

THE COUNTY GOVERNMENT OF BUNGOMA



**DEPARTMENT OF AGRICULTURE, LIVESTOCK, FISHERIES,
IRRIGATION AND COOPERATIVES**

BUNGOMA COUNTY AGRICULTURAL SOIL MANAGEMENT POLICY

OCTOBER, 2023

List of Abbreviations & Acronyms

AEZ	Agro-ecological Zone
ASDS	Agriculture Sector Development Strategy
ASM	Agricultural Soil Management
AU	African Union
CAADP	Comprehensive African Agricultural Development Programme
CBOs	Community-based organizations
CIAT	International Centre for Tropical Agriculture
CoK	Constitution of Kenya
COMESA	Common Market for Eastern and Southern Africa
EAC	East Africa Community
EU	European Union
FABP	Food and Agriculture Business Principles
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
GMOs	Genetically modified organisms
ICRAF	International Centre for Research in Agro-Forestry (World Agro-Forestry Centre)
IGAD	Inter-Governmental Authority on Development
KALRO	Kenya Agricultural and Livestock Research Organization
KEBS	Kenya Bureau of Standards
KEFRI	Kenya Forest Research Institute
KEPHIS	Kenya Plant Health Inspectorate Services
KFA	Kenya Farmers Association
KGCU	Kenya Grain Growers Cooperative Union
MENR	Ministry of Environment and Natural Resources
MoALF	Ministry of Agriculture, Livestock and Fisheries
NAEP	National Agriculture Extension Policy
NALEP	National Agricultural and Livestock Extension Programme
NASEP	National Agricultural Sector Extension Policy
NASM	National Agricultural Soil Management
NASMP	National Agricultural Soil Management Policy
NEMA	National Environmental Management Organization
NFP	National Forest Policy
NGOs	Non-Governmental Organizations
NIP	National Irrigation Policy
NLC	National Land Commission
NLRP	National Land Reclamation Policy
NOADP	National Organic Agricultural Development Policy
NRM	Natural resources management

NSS	National Soil Service
NSWCP	National Soil and Water Conservation Programme
PRSP	Poverty Reduction Strategy Paper
SDG	Sustainable Development Goals
SIDA	Swedish International Development Agency
SOPs	Standard Operating Procedures
SRA	Strategy for Revitalizing Agriculture
SSA	Sub-Saharan Africa
UNCCD	United Nations Convention to Combat Desertification
UNEP	United Nation Environment Programme
UNGC	United Nations Governing Council
VAT	Value Added Tax
VCR	Value Cost Ratio
WTO	World Trade Organization

Contents

List of Abbreviations & Acronyms	i
Foreword	v
Preface.....	vi
ACKNOWLEDGEMENT	vii
CHAPTER ONE	1
POLICY CONTEXT AND RATIONALE	1
1.0 Introduction.....	1
1.1 Background.....	1
1.3. Policy and Legal Framework	3
1.4 Rationale.....	5
1.5 Policy Development Process	5
CHAPTER TWO	6
THE POLICY FRAMEWORK	6
2.1 Introduction.....	6
2.2 Vision	6
2.3 Mission.....	6
2.4 Policy Objectives	6
2.4.1 Broad Objective	6
2.4.2 Specific Objectives.....	6
2.5 Guiding Principles	6
CHAPTER THREE.....	8
POLICY ISSUES AND POLICY INTERVENTIONS.....	8
3.0Introduction.....	8
3.1 Opportunities and Strategic Policy Interventions	8
Policy Issue 1: Declining Soil Fertility	8
Policy Issue 2: Soil Erosion.....	9
Policy Issue 3: Deforestation	10

Policy Issue 4: Inappropriate Land Use	11
Policy Issue 5: Climate Change impacts on agriculture soils.	11
Policy Issue 6: Inadequate knowledge and Skills.....	12
CHAPTER FOUR	13
POLICY IMPLEMENTATION FRAMEWORK.....	13
4.0 Introduction.....	13
4.1 Institutional framework.....	13
Table 1. Institution, Mandates and Roles of Stakeholders	13
CHAPTER FIVE	15
POLICY MONITORING, EVALUATION, REPORTING AND REVIEW	15
5.0 Introduction.....	15
5.1 Monitoring and Evaluation	15
5.2 Reporting	15
5.3 Review of the policy	15

Foreword

The Agriculture sector is the mainstay of the Bungoma County's economy. The sector is key towards poverty alleviation and offering employment to the growing population. Bungoma County contributed a share of 2.1% to the national GDP over the period 2018-2022. The County's agriculture Gross County Product (GCP contributed 3.8% to the national agriculture Gross Value Added (GVA). Agriculture is the key driver of growth in the county contributing Kshs.107.829 billion of the total Kshs.183.509 billion Gross County Product (GCP) in 2022 which is a GCP share contribution of 58.76%.

