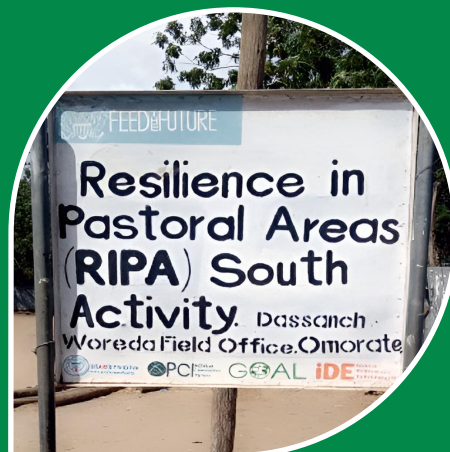
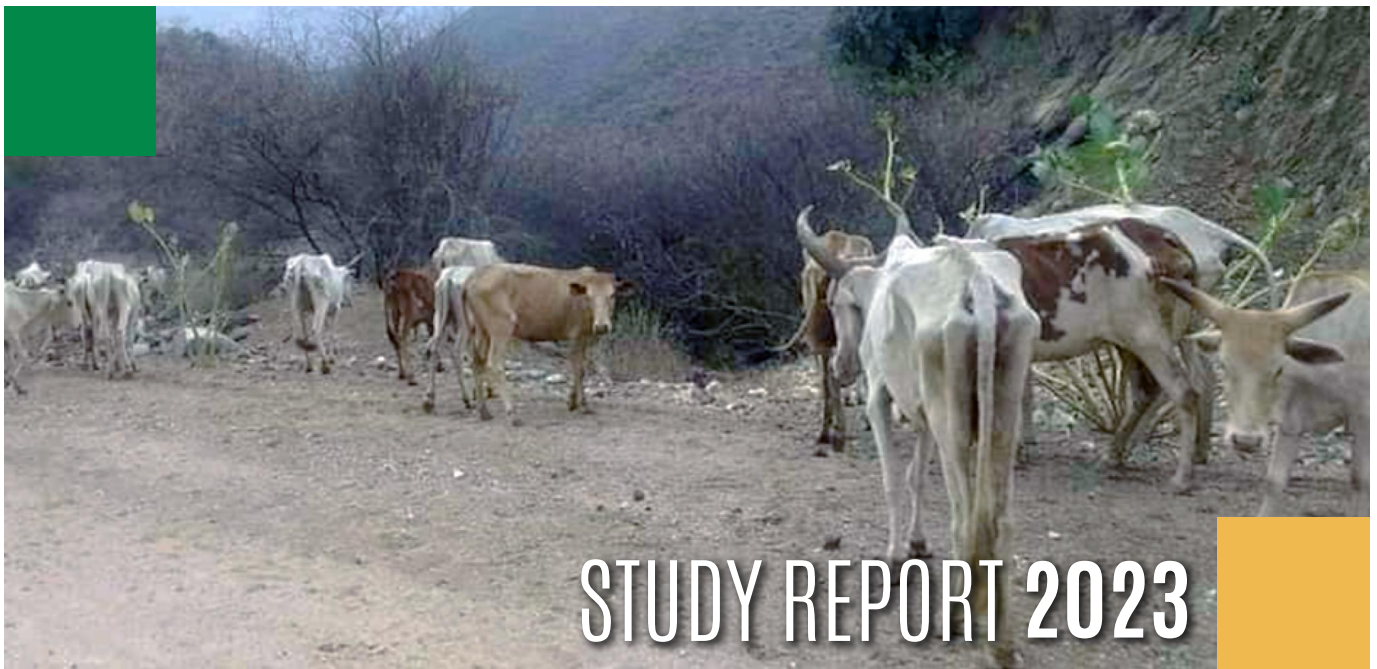




Assessing Pastoral Land Use Planning, Extension Services Systems and Opportunities in the Greater Horn of Africa





USAID
FROM THE AMERICAN PEOPLE

Assessing Pastoral Land Use Planning, Extension Service Systems and Opportunities in the Greater Horn of Africa

2023

STUDY REPORT

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LIST OF ACRONYMS

ARP	Agricultural Revival Programme
ASALs	Arid and Semi-arid Lands
BAU	Business-As-Usual
CAMP	Comprehensive Agriculture Master Plan
CBD	Convention on Biodiversity
CEWARN	Conflict Early Warning and Response Mechanism
CITES	Convention on International Trade in Endangered Species of Wild Fauna & Flora
CAHWs	Community Animal Health Workers
CDRs	Community Disease Reporters
CSA	Climate Smart Agriculture
CSOs	Civil Society Organizations
FAO	Food and Agricultural Organization
FFS	Farmer Field School
GDP	Gross Domestic Product
GoSE	Government of the State of Eritrea
ICPALD	IGAD Centre for Pastoral Area and Livestock Development
I-CSP	Interim Country Strategy Paper
IGAD	Intergovernmental Authority on Development
IICSUSB	International Initiative for Conservation and Sustainable Use of Soil Biodiversity
IK	Indigenous Knowledge
INDC	Intended Nationally Determined Contribution
IPCC	Intergovernmental Panel on Climate Change
I-PRSP	Interim Poverty Reduction Strategy Paper
LLP	Livestock and Livestock Product
NAADS	National Agricultural Advisory Services
NALEP	National Agriculture and Livestock Extension Policy
NAPA	National Adaptation Program Action
NASEP	National Agricultural Sector Extension Policy
NDP	National Development Plan
NGO	Non-Government Organization
NMTIP	National Medium-Term Investment Programme
PADETES	Participatory Demonstration and Training Extension System
PPP	Public Private Partnership
RRMSF	Regional Rangeland Management Strategic Framework
SDG	Sustainable Development Goals
SLM	Sustainable Land Management
SPB	Strategic Plan for Biodiversity
T.O.T	Transfer of Technology
UN	United Nations
UNCCD	UN Convention to Combat Desertification
UNFCCC	UN Framework Convention on Climate Change
USAID	United States Agency for International Development

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Dr. Dereje Wakjira
Director, ICPALD

EXECUTIVE SUMMARY

The IGAD rangelands provide several goods and services that contribute to national, regional and global food markets. These rangelands are a backbone of the livestock industry and support the majority of the region's 520 million livestock, providing the population with high-value livestock products. Despite their recognized significance, the IGAD rangelands face a plethora of challenges, including degradation, prolonged droughts, unreliable rains and Climate Change, inter-alia.

In addition, the inherent inadequate extension services limit adoption of modern farming technologies thus compromising the proper planning and use of rangelands for enhanced productivity. An exploratory cross-sectional study was conducted to assess the pastoral land use planning, available extension services system and identify opportunities to be exploited to build resilience in the IGAD region. A detailed desk review of existing literature related to rangeland use planning and extension systems was carried out. Primary data was obtained from twenty Focus Group Discussions, sixteen Key Informant Interviews using interview schedules and 105 purposively selected respondents knowledgeable on the subject matter. Results showed that stakeholders at grassroots compared to those at the Centre, didn't have clear knowledge on government policies/laws/strategies or investments related to sustainable rangeland management ($\chi^2 = 19.474$; $p = 0.000$). The study also revealed existence of rich indigenous knowledge among pastoral and agro-pastoral communities in the IGAD region.

It further identified a number of good practices including setting by-laws; prohibiting access to certain parts of rangelands and cutting specific trees; setting time of watering animals; transferring of indigenous knowledge to the young generation; involving both boys and girls; and adoption of planting pastures, among others. The study also indicated formulation of by-laws as the most preferred adopted practice by the pastoral communities ($\chi^2 = 55.282$; $p = 0.000$). Furthermore, the study also observed that inadequate commitment from the Member States frustrates implementation of international, continental and regional agreements. It was further established that inadequate funding by governments result in inadequate staffing and delivery of extension services thus frustrating efforts of achieving sustainable rangeland management.

In conclusion, the study recommends among others documentation and sharing of indigenous knowledge among pastoral communities, allocation of sufficient funds to enable wider extension coverage and ensure all farmers receive adequate knowledge and technologies. It also advocates for promotion of functional participation of pastoral range communities to ensure success of adopted strategies for sustainable rangeland management.



1.0 INTRODUCTION

1.1 Background

The Inter-Governmental Authority for Development (IGAD) region comprises the countries of Djibouti, Eritrea, Ethiopia, Kenya, Somalia, Sudan, South Sudan and Uganda (Figure 1). The region has a high population growth rate of 3% (with the total population doubling every 23 years) and an increasingly young population with over 60% of the estimated 242 million people being youth (IGAD Secretariat, 2019). It covers an area of about 5.2 million square kilometers composed of about 60-70% Arid and Semi-arid Lands (ASALs). It is characterized by low erratic rainfall of up to 500mm per annum. This is substantially below the global average of 1,385 cubic meters (Fischetti, 2012) and lower than the minimum amount (2000 cubic meters) required to meet human needs (Thomas, 2016). It is the region with the highest environmental vulnerability worldwide and is thus widely exposed to food insecurity (KwF, 2016). Being prone to recurrent droughts and dry spells, makes it one of the most vulnerable regions on the African continent for climatic variations, which heightens the need for special interventions.

On the contrary, these vast ASALs, predominantly inhabited by pastoral and agro-pastoral communities, have very limited access to extension services. The extension system is usually a replica of the one designed for the sedentary production system that does not meet the requirements of pastoralists. This leads to pastoralists lagging behind in the adoption of modern innovations and technologies for proper planning and use of rangelands for enhanced productivity. These ASALs also have limited access to external markets and lack opportunities for value addition or income diversification; hence they remain hotspots for high levels of poverty in the region. Private or public investments to purposely develop the pastoral areas remain low (MAAIF, 2014).

IGAD in collaboration with development partners has been initiating programs to support building the resilience of communities and systems in the Horn of Africa. One such program is the “Building Resilient Market Systems in the Cross-border Drylands of the IGAD Region” funded by USAID. It supports the realization of the IGAD IDDRSI strategy outcomes and implemented by various IGAD specialized institutions. Consequently, IGAD contracted a consultant to assess the pastoral land use planning, available extension services system and opportunities to be exploited to build resilience in the region.



Figure 1: Map of IGAD Region

Source: KfW, 2016

1.2 Significance of Rangelands in the IGAD Region

IGAD's rangelands are the backbone of livestock industry that provides various economic opportunities along the value chain. They support the majority of the region's 520 million livestock of which 242 million (35%) are small ruminants (IGAD, 2022). They contribute 10% - 50% of the individual countries' agricultural GDP (IGAD, 2020). Rangelands host most protected areas, such as game reserves and national parks hence support tourism that is a good source of foreign exchange. Most rangelands have commercial deposits of oil and natural gas, sand, gravel, a wide range of precious minerals, soda ash, medicinal plants, gums and resins (ICPALD, 2017). Rangelands also host sacred sites that are valued for spiritual and religious purposes thus being linked to the cultural identity of certain ethnic groups (ICPALD, 2020).

1.3 Challenges of the IGAD Rangelands

The IGAD rangelands are facing a myriad of challenges that threaten range productivity, livestock production, ecosystem stability and therefore livelihoods of pastoral and agro-pastoral communities. Climate Change is one of the greatest challenges gravely effecting the ASAL rangeland environment (Hoffmann and Vogel, 2008). It is characterized with frequent prolonged droughts, unpredictable and unreliable rains; affecting crop, livestock production and food security. It is amplifying range degradation, leading to pasture scarcity and the subsequent reduction of livestock productivity due to loss of condition and death. It is also associated with increased emergence of livestock diseases, as higher temperatures and changed rainfall patterns alter the abundance, distribution and transmission of animal pathogens (FAO, 2022). Furthermore, it affects reproduction efficiency of livestock through impairment of embryo development, pregnancy rate and lowering sperm quality in bulls, pigs and poultry (Rajos-Downing et.al, 2017).

1.4 Governance of Rangelands

Governance of rangelands in IGAD has continuously undergone, and is still undergoing changes. Currently, both informal (traditional) and formal systems exist to control access to and manage the utilization of pastoral rangelands. The traditional system is based on community by-laws enforced by Councils of Elders who arbitrate over issues of water use and natural resource management, migration strategies to reserved areas, land disputes, uncontrolled bush burning and tree cutting, and punish offenders (IGAD, 2022). Traditionally, dry season pastures are deliberately not used during the wet season to allow them regenerate for use during the dry season. Thus permanent use of one area is avoided to prevent depletion and degradation of pasture, and large tracts are left idle during the rainy season. Traditional institutions are thus good at enforcing rules for sustainable use of rangelands, especially when pastoralists are clearly recognized as the beneficiary community.

In contrast, formal governance structures tend to weaken customary institutions because of failure to integrate and legally recognize them. In addition, traditional management knowledge is gradually being lost as more of the younger generation of pastoralists are attracted to urban areas. Yet the traditional system had developed an intimate knowledge of the environment and many successful techniques that could still be of use today (Niamir, 1991). IGAD region is thus facing a breakdown of the traditional institutions that govern access to grazing lands with corresponding lack of regulatory mechanisms to control use of resources (IGAD, 2021).

1.5 Objective(s) and Scope of the Assignment

The general objective of the assignment was to assess the pastoral land use planning, available extension services system and identify opportunities to be exploited to build resilience in the IGAD region.

The consultant was to review traditional institutions governing rangeland use, national rangeland management policies, as well as rangeland management good practices by communities and Member States, identify available gaps and develop practical rangeland planning and use framework and extension services to exploit available opportunities in the IGAD region.

Specifically, the following tasks were to be carried out:

- i. Undertake desk review of existing literature on pastoral land use planning/rangeland use planning and good management practices from the region, highlighting challenges and strengths experienced while referencing the IGAD regional rangeland management strategy that is already domesticated by Member States;
- ii. Review traditional pastoral land governance institutions and national policies and strategies governing pastoral land use/rangeland use planning and support extension services - public and private, as well as identify strengths, challenges and suggested solutions and opportunities for investment;
- iii. Explore how the pastoral land use/planning is incorporated into the overall land use planning framework of the target Member States, focusing on how the land use planning policies and laws are taking into consideration the need for pastoral communities;
- iv. Establish a pastoral/agro-pastoral land use planning and cross-border community, natural rangeland management good practices through seasonal grazing patterns, as well as practiced veterinary extension system for pastoralists;
- v. Develop a factsheet from the assessment report, and;
- vi. Undertake any other assignment as may be deemed appropriate by the project coordinator as long as it is relevant to the assignment.

2.0 AVAILABLE PASTORAL RANGELAND MANAGEMENT RELATED FRAMEWORKS, PROTOCOLS AND EXTENSION SYSTEMS

2.1 Rangeland Frameworks

2.1.1 Global

- **The UN 2030 Sustainable Development Goals (SDGs)**

The SDGs are a collection of 17 ambitious goals set by global leaders to transform the world by the year 2030 and create a sustainable future for all. The preamble of the 2030 Agenda (Paragraph 16) calls for integrated solutions and commits nations to a new approach to sustainable development, recognizing that eradicating poverty and inequality, preserving the planet and creating sustained and inclusive economic growth are linked and interdependent. A number of SDGs relate to rangeland management and view rangelands as an ideal arena for showcasing the three pillars of sustainable development – environmental, economic and social (Jones, 2021). These include SDG 1 (End poverty in all its forms); SDG 2 (End hunger, achieve food security and improve nutrition and promote sustainable agriculture); SDG 6 (Ensure availability and sustainable management of water and sanitation for all); SDG 13 (Take urgent action to combat Climate Change and its impacts); SDG 15 (Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity loss) and SDG 16 (Promote just, peaceful and inclusive societies).

- **The Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests, 2020**

The purpose of the Voluntary Guidelines is to serve as a reference and to provide guidance to improve the governance of tenure of land, fisheries and forests with the overarching goal of achieving food security for all and to support the progressive realization of the right to adequate food. They are intended to contribute to the global efforts towards the eradication of hunger and poverty, based on the principles of sustainable development and with the recognition of the centrality of land to development by promoting secure tenure rights and equitable access to land, fisheries and forests. The Guidelines recognize the role of people, communities and others in responsible governance of tenure of land, fisheries and forests and management of other natural resources, such as water and minerals. They are therefore relevant to sustainable rangeland management since they promote responsible governance of tenure that conversely promotes sustainable social and economic development that in turn helps eradicate poverty and food insecurity, and encourages responsible investment.

- **The Nagoya Protocol, 2010**

The Protocol significantly advances the fair and equitable sharing of benefits arising from their utilization by providing a strong basis for greater legal certainty and transparency for both providers and users of genetic resources. It recognizes the uniqueness of traditional knowledge associated with genetic resources that reflect a rich cultural heritage relevant for conservation and sustainable use of biological diversity. By promoting the use of genetic resources and associated traditional knowledge, and by strengthening the opportunities

for fair and equitable sharing of benefits from their use, the Protocol creates incentives to conserve biological diversity, sustainable use of bio-resources, and further enhances the contribution of biological diversity to sustainable development and human well-being.

- **The Strategic Plan for Biodiversity (SPB), 2011-2020**

The SPB was adopted at the Convention on Biological Diversity (CBD) COP-10 and provides a framework for action by CBD stakeholders. The Plan is accompanied by 20 Aichi Biodiversity Targets where land health/biodiversity is cross-cutting amongst these targets including sustainable agriculture (Target 7), reducing pollution (Target 8), restoring and safeguarding ecosystem services (Target 14), and enhancing ecosystem resilience and health including carbon storage and restoring 15% of degraded ecosystems. The Aichi Biodiversity targets are closely related to rangeland management and could be used to establish specific targets for sustainable use of pastoral lands.

- **The International Initiative for the Conservation and Sustainable Use of Soil Biodiversity (IICSUSB)**

The IICSUSB was endorsed in 2006 as the main international framework for action regarding soil biodiversity. The Initiative is managed mainly by the UN Food and Agriculture Organization (FAO) and other partners and has as its main goals, awareness-raising, knowledge and understanding and mainstreaming. The strategic principles of the IICSUSB are important for pastoral land management and include improvement of farmers' livelihoods and recognition of their skills; integrated, adaptive, holistic and flexible local solutions; participatory technology development suitable to local conditions; building partnerships and alliances; promotion of cross-sectoral and integrated approaches; dissemination and exchange of information and data.

- **The Draft International Covenant on Environment and Development, 1995**

Launched in 1995 with the 5th Edition of 2015, the Draft Covenant is a blueprint for an international framework agreement consolidating and developing existing legal principles related to environment and development. It was thus prepared as an umbrella agreement to knit together the principles reflected in the sectoral treaties that impact upon the environment and development.

The Draft Covenant has many articles that are relevant to the protection and management of pastoral land. In particular, Article 26 relates to natural systems and calls on parties to take appropriate measures to conserve and where necessary and possible restore natural systems, which support life in all its diversity, including biological diversity, and to maintain and restore the ecological functions of these systems as an essential basis for sustainable development.

- **The United Nations Framework Convention for Climate Change (FCCC), 1992**

The Convention that was adopted in 1992 recognizes the role of terrestrial ecosystems as a sink and reservoir for potential greenhouse gases and is concerned that human activities have been substantially increasing the atmospheric concentrations of greenhouse gases. Two of the principal sources of greenhouse gases are changes in land use cover and land use.

The objective of the Convention is the stabilization of greenhouse gas concentrations in the

atmosphere at a level that will prevent anthropogenic interference in the climate system to allow ecosystems to adapt naturally to Climate Change, to ensure that food production is not threatened and to enable economic development to proceed sustainably.

- **The International Tropical Timber Agreement (IITA), 1994**

This Agreement is aimed at promoting sustainable management of tropical forests. Through consultations and cooperation between producers and consumers, it improves market information and discourages over-harvesting and deforestation. Since almost all tropical timber producing countries are parties to the Agreement, it has a significant role in the promotion of forests including those in rangelands.

- **The UN Convention on Biological Diversity (CBD), 1992**

The fundamental concern of the CBD is that biological diversity is being significantly reduced by human activities, e.g. overgrazing and biomass harvesting. The Convention stresses the importance of, and the need to promote global, international and regional cooperation among countries in promoting conservation of biological diversity and sustainable use of bio-resources. It further calls on intergovernmental organizations and the non-governmental sector to support conservation of biological diversity and the sustainable use of its components. It also appeals to nations to prepare strategies to implement the CBD. The Convention acknowledges that substantial investments are required to conserve biological diversity and that there is a broad range of environmental, economic and social benefits from those investments.

- **The Convention on Wetlands of International Importance (RAMSAR Convention), 1971**

The Ramsar Convention is the oldest intergovernmental treaty which provides the framework for international cooperation for the conservation of wetland habitats, having been established in 1971 by the United Nations Educational, Scientific and Cultural Organization (UNESCO) but took effect four years later.

It covers a very wide variety of wetland habitats including rivers, lakes, marshes, coastal areas and ponds, among others. The Convention places numerous obligations upon the Contracting Parties to promote conservation and wise use of wetland habitats including those of international importance. It also calls for international cooperation in management of shared water bodies and shared wetland species. It is thus relevant to pastoral rangelands since rangelands are themselves shared resources with most of them hosting wetlands.

2.1.2 Continental Protocols, Regulations and Strategies

There are a number of instruments relevant to pastoral land management on the African continent. These among others include:

- **The African Union's Agenda 2063**

Agenda 2063 is the continent's master plan that aims to deliver on inclusive, sustainable development and transformation of Africa into the global powerhouse of the future. It projects an Africa of strong identity, culture and values, as well as a strong and influential partner on the global stage making equal, respected contribution to human progress

and welfare. Formulated in 2013 to guide the continent's development in the next fifty years, it outlines the aspirations of Africans and gives a number of priority areas which if implemented would result into improved standards of living and inclusive sustained economies.

