Lack of enough water leads to crop failure	- Develop more sustainable water projects
			- Water pollution	- Control water pollution
Environmental Conservation	All Sectors	- A properly managed environment supports life, provides resources to the economy and acts as a sink for emissions and waste to spur economic development		- Develop environment management plan to ensure a clean and healthy environment is maintained
			- Land, Water, Air and noise pollution leads adverse health effects and low economic production	- Reduce incidences of air and noise pollution to manageable levels

3.7 Stakeholder Analysis

The different stakeholders relevant to the sector and possible areas of collaboration are presented in table 14.

Table 14: Analysis of Sector Stakeholders, Roles and Collaboration Areas

S/No.	Stakeholder	Roles	Possible areas of Collaboration
1. National Government, Lead Agencies and State Corporations:			
1	Kenya Forest Service (KFS)	Conservation and	Tree Planting

S/No.	Stakeholder	Roles	Possible areas of Collaboration
		management of forests.	Protection of water catchment areas Protect human activities in the forest; Enforcement Forest Conservation and Management Act 2016. Issuance of Movement Permit for forest products
2	Kenya Forestry Research Institute (KEFRI)	Research	Identification of tree species to be grown. Identification and management of invasive species. Identification and promotion of non-timber products; Rehabilitation of degraded forest areas and wet lands; Payment of ecosystem services policy
3	National Environment Management Authority (NEMA)	Coordinate environmental issues	Provision of legal framework on environmental issues.
4	Kenya Wildlife Service (KWS)	Conservation and management of wildlife and their habitats	Enforcement of Wildlife Act 2013. Human Wildlife Management; Promotion of Nature Based Enterprises in relation to Wildlife and issuing of permits on the same; Management of invasive species Wildlife and vegetation monitoring
5	Water Resources Authority (WRA)	Regulation of use and management of Water resources	Enforcement of the Water Act, 2016 Issuance of Water Permits Forming and training of Water Resource Users Associations (WRUA) Policy formulation
6	Water and Sanitation Trust Fund (WSTF)	Funding Water Sector Programmes	Increase coverage and access to water services
7	Lake Victoria North Water Works Development Agency (LVNWWDA)	Water and Sanitation Infrastructure Development Provide technical services and	Development of Treatment Works and Sewerage systems. Provision of Water Bowsers and Exhausters. Development of reticulation systems

S/No.	Stakeholder	Roles	Possible areas of Collaboration
		capacity building to County Governments	Capacity building of Water Service Providers Linkage between the National Government and the County Government on water development matters.
8	National Water Harvesting and Storage Authority (NWHSA)	Construction of large dams Undertake Drilling of Boreholes	Enhance Harvesting and storage Capacities Increasing access to clean and safe water Technical Support
9	Water Services Regulatory Board (WASREB)	Sets Standards and enforces regulation that guides the water sector	Capacity Building of Water Service Providers
10	Kenya Water Towers Agency (KWTA)	Conservation and protection of the water towers	Conservation of Cherangani water Towers
11	National Treasury Project Implementation Unit	Financing, Monitoring and Evaluation	Resource Mobilization such as Financing Locally Led Climate Actions.
12	Kenya Meteorological Department	Weather/Climate Forecasting	Provision of Climate Information Service; Capacity Building on Climate information service; Awareness creation on climate change response
2. Development Partners, Civil Society Organizations and Non-Governmental Organizations:			
13	The Water Mission	Funding and Supporting Water Infrastructure Development	Support Community Operated Water Projects Capacity Building and Capacity Building. Implementation of Water Projects
14	World Vision-Kenya	Funding and Supporting Water Infrastructure Development	Support Community Operated Water Projects Capacity Building and Capacity Building. Implementation of Water Projects
15	One Acre Fund/Tupande	Improvement of people's livelihoods	Support agroforestry and afforestation
16	USAID	Funding Support Water	Increasing coverage. Capacity Building and