To transform agriculture into a modern, innovative and commercially oriented sector as envisioned in Kenya Vision 2030, it is imperative that land productivity is improved and sustained through proper management of agricultural soils. Soils perform a large number of economic and environmental functions. Many industries, including farming and food production, forestry and tourism, depend on the sustainable use of soils.

Most of the agricultural soils in Bungoma County are affected by key issues such as; declining fertility, soil erosion, deforestation, climate change and inappropriate land use that hinder potential productivity of agricultural value chains. Soil sampling conducted by KARI (now KALRO) under National Accelerated Agricultural Input Program (NAAIP) soil survey in 2013 showed that the county soil status was acidic (pH less than 5.5) and therefore recommended non-acidifying fertilizer and liming. Continuous testing using county mobile testing labs confirmed that soil is chemically degraded across the county and thus recommended improvement through liming and other sustainable land management practices.

This policy aims to promote agriculture development through sustainable soil management practices. It proposes a wide range of measures and actions responding to key agricultural soil issues and challenges. Soil management requires partnership and coordination with key stakeholders. It is against this background, that this county Agricultural Soil Management Policy has been developed. It proposes a wide range of measures and actions responding to key agricultural soil issues and challenges. The policy highlights the various challenges facing our soils and proposes various policy measures to address them. It also recommends strong institutional and governance measures to support the achievement of the desired objective

The County Government is committed to fully implement this policy and shall therefore strengthen the respective institutions and provide the needed resources.

KENNETH MAKELO LUSAKA
H.E THE GOVERNOR
COUNTY GOVERNMENT OF BUNGOMA

Preface

The formulation of the Bungoma County Agricultural Soil Policy was through a consultative and participatory approach. The development of the Policy took into account the existence of National and County Governments. The formulation process involved and considered the views and priorities of key stakeholders. The input was achieved through wide consultations in a series of workshops, meetings and professional fora involving development partners, private sector groups, communities and research institutions.

The policy aims to promote programs on integrated soil fertility management systems, protect soils and conserve biodiversity, support programs on afforestation and reforestation, promote and enhance climate change mitigation and adaptation measures and enhance knowledge and skills on sustainable land management.

This policy highlights priority areas in agricultural soil management and incorporates interventions that will be employed by the County in order to achieve sustainable soil management practices. Priority areas highlighted are: declining soil fertility, soil erosion, deforestation, inappropriate land use, climate change impacts on agriculture soils and inadequate knowledge and skills.

The successful implementation of this policy will depend on the partnership between the County Government of Bungoma and all relevant stakeholders. I therefore call on all stakeholders to embrace the recommendations that are contained in this policy towards ensuring effective soil quality management for improved agricultural productivity.

Hon. Monica Salano Fedha

County Executive Committee Member (CECM)

Department of Agriculture, Livestock, Fisheries, Irrigation and Cooperatives

ACKNOWLEDGEMENT

The drafting of the Agricultural Soil Management policy is an outcome of tireless efforts and participation by various individuals and institutions. Firstly, I wish to acknowledge GiZ Kenya Pro-Soil project titled soil protection and rehabilitation for food security whose resources supported the County in the formulation of this policy.

I wish to thank the County Executive Committee Member for Agriculture, Livestock, Fisheries, Irrigation and Cooperatives- Dr. Monica Fedha for her invaluable technical and logistical contribution and guidance in the preparation of this Policy.

I wish to thank the County Assembly on playing its legislative role and ensuring that this policy is passed. Specifically, we extend our gratitude to the Sectoral Committee on Agriculture, Livestock, Fisheries, Irrigation and Co-operatives and the Committee on Delegated Legislation for their input.

The process of preparing this policy was undertaken by a dedicated technical working group that comprised of staff from the County Departments of Agriculture, Livestock, Fisheries and Cooperatives; Environment, Water, Natural Resources and Climate Change; County Attorney; and a representative from NEMA. The task force was key in developing primary drafts that were the basis for stakeholder consultations and public participation.