The Agenda's almost all aspirations relate to rangelands since they reflect the desire to optimize the use of Africa's resources for the benefit of all Africans. In particular, Aspiration 1 that strives for "a prosperous Africa, based on Inclusive Growth and Sustainable Development" underpinned by its priority areas on poverty, inequality and hunger; sustainable and inclusive economic growth; agricultural productivity and production; sustainable natural resource management and Biodiversity conservation; sustainable consumption and production patterns; water security; Climate resilience, natural disasters preparedness and prevention are relevant to rangelands.

- **The Policy Framework for Pastoralism in Africa, 2010**

The Framework is the first continent-wide policy initiative, driven by recognition that reduction of pastoral poverty is central to the achievement of sustainable development, because pastoralists represent a substantial segment of the population in many African countries.

The Policy Framework aims to secure, protect and improve the lives, livelihoods and rights of African pastoralists. It also aims at promoting a multi-sectoral and inter-disciplinary approach to achieve sustained productive rangeland management in harmony with other policies that address issues pertinent to rangelands development and conservation. Furthermore, it focuses on conflict management and promotion of shared co-existence between people, flora and fauna, taking into account transparency and accountability with all responsible stakeholders. It is relevant to pastoral rangelands since it outlines principles that are of great significance for rangeland management. These include freedom of mobility, inclusion of pastoralists in the process of policy and legislative reforms, recognition of the economic contribution of pastoralists to development and acknowledgment of the importance of indigenous institutions to land management.

- **The AU Land Policy Framework 2010**

It is a continental Framework to strengthen land rights, enhance productivity and secure livelihoods. It recognizes the central role that land plays in the development process and makes recommendations to national governments to help create and implement improved land policies and legislation that will enhance tenure security for women and men. It also encourages African governments to address concerns related to the status of land administration systems, land rights delivery systems, land governance structures and institutions.

The Framework highlights the challenges and threats to rangelands arising from agricultural expansion, degradation and general marginalization and specifically emphasizes the need to protect grasslands and pastoral ecosystems. It recognizes the critical role of rangelands in livestock production, wildlife and biodiversity conservation. It thus calls for sustainable rangeland practices, as well as development of policies that ensure tenure security, participation of pastoral communities in rangeland management, guarantee equal access to pastoral resources for women, establish processes for the resolution of cross-boundary disputes and improve technologies of resource use.

- **The African Convention on the Conservation of Nature and Natural Resources, 1968**
The Convention was adopted in 1968 and revised in 2003. It acknowledges the principle of common responsibility for environmental management and calls for conservation and rational use of natural resources for the benefit of present and future generations. It embodies a comprehensive and integrated regional approach to environmental protection and sustainable development. It reflects a renewed perception of resource management that reconciles nature and culture. This instrument advocates an integrated approach to resource management and provides legal principles and best practices that are relevant to pastoral land management.

2.1.3 Regional

- **The Strategy for Sustainable and Resilient Livestock Development in view of Climate Change in the IGAD Region, 2022- 2037**

The Regional Strategy provides a comprehensive framework to support the identification and prioritization of policies and actions to increase the resilience and sustainability of the livestock sector to Climate Change impact in the IGAD region. It mainly focuses on pastoral and agro-pastoral production systems in the ASALs and outlines four specific objectives to achieve its vision, “a more resilient, productive, and sustainable livestock sector in the IGAD region for improved living standards and reduced vulnerability to Climate Change”. Its five priority areas for improving sustainability and resilience of the livestock sector are closely linked to pastoral rangelands since they are the most exposed and vulnerable to the impact of Climate Change.

- **The Eastern African Bio-Economy Strategy, 2022**

The Strategy offers a compelling framework for putting in place agreed goals, which countries in Eastern Africa could use to achieve the UN 2030 Agenda for Sustainable Development, the continental aspiration of Agenda 2063, and the regional aspiration contained in EAC Vision 2050. It is a major strategic driver for the application of scientific research, knowledge and innovation to transform bio-based materials into not only food, feed, fibre and fuel, but also into a wide range of agro-industrial and value-added products.

In addition, it provides an opportunity for making use of the region’s abundant natural resources, including underutilized agricultural waste materials to produce value added products with applications in many sectors, including food, health, energy and industrial goods, thereby creating jobs, generating wealth, and connecting smallholder farmers to new bio-based value chains.

The strategy will enhance the sustainable production and exploitation of biological resources and knowledge to support: (i) food and industrial feedstock production; (ii) a diversified industrial sector producing a range of bio-based products including high quality foods, feeds, chemicals, pharmaceuticals, textiles, construction products, etc., and; (iii) protection of ecosystem services and mitigation of Climate Change. Its alignment to commitments for environmental sustainability, Climate Change adaptation and mitigation, reversing or changing unsustainable practices makes it relevant to sustainable rangeland management. It thus responds to the challenges, and opportunities of the IGAD region.

- **The Regional Strategic Framework: Rangeland Management in Arid and Semi-Arid Lands of the IGAD Region (RRMSF), 2020**

The Framework recognizes IGAD rangelands as the backbone of livestock industry; contributing significantly to the member countries' national GDP plus providing various economic and livelihood opportunities. The development of the RRMSF was in response to the myriad of challenges and change dynamics that threaten range productivity, livestock production, ecosystem integrity, and therefore livelihoods of pastoral and agro-pastoral communities inhabiting these areas. It was thus developed as a harmonized rangeland management charter for the IGAD region.

The RRMSF contributes to achievement of sustainable rangeland management by addressing the problem of weak linkages and coordination of policies on rangeland development in the IGAD region. It promotes sustainable rangeland management through harmonization of policies and practices in the member countries in order to create synergy and enhance efficiency of development initiatives. Specifically, the Framework offers a basis for IGAD Member States to formulate and operationalize sound rangeland management policies and actions. This effort is expected to complement other ongoing initiatives to strengthen resilience of ASAL ecosystems by supporting formulation and implementation of sound policies aimed at sustainable management of rangeland ecosystems.

The Framework notes that policies set on achieving sustainable rangeland development should focus on the intricate interconnection among the socio-cultural, economic and ecological factors within the IGAD rangelands. This includes the participation of pastoralist communities, the recognition of customary mechanisms regulating rangeland use and conflict resolution as central to rangeland development. It promotes consensus for shared principles as the basis for securing land rights and access to rangeland resources by all users. Furthermore, it suggests actions aimed at achieving healthy and productive rangelands that Member States can adopt in keeping with their respective national rangeland contexts.

- **The IGAD Protocol on Transhumance, 2020**

The Protocol aims at exploiting the full social and economic potential of the pastoral system by allowing free, safe and orderly cross-border mobility of transhumant livestock and herders in search of pasture and water as an adaptation mechanism to Climate Change and weather variability within the IGAD region. It commits Member States to support the formation and strengthening of local institutions in the border areas to facilitate cross-border collaboration during mobility and uphold other regional mechanisms for promoting pastoral coexistence, including the IGAD Conflict Early Warning and Response Mechanism (CEWARN), the prevention of proliferation of small arms and light weapons (SALWs), disease control and surveillance, prevention of livestock theft, and use of the traditional systems and structures for conflict management and peace building among cross-border communities.

More importantly, the Protocol also calls on Member States to invest in border communities through integrated land use plans that take into account the needs of pastoralists, disaster risk management strategies, tracking of animal mobility, early warning mechanisms and long-term investment in the pastoral areas. By promoting cross-border investments and pastoral coexistence, the Protocol further provides incentives for sustainable rangeland management and enhanced livestock production.

- **The IGAD Drought Disaster Resilience and Sustainability Initiative (IDDRSI) Strategy, 2019 - 2024**

The Initiative is a holistic and comprehensive plan, aimed at building the resilience of vulnerable communities to the effects of recurrent droughts and achieving simultaneous growth and sustainable development in the IGAD region. The objective of IDDRSI is to develop a framework for managing disasters in the Horn of Africa. It is based on strengthening pastoral livelihoods through interventions that target livestock production, health and marketing. The identified eight priority intervention areas highlight and prioritize the region's food security and other development challenges in relation to the objective of achieving drought resilience. All the IDDRSI priority intervention areas are relevant to rangelands since they were carefully selected and extensively discussed on the basis of their potential to contribute to enhancing resilience to environmental impact, Climate Change and natural disasters and promote the sustainable use of natural resources in the IGAD region.

- **The IGAD Land Governance Strategy, 2017 - 2022**

The Strategy provides a comprehensive and coherent framework aimed at guiding IGAD programmes in the area of land governance. It was driven by recognition that addressing challenges of land governance in the IGAD region, such as the legal pluralism, biases in access to land, and land conflicts, among others is critical to the achievement of sustainable development. Its overall goal of assisting and complementing the efforts of the Member States in land governance together with its strategic pillars, namely: Pillar 1 (Agriculture, Natural Resources and Environment); Pillar 2 (Economic Co-operation and Integration and Social Development); Pillar 3 (Peace and Security), and; Pillar 4 (Corporate Development Services), make it instrumental to rangeland management.

The efforts to link the Strategy with other IGAD strategies and processes, such as those of environment and natural resources, food security, gender, peace and security and the Environment Outlook, among others makes it very relevant to pastoral rangeland management.

- **The EAC Livestock Policy, 2016**

The Policy recognizes the significant role of livestock in economic development, contributing between 30% and 50% of the agricultural GDP and accounting for between 10% and 15% of the national GDP. In terms of livelihoods in smallholder and pastoral households, the Policy observes that livestock accounts for up to 68% and 75% for male and female-headed households respectively. It is significantly influenced by the regional and international development processes and is closely linked to other EAC initiatives such as the EAC Agricultural and Rural Development Strategy (2005 - 2030), the EAC Food Security Action Plan (2011 - 2015) and the African Union Policy Framework for Pastoralism, among others. The Policy aims to transform the EAC livestock subsector into a vibrant livestock industry contributing significantly to improved living standards of citizens, economic growth and sustainable natural resources management.

All said and done, the Policy is relevant to sustainable rangeland management through its conservation development objective that is desirous to reduce loss of biodiversity, reduce degradation of grazing pastures, water resources and conflicts over natural resources. It thus serves as a motivational source for member states to strengthen their cooperation in

realizing the region's development aspirations. Furthermore, all its four policy objective pillars relate to rangeland management, namely: a) Securing access to basic production inputs and security to stimulate productive use of livestock assets; b) Building resilience to risks and shocks to secure livestock assets; c) Enhancing growth in livestock productivity and competitiveness for livelihood benefits, and; d) Sustaining growth in livestock productivity and competitiveness adaptable to dynamics in the livestock value chains.

- **The IGAD Regional Climate Change Strategy (IRCCS), 2016**

The IRCCS highlights Climate Change as having the potential to multiply existing threats to human security including food, water, health and economic insecurity in the Horn of Africa. It sets out to develop, and strengthen resilience and adaptive capacity of the IGAD region to Climate Change and extreme weather events through the promotion of integrated and sustainable development across a wide-range of sectors of the economy and society.

The Strategy outlines nine principles to strengthen resilience and adaptive capacity of the IGAD region to Climate Change and extreme weather events. Its overarching priority intervention areas, namely: 1) Agriculture, livestock and fisheries; 4) Water resources for irrigation and domestic consumption); 6) Climate Change, forest Resources, wetlands and biodiversity; 7B) Arid and Semi-Arid Lands (ASALs), and; 8) Cross-Issues sectors) make it influential in sustainable rangeland management.

- **The IGAD Environment and Natural Resources Strategy, 2007**

The Strategy provides a comprehensive and coherent framework aimed at guiding IGAD programmes in the area of environment and natural resources. The overall goal of the Strategy is to assist and complement the efforts of the Member States in environment and natural resources management. The framework is significantly influenced by the regional and international development processes and is closely linked to other IGAD strategies and processes, such as - those of food security, gender, peace and security and the Environment Outlook, among others. It serves as a motivational source for member states to strengthen their cooperation in realizing the region's development aspirations.

All its four strategic objectives and outcomes are relevant to rangeland management in the region. The strategic objectives are to:

- i. Improve the framework for environmental and natural resources governance in the IGAD region;
- ii. Develop information required for sound environmental and natural resources management and make it readily available;
- iii. Enhance capacity of Member States for improved environmental and natural resources management, and;
- iv. Enhance the capability for environmental and natural resources research and development in the region.
- v. Though global, continental and regional frameworks provide entry points for engaging governments on development planning and action in pastoral areas, they have no political institutional framework for implementing policies. At best, the policies they formulate constitute international soft law, articulating general consensus among states on what needs to be done, while leaving it to the member states to take steps at national level to

operationalize them by translating them into binding national policies, laws, strategies and plans. Moreover, at global, continental and regional levels, policy development is not done in a systematic manner. Policy priorities are informed by political consensus and in some cases by what donors are funding at any given moment. These frameworks are therefore ineffective and achieving positive results from them is more of an illusion.

2.1.4 IGAD Member States' Legislations, Policies, Strategies, Regulations and Guidelines

2.1.4.1 Uganda

(a) The Constitution and Strategic Development Frameworks

The Constitution of Uganda, 1995 has a number of clauses that are relevant to rangeland management. For instance, National Objective XIII compels the State to protect important natural resources, including land, water, wetlands, minerals, oil, fauna and flora on behalf of the people of Uganda. Furthermore, Objective XXVII is emphatic on environmental preservation and sustainable development. While Article 237, vests land in Uganda in the hands of citizens and recognizes customary or communal tenure systems as one of the land tenure systems. To ensure holders secure adequate interest in land, the Constitution provides that holders of customary land should get certificates of ownership of their land. It further gives powers to Government both central and local levels to hold land in trust for the people and protect natural lakes, rivers, wetlands, forest reserves, game reserves, national parks and any land to be reserved for ecological and touristic purposes for the common good of all citizens.

Uganda's Vision 2040 contains the aspirations of Ugandans to operationalize the country's vision, which is "a transformed Ugandan society from a peasant to a modern and prosperous country within 30 years". The Vision targets related to rangeland management include, increasing the per capita income to US\$ 9,500 and reducing population below the poverty line to 5%. The Vision contributes to pastoral rangeland management by addressing the national aspirations of: having unity in diversity and equal opportunities irrespective of gender, tribe, ethnicity or religion; having progressive and developmental culture that blends traditional beliefs and national values; a future in which men, women, youth, children, and persons with disabilities are empowered to participate as equal partners in development, and; desire for a green economy and clean environment where the ecosystem is sustainably managed and the live ability of the urban systems greatly improved.

The National Development Plan (NDP III), 2020/21 - 2024/25 aims at increasing household incomes and improve the quality of life of Ugandans. The NDP III adopted a programmatic approach to service delivery and ensures synergies between sectors in order to deliver the development aspirations articulated in Vision 2040. NDP III is relevant to rangeland management since it is expected to be achieved through resource-led industrialization and is emphatic on increasing commercialization and competitiveness of agricultural production through agro-processing. It is also intended to stop and reverse the degradation of water resources, environment, and natural resources, as well as the effects of Climate Change on economic growth and livelihood security.

(b) Land, Environment and Natural Resources

The National Environment Act, 2019 is the legal framework for the management of the

environment and natural resources in Uganda. The Act also provides for emerging environmental issues, including Climate Change, the management of hazardous chemicals, plastics and plastic products, and strategic environmental assessment.

The Forestry and Tree Planting Act, 2003 aims at conserving Uganda's rich forest biodiversity to meet the needs and aspirations of present and future generations. The Act emphasizes watershed management and soil and water conservation, all of which contribute to rangeland resilience. It promotes community forestry and addresses the concern of forests on private and government land.

The Uganda Forestry Policy, 2001 recognizes the need for wider rangeland types of ownership, access and management of forest resources. The Policy also promotes commercial forestry, collaborative forest management, farm forestry, forest biodiversity conservation, and supply of tree seed and planting material; all of which relate to sustainable rangeland management.

The Water Act, 1997 (Cap. 152) provides for the rational use, protection and management of water resources and supply. It provides for control of pollution and promotion of safe storage, treatment, discharge and disposal of waste, which may pollute water or otherwise harm the environment and human health.

The Uganda Wildlife Policy, 1999 aims at promoting the long term conservation of the country's wildlife and biodiversity in a cost effective manner, which maximizes the benefits to the people of Uganda.

The National Water Policy, 1999 gives an integrated approach to manage Uganda's water resources in ways that are sustainable and most beneficial to the people.

The National Environment Management Policy, 1995 endeavors to integrate environmental concerns in all development activities and to promote positive attitudes and behavioral change in natural resource use.

The National Policy for the Conservation and Management of Wetland Resources, 1995 aims at promoting sustainable use of wetland resources and ensuring that the vital functions are preserved.

(c) Pastoralism and Range Management

The draft Rangeland Management and Pastoralism Policy (RMPP) offers a framework for sustainable management of range resources in Uganda. It recognizes the role of traditional systems in rangeland management and proposes interventions to strengthen both formal and traditional rangeland management systems to ensure sustainable use by both the present and future generations.

The Prohibition of Burning of Grass Decree, Decree No. 5 of 1974 prohibits the unauthorized burning of grass. Prescribed burning can restore rangeland healthy; improve rangeland uses, such as grazing and livestock production.

The Cattle Grazing Act, 1964 (Cap. 223) makes provisions for the control and regulation of grazing of cattle, to prevent overstocking and overgrazing. Controlled grazing can

improve pasture condition, increase carrying capacity, assist with drought planning, improve animal performance, and overall ecosystem health.

(d) Extension Services

The National Agricultural Extension Policy, 2016 envisions “Prosperous farmers and other agricultural actors for socio-economic transformation and welfare of the population”. Achievement of this is anchored on four strategic objectives. These are to: (i) establish a well-coordinated, harmonized pluralistic agricultural extension delivery system for increased efficiency and effectiveness; (ii) build institutional capacity for effective delivery of agricultural extension services; (iii) develop a sustainable mechanism for packaging and disseminating appropriate technologies to all categories of beneficiaries in the agricultural sector; and (iv) to empower farmers and other value chain actors to effectively participate in agricultural extension processes and build their capacity to demand for services.

The National Agricultural Advisory Services (NAADS) Act, 2001 aims at developing a demand driven, client oriented and farmer led agricultural service delivery system particularly targeting the poor and women. It is envisioned to be a decentralized, farmer owned and private sector serviced extension system contributing to the realization of the agricultural sector objectives. This vision was expected to be achieved through the pursuit of its mission; increased farmer access to information, knowledge and technology through effective, efficient, sustainable and decentralized extension services with increasing private sector involvement in line with government policy.

(e) Livestock Production and Development

The National Agriculture Policy, 2011 aims at promoting food, nutrition security and household incomes through coordinated interventions that focus on enhancing sustainable agricultural productivity and value addition, providing employment opportunities and promoting domestic and international trade. It commits to support sustainable development, use and management of water, soil and land resources for agriculture to boost production and value addition.

The Animal Feeds Policy, 2005 aims at stimulating increased feed production, ensuring quality animal feeds on the market, reducing production costs and building capacity among private and public sector actors for the development of the animal feeds industry. It is cognizant of environmental degradation and commits to address environmental degradation during production, marketing and use of feeds.

The Animal Breeding Act, 2001 provides for the promotion, regulation, control, marketing, import, export and quality assurance of animal and fish genetic materials in Uganda. Breeding for improved efficiency of animals leads to a reduction in the total number of heads required to meet a given production level and can lead to sustainable utilization of resources including rangelands.

The Dairy Industry Act 2000 provides for the establishment of the Dairy Development Authority; promotion and control of the production, processing and marketing of milk and dairy products and facilitating the development of the dairy industry. It is cognizant of the environmental and sustainability challenges related to use of natural resources and the impacts that are generated as a result of the production of milk and dairy products

and commits to ensure environmental equilibrium.

(f) Climate Change

The National Climate Change Act, 2021 provides a framework for monitoring, reporting and verifying the impact of Climate Change and the implementation of programmes on Climate Change; enhancing the ability to adapt to the adverse impacts of Climate Change, building climate resilience and developing a mechanism for enhancing low greenhouse gas emissions.

Uganda's Intended Nationally Determined Contribution (INDC), 2015 highlights adaptation as Uganda's priority since the livelihood of the people of Uganda is highly dependent on the exploitation of her natural resources. It commits government to scale-up Sustainable Land Management (SLM), continue to work on reducing vulnerability and addressing adaptation in agriculture and livestock, forestry, infrastructure water, energy, health and disaster risk management.

The Uganda Meteorology Act, 2012 provides for the creation of the Uganda National Meteorological Authority (UNMA) whose interventions prioritize mitigation of social and economic impacts of natural disasters, promotion of the use of meteorological data and information for social and economic activities, promotion and enhancement of the quality of the environment, and monitoring and provision of warnings about adverse weather conditions. The Act is relevant to sustainable rangeland management since it recognizes the need to improve the accuracy and reliability of weather forecasts and advisory services to customers, through the development of climate predictions and short-term weather forecasting capacities.

The Ugandan National Adaptation Program Action (NAPA) Implementation Strategy, 2007 focuses on the enhancement of resilience and identifies nine adaptation priority areas that include community tree growing; land degradation management; strengthening meteorological services; community water and sanitation; water for production; drought adaptation; vectors, pests and disease control; indigenous knowledge and natural resource management; and Climate Change and development planning. Implementation strategies of the NAPA rely on community and ecosystem adaptation in the most vulnerable communities of Uganda and are therefore relevant to sustainable pastoral rangeland management.