S/No.	Stakeholder	Roles	Possible areas of Collaboration
		and Sanitation Infrastructure Development	Technical Support Support Policy Formulation and Regulations
17	GIZ	Funding Support Water and Sanitation Infrastructure Development	Increasing coverage. Capacity Building and Technical Support Support Policy Formulation and Regulations
18	The Kenya Redcross Society – Kakamega	Disaster Response Funding of Projects	Funding of Community Water Projects and sanitation programmes Training on Disaster Management; Disaster Risk Management Development
19	Catholic Justice & Peace Commission (CJ&PC)-Kakamega Diocese	Advocacy on Justice and Peace, Human Advancement and Human Rights	Conservation Capacity on Governance Arbitration
20	Nature Kenya	Promote the study and conservation of nature.	Increasing County Forest/Tree Cover Capacity Building of Groups Environmental Conservation Support Policy Formulation
21	Practical Action	Promotion of Green Energy	Awareness Creation. Advocacy
22	Kakamega Natural Forest Community Conservation Organization	Biodiversity Conservation	Conservation
23	Eco2librium	Promotion of Green Energy	Capacity Building
24	Women in Water and Natural Resource Conservation (WWANRC)	Support Women in transforming Household health environmental Conservation, Nutrition and Food Security	Promote Sanitation Promotion of Alternative Livelihoods Capacity Building in Climate Change Resilience
25	Anglican Development Service – Western (ADS)	Implementation of Development Programmes through Community Empowerment	Support Climate Change Governance, Climate Change Adaptation Initiatives to ensure Resilience Lobby and advocacy of Community involvement in Climate Change Action.
3. The Private Sector:			

S/No.	Stakeholder	Roles	Possible areas of Collaboration
26	Shanta Gold Ltd	Gold Prospecting	Partnership In Development of Water Projects
27	Davis & Shirtlifff	Supply of Water Equipment	Technical Support Capacity Building
28	VRH Kakamega Limited	Investment in Turning Waste into Energy	Waste Management
4. **Academia and Research Institutions:**			
29	Masinde Muliro University of Science and Technology (MMUST)	Training and Research	Capacity Building Information Sharing
30	Media	Publicity	Creation of Public Awareness

CHAPTER IV: IMPLEMENTATION MECHANISMS

4.1 Institutional and Coordination Framework

4.1.1 Institutional Arrangement

The various institutions and their specific roles in the implementation of this Sector plan are presented in table 15. The institutions range from County Government Departments and Agencies as well as other players such as the National Government Ministries, Departments and Agencies (MDAs), the Civil Society, development partners among others.

Table 15: Sector Institutions and their Role

S/No.	Name of Institution	Role
1.	County Assembly	Legislation, budget allocation and oversight.
2.	County Executive Committee	Implement national and county legislations.
3.	County Attorney	Provision of legal services
4.	County Department of Finance and Economic Planning	Overseeing management of public finances and economic affairs
5.	County Department of Roads Public Works and Energy	Development of designs and supervision of civil works
6.		
7.	County Planning Unit	Development of plans and budgets Monitoring and Evaluation
8.	County Budget and Economic Forum	Representation of the public in government programmes (budgeting)
9.	Lake Region Economic Bloc	Coordinate inter county economic development
10.	Kenya Forest Service (KFS)	Tree Planting; Protection of water catchment areas; Protect human activities in the forest; Enforcement Forest Conservation and Management Act 2016; Issuance of Movement Permit for forest products
11.	Kenya Forestry Research Institute (KEFRI)	Identification of tree species to be grown; Identification and management of invasive species; Identification and promotion of non-timber products; Rehabilitation of degraded forest areas and wet lands; Payment of ecosystem services policy
12.	National Environment Management Authority (NEMA)	Provision of legal framework on environmental issues.
13.	Kenya Wildlife Service (KWS)	Enforcement of Wildlife Act 2013.