Finally, I wish to acknowledge the participants of the various workshops in the development of this policy. We are especially indebted to research institutions, universities, NGOs, and CBOs who sent representatives to participate in the formulation and validation of this policy. Your input into this policy will go a long way in the development of the food safety sector and the County of Bungoma as a whole.

County Chief Officer,
Agriculture and Irrigation

CHAPTER ONE

POLICY CONTEXT AND RATIONALE

1.0 Introduction

The chapter presents the context within which the County's agriculture soil management policy is developed. It outlines policy and legal frameworks with regard to the same at both National and County levels. It also summarizes the rationale for the policy and finally provides insights into the process of developing the policy.

1.1 Background

Agriculture plays a critical role in the four dimensions that embody food security, namely food availability, food accessibility, food utilization and food system stability. Besides food security, agriculture is important in Kenya's national economy as it contributes 27.3% annually of Gross Domestic Product, 65% of total export earnings, employs over 80% of the country's rural workforce, provides 70% of raw materials for industry, and provides more than 18% of formal employment.¹

Bungoma County contributed a share of 2.3% to the national GDP over the period 2013-2017. The County's agriculture Gross County Product (GCP) contributed 3.8% to the national agriculture Gross Value Added Product (GVAP). Agriculture is the key driver of growth in the county contributing Kshs.107.829 billion of the total Kshs.183.509 billion Gross County Product (GCP) in 2017 which is a GCP share contribution of 58.76%.²

Soil is the most important resource in agricultural production. It constitutes the foundation of agricultural development and ecological sustainability and the basis for food production. It is also the world's largest terrestrial pool of carbon and approximately 95% of global food is produced in soil. However, evidence provided in the Status of the World's Soil Resources (SWSR; 2015) report and other studies shows that about 33% of global soils are moderately or highly degraded due to unsustainable management practices. This loss also significantly reduces the soil's ability to store and cycle carbon, nutrients, and water. Kenya must therefore strive to bring the issue of sustainable soil management to the forefront of public attention in order for her population to recognize and appreciate the importance that soil has with food, water, climate, biodiversity and life.

Soil and water conservation (SWC) was introduced in Kenya in the 1930s due to serious erosion problems in both the settlers and the African farms and was made compulsory by the African Land Development Board (ALDEV) and the Swynnerton Plan (1953-1957). Colonial authorities addressed the problem of soil erosion by implementing district level by-laws specific to the 'African held land' which focused on coffee and cotton. Local administration

¹Kenya National Bureau of Statistics, 2015

²Gross County Product Report, 2019, KNBS

and Agricultural Technicians rigorously enforced these stipulations and stiff penalties were imposed on farmers who failed to comply. SWC measures that were enforced included contour farming, tree planting, terrace strip cropping and destocking.

However, there was a lost decade (1963 -1972) where there was no clear cut SWC approach. This was a period of laxity by the people towards coerced soil conservation. This was because soil conservation had become both politically and socially untenable. During this period, more terraces disappeared through destruction, and neglect than were being constructed coupled with few initiatives towards soil conservation.

Land degradation was considered to be a serious problem in Kenya during the United Nation Conference on Human Environment in Stockholm in 1972. Hence the revival of soil conservation (1972-1988). The National Soil and Water Conservation Program (NSWCP) was launched in 1974 with support from the Swedish International Development Agency (SIDA). This programme aimed at increasing and sustaining agricultural production through simple, cheap and effective soil conservation measures. This was an individual farm-based approach with a package of tools given out to farmers.

The catchment approach (1988-1998) strategy was later introduced and addressed all conservation measures in clearly delineated catchments. The benefit was viewed in terms of high visibility of conservation efforts, continuous treatment of farms, safe conveyance of excess runoff in the high rainfall areas, water harvesting in the arid and semi-arid lands and development of a cadre of highly specialized staff.

In 2000 the National Agriculture and Livestock Extension Programme (NALEP) was launched. NALEP had the basic elements of Catchment Approach (Focal Area Extension Approach -2000 -2010). The approach was more demand driven and holistic in all technical areas. It took over from the catchment approach. However, the focal area approach concentrated on all aspects of farm management but was not focused entirely on soil management. After the closure of NALEP a gap has existed in the area of coordination of soil and water conservation in the country.