(g) Trade, Marketing and Value Addition

The National Trade Policy 2007 aims at developing and nurturing private sector competitiveness and supporting the productive sectors of the economy to trade at both domestic and international levels. It will boost capacities of the socially and economically disadvantaged sections of the community including agro-pastoralists to trade. This has the potential to fuel progress across a broad range of SDGs including protecting, restoring and promoting sustainable use of terrestrial ecosystems.

The National Agriculture Policy 2011 makes provisions for the promotion of domestic, regional and international trade in agriculture, including livestock. This can be achieved by providing support services such as transparent market information and through improving marketing infrastructure such as livestock markets and abattoirs.

The Cattle Traders Act, 1943 (Cap 43) provides for the regulation of cattle trading within Uganda. It prohibits anyone to engage in the business of a cattle trader in any area of Uganda unless he or she is in possession of a valid license issued to him or her by a veterinary officer in the prescribed form.

2.1.4.2 Sudan

(a) The Constitution and Strategic Development Frameworks

The Interim National Constitution 2005 under article 32(1) guarantees equal right of men and women to the enjoyment of all civil, political, social, cultural and economic rights including combatting harmful customs and traditions that undermine the dignity and the status of women. The Constitution is relevant to rangeland management through article 11 that guarantees people the right to a clean and diverse environment with both the State and the citizens having the duty to preserve and promote the country's biodiversity.

The Sudan Poverty Reduction Strategy Paper (PRSP) for the period 2021-2023 proposes many strategies for responding to the development needs of Sudan's poor populations that serve as entry points for sustainable rangeland management.

The Sudan country strategic plan (2019-2023) proposes four interlinked strategic outcomes aimed at improving Sudan's capacity to reduce hunger and malnutrition while contributing to the Sustainable Development Goals for poverty, education, gender equality, climate action and peace building. It is cognizant of challenges faced by Sudan, which among others include increased climate variability, environmental degradation and poor natural resource management. The recognition of environmental degradation, poor natural resource management and outlining interventions to achieve sustainable food systems makes the strategy more responsive to sustainable rangeland management.

The Twenty-Five-Year National Strategy (2007-2031) that envisions to continue building a progressive nation by the advent of the year 2031 in all aspects of political, economic, social and cultural life. The strategy proposes adoption of a modernization path to attain decent life embossed with self-satisfaction, welfare, security, advancement and progress of the different communities.

(b) Land, Environment and Natural Resources

The government of Sudan has developed a number of policy and legal frameworks that promote environmental and natural resources protection. These among others include:

The Forests and Renewable Natural Resources Act, 2002, that provides the framework for the management and protection of forests and renewable natural resources encompassing pasture and range.

The Environmental Protection Act 2001 aims at protecting the environment, its purity, natural balance and to preserve its components of the basic elements, its social and cultural systems to lead to safety and sustainable development in the interest of the coming generations. Through its dedication towards raising environmental awareness and popular participation in decision-making process and setting policies, it becomes instrumental in promoting pastoral resilience and sustainable rangeland management.

Water Resources Act 1995 aims at reforming the organization of the Nile and Non-Nilotic surface waters as well as the groundwater and establishes the National Council for Water Resources (NCWR) to rationalize the management and use of water resources to mitigate the effects of natural disasters. It is thus seen as a panacea for rangelands that are majorly water stressed.

(c) Pastoralism and Range Management

The Rangelands and Forage Resources Development (Rationalisation) Act of 2015 aims at addressing the ravages that have a negative impact on pasture quality and quantity (such as fires, deforestation, overgrazing and expansion of unplanned agriculture), and increasing coordination between bodies concerned with natural resources. The Act provides for the specification, development and protection of routes to facilitate the movement of animals between the grazing sites and water resources. Local Orders and Local Acts have been passed in different states to give effect to the Act and ensure its effective implementation. These among others include: rangeland registrations, ranches' approval, water points administration, protection of rangelands from natural fire, inspection of hema system, cultivation inside rangeland and fees for rangeland utilization.

The Draft Agriculture and Animal Producers' Legislative Act 2010 is to repeal the Organizations of Farmers and Pastoralists Act of 1992. This will eliminate traditional representation of pastoralists and replace it with a new system that supports government policies of pastoral land alienation for agricultural production and extractive activities. It will thus negatively impact on pastoralism if implemented.

The National Action Plan for the Implementation of the Great Green Wall for the Sahel and Sahara Initiative has identified 5 strategic interventions areas that impact on pastoral rangeland management: (i) Restoration of degraded lands; (ii) Forest and rangeland sustainable management; (iii) Support to livelihoods and resilience of local communities; (iv) Capacity development through research, knowledge management and dissemination of best practices; and (v) Implementation and monitoring framework.

The Organisation of Farmers and Pastoralists Act 1992 aimed to establish institutional structures to organise nomads and farmers and to assist in the implementation of government programmes for rural development.

(d) Extension Services

The Sudanese government attaches great importance to extension services, thus making services almost entirely public. It has a number of frameworks relevant to extension which among others include:

The Veterinary Council Act of 1995 aims at establishing in Khartoum the veterinary Council with the following main tasks (i) organize, regulate, supervise, promote and control the veterinary profession; (ii) set standards for the recognition of the qualifications for veterinarians; (iii) set regulations that define duties and obligations of veterinarians; (iv) specify qualifications for enrollment in its registers; and (v) implement the code of ethics and investigate contraventions committed against the professional or public conduct when incompatible with the professional conduct, and take the appropriate measures.

(e) Livestock Production and Development

The Agricultural Revival Programme (ARP) 2008 is emphatic on strengthening commercialisation of the traditional farming sub-sector and provides a framework for driving Sudan's agricultural growth and development. It targets to protect natural resources through the development of forests, pastures and rangelands and re-establishment of the vegetative cover. It further targets to control degradation of resources, conserve genetic resources, enhance livelihoods of low income groups, alleviate poverty at household and community levels and increase their resilience under an environment of Climate Change.

The Ordinance of the Council of Ministers No. 4 of 2007 establishing the General Authority for Veterinary Supply deals with the establishment of the General Authority and defines its objectives and competencies, in particular to provide, import, process, store and deliver veterinary supply; to define the quality and quantity of veterinary supply; to establish public and popular veterinary pharmacies; to ratify contracts and agreements; and to coordinate with competent authorities for the establishment of veterinary industries and laboratories.

The Quarantine Law No. 18 of 1974 aims to lay down regulations and rules for the management of the quarantine. It specifies diseases which shall be subjected to quarantine and provides for among others sanitary regulation in ports; protection against marine pollution; measures and procedures against polluted ships or planes and issuance of certificates.

The Federal Meat Inspection Act of 1974 aims at providing rules for veterinary inspection of food animals belonging to livestock; swine; poultry; and fish. The Act establishes among others that food animals can be slaughtered in the abattoirs or any other place permitted by the competent authority; before slaughtering, food animals have to be prepared, hygienically inspected and stamped by the Government stamp inside the abattoir; and no transportation and sale of meat of food animals before conducting veterinary inspection.

The Animal Diseases (Free Zone) Act, 1973 aims at establishing an Animal Disease Free Zone with the goal of eradicating contagious animal diseases, zoonotic and other diseases that endanger the human life. It has established a Technical Committee, including the representation of Herders Association, with the following main tasks (i) technically study and submit proposals for eradication of the various animal diseases; (ii) establish the priority of diseases to be eradicated; and (iii) study the most efficient mean to meet the requirements of the states importing Sudanese cattle and meat.

(f) Climate Change

The NDC, 2021 outlines the country's commitment to pursue a low emissions and resilient sustainable development in the energy, forestry, land-use, and waste sectors. It also identifies agriculture as a key adaptation priority and proposes scaling-up more efficient irrigation systems powered by renewable energy.

The NAPA, 2007 recognizes that Climate Change represents a serious sustainable development problem that affects Sudan's citizens who are spread across many vulnerable communities. It offers an effective basis for urgent and immediate action to reduce the mounting risks of Climate Change on the nation's most vulnerable communities. It prioritizes rangeland management and rehabilitation of tree/shrub rangelands thus being

truly sensitive to sustainable rangeland management.

(g) Trade, Marketing and Value Addition

The Law No. 35 of 2004 on Veterinary Quarantine for Import and Export of Live Animals and Meat aims at establishing health conditions for trading in live animals and meat in Sudan.

The Animal Skin Act of 1954 aims at regulating the animals' skin trade in Sudan. Art.5 permits to buy cowhide or any other skin for the purpose of (i) selling it again or (ii) exporting it only if in possession of a license that entitles him, in the first case, to buy, sell, process, or otherwise trade in those skins inside Sudan, and, in the second case, to buy and export them from Sudan, provided that the license includes all the aforementioned purposes. Allowing trade in animal skins increase income to livestock keep, majority of whom are pastoralists.

2.1.4.3 South Sudan

(a) The Constitution and Strategic Development Frameworks

The Transitional Constitution of the Republic of South Sudan (RSS) 2011 under Article 5 recognizes written law; customs and traditions of the people; the will of the people; and any other relevant sources as part of legislation. It urges all levels of government to institute a process of progressively developing and amending the relevant laws to incorporate customary rights and practices and local heritage.

South Sudan Vision 2040 is to transform the country into an economic powerhouse in which all members of the society play their honest part in the "baking" and sharing of the national cake. This vision will be achieved through the creation of a diversified economy driven by agriculture, industry, mining, manufacturing, tourism and services. The vision recognizes disaster preparedness and management as a critical component of national development. It commits that by 2040, relevant institutions and procedures will be in place to anticipate, prevent and manage the consequences of natural and manmade disasters.

South Sudan National Development Strategy 2018 - 2021 guides government in investing in areas such as agriculture and livestock, petroleum, security sector reform, and basic services that will consolidate peace and stabilize the economy. The strategy will be delivered through six interconnected priority strategic actions (i) create enabling conditions for and facilitate the voluntary return and integration of displaced South Sudanese; (ii) develop appropriate laws and enforce the rule of law; (iii) ensure secure access to adequate and nutritious food; (iv) silence the guns by facilitating a permanent cessation of hostilities; (v) restore and expand the provision of basic services; and (vi) restore and maintain basic transport infrastructure such as roads and bridges. All the six strategic actions are critical ingredients for sustainable rangeland management.

(b) Land, Environment and Natural Resources

The National Environment Policy 2012 acknowledges that the escalating degradation of the rangelands from overgrazing and overstocking calls for adoption of integrated range management practices to promote the sustainable management of pastures and rangelands. It proposes development of programmes for improving livestock production based on consideration of the specific climates, terrains, and ecosystems particularly

in relation to seasonal grazing patterns and the quantity of available water. It suggests rotational grazing of livestock populations on the rangelands in order to reduce the risks of soil compaction. It further calls for the strengthening of local communities' role in environmental management. These include the establishment of community based organizations which are expected to play a pivotal role in advocacy on sustainable management of natural resources through mobilizing and sensitizing local people; supporting local group participation in management; and ensuring that the concerns of the underprivileged are integrated in to the national development plans.

The Water Policy 2007 provides for optimal allocation of available water resources in Southern Sudan on an equitable and sustainable basis. The policy commits to build capacities in different areas such as water resource assessment and monitoring, research and development of appropriate technologies, disaster management, environmental protection and trans-boundary co-operation.

(c) Pastoralism and Range Management

The South Sudan Country Programming Paper 2019-2024 recognizes the role of rangelands to society for the goods and ecological services they provide. It calls for promotion of conservation and sustainable rangeland management for the benefit of current societies and for future generations.

The National Environment Policy 2012 provides for adoption of integrated range management practices to promote the sustainable management of pastures and rangelands.

(d) Extension Services

The National Agriculture and Livestock Extension Policy (NALEP), 2011 is cognizant of deforestation and environmental degradation among key factors contributing to poor performance of the Agriculture and Livestock Sectors in the South Sudan. The policy is envisioned to enhance clientele access to demand-driven, decentralized pluralistic and farmer led extension system. Its objective is to guide the establishment and implementation of a pluralistic extension system which will be instrumental in achieving national agricultural and livestock goals, through developing and improving the efficiency of sustainable agriculture, livestock, water, forestry and rangeland resource sub-sector activities based on sound environmental practices.

The Government of South Sudan Growth Strategy 2010 - 2012 acknowledges that unless farmers, pastoralists and fisher folk are able to market their produce, they will have little incentive to invest in or adopt new technologies to increase production. It commits to support agriculture and livestock extension and research to strengthen the agriculture and livestock value chain and food security in the country.

(e) Livestock Resources and Development

The Draft National Livestock Development Policy has indicated the rights of pastoralists to access, manage and use communal rangelands in the traditional grazing areas within the country. There are however no clear rangeland entitlements and responsibilities.

The Comprehensive Agriculture Master Plan (CAMP) 2017 is South Sudan's investment plan

covering five sub-sectors (crops, livestock, fishery, forestry and institutional development) that guides all stakeholders in the country towards effective and efficient agricultural development.

The Ministry of Animal Resources and Fisheries Policy Framework and Strategic Plans 2012 -2016 requires the ministry to promote best animal husbandry practices to reduce environmental degradation; and promote sustainable management of rangelands and pastures through integrated range management practices. Some of the Strategic objectives include improve utilization and conservation of rangelands and water resources by mapping livestock migratory routes and grazing areas, and establishing of water catchments.

The National Agriculture and Livestock Extension Policy (NALEP), 2011 aims to guide the establishment and implementation of a pluralistic extension system which will be instrumental in achieving national agricultural and livestock goals, through developing and improving the efficiency of sustainable agriculture, livestock, water, forestry and rangeland resource sub-sector activities based on sound environmental practices.

(f) Climate Change

The South Sudan's Second Nationally Determined Contribution, 2021 reiterates its commitment to the Paris Agreement goal of limiting global temperature rise to well below 2 degrees Celsius above pre-industrial levels, while making efforts to limit the increase to 1.5 degrees Celsius. It details how South Sudan has significantly increased its climate ambition of reducing emissions across its sectors by 109.87 million tonnes of carbon dioxide equivalent while sequestering an additional 45.06 million tonnes by 2030. It outlines its National Adaptation Programme of Action, and the development of other climate-related sectoral plans and policies.

The Republic of South Sudan's National Adaptation Programme of Actions (NAPA) to Climate Change, 2016 aims at reducing the vulnerability of communities, reducing food insecurity, fostering inclusive and pro-poor growth. This will be achieved through supporting five thematic areas: (i) Environment; (ii) Water Resources; (iii) Agriculture; (iv) Disaster Risk Reduction; and (v) Policy and Institutional Framework. It identifies promotion of reforestation of degraded landscapes/watersheds using multi-use forest species to increase community safety-nets and diversify livelihoods that are fundamental in sustainable range management.

(g) Trade, Marketing and Value Addition

The draft trade policy identifies six priority areas of interventions to achieve its vision of a 'globally competitive South Sudan economy led by exports with an efficient domestic market': (i) Facilitate trade and promote markets; (ii) Integrate into the global economy and enhance South Sudan's access to export markets; (iii) Enhance South Sudan's business environment for South Sudanese firms to increase exports; (iv) Improve trade-related infrastructure; (v) Build domestic trade; and (vi) Leverage international resources for the creation of South Sudan's diversified export base. The policy also acknowledges that comprehensive reforms in almost all aspects of economic life are necessary, as is in-depth technical knowledge and implementation.

The Regulation of Imports and Exports Act, 2012 recognizes livestock as among goods

that can be exported out of South Sudan. In addition to generating foreign exchange, livestock can also create opportunities for value addition and industrialization; stimulate smallholder entrepreneurship, close inequality gaps; promote sustainable consumption and production patterns; increase the resilience of households to climate shocks; and bring together multiple stakeholders to achieve sustainable development (FAO, 2018).

The Investment Promotion Act, 2009 provides for the promotion and facilitation of investment in Southern Sudan and the creation of the Southern Sudan Investment Authority. The Act promotes sustainable and more efficient use of natural resources. It is thus relevant to sustainable rangeland management and contributes to making ecosystems more resilient to shock.

2.1.4.4 Somalia

(a) The Constitution and Strategic Development Frameworks

The Federal Republic of Somalia Provisional Constitution (2012) provides for equality of citizens before the law regardless of sex, religion, social or economic status, political opinion, clan, disability, occupation, birth or dialect. Article 21 provides the right to freedom of movement, freedom to choose their residence, and freedom to leave the country. Article 25, guarantees citizens a share of the natural resources of the country and compels the state to protect the environment from pollution and harmful materials. The constitution under article 27 also provides for a right to clean potable water, a critical ingredient for sustainable rangeland management.

The Somalia National Development Plan 2020 - 2024 (NDP9) recognizes that poverty in Somalia is exacerbated by climate emergencies and aims to increase the country's resilience to adverse effects of Climate Change, enhance water security and boost production. It identifies Livestock Sector as one of the high-growth sectors to transform Somalia. It acknowledges that livestock widely reared, on the traditional pastoral or agro-pastoral grazing system, puts a major strain on limited natural resources, such as rangeland and water. In particular, it commits to modernize traditional systems of production to build resilience and proposes among others to improving the natural rangelands resource base to sustain the production and productivity of livestock.

The National Investment Promotion Strategy (NIPS), 2022 is envisioned to position Somalia as the most preferred investment destination in Africa. The NIPS consents that meeting the SDGs, will be achieved by investment and identifies Livestock Sector as one of the investment priority sectors to move towards an enterprise driven development.

(b) Land, Environment and Natural Resources

The NDP-9 proposes to improve land tenure management to deal with grazing rights, the fast-expanding private enclosures on previously communal rangelands, and commercial crop- and grasses-producing areas.

The Federal Republic of Somalia Provisional Constitution (2012) recognizes land as Somalia's primary resource and the basis of the people's livelihood and provides that it shall be held, used and managed in an equitable, efficient, productive and sustainable manner. The constitution charges all people in the Federal Republic to safeguard the environment and

participate in the development, management, conservation and protection of the natural resources and environment. It empowers the Federal Government and the governments of the Federal Member States to take necessary measures to reverse desertification, deforestation and environmental degradation, and to conserve the environment and prevent activities that damage the natural resources and environment.

(c) Pastoralism and Range Management

The NDP-9 proposes among others to improving the natural rangelands resource base to sustain the production and productivity of livestock, in parallel with improving livestock productivity and value addition; and re-establishing the National Rangeland Agency and enforcing pre-war and/or more recent policies and laws (alongside the traditional systems) to rehabilitate and manage the rangelands.

The Customary law, (Xeer), is adapted for administering, managing and regulating common property such as pasture, grazing land, forests and water. The elder's court of the clan constitutes the source of Xeer and has the role of the supreme guardian.

(d) Livestock Resources and Development

The Draft Livestock Sector Development Strategy is to ensure that the livestock sector makes sustainable contributions to food security, poverty alleviation, an improved status of women and environmental protection, through activities that support economic growth. It proposes to increase off-take of live animals and of animal products from the national herds and flocks, and raise producer incomes through more rational use of indigenous farm animal genetic resources, feed resources and more secure land tenure arrangements.

The National Veterinary Law Code 2016 empowers the Ministry of Livestock, Forestry and Range (MoLFR) to assure the health of the national herd for purposes of promoting animal welfare, animal and human health. It provides for the creation of a National Veterinary Board, to among other things regulate the veterinary profession and veterinary drugs.

(e) Extension Services

NDP-9 recognizes limited availability of high quality veterinary services following the civil war as a key challenge to livestock development. It acknowledges the private sector and livestock professional associations (LPAs), funded by development partners, for playing a critical role in provision of veterinary services. It proposes to support research and extension to increase productivity.

(f) Climate Change

The Nationally Determined Contribution (NDC), 2021 recognizes Climate Change as having exacerbated Somalia's precarious situation affecting all aspects of the economy, especially the agro-pastoral livelihoods that are Somalia's backbone. It sets out a target of 30% GHG emission reduction by 2030 compared to its Business-As-Usual (BAU) projection of 107.4 MtCO₂e, which amounts to a 32.2 MtCO₂e reduction. The NDC proposes many adaptation actions with agriculture and food security; water resources management; and forestry and environment as among key priority adaptation sectors.

The National Adaptation Programme of Action on Climate Change (NAPA), 2013 identifies urgent and immediate Climate Change adaptation needs of the most vulnerable

groups and provides the starting point from which Climate Change adaptation can be mainstreamed into development plans as a key strategy for attaining sustainable development and poverty reduction. It set out 8 key activities related to rangelands: (i) Land management with emphasis on preventing deforestation, planting new trees, establishing regulations for rotational grazing, protection and supervision of grazing areas.; (ii) Provision of veterinary services by the government, ensuring access to remote rural areas and establishing diagnostic labs; (iii) Support pastoralists in becoming agro-pastoralists or livestock farmers, whereby their livelihoods are diversified; (iv) Control the export of female livestock due to the negative impacts on the sector; (v) Cultivation of drought resistant fodder crops; (vi) Enhance livestock-based livelihoods through support to small-scale industries (hides, tanning, milk) and training in marketing of animal products ; (vii) Provide funding and mechanism for research into animal health; and (viii) Establishment of livestock associations, cooperatives and support to local NGOs working in the sector

(g) Trade, Marketing and Value Addition

Livestock trade is vital to Somali pastoralists and is a main source of revenue for Somalia. Frameworks have therefore been developed to steer livestock trade and spur economic development and these among others include:

The Vet Law Code, 2016 provides the necessary legal and technical environment to ensure effective prevention and control of animal diseases, including trans-boundary animal diseases. It is committed to ensuring meat hygiene and mandates the veterinary directorate to license control and regulate slaughterhouses and premises where meat is processed for human consumption, including the maintenance of technical, sanitary and hygiene standards.