S/No.	Name of Institution	Role
		Human Wildlife Management; Promotion of Nature Based Enterprises in relation to Wildlife and issuing of permits on the same; Management of invasive species Wildlife and vegetation monitoring
14.	Water Resources Authority (WRA)	Enforcement of the Water Act, 2016 Issuance of Water Permits Forming and training of Water Resource Users Associations (WRUA) Policy formulation
15.	Water and Sanitation Trust Fund (WSTF)	Increase coverage and access to water services
16.	Lake Victoria North Water Works Development Agency (LVNWWDA)	Development of Treatment Works and Sewerage systems. Provision of Water Bowsers and Exhausters. Development of reticulation systems Capacity building of Water Service Providers Linkage between the National Government and the County Government on water development matters.
17.	National Water Harvesting and Storage Authority (NWHSA)	Enhance Harvesting and storage Capacities Increasing access to clean and safe water Technical Support
18.	Water Services Regulatory Board (WASREB)	Capacity Building of Water Service Providers
19.	Kenya Water Towers Agency (KWTA)	Conservation of Cherangani Water Towers
20.	National Treasury Project Implementation Unit	Resource Mobilization such as Financing Locally Led Climate Actions.
21.	Kenya Meteorological Department	Provision of Climate Information Service; Capacity Building on Climate information service; Awareness creation on climate change response
22.	The Water Mission	Support Community Operated Water Projects Capacity Building and Capacity Building. Implementation of Water Projects
23.	World Vision-Kenya	Support Community Operated Water Projects Capacity Building and Capacity Building. Implementation of Water Projects
24.	Tupande (Formerly One Acre Fund)	Support agroforestry and afforestation
25.	USAID	Increasing coverage. Capacity Building and Technical Support Support Policy Formulation and Regulations
26.	GIZ	Increasing coverage. Capacity Building and Technical Support Support Policy Formulation and Regulations
27.	The Kenya Redcross Society – Kakamega	Funding of Community Water Projects and sanitation programmes Training on Disaster Management;

S/No.	Name of Institution	Role
		Disaster Risk Management Development
28.	Catholic Justice & Peace Commission (CJ&PC)-Kakamega Diocese	Conservation Capacity on Governance Arbitration
29.	Nature Kenya	Increasing County Forest/Tree Cover Capacity Building of Groups Environmental Conservation Support Policy Formulation
30.	Practical Action	Awareness Creation. Advocacy
31.	Kakamega Natural Forest Community Conservation Organization	Conservation
32.	Eco2librium	Capacity Building
33.	Women in Water and Natural Resource Conservation (WWANRC)	Promote Sanitation Promotion of Alternative Livelihoods Capacity Building in Climate Change Resilience
34.	Anglican Development Service – Western (ADS)	Support Climate Change Governance, Climate Change Adaptation Initiatives to ensure Resilience Lobby and advocacy of Community involvement in Climate Change Action.
35.	Shanta Gold Ltd	Partnership In Development of Water Projects
36.	Davis & Shirtlifff	Technical Support Capacity Building
37.	VRH Kakamega Limited	Waste Management
38.	Masinde Muliro University of Science and Technology (MMUST)	Training and Research Capacity Building Information Sharing
39.	Media	Creation of Public Awareness