Most of the agricultural soils in Bungoma County are affected by key issues such as; declining fertility, soil erosion, deforestation, climate change and inappropriate land use that hinders potential productivity of agricultural produce. The first soil survey in Bungoma County was done between 2010 and 2011. Soil sampling was conducted by KARI (now KALRO) under National Accelerated Agricultural Input Program (NAAIP) soil survey. The results released in 2013 showed that the county soil status is acidic (pH less than 5.5) and therefore recommended non-acidifying fertilizer and liming. The second soil survey in 2015 sampled soils from all the wards where 67% of the results showed depressed pH. Continuous testing using county mobile testing labs confirmed that soil is chemically degraded across the county and thus recommended improvement through liming and other sustainable land management practices.

1.3. Policy and Legal Framework

This policy will complement several national and county legal instruments in providing a framework for management of sustainable soil management as outlined below;

The Constitution of Kenya, 2010 is the overarching law that governs natural resources in Kenya. Chapter 5 of the constitution deals with land use and land tenure and in it are various articles that are relevant to soil management.

Kenya Vision 2030 emphasizes sustainable agricultural growth as a critical element in poverty reduction and addressing inequalities. It recognizes the importance of soil fertility in enhancing agricultural productivity for driving economic growth.

Environment Management and Coordination Act (EMCA), 1999 (amended 2015) - This Act establishes the National Environmental Management Authority (NEMA) whose mandate is to coordinate all environmental activities in Kenya.

Climate Change Act, 2016- The Act provides for a regulatory framework for enhanced response to climate change; to provide for mechanisms and measures to achieve low carbon climate development, and for connected purposes.

Forest Conservation and Management Act, 2016 - The Act contextualizes establishment and development of sustainable management of forestry resources. It further provides for farm forestry which will take pressure off existing forests and act as income generation. This ensures that ecosystem services associated with forested ecosystems continue to be provided.

Land Act 2012 - The Act provides guidelines for the management of public land, conservation of ecologically sensitive public land, and conservation of land based natural resources.

Crops Act, 2013 - The Act has provisions for development of regulations on measures of maintaining soil fertility including soil testing and regulation of soil salinization, chemical degradation and toxic levels in plants and promotion of fertilizer cost-reduction investment projects through provision of incentives and facilities to relevant investors.

Sessional Paper 1 of 2017 on National Land Use Policy (NLUP) aims at guiding Kenya towards a sustainable and equitable use of land. The policy calls for immediate actions to address environmental problems that affect land such as degradation, soil erosion and pollution.

Kenya Agricultural Soil Management Policy 2023- The policy gives direction on how agricultural soils will be managed for increased crop productivity and production while at the same time conserving the environment. The policy encompasses sustainable agricultural soil and environmental management with regard to soil and water conservation, soil fertility management, agroforestry, soil restoration and rehabilitation, technology development, dissemination and utilization of soil management technologies and investments.

National Agriculture Policy 2021 - The Policy provides a framework for sustainable development of the agricultural sector based on the requirements of the Constitution, the Kenya Vision 2030, Millennium Development Goals and other national, regional and international development goals in agriculture.

National Environmental Policy 2013- The Policy sets out important provisions relating to the management of ecosystems, ecosystem services and sustainable use of natural resources.

National Agricultural Sector Extension Policy (NASEP) 2012 - The instrument sets policy for agricultural extension, and promotion and diffusion of technologies for land management. The policy recognizes that land is an important resource in agricultural development, thus soil and water conservation and support for environmental conservation in all agricultural projects and programmes are prioritized.

National Forest Management Policy, 2014 - The Policy provides a framework for improved forest governance, resource allocation, partnerships and collaboration with the state and non-state actors to enable the sector to contribute to meeting the country's growth and poverty alleviation goals within a sustainable environment.

Agricultural Sector Transformation and Growth Strategy (ASTGS) 2019 - 2029
The ASTGS takes an evidence-based approach, and a sharp focus on implementation and delivery with the counties at the centre. This approach is the foundation for addressing the challenges that constrain agricultural output, productivity, natural resource management, and the effects of climate and environmental change.

Kenya Climate Smart Agriculture Strategy 2017 – 2026 - The broad objective of the Kenya CSA Strategy is to adapt to climate change, build resilience of agricultural systems while minimizing emissions for enhanced food and nutritional security and improved livelihoods

Bungoma County Environment Policy, 2021 - The policy is guided by specific objectives such as providing financial resources for sustainable management of the County environment and natural resources; providing a framework for an integrated approach to planning and sustainable management of environment and natural resources; promoting and enhancing partnership and public participation in the protection and conservation of the County environment and natural resources among others.