The code conforms to current technology and also international trade regulations such as those of the World Organization for Animal Health (Office International des Epizooties - OIE) and the Sanitary and Phyto-Sanitary (SPS) agreements of World Trade Organization. It thus contributes greatly to international trade and export/import relations with the trading partners. International trade is essential for Somalia's recovery, economic development, poverty reduction and can promote efficiency, knowledge diffusion, technological progress and inclusive growth (WB, 2020).

The National Livestock Policy (2006 - 2016) aims at improving the livestock industry in order to increase incomes of the livestock producers, enhance food production of animal origin and increase the contribution of the livestock sector to the national economy in general. It is cognizant of Range degradation, improper range and land use as major natural constraints to the growth of the livestock industry and commits to reverse this trend.

2.1.4.5 Kenya

(a) The Constitution and Strategic Development Frameworks

The Kenya Constitution 2010 guarantees citizens equality before the law and equal protection and benefit. Article 60 provides for sustainable and productive management of land resources; encouragement of communities to settle land disputes through recognized local community initiatives; sound conservation and protection of ecologically sensitive areas. The constitution also classifies land as public, community or private land (art. 61).

It vests Community land in communities identified on the basis of ethnicity, culture or similar community of interest.

The Kenya Vision 2030 aims to transform Kenya into an industrialized, middle-income country providing high quality of life to all its citizens by 2030 in a clean and secure environment. The Vision highlights agriculture as one of the six key sectors to move the Economy up the Value Chain. It proposes to promote an innovative, commercially-oriented, and modern agricultural sector through: (i) transforming key institutions in agriculture and livestock to promote agricultural growth; (ii) increasing productivity of crops and livestock; (iii) introducing land use policies for better utilization of high and medium potential lands; (iv) developing more irrigable areas in arid and semi-arid lands for both crops and livestock; and (v) improving market access for smallholders through better supply chain management.

The Draft Fourth Medium Term Plan is prepared against the backdrop of among other challenges, negative effects of Covid-19 pandemic and intends to implement economic recovery strategies to re-position the economy on a steady and sustainable growth trajectory. It strives to strengthen the country's economic sector and create employment opportunities, reduce poverty and create a conducive environment for investment.

(b) Land, Environment and Natural Resources

The Kenya Vision 2030 aims at making Kenya a nation that has a clean, secure and sustainable environment by 2030. This will be achieved through: (i) promoting environmental conservation to better support the economic pillar's aspirations; (ii) improving pollution and waste management through the application of the right economic incentives; (iii) commissioning of public-private partnerships (PPPs) for improved efficiency in water and sanitation delivery; (iv) enhancing disaster preparedness in all disaster-prone areas and improving the capacity for adaptation to global Climatic Change.

The Sessional Paper No.01 of 2021 on National Water Policy recognizes water as a social and economic good, critical for sustainable development of Kenya. It acknowledges the decreasing trend in water availability due to increasing population, expanding economic activities and increasing degradation of catchment areas, most of which are in rangelands. It proposes several actions through which Kenya can reengineer the water sector and achieve sustainable development in consonance with the SDGs.

The National Land Use Policy (Sessional Paper, No.1 of 2017) provides legal, administrative, institutional and technological framework for optimal utilization and productivity of land and land related resources in a sustainable and desirable manner. It addresses the problem of rangelands degradation, secures pastoralists' livelihoods and tenure to land through multi-faceted approaches that support conservation, environmental management and sustainable production in the utilization of land resources in Kenya.

The Community Land Act No.7 of 2016 provides for the recognition, protection and registration of community land rights; management and administration of community land. It vests ownership of community land in the community. The Act establishes a Community Land Management Committee elected by a community assembly consisting of all adult members of the community to among others coordinate the development of community land use plans in collaboration with the relevant authorities and prescribe rules/regulations, to govern the operations of the community.

The National Environment Policy, 2013 recognizes the significant role of sound environmental management in providing a wide variety of goods and services and commits to promote conservation and sustainable utilization of natural resources for sustainable development. It outlines several objectives to achieve sustainable management in order to guarantee better quality of life for present and future generations. These among others include (i) strengthen the legal and institutional framework for effective coordination and management of the environment and natural resources; and (ii) ensure sustainable management of the environment and natural resources, such as unique terrestrial and aquatic ecosystems (including rangelands), for national economic growth and improved livelihoods.

The Land Act 2012 (No.6 of 2012) provides for the sustainable administration and management of land and land based resources. The Act specifies the forms of land tenure as: (i) freehold; (ii) leasehold; (iii) customary and such forms of partial interest e.g. easements. It further defines customary land as private land on which one or more members of the family have customary rights of ownership.

The National Land Policy (Sessional Paper No.3 of 2009) defines the key measures required to address the critical issues of land administration, access to land, land use planning, restitution of historical injustices, environmental degradation, conflicts, unplanned proliferation of informal urban settlements, outdated legal framework, institutional framework and information management. It recognizes customary rights to land and provides for a benefit sharing mechanism between government and community if natural resources (exploitable) fall under community land. In order to secure pastoralists' livelihoods and tenure to land, it compels government to (par 183): (i) recognize pastoralism as a legitimate land use and production system; (ii) establish suitable methods for defining and registering land rights in pastoral areas while allowing pastoralists to maintain their unique land systems and livelihoods; (iii) establish a legislative framework to regulate transactions in land in pastoral areas; (iv) ensure that the rights of women in pastoral areas are recognized and protected; (iv) provide for flexible and negotiated cross boundary access to protected areas, water, pastures and salt licks among different stakeholders for mutual benefit; and (v) ensure that all land uses and practices under pastoral tenure conform to the principles of sustainable resource management.

The Environmental Management and Coordination Act (EMCA) (No 8 of 1999) is cognizant that environment constitutes the foundation of national economic, social, cultural and spiritual advancement. It provides for the establishment of an appropriate legal and institutional framework for the management of the environment. It charges various sector institutions (wildlife, water forestry, livestock, agriculture, and mining) with the responsibilities of enforcement.

Other frameworks among others include (i) *The National Wildlife Conservation and Management Policy 2017* that includes wildlife conservation and management on private and community Lands; (ii) *The Forest Conservation and Management Act (No.34 of 2016)*, that establishes the Kenya Forest Service to conserve, protect and manage all public forests including dryland forests; (iii) *The Forest Policy, 2014* which requires the Government to promote sustainable management of dryland forests; and (iv) *The Wildlife Conservation and Management Act, (No.47 of 2013)* that provides for the protection, conservation, sustainable use and management of wildlife in Kenya.

(c) Pastoralism and Range Management

Frameworks that relate to Pastoralism and Range Management in Kenya include:

The constitution Article 42 recognizes a healthy environment as a right to every person and calls for sustainable exploitation, utilization, management and conservation of the environment and natural resources. The constitution, Article 69 (2) places a duty on every person to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources. The Constitution also provides for the strengthening of traditional institutions of pastoral communities and calls for the protection and promotion of the interests and rights of minorities and marginalized communities who include traditional communities, indigenous communities and pastoralists (art. 260).

The Range Management and Pastoralism Strategy (RMPS) 2021 - 2031 recognizes that more than 80 percent of the Rangelands are located in communal lands and for the communities to utilize their land sustainably; they must have ownership of the land, and be engaged in decisions for sustainable utilization and protection. It further recognizes that investments in rangelands rehabilitation and improvement will greatly contribute to the attainment of food and nutritional security as envisaged in the Constitution of Kenya and the Vision 2030. The strategy proposes the development and adoption of proven technologies for rangeland resource exploitation, management and utilization together with strengthening of governance and management at community level to ensure sustainability in the rangelands.

The Community Land Act No.7 of 2016 provides for establishment of Community Land Management Committees to govern the operations of the community and coordinate the development of community land use plans.

The Sessional Paper No. 08 of 2012 on National Policy for the Sustainable Development of Northern Kenya and other Arid Lands recognizes that pastoralists have traditional systems of governance and have successfully managed climate variability for centuries. It commits to strengthen traditional systems of governance and alternative dispute resolution mechanisms. The Session paper proposes a range of interventions to facilitate and fast-track sustainable development in Northern Kenya and other arid lands by increasing investment and by ensuring that the use of those resources is fully reconciled with the realities of people's lives.

The County Government Act 2012 provides the county governments the powers to function and take responsibilities for the delivery of services within their designated counties including management of environment and natural resources among other responsibilities.

(d) Livestock Resources and Development

The Draft National Livestock Policy, 2019 aims at contributing to food and nutrition security and improved livelihoods while safeguarding the environment. Its specific objectives include improving management of livestock, feed and rangeland resources while promoting social inclusion and environmental resilience.

The Veterinary Policy 2015 provides a roadmap for the development of animal resources in Kenya. It addresses animal health, production, welfare, food safety and trade among other

concerns. The broad objective of the policy is to professionally safeguard animal health and welfare, increase animal production and productivity and promote trade in animals and animal products for sustainable food security, food safety and economic prosperity.

The National Livestock Policy (Sessional Paper No. 2 of 2008 (revised 2014)) guides and controls operations in the livestock sector and industry. It proposes a number of measures to support rangeland management including the county governments to undertake initiatives to increase the feed availability by encouraging appropriate grazing management strategies, fodder and pasture conservation. It calls on both the national and county governments to promote production of irrigated forages and take steps to mitigate the effects of pests and diseases.

(e) Extension Services

The Veterinary Policy 2015 recognizes the role of extension in improving productivity of animals in order to increase farmers' incomes, enhance their standards of living, promote household food security and reduce poverty by maintaining healthy animals. It calls on the national government to provide for appropriate regulatory frameworks for animal resources' extension services with county governments supporting extension services including modern extension delivery channels employing ICT in the animal resource industry. The policy is cognizant of environment, Climate Change and disasters. It calls on the national government to support development of strategies for early warning, preparedness and rapid response to mitigate disasters that affect animals.

The Kenya Agricultural and Livestock Research Act, 2013 provides for the establishment of the Kenya Agricultural and Livestock Research Organization (KALRO); to take leadership roles in the co-ordination of agricultural research activities in Kenya. The Act supports research on appropriate Rangeland management e.g. livestock breeds, Range livestock feeds, pasture/ fodder grass seed varieties for higher productivity in rangelands and other regions.

The National Agricultural Sector Extension Policy (NASEP), 2012 spells out modalities for effective management and organization of agricultural extension in a pluralistic system where both public and private service providers are active participants. Its key objective is 'to empower the extension clientele through sharing information, imparting knowledge and skills, and changing attitudes so that they can efficiently manage their resources for improved quality of livelihoods'. This perfectly resonates with sustainable rangeland management. It recognizes the weaknesses of the past extension systems that were top-down and articulates a clientele participatory and demand-driven extension system that affirms the role of the private sector. It commits government to continue playing an active role in offering extension services in disadvantaged communities through fully subsidized them with the intention of gradually withdrawing and or partially charging for the offered services.

The Constitution Article 186 provides for the county executive committee to manage and coordinate the functions of the county administration and its departments; and perform any other functions as assigned in the Fourth Schedule of the Constitution. These include among others extension services, livestock production, plant and animal disease control.

(f) Climate Change

The Intended Nationally Determined Contribution (INDC), 2021 aims to reduce the country's greenhouse gas (GHG) emissions by 32% by 2030, relative to a business-as-usual scenario of 143 Mt CO₂eq. This includes action in the agricultural sector, informed by the Climate-Smart Agriculture Framework Program. Priority mitigation activities among others include: (i) increasing of renewables in the electricity generation mix of the national grid; (ii) enhancement of energy and resource efficiency across the different sectors; (iii) make progress towards achieving a tree cover of at least 10% of the land area of Kenya; (iv) clean, efficient and sustainable energy technologies to reduce overreliance on fossil and non-sustainable biomass fuels; Low carbon and efficient transportation systems; (v) Climate smart agriculture (CSA) in line with the Kenya CSA Strategy and efficient livestock management; and (vi) Sustainable waste management systems.

The Green Economy Strategy and Implementation Plan 2016 - 2030 is designed to support a globally competitive low carbon development path through promoting economic resilience and resource efficiency, sustainable management of natural resources, development of sustainable infrastructures and providing support for social inclusion. It entails pursuing strategies that create conditions that encourage communities to participate in conservation and management of land based natural resources that also include rangelands.

The Climate Change Act, 2016 provides a framework for enhanced response to Climate Change, giving mechanisms and measures to achieve low carbon development. It calls for public participation when developing strategies, laws and policies related to Climate Change. By providing for public participation, the act contributes to ownership and overall management of resources including rangelands. Von Korff et.al, 2012, argued that public participation is both a prerequisite and an element of good governance and the sustainable management of natural resources. In a similar vein, other authors have associated participation with sustainability (Baylan, 2016) and greater adaptive capacity of social-ecological systems (Pahl-Wostl 2007).

The Kenya National Adaptation Plan 2015-2030 recognizes Climate Change as a cross-cutting sustainable development issue and aims at ensuring an enhanced resilience to Climate Change towards the attainment of Vision 2030 by mainstreaming adaptation across all sectors. It sets out five key objectives that are: (i) Highlight the importance of adaptation and resilience building actions in development; (ii) Integrate Climate Change adaptation into national and county level development planning and budgeting processes; (iii) Enhance the resilience of public and private sector investment in the national transformation, economic and social and pillars of Vision 2030 to climate shocks; (iv) Enhance synergies between adaptation and mitigation actions in order to attain a low carbon climate resilient economy; and (v) Enhance resilience of vulnerable populations to climate shocks through adaptation and disaster risk reduction strategies.

(g) Trade, Marketing and Value Addition

The Dairy Industry (Import and Export) Regulations, 2021 Legal Notice no. 21/2021 aims at providing proper procedure for importing and exporting dairy products; ensuring that dairy produce imports and exports meet relevant standards; protecting the Kenyan dairy industry against unfair trade practices; supporting government effort to guarantee food security and self-sufficiency.

The Draft National Livestock Policy, 2019 provides guidance to national and county governments in the development of the Livestock Industry and takes cognizance of the impact of livestock activities on the environment and other natural resources such as land, water and wildlife/livestock interaction. It recognizes the potential of the ASALs in livestock production and proposes options for the economic exploitation of these areas.

The Veterinary Policy 2015 seeks to ensure that Kenyans benefit from quality health by guaranteeing animal health, welfare and production services. It identifies key challenges facing the animal resource industry and provides direction in addressing each of them. It commits the national government to provide for effective sanitary, phytosanitary and traceability measures and quality assurance at all levels in animal value chains with the county governments enhancing awareness.

The National Trade Policy, 2009 articulates the government's aspiration towards poverty eradication and sustainable economic development through providing opportunity for expanded markets, income generation and distribution, increased employment and competitiveness. The Policy aims to tackle a number of constraints, such as the low value-added component in exported goods, insufficient trade facilitation infrastructure, a lack of medium-and long-term financing for small businesses, and limited trade finance for companies of all sizes in order to spur Kenya's international trade. It is expected to boost inclusive development by supporting sectors that add more value to goods, rather than simply growing or extracting commodities.

The Animal Diseases (Amendment) Rules, 2007 provides for examination of imported animals by the inspecting officer to ascertain the health status for purposes of preventing spread of diseases. The rules thus facilitate trade that serves as an engine for inclusive development including pastoral areas.

The Dairy Industry Act (Cap 336) provides for the improvement and control of the dairy industry and its products. The Act (article 32) stipulates that primary producers who produce milk for sale should register with the Dairy Board giving details of name, postal address, land number, the cattle, equipment, production and disposal of produce.

The Agricultural Produce (Export) Act (Cap 319) provides for the grading and inspection of agricultural produce to be exported. It defines agricultural produce as any article produced or derived from farming operations such as meat or any product thereof, milk products, eggs or margarine or butter substitutes or any that the Minister may declare to be by notice in the Gazette. The act facilitates international trade that can foster inclusive development. In addition, by catering for animals and their products, the act has relevancy to pastoral rangelands that support a good percentage of Kenya's livestock population.

2.1.4.6 Ethiopia

(a) The Constitution and Strategic Development Frameworks

The Federal Democratic Republic of Ethiopia (FDRE) Constitution (1995) article 40(3) stipulates that 'land is common property of the nations, nationalities and peoples of Ethiopia and shall not be subject to sale or other means of exchange and exclusively vests the 'right of ownership of rural land and urban land as well as of all natural resources in the State and the peoples of Ethiopia. The constitution guarantees Ethiopian pastoralists the

right to free land for grazing and cultivation as well as the right not to be displaced from their own lands (art.40(5). Ethiopian farmers and pastoralists have the right to receive fair prices for their products, that would lead to improvement in their conditions of life and to enable them to obtain an equitable share of the national wealth commensurate with their contribution (art 41(8). The constitution (art 43(1&2) also guarantees Ethiopians the right to improved living standards, sustainable development and participation in national development. It compels Government and all Ethiopian citizens to protect the country's natural endowment, historical sites and objects (art. 91(2).

The Ethiopia Ten Year Development Plan (2021-2030) provides strategic directions to maintain sustainable growth and achieve structural transformation, as well as attaining equitable distribution of wealth and shared prosperity over the long-term. It outlines six objectives that can propel Ethiopia into an "African beacon of prosperity". Key among these and related to sustainable rangeland management include (i) Ensuring structural economic transformation by promoting overall productivity, and competitiveness; and (ii) Creating an enabling environment where every citizen would become the owners and beneficiaries of the development endeavour by ensuring the quality and accessibility of basic social services and the provision of infrastructure.

The Ethiopia Country Strategic Plan (2020 - 2025) provides for a gradual expansion and intensification of resilience, livelihood diversification initiatives and the integration of nutrition concerns and gender equality. The plan has five strategic outcomes and these that are closely relevant to sustainable rangeland management include (i) Shock-affected populations in targeted areas and refugees in camps are able to meet their basic food and nutrition needs; (ii) Vulnerable and food-insecure populations in targeted areas have increased resilience to shocks; and (iii) Federal and regional government institutions, the private sector and local non-governmental organizations benefit from capacity strengthening in the areas of early warning and emergency preparedness systems, safety nets programme.

(b) Land, Environment and Natural Resources

Ethiopia has no comprehensive national land policy though national land use policy and national integrated land use plan are speculated to be underway. As a result of the absence of national land policy, land-related issues are found scattered in several other policies, strategies, development programs, agricultural development projects, plans, and proclamations. These include, but not limited to:

The Federal Democratic Republic of Ethiopia (FDRE) Constitution (1995) in addition to the Constitutional provisions for land, compels government to ensure that all Ethiopians live in a clean and healthy environment and calls on Government and citizens to participate in protecting the environment (art. 92(1 &4) the country's natural endowment (art. 91(2).

The Land Administration and Land Use Proclamation No.456/2005 acknowledges the autonomy of regional states in matters of land. The proclamation is progressive in terms of promoting gender equality and codifies use rights for women and men in terms of titles that last 100 years. It (art. 6) provides that the rural land shall be surveyed and the holder given a certificate indicating the size, land-use type and cover, level of fertility and borders and obligations and rights of the holder. By providing for security of tenure and prescribing land use type and obligations, it becomes an important tool for ensuring sustainable rangeland management.

Based on the Proclamation No.456/2005, the Regional States have issued regional land proclamations and implementation rules and regulations. These among others include:

The Rural Land Administration and Proclamation of Ethiopian Somali Region (128/2013) aims at establishing a land administration system and legal framework to defeat the traditional clan-based communal land tenure system as well as to ensure land ownership and user right of women.

The Revised Amhara National Regional State Rural Land Administration and Use Proclamation No. 133/2006 aims at determining and providing the rural land administration and use; to maintain its fertility and to be able to transfer to the next generation by using it properly; to create conducive situation in the region to fully make practical the rights of farmers and semi-pastorals to get and use land freely and not be displaced from it.

The Southern Nations and Nationalities People's Region Rural Land Administration and Use Proclamation No.110/2007 aims at improving management and utilization of land and land resources for agricultural purposes in the Southern Nations, Nationalities And Peoples' Regional State. The Proclamation defines the right to acquire, free of charge, rural land by peasants, pastoralists and semi-pastoralists engaged in agriculture and the equal rights of women with respect to land and provides for the protection of such rights. Among other things, it also provides for rural land registration and certification, obligation of rural land users in respect of proper use and protection of land, land use planning and sustainable use of land, dispute resolution, certain aspects of (equitable) water management, conservation of water resources, irrigation, and responsibilities of the Regional Bureau of Agriculture and Rural Development.

The Oromia Region Proclamation No. 130/2007 aims to improve management and utilization of land and land resources for agricultural purposes. The Proclamation defines the right to acquire, free of charge, rural land by any adult residents of the region, including women, whose livelihood depends on agriculture, and other subjects. It also defines land use rights of peasants, pastoralists and semi-pastoralists and provides for the protection of such rights. It also provides for dispute resolution, protection of land from degradation and erosion, protection of wetlands, catchment areas and springs, planting of trees and other restrictions on the use of land for management and conservation purposes.

The Federal Forest Development, Conservation and Utilization Proclamation (542/2007) permits private individuals, associations, governmental and non-governmental organizations and business organizations who want to develop forest the right to obtain rural land in areas designated for forest development in accordance with regional land administration and utilization laws. It provides for supply of sufficient amount of plant seeds and seedlings of tree species that could have different economic benefits. By providing for forest development, it demonstrates a much greater approach for community involvement in sustainable rangeland management.

The Environmental Protection Organs Establishment Proclamation (No.295/2002) provides for creation of the Environmental Protection Authority to formulate policies, strategies, laws and standards, which foster social and economic development in a manner that enhances the human welfare and environmental safety. It provides for establishment of independent regional environmental agencies to be responsible for coordinating the formulation, implementation, review and revision of regional conservation strategies,

environmental monitoring, protection and regulation.