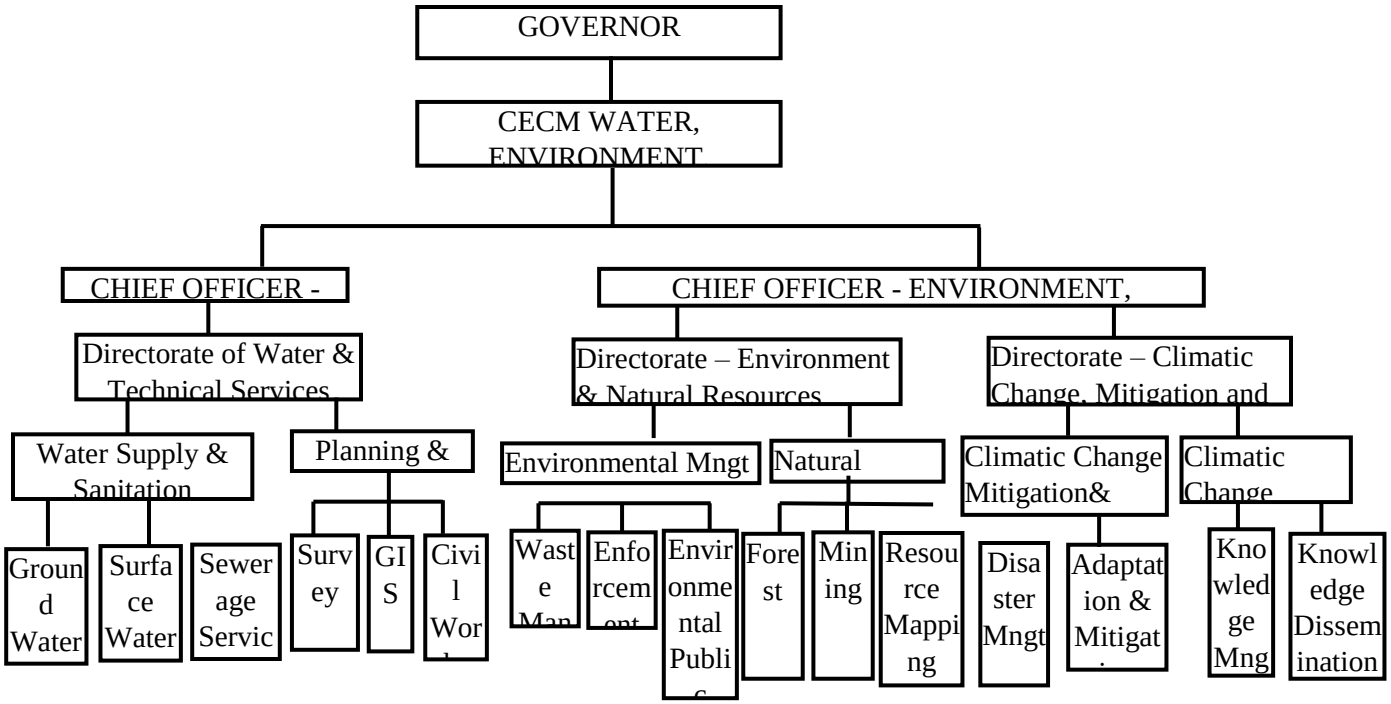
4.1.2 Coordination Framework

The coordination framework, elaborated through the organization structure defines how activities such as task allocation, coordination and supervision are directed towards the achievement of organizational goals. The implementation of this sector plan will be executed by the Department of Water, Environment, Natural Resources and Climate Change supported by relevant County and National Government departments/agencies. Such support may include supervision on project implementation, sourcing of goods and services and provide sector policy direction and technical knowledge.

The organization structure, as elaborated in figure 9 is designed to ensure effective coordination of the implementation of the Sector plan based on the mandates. The structure exists to enable the performance of work activities in line with an organization's strategy and is designed around the mandate of the organization. The Department will be headed by a County Executive Committee Member and a Chief Officer appointed by the Governor. There are four directorates headed by Directors assisted by several technical staff. The Directorates are; Water Services; Environment; Natural Resources; and Climate Change.

The County Executive Committee Member is responsible for overall administration and providing policy direction. The Chief Officer is responsible for coordination and administration and is the accounting and authorized officer. The Directorates of Water & Technical Services is responsible for management and coordination of water services; Environment and Natural Resources is responsible for protection, conservation and managing the environment; Climate Change, Mitigation and Adaptation is responsible for enhancing and coordinating Climate change and mitigation measures in the county; while Administrative and Support services is responsible for providing support services to all the directorates to ensure efficient and effective service delivery.

Figure 9: Organization Structure



4.1.3 Financing Mechanism

The programmes identified in this sector plan will be funded by the County Government of Kakamega through monies appropriated by the County Assembly. Other sources of funding will be conditional grants from the national government and support from development partners. The total cost of implementing the programmes identified in the sector plan is Kshs. 103,023. The financing sources will mainly be the county government budgets, support from national budgets, Public- Private Partnerships, development partners, private sector, among others. The cost of funding the Sector plan and the funding sources is presented in table 16.

Table 16: Sector Financing

S/No.	Subsector	Budget (Ksh. Millions)	Source of Funds	
			CG	Others (Explain)
1	Water & Technical Services	63,940	CG	Development partners; NG Grants
2	Environment and Natural Resources	30,721	CG	
3	Climatic Change, Mitigation and Adaptation	8,250	CG	
4	Administration and Support Services	112	CG	
	Total	**103,023**		

4.1.4 Capacity Development

The implementation of this sector plan will face challenges if the identified capacity gaps are not addressed. Table 17 highlights some of the capacity gaps and proposed measures to address the gaps.

Table 17: Sector Capacity Gaps

S/No.	Capacity Gap	Measures to address the gap
1.	Inadequate skills in some staff on key technical issues	Capacity building, training staff, motivation & incentives;
2.	Inadequate human resource	Identify the human resource gaps and recruit suitable staff
3.	Lack of a capacity building road map.	Undertake management staff leadership development
4.	Non-integrated systems Inadequate and obsolete systems in some areas/ section; Lack of adequate infrastructure water, sewerage systems, solid waste management systems etc.; Lack of an electronic M&E platform, manual systems, lack of comprehensive regulatory, enforcement and compliance systems.	Implement integrated management systems; Develop relevant policy manuals; Train all employees on understanding the system; Provide all necessary systems; Enhance Compliance with the relevant regulations, policies. Allocate adequate finances in each activity in the budget.
5.	Inadequate funding	Lobby for additional funding and identify partners to support the funding deficit
6.	Monitoring, Evaluation and Reporting	Develop systems to support periodic monitoring, evaluation and reporting

4.2 Risk Management

The possible risks identified that may hinder implementation of the sector plan and measured proposed to mitigate the impact of the risks are indicated in Table 18.