Bungoma County Climate Change Policy, 2020- The policy's objectives include; to appropriately address County climate change challenges for sustainable development; to promote conservation of natural resources for posterity; to integrate climate change into all County development projects and programmes among others.

Bungoma County Climate Change Action 2023-2027- The Plan was developed to provide a roadmap in building resilience to the impacts of climate change.

1.4 Rationale

Soil is the most important resource in agricultural production. It constitutes the foundation of agricultural development and ecological sustainability and the basis for food production. The current rate of soil fertility decline and degradation in Bungoma is not conducive for the projected 7% national growth of the agriculture sector. Despite this scenario, there has been little effort towards the development of policies to address declining soil fertility, soil erosion, deforestation, inappropriate land use and climate change.

The Kenya Agricultural Soil Management Policy 2023, the National Agriculture Policy 2021 and the Agriculture Sector Transformation Growth Strategy 2019-2029 have been the main documents guiding soil management in the sector which do not adequately address key thematic issues for the Bungoma situation regarding agricultural soil management. Further, weak coordination, implementation and enforcement of existing strategies, policies and legislation is evident. As such policy gaps in the management of agricultural soils have been identified in this policy that requires a comprehensive sector-wide approach that is multi-sectoral and multi-stakeholder.

1.5 Policy Development Process

The formulation of the Bungoma County Agricultural Soil Policy was through a consultative and participatory approach. The Technical Working Group undertook desk top research for secondary information and drafted the policy through focused group discussions. The draft policy was subjected to internal validation and review through presentations to key stakeholders and later public participation. The draft policy was then presented to the cabinet for approval and subsequent transmission to the County Assembly for input and approval.

CHAPTER TWO

THE POLICY FRAMEWORK

2.1 Introduction

This chapter covers the vision, mission, goals, objectives and guiding principles that govern the policy.

2.2 Vision

Sustainably managed agricultural soils for enhanced productivity and environmental protection for improved livelihoods.

2.3 Mission

To promote sustainable agriculture soil management practices through appropriate technologies and stakeholder engagement.

2.4 Policy Objectives

2.4.1 Broad Objective

The main objective of this policy is to promote agriculture development through sustainable soil management practices.

2.4.2 Specific Objectives

1. To promote programs on Integrated soil fertility management systems.
2. To protect soils and conserve biodiversity.
3. To support programs on afforestation and reforestation.
4. To promote and enhance climate change mitigation and adaptation measures
5. To enhance knowledge and skills on sustainable land management.

2.5 Guiding Principles

The implementation of this Policy will be guided by the following principles:

- a) Right to a clean and healthy environment for sustainable development.
- b) **Equity and social inclusion:** fair and equitable distribution of resources and benefits to all communities including marginalized and vulnerable communities.
- c) **Partnership:** prioritize building partnerships, collaborations and synergy from the public, government, public benefits organization, civil society, private sector as well as vulnerable communities including women, youth and Persons with Disability.

- d) **Accountability:** the mobilization and utilization of financial resources shall be undertaken with integrity and transparency, in order to achieve optimal results in the implementation of the policy interventions.
- e) **Stakeholder Engagement and Public Participation:** consultations, negotiations and consensus building shall be key.
- f) **Precaution and prevention:** the protection and rehabilitation of degraded soils.

CHAPTER THREE

POLICY ISSUES AND POLICY INTERVENTIONS

3.0Introduction

This chapter highlights priority areas in agricultural soil management and incorporates interventions that will be employed by the County in order to achieve sustainable soil management practices.

3.1 Opportunities and Strategic Policy Interventions

Policy Issue 1: Declining Soil Fertility

Soil fertility is the ability of the soil to provide appropriate plant nutrients for crop growth and a key factor that determines the quality and quantity of crop produce. It's the most valuable natural resource which supports agriculturally based livelihoods. Decline in fertility levels is the loss of vital nutrients that are important in growth of crops through leaching, soil erosion and mono-cropping among others.

In Bungoma County, soil fertility decline has led to low productivity of agricultural produce. Cultivation across the contour lines in the county especially in Mt. Elgon has resulted in nutrient loss when it rains due to unchecked water flow. Furthermore, largely employed mechanized systems affect the soil through compaction that limits water and air into the soil. There is inadequacy of soil fertility management equipment which hinders access and adoption. Inappropriate use of both organic and inorganic fertilizers has resulted into fluctuation of soil pH levels that has led to unavailability of some nutrients.