The Environmental policy of Ethiopia 1997 aims to maintain the health and quality of life of all Ethiopians and to promote sustainable social and economic development. It defines policies for ten cross-sectoral issues related to rangelands that need to be considered for effective implementation: population, community participation, land tenure, land use, social and gender issues, environmental economics, information systems, research, impact assessment, and education.

The Development Conservation and Utilisation of Wildlife Proclamation (No.541 / 2007) makes provision for the development, conservation and sustainable utilization of wildlife resources in Ethiopia, including wild animals found in Ethiopia, those species migrating from country to country and temporarily staying in Ethiopia. The proclamation creates conditions necessary for promoting private investment and wildlife-based tourism. It also makes provisions for permitting hunting and sharing of profits derived from the utilization of wildlife resources. All these are to ensure sustainable utilization of resources including rangelands that host wildlife conservation areas.

The Ethiopian Wildlife Development and Conservation Authority Establishment Proclamation No. 575/2008 establishes the Ethiopian Wildlife Development and Conservation Authority that among others is responsible for (a) preparing policies and laws relating to the development, conservation and utilization of wildlife resources and their implementation; and (b) providing support to regions with respect to the development and conservation of wildlife, and delegate its powers and duties to other federal and regional government organs where necessary.

(c) Pastoralism and Range Management

The Federal Democratic Republic of Ethiopia (FDRE) Constitution (1995) article 89 mandates Government to hold, on behalf of the People, land and other natural resources and to deploy them for their common benefit and development. It provides for special assistance to Nations, Nationalities, and People least advantaged (mostly inhabitants of rangelands) in economic and social development.

The draft Federal Democratic Republic of Ethiopia Pastoral Development Policy and Strategy focuses on realizing improved and sustainable livelihoods for people in pastoral areas through integrated development that is centered on the animal resources, local knowledge and other reliable endowments. It outlines five objectives to be pursued: (a) Respond to the demands of pastoralists for growth and development in a holistic manner by taking their livelihood system as the basis; (b) Guide sectoral policies and strategies that have been developed in a segmented fashion, to be revised in light of the livelihood basis and ecology of pastoralists; (c) Coordinate government and non-government pastoral development actors so that they will work together and exchange experiences for a common goal; (d) Coordinate efforts to make pastoral areas sustainably food secure, peaceful; and (e) Narrowing down the gaps in development and capability indicators between pastoral areas and relatively developed neighboring regions and the national average. It provides for expansion of infrastructure, entrenching good governance; building implementation capability; ensuring women's and youth participation in development activities; and building on best practices which are all instrumental in sustainable rangeland management.

(d) Livestock Resources and Development

The Ethiopia livestock master plan (2015-2020) emphasizes the need to improve the health, feed, and genetic aspects of the livestock sub-sectors and to overhaul related policies and institutions in order to create an enabling environment for private sector investment. It provides for integration of natural resource management activities with livestock feed production. These among others include (i) growing forage species in enclosures established for rehabilitating degraded grazing lands, and on degraded lands; and (ii) incorporating livestock production with reforestation by mixing multipurpose tree species like *Leucaena*, *Sesbania* and *Tagasaste*, so that the fodder can be used as a protein supplement for livestock subsisting on low-quality crop residues and grasses. This should support sustainable rangeland management, increase resilience and livelihoods of farmers in the pastoral and agro-pastoral areas of Ethiopia.

The Veterinary Drug and Animal Feed Administration and Control Authority Establishment Council of Ministers Regulation No. 272/2012 that establishes the Veterinary Drug and Feed Administrative Council as an autonomous federal Authority to ensure improvement of animal productivity and availability of wholesome animal products to the consumers. It permits the Authority to delegate part of its powers and duties to appropriate regional organs.

The Veterinary Drug and Feed Administration and Control Proclamation No.728/2011 sets standards for veterinary drugs, feed and veterinary drug professionals activities. The proclamation also provides for regulating trans-regional veterinary drug and feed production, distribution, promotion, storage and quality control and veterinary drugs and feed import and export activities.. It also Provides for Disposal of Veterinary Drug and Feed with due care to avoid environmental pollution. By making provisions for safe disposal of drugs and feeds, the proclamation becomes sensitive to sustainable rangeland management.

The Animal Diseases Prevention and Control Proclamation No.267/2002 aims at preventing and controlling animal diseases in order to maximize benefits from the livestock sector. It provides for the mechanisms for prevention and control of animal diseases, registration of animal health professionals and delivery of services, movement of animals, animal products and by-products. It prescribes for establishment of quarantine stations, entrance and exit posts, and export and import of animals, animal products and by-products standards including the need to be accompanied by recognized international animal health or sanitary certificate (art. 14).

(e) Extension Services

The government of Ethiopia firmly believes that an efficient extension system plays an important role in bringing about agricultural transformation. Several frameworks to guide extension delivery were developed and these among others include:

The National Strategy for Ethiopia's Agricultural Extension System, 2014 aims at transforming agriculture through implementation of pluralistic extension system and by providing demand-driven and market-led extension services to farmers pastoralists and agro pastoralists. It recognizes appropriate management of natural resources and good agronomic practices as having a powerful influence on environmental quality and sustainability. It proposes 3 key strategic interventions in enhancing environmental quality

to make agriculture more productive and sustainable (i) improve Natural Resources Management- extension services; (ii) improve capacity and know how on NRM proposes; and (iii) Drought mitigation, moisture conservation, promotion of good irrigation practices and maintenance of natural vegetation. By proposing these, the strategy among others intends to promote regular crop rotation, crop residue management, and double cropping that have the potential to replenish nutrients, reduce plant diseases and insect pests; and use moisture stress tolerant crops, together with introduction of new crops, use of water harvesting techniques, rehabilitation of terraces, improved irrigation techniques and improved water points in pastoral areas.

The Livestock extension vision and strategy for Ethiopia, 2013 is envisioned to enable farmers and pastoralists receive efficient and sustained extension services, and as a result be better utilizers of the livestock resources they own through application of modern technologies. It is meant to enable farmers/pastoralists use more modern agricultural technologies and new practices efficiently and effectively thereby increasing production, productivity and improve livelihoods.

(f) Climate Change

The Federal Democratic Republic of Ethiopia (FDRE) Constitution (1995) article 89(3) provides that Government shall take measures to avert any natural and man-made disasters, and, in the event of disasters, to provide timely assistance to the victims.

The Ethiopia Ten Year Development Plan (2021-2030) includes the need for a climate resilient economy.

The Climate Resilient Green Economy (CRGE) strategy, 2011 aims at identifying the impact of both current weather variability and future Climate Change on Ethiopia and highlights options for building climate resilience. It sets four pillars for building Ethiopia's green economy: (i) improving crop and livestock production practices for higher food security and farmer income while reducing emissions; (ii) protecting and re-establishing forests for their economic and ecosystem services, including as carbon stocks; (iii) expanding electricity generation from renewable sources of energy for domestic and regional markets; and (iv) leapfrogging to modern and energy-efficient technologies in transport, industry and buildings. All these are relevant for sustainable rangeland management and if implemented, have the potential to reduce natural or human-induced physical events that may cause loss of life, livelihoods or impact on environmental resources.

The Intended Nationally Determined Contribution (INDC), 2021 commits Ethiopia to reduce economy-wide greenhouse gas (GHG) emissions by 12.4% in 2030 compared to a business-as-usual (BAU) scenario. This would represent a 51.1 MtCO₂eq reduction, limiting GHG emissions at 360.85 MtCO₂eq in 2030 (compared to a BAU emission level of 412 MtCO₂eq). The emissions reduction target could be further increased to 53.5% with financial backing from the international community; this would limit GHG emissions to 242.8 MtCO₂eq, i.e. 220.6 MtCO₂eq less than the BAU scenario.

(g) Trade, Marketing and Value Addition

The Animal disease control Proclamation No 267/2002 recognizes livestock as source of livelihoods and assets for the economic growth of the Ethiopia. It provides for establishment of entrance and exit posts for import and export of Livestock and Livestock

Products (LLP). The proclamation is emphatic on issuance of international animal health or sanitary certificate for any animal, semen, embryo, hatching-eggs, animal products, animal by-products, biological products and pathological samples to be exported or imported. It thus facilitates international trade that can have a positive trickledown effect on sustainable rangeland management.

The guidelines for Meat inspection, hygiene and construction of export abattoir, 2000 provides operational procedures of export abattoir, routine procedures pertaining to details of examination of animals destined for slaughter, decisions on ill-health findings, sanitary precautions and measures in abattoir environments, etc.

The Meat inspection No 428/1972 sets regulations for abattoirs and commercial establishments dealing with slaughtering, preparation and processing of LLP for export from or import into Ethiopia.

The Draft Animal diseases prevention and control regulation aims at enhancing the disease reporting, investigation and surveillance mechanisms at federal and regional levels. It also sets modus operandi for intervention and control of disease outbreaks.

The Draft Regulation to control movement of animal and transportation of animal products & by-products sets mechanisms to prevent spread of infectious diseases out of the foci of occurrence and increase confidence of recipient/importing countries.

The Draft Regulations to provide for the registration and licensing of animal health professionals issues regulations governing the registration of animal health professionals, delivery of services and other miscellaneous provisions.

2.1.4.7 Eritrea

(a) The Constitution and Strategic Development Frameworks

The Eritrea's Constitution of 1997 provides that in the interest of present and future generations, the State shall be responsible for managing all land, water, air and natural resources and for ensuring their management in a balanced and sustainable manner; and for creating the right conditions to secure the participation of the people in safeguarding the environment (art.8 (3). Art 21 (4) stipulates that the state and society shall have the responsibility of identifying, preserving and developing, as need be, and bequeathing to succeeding generations historical and cultural heritage.

The Interim Poverty Reduction Strategy Paper (I-PRSP), 2004 aims at directly impacting on poverty through broad based economic growth and targeted interventions. It recognizes pastoralists as having adequate body of knowledge with highly protective attitude toward the riverine forests that give them fodder for their animals, supplementary food for humans, construction materials for their homes, and materials for their craft products.

The National Medium-Term Investment Programme (NMTIP), 2005 aims at creating a favorable environment for improving competitiveness of the agricultural and rural sector. It recognizes pastoral system mainly transhumance and agro-pastoral, as having been under continuous destabilization due to the shrinkage of grazing land and disease, affecting productivity and export trade. It thus gives due focus to the promotion of

sustainable livelihoods of farmers, pastoralists and fishing communities and to the sustainable improvement of natural resource management including rangelands.

The Eritrea Interim Country Strategy Paper (I-CSP) 2017- 2019 aims at promoting inclusive and sustainable growth. It is anchored on the single pillar of "Agriculture Transformation for Inclusive and Sustainable Growth." This is hoped to facilitate an increase in productivity of priority value-chains, promote post-harvest loss management and value-addition, increase investment in enabling infrastructure, enhance skills development, job creation and entrepreneurship in agriculture and support the creation of an enabling agribusiness environment with appropriate policies and regulation.

(b) Land, Environment and Natural Resources

The Eritrean Environment Protection, Management and Rehabilitation Framework Proclamation No. 179/2017 provides for pollution control and waste management; as such, it prohibits pollutions, seeks to control hazardous and toxic substances, the management and minimization of waste. The Proclamation takes into consideration a number of environmental management principles. These among others include; an integrated management approach; streamlining environmental protection into sustainable development planning; putting human wellbeing at the forefront; the sovereign right of the State to exploit natural resources; achieving sustainable development through equity and fairness; the polluter pays principle; public participation; sustainable use of natural resources; environmental rights and duties of persons.

The Cultural and Natural Heritage Proclamation No. 177/2015 vests ownership of all Cultural and/or Natural Heritage resources in the state. It provides for protection of Cultural and Natural Heritage against all forms of damage and encourages the general population to nurture and conserve heritage resources, their cultural and indigenous values.

The Eritrean National Mining Corporation Establishment Proclamation No. 157/2006 provides that the Mining Corporation shall comply with the relevant laws of the State of Eritrea, and particularly those laws pertinent to mining operations, labour safety and environmental protection.

The "Forestry and Wildlife Conservation and Development Proclamation No. 155/2006 provides community or private ownership of woodlots.

Proclamation No. 95/1997 provides for the registration of land and other immovable property. It establishes a Cadastral Office under the Ministry of Land, Water and Environment to register all land, all tiesa land, agricultural usufruct, leasehold, as well as utilized or unutilized Government land. It further provides that the Ministry of Land, Water and Environment may issue regulations and directives which it deems necessary to implement the provisions of this proclamation. Land registration and issuance of guidelines on utilization of land is an impetus for sustainable management of resources including rangelands.

The Legal Notice No. 31/1997 provides for the procedure of allocation and administration of land and any right holder shall register it in the land registry. It permits granting of Agricultural usufruct rights only to citizens who reside in villages and whose livelihoods depend on agriculture. The notice further provides for the preparation of land use plans

and area development plans to ensure national standards. All these are to ensure effective and efficient land utilization in Eritrea.

The Land Proclamation No. 58/1994 provides for reformation of the land tenure system and expropriation of land for purposes of development and national reconstruction. The Proclamation provides for preconditions pertaining to the management of the land (art.3). It classifies rural land as either tiesa land (land for housing) or land for agricultural activities and stipulates that every Eritrean citizen shall have the right to obtain tiesa land in his home village (art.6). The demarcation of rural land into tiesa and agricultural coupled with giving preconditions encourages planned settlement together with proper utilization of agricultural land. This practice can also be applied in rangelands to promote sustainability.

(c) Pastoralism and Range Management

In Eritrea rangelands constitute about 47 % of the country and most of which about 57 % are in the western lowlands. A number of frameworks related pastoral rangelands include:

The Eritrean Environment Protection, Management and Rehabilitation Framework Proclamation No. 179/2017 pledges to promote research to find out the causes of ecosystem disturbances and degradation of habitat. It further commits to use the research results to add value and improve existing environmental assets and convert current environmental challenges into opportunities for development as well as to redress habitat loss by maintaining stable and functioning relations between the living and nonliving parts of the environment by preserving biological diversity, reversing degradation of natural resources as well as reclaiming lost ecosystems.

(d) Livestock Resources and Development

The Food security strategy, 2004 recognizes Livestock production as an important sector of the rural economy, especially in the more arid areas of the country with pastoralists tending to over-stock despite shortages of fodder and water. It thus pledges to introduce effective research and extension services to address priority problems and concerns of subsistence farmers. This entails conducting applied research and extension programs in support of the strategies for rain fed agriculture.

The Eritrea National Biodiversity Strategy and Action Plan (NBSAP) proposes to increase productivity through improved animal health, better feedstock supply and selection of improved breeding stock. The strategy also highlights Integrated Farming System (IFS) as an important ingredient for sustainable utilization of natural resources including rangelands. It provides for conservation of environmentally, socially and economically important indigenous cattle breeds, establishment of breeding centres and proper range management.

(e) Extension Services

The Eritrea Interim Country Strategy Paper (I-CSP) 2017 - 2019 recognizes factors such as low use of yield enhancing technologies, lack of skills, poor extension services and inefficient land management systems hinder agricultural productivity and growth. It proposes to improve investments in agriculture related infrastructure and livelihoods of the people through the provision of agriculture integrated minimum package. Similarly, it suggests supporting Skills Development for Employability and Entrepreneurship Project (SDEEP) to enable youth and women to engage in agribusiness, and related value chains.

The Food security strategy, 2004 aims at ensuring that all Eritreans have sufficient quantity of acceptable quality food at an affordable price at any time and place within the country. The strategy emphasizes adoption of appropriate technologies employing modern agricultural inputs and practices taking into consideration risks, developing and disseminating drought-resistant, faster-maturing seed varieties, training the agricultural extension staff with effective skills and introduction of agricultural extension packages that take into account agro-ecological conditions. It is also committed to identifying and protecting degraded rangeland areas.

(f) Climate Change

The Intended Nationally Determined Contribution (INDC), 2015 aims at limiting Eritrea's net greenhouse gas (GHGs) emissions in 2030 to less than 3.9 MtCO₂eq compared to BAU of 6.3 MtCO₂eq. It guides Eritrea towards achieving its goals of becoming Climate Change responsive country with equitable economic growth by ensuring a rapid transition to low-carbon economy. It promises to undertake mitigation and adaptation initiatives to reduce the vulnerability of its population, environment and economy to the adverse effects of Climate Change. The INDC highlights agriculture, land management and energy, amongst other things, as priorities for both mitigating and adapting to Climate Change.

The National Adaptation Programme of Action (NAPA), 2007 recognizes Climate Change as posing a key challenge to Eritrea's emerging development priorities for agricultural development, livestock raising, forestry conservation, water resource management, coastal and marine environmental protection and safeguarding public health. It pledges to focus on adaptation activities in agriculture, forestry, livestock, water resources, Marine and Coastal Zones and public health. The key priority activities among others include (a) breeding drought and disease resistant crops; (b) Introducing community based pilot rangeland improvement and management in selected agro-ecological areas in eastern and northwestern lowlands rangelands; (c) introducing community based pilot projects to intensify existing production models, area and species specific in eastern and northwestern lowland selecting suitable sheep and goat breeds; (d) encourage afforestation and agroforestry through community initiatives and ground water recharge for irrigation wells.

(g) Trade, Marketing and Value Addition

The Regulations to Determine the Requirements and Standards for Milk and Milk Products Processing Plants, Legal Notice No. 113/2006 provides for registration and licensing of any person who intends to establish a milk processing plant. It requires dairy farms that process milk for sale to be free from bovine tuberculosis and brucellosis. It further provides for milk inspectors to control quality standards of plants and calls on processing plants to render the necessary cooperation to designated inspectors. The Legal Notice has a bearing in improving pastoralists' income from milk which can translate in adopting better technologies that support range productivity.

The Business Licensing Amendment Proclamation No. 128/2002 regulates the business licensing system in order to rationalize, harmonize the system and avoid unnecessary delays and harmful legal practices. It outlines several businesses to be licensed but exempts all those involved in subsistence farming, subsistence pastoral or fishing activities.

The Legal Notice 63/2002 regulations to prohibit the production, importation, sale or distribution of the plastic bags in Eritrea prohibits production, importation, sale or

distribution of any plastic bags of high density or low density polyethylene product not exceeding two millimeter (2 mm) in thickness. The regulations call on other Government agencies to cooperate with the Ministry of Land, Water and Environment in the proper implementation.

The Investment Proclamation No. 59/1994 sets out six objectives to provide an enabling investment environment (i) encourage investments so as to develop and utilize the natural resources of the country; (ii) expand export and encourage competitive import-substituting businesses; (iii) create and expand employment opportunities; (iv) encourage the introduction of new technology in order to enhance production efficiency and thereby optimize resource exploitation; (v) encourage equitable regional growth and development; and (vi) encourage small and medium scale enterprises. It provides for open investments to all investors and allocation of land/or water to investors to be determined by the relevant Eritrean laws and regulations.

2.1.4.8 Djibouti

(a) The Constitution and Strategic Development Frameworks

Djibouti's Constitution of 1992 with Amendments through 2010 provides for equality before the law and freedom of movement of all the citizens and the right to establish themselves freely in the country (article 14). It guarantees the fundamental rights of the human person and the public freedoms. The constitution recognizes territorial collectivities that include regions, communes and other territorial collectivities of specific status (art. 85).

Djibouti country strategic plan (2020 - 2024) recognizes livestock production as the main source of income for 90 percent of the rural population and its development being curtailed by scarcity of water and pasture. It identifies agricultural, pastoral and fisheries sectors as key in addressing food insecurity and malnutrition among susceptible rural households. It recommends among others to: (a) strengthen the national social protection system, promote nutrition-sensitive interventions and enhance resilience to shocks; (b) strengthen the agro-pastoral and fishing sectors; and (c) strengthen the national natural disaster management system.

Vision Djibouti 2035 wishes to raise growth rate to an annual average of 7.5 to 10% in real terms during the period of 2013-2035. It emphasizes diversification of the economy through harnessing opportunities that exist across a variety of sectors, including fishing and farming, tourism, logistics, ICT, financial services, manufacturing and renewable energy. The Vision also pledges to consolidate human capital development through important investments in health and education sectors in order to directly improve populations' wellbeing and to reinforce indirectly other different forms of human capital that aim at increasing incomes. Human capital development is a catalyst for sustainable development (Njoku, 2017) and an important factor in agricultural transformation, natural resources' utilization and sustainable development (Schuh, 1999).

The National Development Plan (NDP) Djibouti ICI 2020 - 2024 wishes to improve the quality of life of all Djiboutians and commits to strengthen the country's human and institutional capacities in order to consolidate the realization of rights and freedoms, democracy, stability and transparency of institutions as well as social cohesion. It proposes integrated implementation of programs, namely human capital development; environment, Climate Change and renewable energy; socio-economic strategy to respond to covid19 and other

pandemics; and finally digitalization as a catalyst for economic and social development.

(b) Land, Environment and Natural Resources

The constitution of Djibouti 1992 as Amended in 2010 recognizes the right to property and guarantees that the right to property may not be infringed except in the case of public necessity.

Law No 173/AN/91/2ndL on Organization or Management of State Private Domains (Lands) provides for private state land, which includes free lands without owners and lands acquired by the State, from donations, inheritances, or of any other manners recognized by the law (art. 1). Article 2 categorizes private land into urban land, designated as such by the legislation, and rural land, which is the other land. It makes provisions for the management of urban land and procedure of acquiring rural land.

Law No 172/AN/91/2ndL on Regulating the Expropriation for Public Purpose Interest provides for the expropriation of land for reasons of public utility, such as construction of roads, railways or ports; urban works; facilities of public services; military works; agricultural centers or natural reserves among others.