Table 18: Risks, Levels, Owners and Mitigation Measures

Risk	Risk Level	Risk owner	Mitigation Measures
Political interference	High	Political	Civic education and political

Risk	Risk Level	Risk owner	Mitigation Measures
		leaders	tolerance
Inadequate revenue to implement the plan	High	CG, NG	Expanded revenue streams Sealing of loopholes in revenue leakage.
High rate of technological trends	Low	Sector	Continually train staff in new technological trends
Changes in legal, compliance and regulations measures	Moderate	Sector	Developing a risk management policy and annual plan
Consumer preferences and demand	Low	Sector	Sensitization to enhance uptake of safe and clean water
Staff turnover	Low	Sector	Enhance staff motivation and welfare

CHAPTER V: MONITORING AND EVALUATION FRAMEWORK

5.1 Introduction

Monitoring and Evaluation framework is critical to enable tracking the implementation of the programmes identified in the sector plan. This section presents the Monitoring and Evaluation framework that will be put in place and reporting mechanisms that promotes knowledge sharing and learning.

Monitoring of the sector programmes and projects will be a continuous process based on the performance indicators set out in the implementation matrix. Evaluation mechanisms will entail measuring actual performance against set target levels and establishing size of gap or variance if any, identifying the casual factors for the variance, identifying and recommending appropriate remedial measures including a review of the objectives and/ or strategies.

5.2 Monitoring, Evaluation and Reporting Structures

Monitoring and Evaluation will take place at National and County levels. The sector will work with the private sector, NGOs and other stakeholders to ensure there is effective monitoring and evaluation of the implementation of this sector plan. The implementation of this plan will be reviewed continuously guided by progress reports.

Monitoring of the entire process from planning, designing and implementation is important as it keeps the planned activities in check, reduces duplication, allows for remedial measures to be taken and ensures the projects/programmes results delivery on time. The Sector M& E Committee comprising the sectional heads and chaired by the Chief Officer together with the Monitoring and Evaluation Unit in the Directorate of Economic Planning will monitor progress of implementation of projects and programmes. The Committee will carry out annual, mid-term and end-term review of the progress of implementation of planned projects and prepare reports for submission to relevant personnel for action. The Sector has put in place a Monitoring and Evaluation System that is in line with and will complement the County Integrated Monitoring and Evaluation System. To maximize learning and to ensure wider accountability, it will be necessary to share key information with partners, programme beneficiaries and the wider public.

5.3 Data Sources and Collection Method

The monitoring and evaluation framework will comprise technical officers from the sector, Public Works, Quality Assurance Officers and representation from the Directorate of Economic Planning. Data collection will be by physical observation of the projects and programmes being implemented, actual verification of items delivered where applicable and survey of stakeholders to ascertain the impact of the projects/programmes.

5.4 Types of Reports to be Produced, Frequency and Consumers

Reporting is important as it provides feedback to establish the challenges, successes and weaknesses in the implementation of various projects and programmes, and whether the set objectives have been met or are on course. The Plan will be evaluated annually, after five years and at the end of the plan period. The reports prepared will outline the achievements in comparison to targets, facilitating factors, challenges faced and lessons learnt. The reports will be submitted to the Governor's office for information use and dissemination to stakeholders including the County Assembly, Development partners, Beneficiaries and the Public. Issues requiring policy interventions will be submitted to the County Executive Committee for action. The reports shall be stored manually in the manual files, also electronically and will be posted on the official County website.

The following reports will be prepared and disseminated;

i) **Annual Review Report (ARR)** – The report will evaluate all the activities undertaken during the year, clearly showing the milestones, challenges and outlining plans for the following year.

ii) **Mid-term Review Report (MTER)** – The report will be undertaken midway in the implementation of the sector plan to assess the extent to which the implementation is meeting plan objectives and timelines.

iii) **End-term Review Report (ERR)** – At the end of the Plan period, there will be an external evaluation carried out by an external evaluator. The task will lead to identification of achievements against performance indicators; constraints encountered during the plan period and make recommendations towards the development of the next plan.