The County has three mobile soil laboratories that only offer incomplete dry analysis at subsidized price rates. The mobile soil laboratories lack supportive infrastructure and maintenance subscription. Inadequate infrastructure for complete soil sampling, testing and analysis has hindered access to such services and adoption of corrective measures on soil fertility management.

High prices of fertilizer products and inadequate availability has hindered access by farmers leading to low utilization levels hence low yields. Nationally, there exists a fertilizer subsidy programme administered through the 4 existing NCPB stores however these stores are not adequate whereas the County has a fertilizer input scheme for vulnerable farmers which is not sustainable. Further, adulteration of fertilizer blends in the market due to inadequate enforcement of quality standards has hampered corrective efforts in addressing soil fertility levels.

Policy Interventions:

To promote sustainable land management practices and Integrated soil fertility management systems, the county government in collaboration with stakeholders shall:

- 1) Develop legislations on soil fertility management programmes such as fertilizer, farm mechanization and soil testing subsidies.
- 2) Enhance relevant infrastructure for soil sampling, testing and analysis.
- 3) Promote programmes on capacity building of agricultural value chain actors on soil fertility management.
- 4) Promote compliance programmes to fertilizer safety and quality standards.
- 5) Promote innovative soil fertility management technologies.
- 6) Enhance access to soil fertility management inputs.

Policy Issue 2: Soil Erosion

Soil erosion is the detachment, movement and deposition of the field's soil by the natural physical forces of water and wind or through forces associated with farming activities such as tillage. Soil erosion leads to loss of top soils that support agricultural production resulting in reduced agricultural productivity. The common soil erosion types in Bungoma County are rill and gully, which are the advanced forms of splash and sheet that are not easily observed. Soil erosion has been evidenced as gullies on the farms in Bumula and Sirisia sub counties, and sedimentation of soils in low lands and along rivers Sio, Chwele, Kuywa, and Nzoia. Evidence of soil erosion can also be observed as small rills on the farms, as well as presence of washed crops along roads and river banks.

Soil cover through use of living plant material crops, cover crops and grass strips, buffer strips and dead plant materials reduces soil erosion. However, in Bungoma County, rain water falling on most bare ground causes soil surface sealing resulting in low water infiltration hence increased surface run-off and gully formations. Uncontrolled surface runoff carries topsoil downstream due to inadequate structures to control water movement. The existing statutes are not adequately enforced to address issues of soil erosion on cultivated slopes, along river banks, around water bodies (riparian areas) and catchment areas.

Investment by the County government towards the development of soil erosion interventions for the agricultural sector is inadequate. Similarly, public and private actors' prioritization of soil erosion control and rehabilitation initiatives in resource allocation is often inadequate. There also exists limited dissemination and uptake of soil and water conservation technologies due to poor linkage between research and extension.

Policy Interventions:

To protect soils and conserve biodiversity, the county government in collaboration with stakeholders shall:

1. Promote soil cover.

2. Promote establishment of soil and water conservation structures.
3. Promote compliance with existing soil erosion control laws and regulations.
4. Enhance Public Private Partnership in soil erosion control.
5. Promote capacity building and public awareness in soil erosion control.

Policy Issue 3: Deforestation

Deforestation is the conversion of forest to an alternative permanent non-forested land due to use such as agriculture, grazing or urban development. Deforestation is primarily a concern for the developing countries due to shrinking areas of forests thus causing loss of biodiversity and enhancing greenhouse gasses. Forest degradation occurs when the ecosystem functions of the forest are disrupted.

The total forest cover in Bungoma County is 14.83% of the total land mass consisting of gazetted and non-gazetted forests which is below the county target of 18% by 2030.³ The most concentrated deforestation in the County occurs in Mt. Elgon sub-County due to increasing demand for agricultural land. The population in Bungoma County has been on the increase and was 1,670,570 people as per the 2019 Kenya Population and Housing Census. With this population pressure and diminishing resources, people have encroached on forest areas for livelihoods.

Timber logging, firewood collection and charcoal burning is a menace in the Mt. Elgon region and other areas in the county. More than 72% of the county households use firewood as the main source of cooking energy. There is increasing demand for wood and wood products for construction and as raw material for industrial use. About 30ha of Mt. Elgon Forest is harvested yearly which has reduced the tree cover. This has exposed the soil to destruction.