The National Domain (Land) Code (Law No.171/AN/91/2ndL on Carrying Definition and Organisation of the Public Domains (Lands) provides for the establishment and organization of the public land. It stipulates that all land belongs to the state. Article 1 provides that public land consists of all property assets, whatever their nature, whether immovable or movable, classified and delimited as belonging to the public domain, whether they are, or are not, intended for use by the public. The national domain includes all lands except those classified in the domain public and those that are privately owned. The state public land consists of the natural domain and the artificial domain (art. 2).

Law No.51/AN/09/6thL (Environmental Code) emphasises that every citizen has the right to a healthy environment and calls upon all citizens to preserve and protect the environment. It covers all sectors working on environmental resources and offers guiding principles for managing and protecting the environment against all forms of degradation. The law seeks to stop any pollution or degradation, or at least limit its negative effects on the environment; restore the elements of the natural and ecological heritage degraded and; promotes the synergistic approach between economic growth, social fulfillment and environmental Protection.

(c) Pastoralism and Range Management

Law No. 200/AN/07/5L on Organisation of the Administration of the Ministry of Agriculture, Livestock and Sea, 2007 proposes several interventions including animal production; fish production; plant production and improvement of plant cover; veterinary and food control; study and exploitation of water resources, at rural and urban level; and control and regulation of maritime affairs.

Decree No. 2013-110/PR/MAECI creating the National Early Warning and Response Mechanism for Pastoral and Urban Conflicts establishes a National Mechanism for Early Warning and Response to Pastoral and Urban Conflicts (CEWERU) that is responsible for collecting and verifying useful information in terms of early warning and reactions to conflicts; carrying out the preliminary analysis of the information collected; evaluating

the analyzes received; developing response strategies; and implement capacity building programs for its members and stakeholders involved in prevention and response.

(d) Livestock Resources and Development

The Agriculture Code (Law No.200/AN/07/5thL on the Organization of the Administration of the Ministry of Agriculture, Livestock, Fisheries and Water Resources regulates the livestock sector and supports a number of activities including (i) conservation, development and improvement of pastures; (ii) conducting studies to increase knowledge of the systems and pastures and build a data bank (of maps, fodder value, etc.) for the benefit livestock breeders and agro-pastoralists production systems; (iii) Monitoring the supervision of sedentary farms; (iv) Training of extension workers, breeders and agro-pastoralists; and (v) Promoting the marketing of livestock and animal products; and the organization of animal production channels among others.

(e) Extension Services

The Agriculture Code (Law No.200/AN/07/5thL on the Organisation of the Administration of the Ministry of Agriculture, Livestock, Fisheries and Water Resources provides for certification of professional training of health auxiliaries identified among breeders and supports training of extension workers, breeders and agro-pastoralists.

The Master Plan Study for Sustainable Irrigation and Farming in Southern Djibouti, 2014 aims at improving livelihood of nomads in rural areas by disseminating agricultural activities which will help to strengthen their resilience against drought. It proposes a number of interventions that include; establishment of a sustainable water resource development, establishment of an irrigation farming model applicable to the natural and regional conditions, improvement of the distribution system of agricultural materials, enhancement of agricultural cooperative activities, enhancement of an extension system of agricultural techniques, and capacity development of the government in implementing projects.

(f) Climate Change

The National Strategy on Climate Change (SNCC), 2017 defines six priority areas to address Climate Change impacts. These are (i) Ensure access to water for all; (ii) Promote best practices in the agricultural, forestry, fishery and tourism sectors and eliminate harmful practices; (iii) Reduce vulnerability to the effects of Climate Change and increase the resilience of the most exposed social-economic or geographical sectors; (iv) Protect and enhance ecosystems and maintain the services they provide; (v) Ensure the development of sustainable and resilient cities in the context of Climate Change; and (vi) Ensure the resilience and sustainability of the country's key strategic infrastructure.

The Intended Nationally Determined Contribution (INDC), 2015 commits to reduce GHG emissions by 40% by the year 2030, representing close to 2 Mt of CO₂e, compared to projections for that year according to the BAU scenario. It reaffirms Djibouti's commitment to adaptation, stating the following as priorities: (i) reducing vulnerability to drought; (ii) protection against sea level rise; (iii) improving access to water; (iv) protection of biodiversity; and (v) strengthening the resilience of rural populations.

The National Adaptation Action Program (NAPA) is envisioned to achieve optimal adaptive capacity for communities in the face of the adverse impacts of Climate Change and

variability. It outlines four objectives to achieve the vision: (i) protection of human lives and their livelihoods, resources, infrastructure and environment; (ii) identification and implementation of the urgent and immediate adaptation needs of grassroots communities to the adverse impacts of Climate Change and variability; (iii) integration of adaptation measures and objectives into sectoral policies and national planning; and (iv) raising the awareness of communities, civil society and decision-makers on the extent of the impacts of Climate Change and related adaptation needs.

(g) Trade, Marketing and Value Addition

Decrees No. 2001-0098/PR/MHUEAT of 27 May 2001 approving the strategy and national action programme for the conservation of biodiversity and *No. 2004-0065/PR/MHUEAT of 22 April 2004* on the protection of biodiversity prohibit trade in all wild species, their carcasses, skins and trophies. If they are in transit through Djibouti, animals or their products must be covered by a CITES export permit issued by the country of origin of the animals/products and by a CITES import permit issued by the country of destination. Promoting biodiversity conservation is crucial for functioning key ecosystem services such as mitigating climate and moderating weather, nutrient cycling, water storage and purification all of which support pastoral resilience.

Orders No. 2000-0727/PR/MAEM and No. 2000-0728/PR/MAEM of 23 September 2000 require that animal foodstuffs or foodstuffs of animal origin, whether imported or produced domestically, must meet certain microbiological and chemical criteria established before they are recognized as suitable for consumption. The orders contribute towards minimizing risks, guaranteeing safety of animal products and raising consumer confidence for Djiboutian animal products. This can result into increased market and income to pastoralists.

Order No. 99-0059/PR/MCI of 14 January 1999 restricts importation of cattle feeds unless one has authorization from the MCI in order to protect the domestic industry. The restriction on feed importation saves the precious foreign exchange that can be instead invested in technologies that support drought resilience to enable even pastoralists to produce sufficient feed.

The Investment Code (1984) defines the guarantees and fiscal advantages the government grants to private companies, which invest in Djibouti and the conditions necessary to grant these advantages. The Code provides for exemptions and tax relief to all investments and companies involved in transformation of products of vegetable or animal origin. Tax exemption encourages investment and trade which can reduce inequality, promote inclusive and sustainable economic growth, full and productive employment and decent work for all (Morgan, 2017).

The IGAD individual member states' policy and legal frameworks hold great potential for providing political leadership and mobilizing technical support and resources for action and change in specific sectors. Unfortunately, many of these good policies and laws remain unimplemented, and thus fail to achieve their noble objectives in addressing pastoralists' plight. In part, this has to do with the fact that many times policies or laws are formulated in response to external pressures and with funding support from donors. In such cases, there may be no motivation within government to allocate the resources needed for implementation. Some IGAD countries, such as Ethiopia, even have incomplete

provisions for the security of local tenure of common land at the national level, although regional governments have developed more progressive policies and legislations, but in most cases these have not been implemented.

2.2 Traditional Rangeland Governance

In adapting to harsh and variable physical environment, pastoralists developed principles and strategies to control access to and manage the utilization of pastoral rangelands. The traditional system is based on community by-laws enforced by Councils of Elders who arbitrate over issues of water use and natural resource management, migration strategies to reserved areas, land disputes, uncontrolled bush burning and tree cutting, and punish offenders (IGAD, 2022). Traditionally, dry season pastures are deliberately not used during the wet season to enable them to regenerate for use during the dry season. Thus permanent use of one area is avoided to prevent depletion and degradation of pasture, and large tracts are left idle during the rainy season. Traditional institutions are thus good at enforcing rules for sustainable use of rangelands especially when pastoralists are clearly recognized as the beneficiary community.

Though governance focuses on ensuring the access of the members of 'the group' to land and resources needed for pastoral production, it also helps build important collective relations (social capital) that are required for effective management of the dryland environments and increase the likelihood of being able to use the land and resources of non-members in times of need. Thus pastoralists developed several traditional range management practices.

2.2.1 Traditional Herd Management

Herd Heterogeneity

Pastoralists always try to maintain a diverse portfolio of livestock; keeping different species so as to meet their needs and to fit the environment. Each type of animal fills a specific objective of the pastoral family. Large animals (cattle and camels) are raised not so much for their meat as for their milk, but they are also the 'bank account' and 'security deposit' of the pastoralists. Sheep and goats are not kept primarily for their milk but for their meat and their 'liquidity'. The use of mixed-species is premised on the fact that different species have different intake preferences i.e. browsers such as goats prefer to consume woody plants, whereas cattle prefer to consume grasses. Mixed species grazing promotes environmental diversity (Niamir, 1991) and has the potential to increase rangeland productivity and profitability without having to decrease cattle stocking rate (Hintze et. al., 2021).

Herd Splitting

Herd splitting, the practice of dividing the livestock into separate herds depending on their age, sex, type and productivity, is widely practiced. Pastoralists frequently separate large ruminants from small ones, and separate livestock into a 'milk' herd (mostly milking and pregnant animals and their young), and a main or dry herd (Nalule, 2010). Herd splitting results in increased niche specialization, reduced competition among livestock for the same vegetation and in a dispersion of grazing pressure since each type of livestock is taken to the pasture which suits it best. Herd splitting is therefore a strategy used to maintain the long term productivity of the range, to ensure sustainable production at a comparatively low cost, and in some cases to improve degraded rangelands.

2.2.2 Traditional Range Management

Livestock Mobility

Mobility is one of the best adapted and effective means of obtaining what livestock need in an ever-variable environment. In the traditional context, movement is not chaotic but is regulated by socio-political controls and technical know-how. It requires access to large areas of rangelands which most groups obtain by a combination of territorial rights and alliances with neighbours. Herders from the same social unit are usually free to use any part of their territory, but in practice confine themselves to the range they know best, and prefer to stay with the same group of people, especially relatives. This usually ensures continuity and consistency in range use by the same group of pastoralists. Traditional livestock movement across landscapes in rangelands is recognized by livestock farmers and pastoralists as the most ecologically and economically reliable practice for managing constrained semi-arid rangeland commons despite the increasing demand for commercial oriented systems that support community resilience to Climate Change and economic shocks (Abate et al., 2010 ; Oba, 2012).

Stock Planning and Controlled Stocking

Stock planning and controlled stocking is an inherent practice among numerous pastoral communities (Oba, 2012; Moyo et al., 2013 and Egeru et al., 2015). This practice involves equitable allocation of stock to specified grazing landscapes for a specified time period for purposes of enabling equitable distribution of stock densities while allowing sustained supply of pasture.

Rangeland Assessment

Rangeland assessment is a key inherent traditional practice among pastoral communities from Ethiopia, Kenya and Uganda (Abate et al., 2010; Oba, 2012). This assessment, is mainly based on the availability of grasses, water, free of animal and human disease, suitability to the different livestock species and security to the herders (Admasu et al., 2010; Oba, 2012). Among the; Afar, Benna, Hamar, Karamojong, Orma and Tsemay pastoral groups, rangeland assessments precede decisions making on mobility and related rangeland management practices. The practice contributes highly to planning, policy and strategy development for the involved communities (Oba, 2012). The practice also highly depends on the organization and strength of local governance systems and institutions such as the elders' councils which ensure compliance (Admasu et al., 2010). In Karamoja, rangeland surveillance was identified to be a responsibility of traditional range scouts locally known as Ngekarebok (Nalule, 2010; Oba, 2012). This highly skilled youthful group is highly respected because it collects information on numerous aspects of the grazing landscape and related social issues like diseases, security relevant for guiding the councils in decision making regarding access and deployment of other practices.

On the contrary, traditional rangeland surveillance systems have not been used in the development context, perhaps because they did not fit into the classical fenced 'ranch' model (Niamir, 1991). Their effectiveness, enhanced by modern husbandry techniques and the relatively low cost of hiring herders as local range monitors, are advantages that can form an integral part of more effective range development programmes.

Rotational and Deferred Grazing Reserves

Rotational and deferred grazing are among the drought coping rangeland management practices by pastoral communities (Solomon et al., 2007). These techniques are frequently

used to save forage for critical periods. For example, the Pokot defer using areas with termite-resistant grass during the wet season in order to preserve good fodder for the dry season. Oba, 2012 argued that deferred grazing is successful when complemented by other practices.

Burning of Grazing Landscapes

Burning is an important traditional rangeland management practice that has been used by several pastoral groups to control trees, woody shrubs and invasive species (Solomon et al., 2007; Bintooro, 2014). Application of fires as a rangeland management tool by traditional pastoralists in eastern Africa was guided by systematic procedures and robust controls which sustained the practice as an effective rangeland management tool for decades (Bintooro, 2014). Burning warms up the soil and reduces the leaf litter that accumulates over time, allowing sunlight to penetrate. Warming the soil increases microbial activity, releasing nutrients from decaying plant material that new grass and flowers need to grow (Graeve, 2018). Burning thus keeps grasslands healthy, more vigorous and productive to support both livestock and wildlife.

2.3 Pastoral Agricultural Extension Systems

Agricultural extension (also known as agricultural advisory services) plays a crucial role in boosting agricultural productivity, increasing food security, improving rural livelihoods, and promoting agriculture as an engine of pro-poor economic growth (IFPRI,2022). It can help smallholder farmers in the IGAD region increase their agricultural productivity and attain sustainable development which enhances their standard of living as well as contributing significantly to regional, national and rural prosperity within environmental constraints (Ali, 2011). Agricultural extension services in IGAD are almost entirely performed by governments under the guidance of the respective ministries responsible for Agriculture. The services generally rely on interpersonal knowledge transfers by agricultural extension agents who visit farmers to provide information to individual farmers or farmers’ groups in their official areas. A number of Non-Government Organizations (NGOs) have also joined in offering extension services.

There are a number of extension models or systems that are employed in the region, however, it is important to note that there is no most preferred extension model for a particular country, as several countries are trying to identify the best extension model and as yet, there is no best practice (Davis 2008). Consequently, countries in the IGAD region have adopted combinations of various models thus permitting farmers to enjoy a mixture of extension delivery assistance from the public, NGOs and private firms. The various extension models currently being developed or implemented in the IGAD are summarized (Table 1) and can be divided into two main types: Top down approaches i.e. from international institutions or national governments and Participatory approaches that engage farmers.

Table 1: Extension Approaches

Top-down Approach	Participatory Approach
National Public Extension Model	Non-Governmental Organization Extension Model
Training and Visit (T&V) Extension Model	Farmer Field School
Private Sector Model	National Agricultural Advisory Services (NAADS), Uganda

Fee-For-Service Extension Models	Participatory Demonstration and Training Extension System (PADETES), Ethiopia
	National Agriculture and Livestock Extension Programme (NALEP), Kenya

2.3.1 Top-down Extension Approach

The Top-down extension approach also known as Transfer of Technology (TOT) by nature of its structure, is where agricultural information from Universities or ministries responsible agriculture is disseminated to farmers through extension agents. The approach helps in promoting agricultural messages that have been designed and developed by research scientists, with limited input by the ultimate users (farmers) of the technologies. This approach is however characterized by several weaknesses that include among others inherent low adoptions, lack of recognition of farmers' vast indigenous knowledge or innovation, and too much emphasis on change agents (extension workers) instead of the users (farmers) of the technologies (Anandajasekeram et al. 2008).

The National Public Extension Model

In this model, it is the exclusive domain of the public sector (ministries responsible for agriculture) to offer extension services. The overall objective is to contribute to the increase of agricultural production and productivity of the rural population (Shinn et al. 2009), utilizing mainly a top-down approach, through the TOT. The information flow from the Ministry of Agriculture is absolutely supply-driven and not area specific (Raabe, 2008), meaning that in most cases the technical knowledge transferred into the field is distorted, outdated and often wrong for the specific situation. Thus, the top-down approach continues to hinder the full potential of the extension service delivery system (Hall et al. 2008; Raabe, 2008).

The public extension model is often characterized by extremely low extension to farmer ratio limiting smallholders' access to extension services. The performance of the extension workers is also adversely affected by the ever reducing government operational support and poor technical background of the majority of the employees. Quite often, most government extension workers have little to offer in terms of messages to a large section of the rural population. Owing to these deficiencies, the public extension model has no specific answer to farmers' problems because it has not been a research concern to reach the farming community (Eicher, 2007). The public extension model is further associated with inherent lack of continuity of most government projects, which results in non-sustainability of these projects. According to World Bank (2010), public extension is incapable of serving resource-poor farmers due to inadequate linkages between research and extension; inadequate finance support; and poor human resource and facilities. Thus addressing complex agricultural problems and achieving food sufficiency through the public extension model has become an illusion.

The Training and Visit (T&V) Extension Model

The focus of the model is to create a group of professional agricultural extension personnel that is capable of delivering proper advice to farmers to increase agricultural production and productivity, incomes and also support rural development. The central objective of the model is based on transforming and improving upon the efficiency of the public (traditional) agricultural extension system. It is focused on effective training and visiting the contact farmers; time-bound work; field and farmers' orientation; consistent and regular training and strong linkages with agricultural research institutions and devotion primarily to extension work. It is

implemented through field demonstrations, farm visits, group and individual meetings. The T&V model is also characterized by a single line of command; promoting agricultural messages that have been planned and developed by research scientists with no involvement of farmers (technology users). This model differs from the Public extension by its emphasis on frequent in-service training for staff, regular visit to farmers' farms, promotion of extension/research linkage and improved extension management. In the process of service delivery, subject matter specialists (SMS) give training to frontline extension agents on new but relatively simple technical issues, the extension agents then proceed to train farmers and/or farmer groups on the new technologies. The system is too rigid; labour intensive, lacks equity and is too expensive as it involves high levels of recurrent expenditure (Mengal et al. 2014).

The Unified Agricultural Extension System

This is a modified T&V in which extension workers are equipped with necessary basic skills and knowledge of all agricultural enterprises with purposes of prudently imparting them to the farmers. This model is non-participatory in nature characterized by weak research- extension linkages, bureaucracy and lack of response to farmers' needs.

The Private Sector Model

Under this model, the private sector assists in providing input and transfer technology to farmers. The private sector mainly agro-dealers and input suppliers employ a marketing strategy of selling their products and extension services as one efficient package. They frequently provide vested advice and deliver extension services to farmers for enhanced productivity and improved linkage to markets (Ferroni and Zhou, 2012). The private sector players strategically maintain farmers' profiles and provide targeted solution packages according farmers' profiles. The private sector model is sturdily correlated to the top-down, transfer-of-technology model of technology dissemination. It is also associated with a number of challenges including confusion due to a multiplicity of services providers, primarily due to the array of knowledge and information system; credibility of information sources and conflict of interests.

Fee-For-Service Extension Model

Fee-for-service extension is provided by both public and private initiatives whereby farmers pay for extension services in an approach that makes services more affordable (Anderson and Feder, 2003; Aker, 2011). In this model, a small group of farmers normally contract extension workers with specific information and service requests. The fundamental goal of this extension model is to deliver the most up-to-date and appropriate information to the right farmer or a group of farmers via the formation of a demand driven extension service system which is cost effective, efficient and of high quality (Umali and Schwartz, 2000, Foti et al. 2007). Charging for extension service ensures that the service is getting to those farmers or the groups of farmers that are actually interested in the information and would also implement the practice (Foti et al. 2007). However, with this model, subsistence farmers especially the poor-resource farmers may not be able to purchase services (Anderson and Feder, 2003) and are most likely to be left behind.

2.3.2 Participatory Extension Approach

Participatory extension approach tries to eradicate the weaknesses of the traditional "top-down approach" to research and development (Anandajayasekeram, 2008). It is basically a combination of technology transfer, advisory services and human resources development and involves two main elements. The first element addresses how extension systems are organized

and emphasizes the fact that farmers play a significant role in shaping extension programmes, and also take ownership of the extension programme and operations. The second core element includes more participatory extension such as farmers-to-farmers exchange and experiential learning. This approach highlights that knowledge is acquired through interactive processes that include extension agents and progressive farmers. The significant features of the participatory approach include putting emphasis on people rather than things; it is also a decentralized system which ensures involvement of the key stakeholders in problem solving and implementation. It empowers participants to value and work on what matters to them and also allows facilitators to learn from recipients rather than to teach them.

The Farmer Field School Model

The Farmer Field School (FFS) extension model is a participatory methodology of technology development and dissemination, which gives the farmers an opportunity to learn practical field activities. The members of the group fund the school (FFS) that is an informal school without walls within the farmers' location, where neighboring farmers with similar interests gather together periodically with facilitators to share skills and knowledge. The FFS model provides intensive trainings that assist farmers to develop their analytical knowledge and skills, critical thinking and creativity and; as a result, help them learn how to make healthier and better decisions, not only in their farming operations but also in their daily activities (Kenmore 2002; Anandajayasekaram et al. (2008). Under the FFS Model, the group members tend to show high levels of ownership. The FFS model is however faced with some challenges that include among others inadequate exposure of research and extension personnel to the concepts and procedures of FFS; competition and conflict of interest between different donor agencies; sharing of proceeds from the school approach; lack of coordination of FFS activities at the national level; gender inequalities; and low level of participation of policy makers.