5.5 Dissemination, Feedback Mechanisms and Citizens Engagement

After preparation of the reports, there shall be review meetings to assess the report and map a way forward. This will keep the plans' activities and outputs on track during implementation, and enable the relevant personnel to identify and take necessary actions to address any emerging issues. The reports will be disseminated to stakeholders including the County Assembly and shared on County digital platforms where citizens will be given an opportunity to provide feedback.

5.6 Mechanism for Reviewing and Updating the Sectoral Plan

The Monitoring and Evaluation data will be analysed and reports prepared for submission to the Governor for his information and appropriate action. These reports will outline in summary the period achievements, shortcomings, challenges faced and recommendations. Based on these reports, a decision to review or update the Sectoral plan will be made.

The monitoring and evaluation Matrix presented in table 19 will be used to effectively monitor the progress of implementation of programmes in the plan and eventually evaluate them.

Table 19: The Monitoring and Evaluation Matrix

Programme	Outcome	Key Performance Indicator (KPI)	Baseline Value (2022)	Targets	
				Five Year	Ten Year
Programme Name: Water and Urban Sanitation service provision and management					
Objective: To improve access to safe water and sanitation					
Outcome: Access to safe water and sanitation					
Water Supply Services	Increase population accessing clean, safe and water	No. of water supply schemes rehabilitated and/or augmented	7	10	20
		No. of new Swater schemes constructed	7	5	10
		No. of boreholes rehabilitated (Flushing, Test pumping and rehabilitation)	40	50	100
		No. of drilled and equipped boreholes	20	30	70
		No. of water quality laboratories constructed	0	1	1
		No. of Water projects solarized/hybridized	31	100	200
		No. of rainwater harvesting and storage	394	400	900

Programme	Outcome	Key Performance Indicator (KPI)	Baseline Value (2022)	Targets	
				Five Year	Ten Year
		systems constructed in public institutions			
		No. of small dams and Water Pans rehabilitated and developed	0	20	40
		No. of springs protected	540	600	1,200
		No. of water drilling units acquired	0	2	4
		No. of Water bowsers (16 m3) acquired	1	10	20
Urban Sanitation	Improved access to sewer and sanitation services	Completion of stalled Sewerage ponds (%)	-	1	1
		Expansion and maintenance of existing sewerage ponds	-	2	2
		No. of new sewerage ponds constructed	-	3	6
		No. of decentralised treatment facilities(DTF)/Safisan Toilets/Bio digesters constructed	0	10	20
WASH regulation instruments – (Policies, regulations, strategies, standards, guidelines)	A well-regulated and coordinated water sector	No. of regulations developed	2	2	4
	Well enlightened Public on policy and legal framework	No. of awareness campaigns conducted on water regulations	-	10	30
	Well Capacitated Staff with understanding of the PPP Act 2013	No. of trainings on Business Development Strategies (PPP Act, PPPs, management contracts, Output Based Grants) held	-	4	8
Research and Development	Research Publications	No. of Research Reports developed	-	5	10
		No. of data banks for Water and Sanitation sector established	-	1	1
Programme Name: Environmental Conservation					
Objective: To ensure access to clean, safe and healthy environment					
Outcome: Environmentally clean and healthy County					
Environmental Conservation	Environmentally clean and healthy County	No. of County Sanitary Landfill established	0	2	4
		No. of Garbage Transfer stations established	0		2

Programme	Outcome	Key Performance Indicator (KPI)	Baseline Value (2022)	Targets	
				Five Year	Ten Year
		No. of Modern refuse trucks purchased	0	4	8
		No. of Skips (Refuse collection containers) purchased	0	40	80
		No. of litter bins installed	100	150	350
		County Solid Waste Management Plan developed	0	1	1
		No. of Public environmental and awareness initiatives conducted	15	20	45
		No. of environmental Legislations developed (Act, Policy and Regulations)	1	1	1
Environmental Pollution Control	Ambient air, permissible noise levels, protected water sources and sustainable land management	Baseline Survey Report on pollution prone areas	1	1	2
		Mobile ambient Air Quality Monitoring station purchased	0	1	2
Programme Name: Natural Resource Management					
Objective: To conserve forest resources, water catchment protection and sustainable utilization of natural resources					
Outcome: Sustainably managed natural resources					
Afforestation and Re-afforestation	Increased county tree cover	No. of survey reports on County vegetation cover developed	1	1	2
		No. of trees planted ('000')	523	600	1,400
		Surveying and Mapping report on County hill tops	-	1	2
		No. of hill tops mapped and protected	-	16	32
		No. of Green zones (parks, green verge and arboretum) developed in upcoming urban centres	-	15	30
		No. of Farmer groups trained and empowered on agro forestry	-	480	960
		Environmental demonstration Centre established	-	1	1
		Farm and Urban Forest Legislation	-	1	-