Encroachment in forested areas has further been worsened by weak enforcement of relevant laws and regulations. Additionally, inadequate public awareness and actors' capacity for forest conservation has slowed down conservation efforts.

Policy Interventions:

To prioritize increase in forest/ tree cover and ensure conservation the county government in collaboration with stakeholders shall:

1. Promote afforestation and re-afforestation.
2. Promote compliance with existing forestry laws and regulations.
3. Promote use of clean sources of energy and alternative non- wood products.
4. Promote alternative sources of livelihoods to people residing near forest to reduce pressure on use of forest resources.
5. Enhance capacity building and public awareness on forest conservation.

³Bungoma County Environment Policy, 2020

Policy Issue 4: Inappropriate Land Use

“Land use” is the term used to describe the human use of land. It represents the economic and cultural activities (agricultural, residential, industrial, mining, and recreational uses) that are practiced at a given place. Different land use activities have varied effects on the environment and human health.

In Bungoma county it has been noted that poor land use practices such as cultivation along river banks, steep slopes, riparian areas, wetland and catchment areas are some of the key factors that have resulted in increased surface runoff, soil erosion and pollution of rivers. Additionally, inappropriate tillage practices including burning of plant residues further expose the soil to various agents of soil erosion. Fragmentation of agricultural land and unplanned urbanization has further led to soil degradation.

There is poor waste management and inappropriate use of pesticides resulting in soil and water contamination. Illegal quarrying, tree cutting (on-farm and forests), sand harvesting, brick making and charcoal burning are other causes of soil degradation. Brick-making removes the top fertile soil while charcoal burning results in destruction of vegetation and soil bio-health. There is weak capacity and low enforcement of land use and urbanization laws and regulations in the county.

Policy interventions:

To promote sustainable land use practices the county government in collaboration with stakeholders shall:

1. Promote sustainable land use programs.
2. Enhance enforcement of land use and urbanization laws and regulations
3. Promote development of affordable and appropriate technologies and innovations and establish incentives to facilitate adoption for sustainable land management.
4. Promote proper farm waste management strategies.

Policy Issue 5: Climate Change impacts on agriculture soils.

Climate change refers to long-term shifts in temperatures and weather patterns due to natural and human activities like deforestation, improper waste management, unplanned urbanization, encroachment to forest land and emission of greenhouse gases.

A drastic increase in climate-induced disasters such as droughts, landslides, mudslides, rock falls and floods, has resulted in significant socio-economic damage and environmental degradation. Excess rainfall has led to change in soil physical, biological and chemical composition resulting in reduced agriculture productivity. Prolonged dry spell has led to low soil cover and reduced biomass exposing the soil to high temperature and agents of soil erosion. There are also incidences of emerging and recurring pests and diseases.

Some of the land management practices such as burning of plant residues and poor handling of organic farm waste has contributed to emission of greenhouse gasses. There exists weak

Early warning system on climate change that has led to poor emergency preparedness and coordination. Despite the county having developed a Climate Change Action Plan its implementation remains a challenge. It is worth noting that agriculture plays an important role in greenhouse gas emissions mitigation (GHG) and removing CO₂ from the atmosphere by sequestering carbon, yet it lags behind other sectors in terms of climate commitments, such as carbon credits and other climate change mitigation measures.

Policy Interventions:

1. Support climate early warning system to enhance preparedness in managing climate variability and weather extremes.
2. Support the implementation of the Bungoma County Climate Change Action Plan 2023-2027.
3. Promote climate smart agriculture and associated technologies.
4. Promote carbon credit programmes.

Policy Issue 6: Inadequate knowledge and Skills.

There is little attention towards sustainable land management yet it affects land productivity on a larger scale. There exists inadequate knowledge among farmers and stakeholders on sustainable land and soil management due to poorly coordinated systems of collecting and disseminating information in the county. There is inadequate public soil management personnel, weak linkage between research and extension on sustainable land management technologies limiting promotion and adoption of appropriate soil management technologies. There is limited use of ICT in promoting sustainable land and water management programs which has negatively impacted on the uptake of the technologies by farming communities. There exist 88 VTCs and 8 ATVETs in the county yet sustainable land management technologies are not well incorporated in their curriculum and they lack capacity to incorporate sustainable soil management issues in their teaching curriculum.