The Non-Governmental Organization Extension Model

Given the dwindling public extension services, a number of NGOs are now filling a critical gap and play a significant role in offering extension services. This is due to the fact that they are relatively well endowed with financial resources for their programs. In offering agricultural extension services, NGOs often utilize a "Farmer First" (bottom-up) extension service approach; a unique participatory, demand-driven and client-centred approach. The "Farmer First" approach sees farmers as part of the technology generation process. It uses their farmland as a central location for providing essential resources, inputs and evaluation of new technologies. This perhaps explains why NGOs have been more effective and efficient than a top-down approach (Davis and Place 2003) in meeting the needs of smallholder farmers and enhancing rural development.

The National Agricultural Advisory Services (NAADS), Uganda

NAADS is a relatively new extension system in Uganda created by an Act of parliament (NAADS Act, 2001) under the Plan for the Modernization of Agriculture (PMA) as one of the government's efforts to reduce poverty. It is envisioned to be a decentralized, farmer owned and private sector serviced extension system contributing to the realization of the agricultural sector objectives. This vision is expected to be achieved through the pursuit of its mission; increased farmer access to information, knowledge and technology through effective, efficient, sustainable and decentralized extension services with increasing private sector involvement in line with government policy. The fundamental aim of the program is to develop a demand driven, client oriented and farmer led agricultural service delivery system particularly targeting the poor and women (Kisamba, 2000). The NAADS Model is designed to improve provision of

agricultural technologies and farm management practices by households, and ultimately lead to increased farm productivity and household incomes.

The program focuses on promotion of household incomes, food nutrition and security through increased productivity and market oriented farming. It is also intended to create options for financing and delivery of agricultural advice for different types of farmers but with particular emphasis on subsistence farmers. Furthermore, NAADS was to empower all farmers to access and utilize contracted agricultural advisory services and also promote farmer groups to develop capacity to manage farming enterprises.

Despite the implementation of NAADS under decentralization to enhance desirable extension services to farmers, poverty reduction is still an uphill task. The argument that better agricultural performance would be achieved through NAADS also seems to have become a complex and difficult task to accomplish.

The Participatory Demonstration and Training Extension System (PADETES), Ethiopia

The PADETES is a modified T&V extension model initiated in Ethiopia based on the experience and publicized success story of Sasakawa Global programme (SG-2000). It is an extension system which promotes cereals production using on-farm demonstration plots and links technologies to inputs through a package deal (Kiptot et al., 2014). PADETES is intended to increase productivity of smallholder farmers; improve incomes through enhancing productivity; empower farmers to actively participate in the development process; ensure self-sufficiency in food production; establish farmer organizations; increase production of export crops; conserve natural resources; and encourage farmer organizations and women's participation in development (Davis et al. 2010). The model promoted cereals production via the Extension Management and Training Plot (EMTP), usually half hectare on-farm demonstration plots which were managed by farmers and used to train other farmers and extension workers on good agronomic and farm management practices (Egziabher et al., 2010). The system has registered several success stories which among others include reaching several farmers equitably; quick increase in productivity; increased production of cereals; increased numbers of participating households in extension packages; rapid use of fertilizer and improved seeds. It however has a few challenges that among others include: being supply-driven with extension packages focusing on crop production; limited training for extension workers; limited focus on cash crops and animals; limited infrastructure, marketing and inputs; and limited participation of women farmers (Lucky and Achebe, 2013).

The National Agriculture and Livestock Extension Programme (NALEP), Kenya

The NALEP was established in 2000 and encourages farmers to form Common Interest Groups (CIGs) in order to extend technologies and knowledge faster. The NALEP focuses on supporting demand-driven, pluralistic and farmer-led extension system involving all stakeholders to facilitate a gradual transition from predominantly public extension to private provision of agricultural extension services (Anandajayasekera et al., 2008). The NALEP mission was to transform agriculture and livestock to a sustainable system to achieve food security, wealth creation and national economic growth through science-based market-oriented, competitive and profitable agricultural systems (Chhettri, 2011).

The main objectives of NALEP was to guide the establishment and implementation of the programme of pluralistic extension systems through national agricultural and livestock goals; significantly contribute to poverty reduction; develop and improve the efficiency of sustainable

agriculture as well as livestock, water, forestry and rangeland resources (Cueller et al. 2006). These objectives will be achieved through diverse strategies including; organizing farmers into viable rural organizations; empowerment of farmers to adequately respond to food security through the transfer of adapted research technologies; inclusion of other stakeholders in the activities; bottom-up planning system; ensuring farmers participate fully in the decision-making processes and group-based approaches in focal areas (Chhetri, 2011; Ngugi et al., 2014).

The NALEP has however met some challenges that include; lack of financial strength to support farmers, leading to a declining attendance of the farmers in training, field days and seminars; too short time framework for officials to implement the programme; insufficient training and retraining of the extension personnel on issues of marketing, packaging and emerging crops and animals to meet the expectations of farmers; and lack of demonstration materials (Chhetri, 2011; Ngugi et al., 2014).

2.3.3 The E-extension System

The revolutionary changes in information communication technology (ICT) have dramatically increased the speed and quality of information transfer. ICTs—primarily mobile telephony, feature phones and mobile-based services such as short message services (SMS) and videos on farming practices reduce the costs of accessing both private and public information related to production and marketing choices, thereby improving the conditions under which farmers make decisions. Electronic communications systems may in part replace personal visits and enhance extension agents' capacity to link their clients with other suppliers of information. Some IGAD member states like Uganda are now piloting e-extension though this is still in preliminary stages and mainly to track extension agents' attendance to work.

ICTs can leverage social networks for agricultural extension, including social networks that are otherwise information poor. This includes the use of big data to better target information content using machine-learning algorithms similar to those used by Facebook or Twitter. Information on users and how they interact with content can also be used to insert information at the most effective node in a virtual social network (Beaman et al. 2018). ICT-enabled extension can expand to reach marginalized population groups by overcoming structural and practical constraints. It can facilitate learning by adapting content to their specific needs and preferences or by triggering behavioral dynamics by role modeling, the creation of new aspirations, or challenging role incongruity. ICT through use of video to allow extension workers to document effort (Duflo et al. 2012) can boost their motivation and performance. The use of ICTs to increase agent monitoring for example use of geo-location to determine whether extension workers visited certain locations (Dal Bó et al. 2021) can enhance the effectiveness of extension workers. Furthermore, establishment of ICT-mediated information clearinghouse platforms, where extension workers are rated by the farmers who receive their services and information made public can be an avenue accelerating extension services. E-extension can provide farmers with actionable information on imminent pest and disease threats, market opportunities that they could not discover on their own, or advice on natural resource management that is undersupplied by extension agents (Spielman et al, 2021) and can therefore be relevant for improving extension services in IGAD pastoral rangelands. Though e-extension can be useful in improving extension service delivery; it is associated with a number of challenges including among others insufficient ICT infrastructure, power supply, lack of basic skills in using ICT, high cost of equipment (internet enabled phones) and lack of awareness especially among rural farmers.

Due to challenges associated with each extension model, there is no most preferred extension model for a particular country; IGAD member states have thus adopted pluralism of models that permit farmers to enjoy a mixture of extension delivery systems. Relatedly, Davis et.al (2010) argued that for extension system to be successful, a range of actors, including government, donors and NGO community, and the private sector, need to work together to implement the various components and programs. Furthermore, Binswanger-Mkhize (2009) observed that small countries that dominate the African scene often lack financial capacity for public goods investments and opined that achieving success in agriculture can be better if done on a regional or sub regional basis. Having to count on their own resources for extension, many African countries and more so member states of IGAD may not be in a position to implement technology transfer and the more demanding strategy of human resource development. Binswanger-Mkhize (2009) also argued that managing crucial, but under threat resources, reversing land degradation, desertification and preserving biodiversity require trans- boundary collective action. It is thus essential that IGAD member states adopt a regional approach in addressing most of their challenges

3.0 METHODOLOGY FOR DATA COLLECTION AND STAKEHOLDER CONSULTATIONS

3.1 Geographical Coverage

The assignment was carried out in the IGAD region and emphasis was on IGAD clusters 1, 2 and 3 (Figure 2) since these have attracted considerable attention and investment. These are ecological zones whose development is best perceived within the framework of a consolidated development plan that introduces the need for an institutional arrangement to facilitate cross-border cooperation.

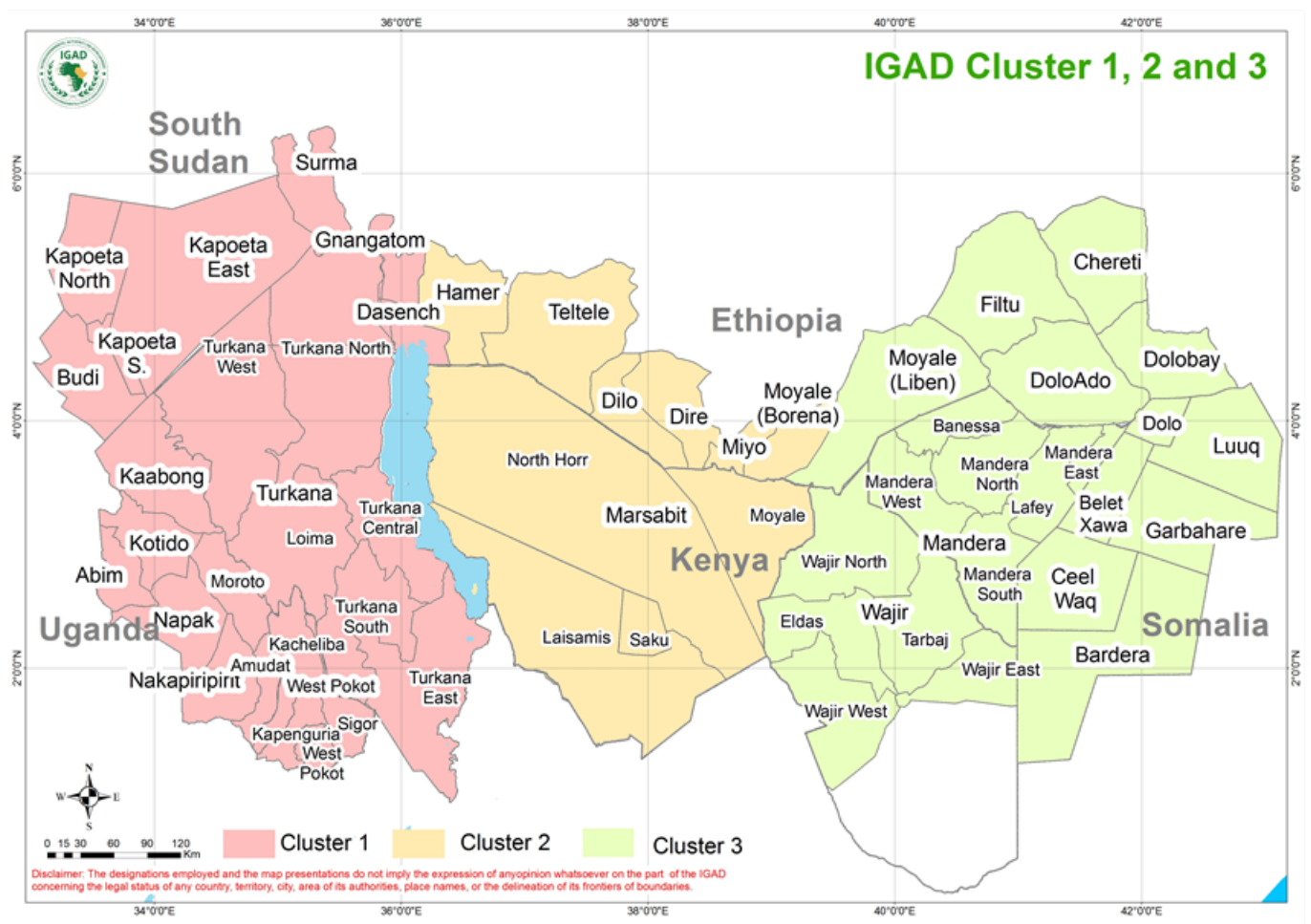


Figure 2: Clusters 1, 2 and 3

Source: IGAD, 2021

3.2 Design

An exploratory cross-sectional design was used to collect both primary and secondary data. The target population included purposively selected community leaders; staff from Civil Society Organizations (CSOs); Non-Governmental Organizations (NGOs); government ministries; research and academic institutions; regional, zonal and district/Woreda/sub-county leaders.

Table 2: Study Sites

Country	Region (County)	Zone	District/Woreda/Subcounty/Organization
Ethiopia	Southern Nations Nationalities and People Region (SNNPR)	South Omo	South Omo Zonal Agricultural Office- Jinka
			Dasenechi
			Hamer
	Oromia	Addis Ababa	Ministry of Agriculture
			Land for Life (L4L), an NGO
			Oromia Regional Bureaus
Kenya	West Pokot		West Pokot
			Pokot South
	Isiolo		Garbatula
			Isiolo
Uganda	Karamoja		Nabuin Zonal Agricultural Research & Development Institute
			Kaabong
			Kotido
			Moroto
			Nakapiripirit
			Amudat

3.3 Data Collection Tools

Interviews, questionnaires and documentary literature were used to collect both quantitative and qualitative data. Appropriate templates of interview schedules and questionnaires were developed based on the identified categories of respondents. Prior to the start of primary data collection, the tools developed were pre-tested to ensure suitability. The necessary adjustments were then made before wider application.

3.3.1 Desk Review

A detailed desk review of all existing literature related to pastoral land use planning/rangeland use planning and extension systems were carried out. The review was not only limited to regional pronouncements, policies/strategies, individual member states' national legal frameworks and policies/strategies, but also included, traditional pastoral land governance institutions regarding pastoral land use/rangeland use planning and support extension services.

In addition, the consultant also reviewed global and continental commitments plus all other documents relevant to the assignment. For purposes of systematic document review, analysis was made along themes and sub-themes.

3.3.2 Interviews

Interviews were used to enhance the collection of primary data. In this case, direct or face-to-face interviews were carried out between the consultant and the key informants to elicit responses from the respondents. However, some minor adjustments were made to the questions given the different education levels among the respondents. Care was taken during the interviews not to lose focus on the main study objectives.

3.3.3 Focus Group Discussions (FGDs)

Twelve FGDs (one per district/woreda/sub-county), each comprising of 8 to 20 purposively selected farmers and community leaders; considered knowledgeable in rangeland management were conducted to get a better insight and also tap their specialist knowledge regarding range resources in their areas. The FGDs generated information on traditional by-laws, management practices of communal rangelands, challenges, opportunities and IK transfer mechanisms. An interview guide was used to conduct the discussions and the proceedings were captured in notebooks.

Photo 1: FGD Lolachat-Nakapiripirit District



Photo 2: FDG Kiina Ward - GarbuTula



3.3.4 Questionnaires

Questionnaires were similarly used to collect primary data. In this case, semi-structured questionnaires were given out to the respondents who filled and returned them.

3.3.5 Observations and Photography

Transect observational field visits and photography through the identified areas were conducted to capture key information on physical interventions, practices and landscape. This enabled filling gaps in the primary and secondary data.

3.4 Data Analysis

The quantitative data collected was summarized and analyzed using the Statistical Package for Social Sciences (SPSS) version 23. The chi-square statistical test was conducted to establish the relationship or associations between variables. The qualitative data was summarized and analyzed under themes and sub-themes.

3.5 Limitations

Due to the prevalent pockets of insecurity in the rangelands, some areas considered risky were not visited to have physical interactions (FGDs) with the farmers and community leaders. The consultant however made efforts to get the input from key stakeholders from the affected parts. In this case, the consultant visited Oromia regional bureaus and held interviews with Key Informants (Kis) involved in issues of rangeland management. Soft copies of the questionnaire were also left at the bureaus that ensured that they were filled and sent to the consultant.

4.0 FIELD DATA FINDINGS AND ANALYSIS, GAPS AND SOLUTIONS AND OPPORTUNITIES

4.1 Field Data Findings

4.1.1 Gender Characteristics of Respondents

The study revealed glaring low participation of women in community engagements across the study area (Fig 3). This could be attributed to the deeply entrenched gender inequalities by pastoral and agro-pastoral communities. Men are usually responsible for grazing the animals, ploughing with draft animals, trading food surpluses, animals and animal products. At all the sites, men had a fair amount of free time that they could dedicate to community meetings and leisure. Women spend a large part of their time doing household-related tasks, collecting fuel for energy, water and to a less extent cutting grass/fodder during dry seasons.

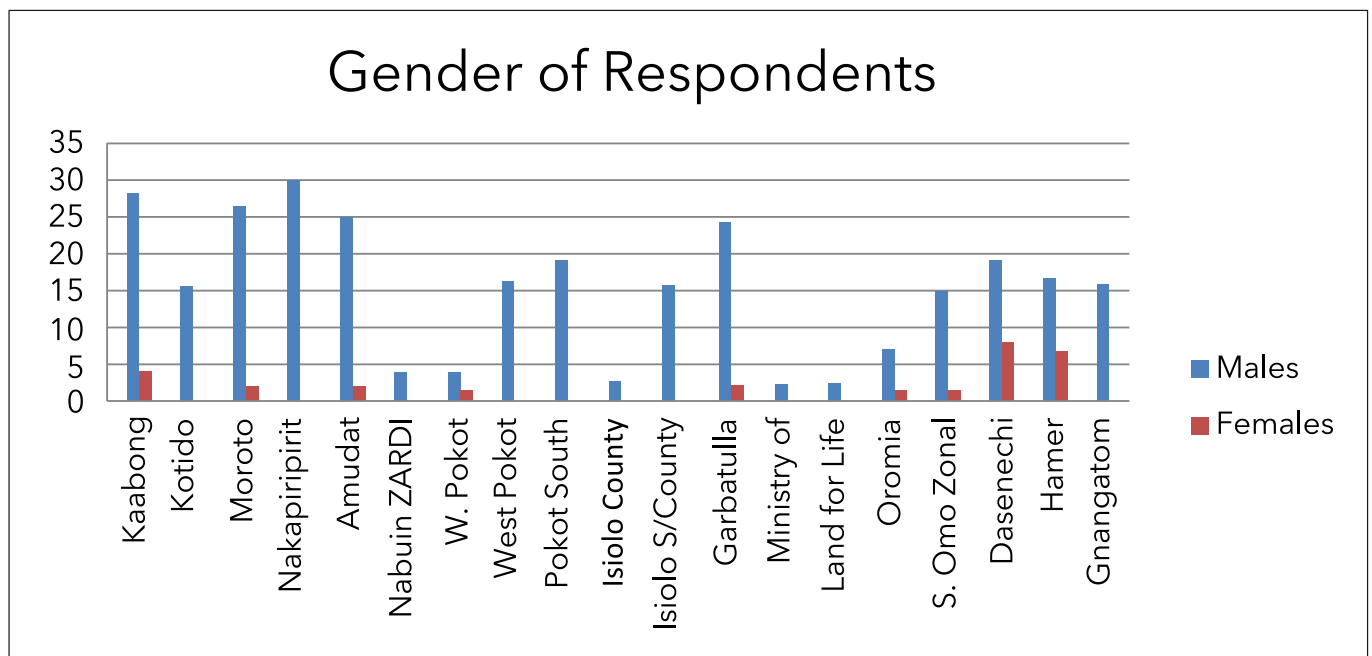


Figure 3: Gender of Respondents

The study however, revealed that some pastoral communities involve women in livestock issues especially in Dasenech and Hamer Woredas that reported involvement of all energetic youths (both males and girls) in grazing animals including seasonal migration during dry seasons as explained in Box 1.

“When I was still young and energetic, I would accompany my brothers to take animals for grazing and watering whenever the pastures in this place would reduce. We would move miles however, we couldn’t go as far as Turkana. Now days, the Kaben (youths) go very far. As we talk, almost all the strong young men and girls have already moved with animals towards Kenya. Only the children and old people like me are the ones left behind with only a few youths to provide security”.

Box1: Statement by Kedo Seri, elderly lady - Dasenech

4.1.2 Interest in Rangeland Management

According to the findings of the study, all the respondents (100%) revealed that rangeland users, i.e. both pastoralists and agro-pastoralists had interest in managing the rangelands. Rangelands are significant sources for fodder and water necessary for pastoral and agro-pastoral livestock management. They also provide communities with wild fruits, medicine, gum and leaves. In addition, pastoralists also use many species of trees for fodder, shade, fencing, construction and making crafts. The users thus attached a lot of importance to rangelands as explained in Box 2.

“Our rangelands belongs to the dead, the alive and the unborn. It is our life and everything. We do not even cut trees unless it is absolutely necessary. This is because trees provide us with shade and also feed for animals during dry seasons. They therefore provide us food.”

Box 2: Statement by Elto Wole - Chairman/Leader, Hamer pastoralists

Generally, rangeland ecosystems provide many goods and services to humanity, including provision of food and fibre, regulation of water supply and sequestration of carbon. They are also social landscapes in which users influence ecosystems and vice versa (FAO, 2016).

4.1.3. Traditional Rangeland Practices

The study identified 8 traditional rangeland management practices that were grouped into herd and grazing management practices.

(i) Herd Management

Pastoralists keep indigenous livestock breeds that are adapted to their rangeland environments. The study identified two herd management practices, namely: mixing of species and herd splitting as having been adopted by pastoralists and agro-pastoralists.

- **Species Mixing**

Many herders keep a variety of livestock species, for example, combining cattle or sheep for pastures with camels or goats for shrublands (Photo 3). This ensures maximization of range utilization, efficient labour utilization and also lessens the risk of total livestock failure. The latter is based on the fact that if one species succumbed to environmental stress, others would survive. Other advantages were a reduction in susceptibility of the livestock to diseases and a better use of the environment where the combination of species kept had different feeding habits (grazers, browsers and intermediates).