Programme	Outcome	Key Performance Indicator (KPI)	Baseline Value (2022)	Targets	
				Five Year	Ten Year
		developed			
Protection of natural resources and environmental processes	Increased biodiversity and ecosystem conserved	No. of survey reports on wetlands in the county developed	1	1	1
		No. of wetlands and groundwater recharge areas reclaimed and preserved	0	48	96
		No. of Wildlife Conservancy Centre/botanical garden established to promote eco-tourism	0	1	2
Promotion of nature-based enterprises	Environmental friendly income generating activities (aquaponics, apiculture, bio-based industries, briquetting, bamboo uptake)	No. of Empowered environmental conservation groups (supplied with bee hives and briquetting machines)	15	80	160
		No. of bamboo Cottage industry developed	0	1	2
		No. of non-wood products developed	0	10	20
		No. of palm oil extraction enterprises established	0	1	2
		No. of trained conservation groups	0	240	480
Mineral Resource management	Sustainable mining and mineral exploitation	No. of legislations on Sand, quarrying and Marram harvesting developed	0	1	1
		No. of artisanal mining groups empowered	0	255	510
		No. of survey Report on mapped County natural resources	0	1	1
		No. of reports on disused mining sites	0	1	2
		No. of disused mining sites rehabilitated	0	10	20
Programme Name: Climate Change, Mitigation and Adaptation					
Objective: To reduce vulnerability to the impacts of climate change by building adaptive capacity, enhancing climate change resilience and strengthening capacities for disaster risk reduction.					
Outcome: Reduced vulnerability to the impacts of climate change					
Climate Change Management	Climate change resilient County	No. of survey reports on Climate Change Vulnerability, mitigation and adaptation developed	0	1	2
		No. of DRR initiatives undertaken	0	1	2

Programme	Outcome	Key Performance Indicator (KPI)	Baseline Value (2022)	Targets	
				Five Year	Ten Year
		No. of Automatic Environmental and Climate Monitoring stations installed	0-	12	24
		No. of Capacity building workshops on climate change mitigation and adaptation conducted	10	16	32
		County Climate Change Legislation developed	5	1	2

ANNEX 1: IMPLEMENTATION MATRIX

Sub-sector	Development Issue	Development Objectives	Strategies	Implementing Agency(s)	Time Frame	Funding	
						Total Budget (Ksh in millions)	Source(s)
Programme Name: Water and Urban Sanitation service provision and management							
Objective: To improve access to safe water and sanitation							
Outcome: Access to safe water and sanitation							
Water Services	Low access to clean and safe water	To increase access to reliable, quality, affordable water services	Development and Rehabilitation of Water Infrastructure.	DWENR, LVNWSB, KACWASCO & KACRUWASCO, Development Partners	2023-2032	4,000	County Government of Kakamega & Development Partners
	Diminishing water sources/ degradation of upstream watersheds/water sources.	To protect and conserve water resources	Promote conservation of water catchment, watersheds and riparian areas	DWENR, LVNWSB& Development Partners	2023-2032	5,000	County Government of Kakamega, Water and Sanitation Trust Fund (WSTF) Lake Victoria North Water Works Development Agency (LVNWWDA) & Development Partners.
	Low coverage of sewerage	To improve access to sewerage services	Development rehabilitation and expansion of sewerage systems	DWENR, KACWASCO & Development Partners	2023-2032	4,000	County Government of Kakamega & Development Partners
Programme Name: Environmental Conservation							
Objective: To ensure access to clean, safe and healthy environment							
Outcome: Environmentally clean and healthy County							
Environment	Poor waste	To enhance	Develop waste management system.	Department Lands, Housing, Urban Areas	2023-2032	620	County Government of Kakamega &