Policy Interventions:

1. Promote capacity development and training programmes and projects on sustainable land management.
2. Enhance and support public soil management extension services
3. Support adaptive research on matters of sustainable land management.
4. Support Research - Extension linkage programmes on sustainable land management.
5. Promote ICT programmes in soil and water management
6. Support Competency based training programs on sustainable land and water management in ATVETs and VTCs.

CHAPTER FOUR

POLICY IMPLEMENTATION FRAMEWORK

4.0 Introduction

This chapter looks into the relevant institutions and their roles in coordination and implementation of this policy.

4.1 Institutional framework

The successful implementation of this policy will depend on the partnership between the County Government of Bungoma and particularly the Department of Agriculture, Livestock, Fisheries, Irrigation and Cooperatives with the various relevant stakeholders. These partners include, other County Government departments, the national government and its institutions, development partners, non-state actors like International and local NGOs, and Private Sector among others.

Table 1. Institution, Mandates and Roles of Stakeholders

INSTITUTION	DEPARTMENTS	ROLE IN IMPLEMENTATION OF THE POLICY
County Government	Department of Agriculture, Livestock, Fisheries, Irrigation and Cooperatives.	Shall be responsible for coordination during the implementation of this policy.
	Department of Environment, Water, Natural resources, tourism and climate change.	Implementation of the County climate change action plan and management of solid waste.
	Department of ICT	Shall be responsible for development and maintenance of ICT systems on soil management.
	Department of Lands, Urban/Physical Planning, Housing & Municipalities	Advise on urban planning
	Department of Finance and economic planning	Responsible for coordination of development of budget and planning documents such as County Integrated Development Plan, Annual Development Plan, and Annual Financial Fiscal Strategy Paper among others.
	Department of Health and Sanitation	Management of liquid and solid waste

National Government	Ministry of Interior and Coordination	Enforcement of the legislations
	Kenya Forest Service	Protection and conservation of forests.
	Meteorological Department	Develop and provide early warning systems of weather to farmers.
	National Land Commission (NLC)	Conduct research related to land and the use of natural resources, and make recommendations to appropriate authorities
Development partners	Multilateral and bilateral organizations	Development partners will provide financing and technical support for the implementation of this policy.
Regulatory Bodies	KEPHIS	Oversee regulatory functions on organic and bio fertilizers.
	KEBS	Establishment of quality standards of all products, developing fertilizer standards, quality control and certification of fertilizer materials.
	NEMA	Responsible for the overall environmental management including those related to agricultural soil management and specifically to monitor and enforce Environmental Quality Standards Regulation
	Radiation Board	Responsible for ensuring compliance to standards in respect to radioactive materials in soil fertility inputs
Non-State Actors		Collaborate with the County government in the implementation of the policy through financing, offering technical support, oversight and review of the policy.
Research Institutions and Institutions of higher learning		Carry out research and develop appropriate technologies that address soil management.

CHAPTER FIVE

POLICY MONITORING, EVALUATION, REPORTING AND REVIEW

5.0 Introduction

Policy monitoring, evaluation, reporting and review are key components in the implementation process. It provides decision makers, development partners and other stakeholders with better means of learning from past experience, improving service delivery, planning, and allocation of resources and demonstrating results as part of accountability to key stakeholders.

5.1 Monitoring and Evaluation

Monitoring of the Policy implementation is an ongoing process that will ensure focused realization of the objectives. It will be participatory, involving all the stakeholders and beneficiaries. The Department of Agriculture together with relevant stakeholders shall collect, compile and analyze information on the implementation of various soil management interventions.

For successful implementation of the soil policy, the department will develop a MERR framework within six months of the policy implementation. The MERR framework is expected to be consistent with the County Integrated Monitoring and Evaluation Systems (CIMES) and have clear terms of reference for relevant stakeholders in data collection, analysis, review storage and sharing.

To ensure effective monitoring, evaluation and learning, the county shall establish a soil management unit which will be multi-Sectoral in nature thus involving representatives from different sectors.

5.2 Reporting

The County Government through the Department of Agriculture, Livestock, Fisheries, Irrigation and co-operatives will develop soil management reports quarterly and annually, detailing the level of implementation of the policy and the challenges experienced. The report will outline options on how to subsequently address challenges and emerging issues.

5.3 Review of the policy

The policy will be reviewed as need arises to address the sector challenges and emerging issues.