Sub-sector	Development Issue	Development Objectives	Strategies	Implementing Agency(s)	Time Frame	Funding	
						Total Budget (Ksh in millions)	**Source(s)**
	Management	access to clean, safe and healthy environment		and Physical Planning			Development Partners
	High environmental pollution	To enhance access to clean, safe and healthy environment	Enhance environmental pollution control systems Mainstreaming of SEA, ESIA in County Planning, projects and programmes	DWENRCC	2023-2032	620	County Government of Kakamega & Development Partners
Total						**1,240**	
Programme Name: Natural Resource Management							
Objective: To conserve forest resources, water catchment protection and sustainable utilization of natural resources							
Outcome: Sustainably managed natural resources							
Natural Resources	Low level of county tree/forest cover	To increase county tree/forest cover	Promote county greening program	DWENRCC & Development Partners	2023-2032	400	County Government of Kakamega & Development Partners
	Landscape degradation	To reclaim and rehabilitate degraded landscapes	Promote reclamation of derelict land	DWENRCC, KFS CSOs & Development Partners	2023-2032	600	County Government of Kakamega & Development Partners
	Loss of biodiversity	To conserve biodiversity and promote access and benefit	Promotion of non-consumptive use of the biodiversity e.g., such ecotourism	DWENRCC & Development Partners	2023-2032	150	County Government of Kakamega & Development Partners
			Promotion of alternative sustainable sources of income	DWENRCC & Development Partners	2023-2032	200	County Government of Kakamega & Development

Sub-sector	Development Issue	Development Objectives	Strategies	Implementing Agency(s)	Time Frame	Funding	
						Total Budget (Ksh in millions)	**Source(s)**
		sharing					Partners
	Over/unsustainable extraction of natural resources (Sand, Clay, Murram, Quarry stones, gold)	To promote sustainable utilization of mineral resources and extractives in the county	Promote sustainable utilization of mineral resources and extractives in the county	DWENRCC & Development Partners	2023-2032	120	County Government of Kakamega & Development Partners
	Natural resources-based conflicts e.g., human wildlife conflicts	To reduce human/wildlife conflicts	Promote coexistence of humans and wildlife.	DWENRCC & Development Partners	2023-2032	200	Kenya Wildlife Service (KWS),County Government of Kakamega & Development Partners
Total						**1,670**	
Programme Name: Climate Change, Mitigation and Adaptation							
Objective: To reduce vulnerability to the impacts of climate change by building adaptive capacity, enhancing climate change resilience and strengthening capacities for disaster risk reduction.							
Outcome: Reduced vulnerability to the impacts of climate change							
Climate Change	Destruction of carbon sinks	To reduce vulnerability to the impacts of climate change by building adaptive capacity, enhancing	Implementation of the existing Kakamega County climate change legislative framework	DWENRCC & Development Partners	2023-2032	120	County Government of Kakamega & Development Partners
			Promote Climate Change mitigation and adaptation strategies/Actions	DWENRCC & Development Partners	2023-2032	500	Government of Kenya –National Government (CoK - NG) , County Government of Kakamega, & World

Sub-sector	Development Issue	Development Objectives	Strategies	Implementing Agency(s)	Time Frame	Funding	
						Total Budget (Ksh in millions)	**Source(s)**
		climate change resilience and strengthening capacities for disaster risk reduction.					Bank
	Low level of participation in climate actions	To promote and deliver accessible, timely, relevant climate information which can support local, sub-county and county-level decision making processes for the benefit of community livelihood	Implement the Kakamega County climate information service Promote Climate Change mitigation and adaptation strategies/Actions	DWENRCC & Development Partners	2023-2032	500	Government of Kenya –National Government (CoK - NG) & World Bank

Sub-sector	Development Issue	Development Objectives	Strategies	Implementing Agency(s)	Time Frame	Funding	
						Total Budget (Ksh in millions)	**Source(s)**
		s and key economic sectors in Kakamega county.					
	Emergence of invasive species, evasive species, pests and diseases	To control and enhance preparedness in addressing emerging issues	Promote research and development	DWENRCC & Development Partners	2023-2032	320	County Government of Kakamega & Development Partners
	Increase in occurrence of extreme climate events and related disasters ------ … (e.g., Dry spell, flooding, drought)	To reduce risks and hazards that may cause, contribute to or exacerbate the occurrence of disastrous events.	Promote collective responsibility in implementing climate change information through collaborations and having platforms for coordinated approach	DWENRCC & Development Partners	2023-2032	100	County Government of Kakamega & Development Partners

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