Photo 3: Herding Sheep and Goats



- **Herd Splitting**

The KIIs and FGDs indicated that usually pastoral herds were split into two; those that remain near homesteads and the other that feeds on pastures that are far. This was also to optimize use of resources across the landscape and to avoid degradation. The herds that remain near homesteads included the sick, milking cows and the calves. These provide food for the remaining members of the family (women, elderly and young children) and are usually under the care of women and children.

- (ii) **Grazing Management**

Based on the results of this study, planned seasonal migration was the most preferred grazing management adopted by pastoral communities. Seasonal migration is entrenched with deep socio-cultural influence among pastoralist communities and is central to their identity. Migration contributed to ensuring access to fodder, water supplies and to avoid diseases. Pastoralists thus use livestock mobility as a means for effective rangeland management and as a key tool in preventing and managing risks. Mobility was also considered a cultural asset with those declining to move viewed as unfit to be members of the community (Box 3). Preservation of herd movement requires legal recognition of existing customary tenure arrangements, especially those which provide for seasonal use of a wide variety of ecological resources.

“Pastoralists are strong believers in accumulation of animals and will try everything possible to ensure survival of their animals. They don’t reduce their stock because they believe that even nature, i.e. drought results in death of their animals. Anyone who refuses to migrate and sells off animals during dry season is frowned at, considered a coward and a social misfit. During times of drought or disease, such a person is not supposed to be supported. In some instances, such people are denied opportunities to marry so as to prevent transmission of their traits in the society”.

Box 3: Statement by Obin Benard Eriya, DAO - Kotido

The study revealed that there was no seasonal migration in search for water and pastures in Kaabong. This is because the district had lost 80% of its herd to the rampant cattle raids being witnessed. The few remaining animals, mainly kept in protected kraals were thus able to be sustained on the available pasture and water resources. Seasonal migration therefore seems something of the past for Kaabong District.

Table 3: Management Practices

	Responses (%)													
	Kaa	Koti	Mor	Nak	Amu	W/ Pkt	Pk-t/S	Isiolo	Garb	S/ Omo	Das	Ham	Gnan	Oro/ Bur
Management Practice														
Seasonal migration	8.3	50.0	22.2	12.5	27.3	33.3	40.0	50.0	25.0	37.5	40.0	33.3	57.1	60.0
Reserved grazing	25.0	12.5	22.2	25.0	18.2	16.7	20.0	16.7	0.0	25.0	20.0	16.7	28.6	20.0
Controlled burning	50.0	25.0	22.2	25.0	9.1	16.7	10.0	0.0	0.0	25.0	0.0	16.7	0.0	20.0
Fencing	0.0	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0

Feed conservation	0.0	0.0	22.2	0.0	0.0	0.0	10.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Tree /shrub conservation	16.7	12.5	11.1	37.5	45.5	33.3	10.0	33.3	75.0	12.5	0.0	33.3	14.3	0.0

4.1.4 Water Sources' Management

The different sources of water in the study area include: rivers, ponds, valley tanks, dams and boreholes. Though majority of these facilities are owned by the communities who developed them and are responsible for maintaining them, practically most of the water facilities are however poorly managed. Majority of the rivers in the study area are seasonal as they lose their water very fast. It was established during the study that both humans and livestock get water from the same sources despite the efforts by communities to provide livestock drinking troughs near the sources. Livestock that drink in facilities are a direct source of nutrient and bacterial pollution of water. These forms of water quality degradation can be eliminated by providing alternate watering facilities and fencing or excluding the livestock from the water facilities.

4.1.5 Best Rangeland Management Practices

The study revealed that a number of good practices were adopted by rangeland users. These include: setting by-laws, prohibiting access to certain parts of rangelands and cutting specific trees, as well as setting time of watering animals, and transferring of indigenous knowledge to the young generation. Other good practices are involvement of both boys and girls in herding animals and adoption of planting pastures among others (Fig 4).

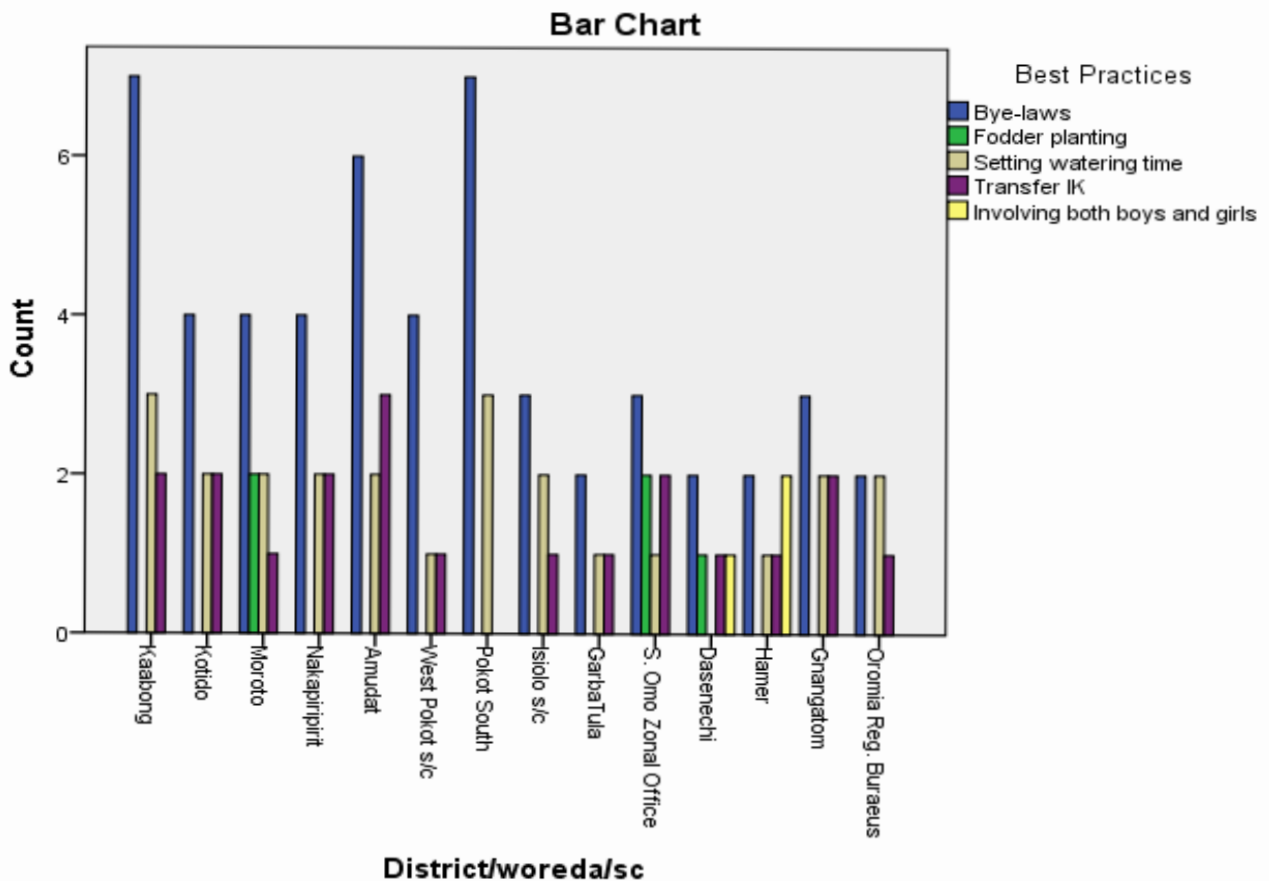


Figure 4: Best Practices

The study results indicated that formulation of by-laws was the most preferred adopted practice by the pastoral communities compared to others. This could be attributed to the fact that all the pastoralists in the study area have traditions, customs and cultural beliefs that function as by-laws and these have played an important role in rangeland conservation and biodiversity. The KIs and FGDs also attested to the existence of by-laws such as prohibition of access to certain parts of the rangelands since some of them have shrines and are used as places for traditional rituals. In addition, certain trees or animals are considered sacred or totems, so there are restrictions to having them destroyed. Any contravention therefore to these by-laws was usually punished by elders' councils existent in all communities (Photo 4).

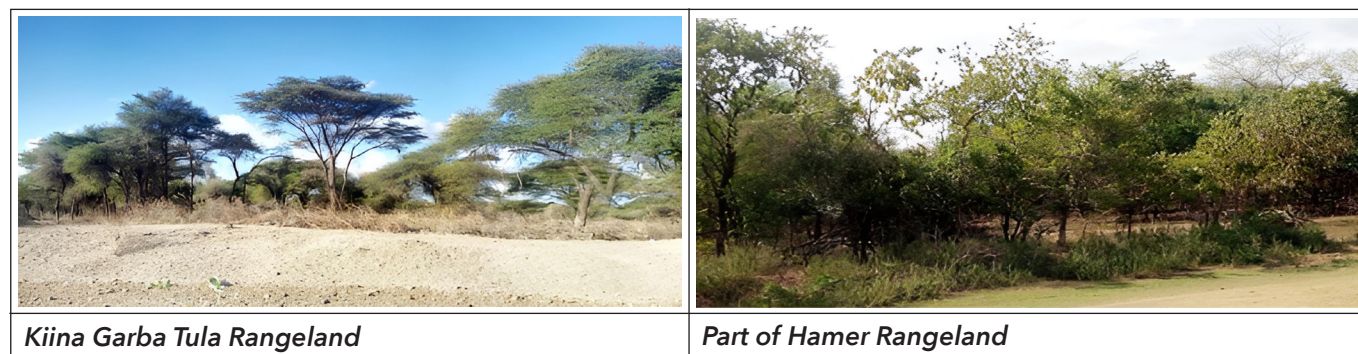
Photo 4: Sign Post of Elders' Council, Isiolo



Field transect observational drives noted that where by-laws were strictly complied with, there was significant improvement in tree cover and, to some extent, range health as evidenced in Nakapiripirit, Amudat, Garbatula and Hamer (Plate 1). The chi test also showed significant differences in the best practices adopted by pastoral communities ($\chi^2 = 55.282$; $p = 0.000$).

Pastoralists in the study area highly value rangelands for grazing their livestock for subsistence and prestige. They therefore have the zeal to sustain its production value, hence the enforcement of traditional codes that they have tried to pass onto the young generation. These together with scientific knowledge have resulted into a number of by-laws to regulate utilization of range resources. This study thus confirms Knox et.al (1998) assertion that resources require some form of coordinated regulation to coordinate individuals' activities; develop rules for resource use; monitor compliance with the rules and sanction violators.

Plate 1: Range Status





Part of Nalampiririt Rangeland



Part of Amudat Rangeland

Results further identified four main means of transferring best practices. These are meetings, demonstration/training by extension workers, use of public media like radios and through drama and folk songs. The most preferred means of transfer of best practices in the study area was meetings presided over by elders. These meetings were mainly conducted in the evenings when elders sit to plan for water, pasture and security. It was notable that all pastoralists in the study area recognized elders who preside over important meetings, festivals and ceremonies of each clan or specific ethnic grouping.

Unfortunately, it was also revealed that the powers and authority of elders have been undermined and are being eroded by the western culture (Box 4). This has affected the range eco-system thus increasing pastoralists' vulnerability to harsh environment.

"We used to hold meetings through which we would teach our children on how to manage animals, but right now, most young men are in schools and universities. So we can't train them. In addition, many young men do not want to listen to elders. WhatsApp and social media have worsened the situation. As you talk, the young men are busy on phones. Even our by-laws are no longer functional after being undermined by government policies. This has led to the breakdown of our cultural system. There is need to create a Pokot syllabus that should be taught from primary to secondary level."

Box 4: Statement by Rionoripo Akudnyang: Elder, Serum Location - Pokot South

It was also observed that whereas communities like the Dasenech, Hamar, Gnangatom, West Pokot and Isiolo preferred meetings as means of transfer, Karamoja respondents preferred drama and folk songs. The choice of drama and folk songs for Karamoja could be due to the prevalent annual cultural galas that bring together the different Karamojong clans, groups and age-sets for common Karimojong interest and peace promotion.

There were however no significant differences among communities in relation to means of transferring best range management practices ($\chi^2 = 22.212$; $p = 0.000$). Pastoral communities use various methods of transferring best range management practices to ensure continuity. Other studies by Alsop (1999) suggest that for effective management of resources, there is need for ongoing communication, sharing of information, information exchange and of building trust. Similarly, Meinzen-Dick and Knox (1999) observed that indigenous knowledge, knowledge of government regulations, as well as technical or scientific knowledge is required for effectiveness of the user groups.

4.1.6 Livestock Breed Improvement

This results in improved animal production and reduction in the total number of heads required to meet a given production level. It leads to efficient use of resources, reduction in GHG

emissions and can contribute to sustainable rangeland management. Observational transect drives and photography revealed existence of some livestock breed improvement facilities in the study area (Plate 2). There was however inadequate coverage of structured livestock breeding programmes. Apart from government agencies, involvement of private sector, non-government organizations, local co-operatives, self-help groups and self-sustainable community-based breeding programmes were none existent. Moreover, these can ensure increased access to livestock breed improvement services. As a result, herders mainly relied on their local animals for breeding. There was widespread indiscriminate mating, resulting into perpetuation of inferior breeds with low productivity.

Plate 2: Livestock Improvement



Nasukuta Livestock Improvement Centre



Breed Improvement Goats at Nasukuta Centre

4.1.7 Livestock Marketing

Marketing creates a link between the farmers and the final consumers. There was considerable development towards improving livestock marketing. A number of livestock markets, holding grounds, slaughter facilities and modern livestock export abattoirs had been developed (Plate 3)

Plate 3: Livestock Marketing Infrastructures



Isiolo Export Abattoir



Nasukuta Export Abattoir



Moroto Slaughter House



Kaabong Livestock Market

Despite the several investments in marketing and value addition, it was revealed that these were inadequate. In addition, many herders, especially in Pokot South indicated that they didn't

know what the Nasukuta export facility was to handle. The study also observed that though herders had very limited knowledge of the emerging livestock export market, they understood the potential of livestock marketing in improving their livelihoods.

4.1.8 Alternative Livelihoods

The transect drives and walks revealed existence of a number of alternative livelihoods (Plate 4). These included retail businesses, beekeeping, sorghum, banana growing, stone quarrying and charcoal burning among others.

Plate 4: Livelihood Options



The study further revealed numerous challenges associated with apiary. The main challenges faced by the beekeepers were identified as expensive modern hives, lack of modern equipment, bee colony decline and honey pests. Other challenges included lack of credit, indiscriminate use of pesticides and lack of technical knowledge as highlighted in box 5.

“Our honey is from natural plants and would have been the best in the region if its quality was guaranteed. Farmers use poor quality traditional hives. The harvesting and processing is also poor that greatly compromise quality. Almost all harvested honey in the district is ferried to Kabaranet-Kenya honey processing factory. Thus, there is no ploughing back proceeds from processed honey to support bee farmers in Amudat. Farmers also don’t have access to credit that they would use to improve on bee farming. During the desert locust infestation, there was unnecessary and untargeted spraying by the military. This also killed bees and even now, some effects are still felt. There is need to support farmers acquire modern bee hives, harvesting gears and processing equipment. There is also need for establishment of a honey processing facility in the district. In future cases of disaster outbreak, government should always involve technical officers to support the military.”

Box 5: Statement by Robert Kimanai, District Production Coordinator - Amudat

4.1.9 Policies/Strategies/Investments in Rangelands

The study revealed that majority of respondents (Fig.5) didn’t have clear knowledge on government policies/laws/strategies or investments related to sustainable rangeland management. The study also showed that those at higher government levels, for example at ministries, zonal or regional levels had better understanding of policies and strategies compared to those at the grassroots.

Figure 5: Policy Responses

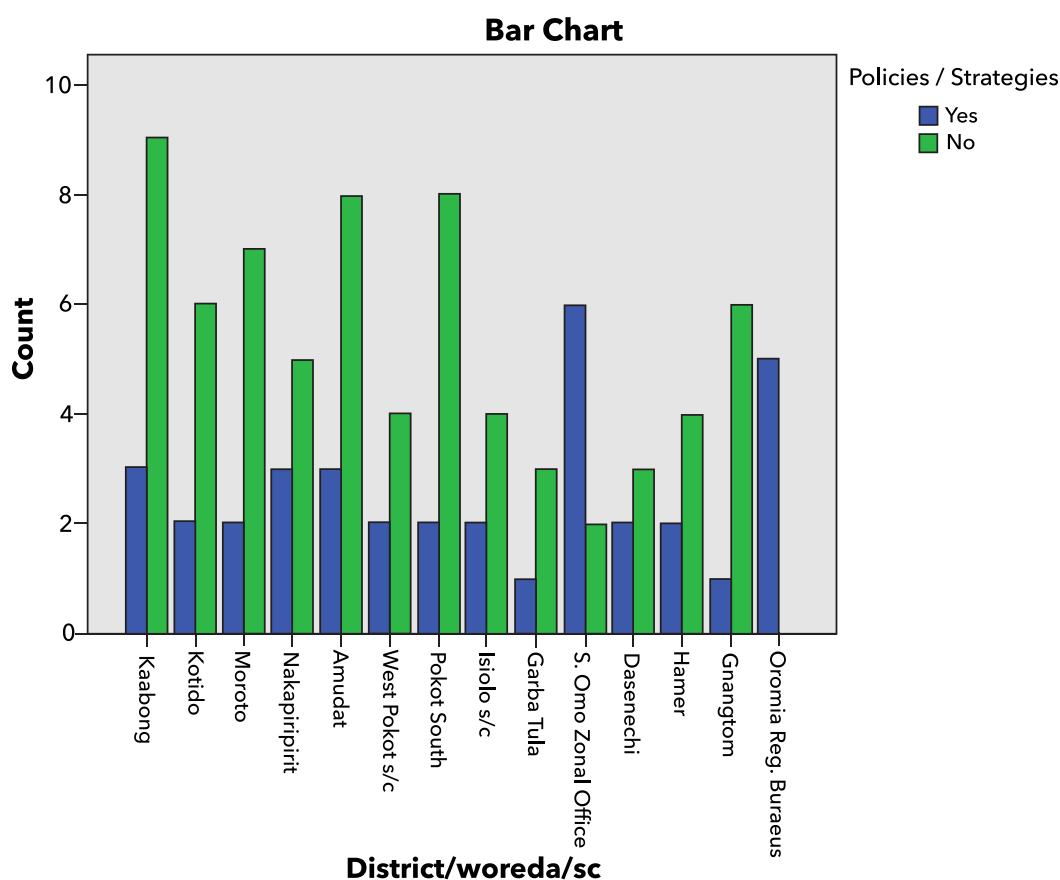


Figure 5: Policy Responses

Furthermore, responses from the FGDs attested that they were less informed on most programs or policies as explained in Box 6. The chi square showed significant differences in knowledge

between those in higher offices and those at the grassroots ($\chi^2 = 19.474$; $p = 0.000$). This could be attributed to the fact that those at higher levels are in most cases the initiators or are directly involved in formulation of projects and policies, thus have better understanding of government initiatives. On the other hand, those at the grassroots are rarely involved during formulation of policies, laws and projects. Even during implementation, the stakeholders at the grassroots are either inadequately sensitized by higher officers. This could be as a result of the perennial inadequate resources' allocation to policy or project formulation and implementation.

"We feel totally neglected by administration and left behind in development. We understand that the Kenyan government enacted the Community Land Act in accordance with the 2010 constitution, but this has not been approved by the Isiolo County Government. Maybe if this Act was approved, our situation would improve. We also get rumors that the national government is going to construct the Lamu Port, South Sudan, Ethiopia Transport (LAPSSET) Corridor. This is going to affect us since part of our land will be taken and some of us might get displaced. Unfortunately, apart from the rumors, no government official has briefed us about LAPSSET. We don't know its benefits and how we as a community will participate in it."

Box 6: Statement by Abdirizak Osman Ali, Chairman Elders Kiina, GarbaTulla

4.1.10 Extension services

There were several players offering extension services in the pastoral areas. However, governments were playing a central role in increasing farmer access to information, knowledge and technology. All the nations, i.e. Ethiopia, Kenya and Uganda have decentralized form of governance in which provision of services including veterinary extension has been transferred respectively to regions, counties and districts respectively. These entities are thus charged with the responsibilities of ensuring that farmers at the grassroots receive extension services and transform their standards of living. Elaborate structures with clear hierarchy, right from the ministries to the lowest unit, had been developed. However, the approved staffing structures were not fully filled in all units visited.

A number of development partners including among others, FAO, USAID, Oxfam, ActionAid, Veterinaires sans Frontieres (VSF), World Vision, Welt hunger hilfe, Mercy Corps, SNF and ILRI were identified as supplementing governments' efforts in the IGAD pastoral rangelands (Plate 5). They were giving support in disease control activities, such as vaccinations, surveillance, research in livestock diseases, provision of drugs, vaccines and cold chain facilities, training of farmers and Community Animal Health Workers (CAHWs) or Community Disease Reporters (CDRs), among others. In addition, they were also involved in drought response interventions. Plate 5: Partners offering livestock related services

Plate 5: Partners offering Livestock Related Services

<p>EU in West Pokot</p>	<p>Feed The Future: Dasanech</p>	<p>World Vision In Amudat</p>
<p>Training CAHW - Hamer</p>	<p>Drug Shop - Nakapiripirit</p>	<p>CAHW Training to Treat Animals</p>

Several private service providers, especially drug shops were also providing vet extension services. Farmers were able to buy drugs for treating their animals and occasionally receive advice. There was however a danger of drug abuse, primarily due to the limited knowledge on drug safety.

Despite the presence of several players in extension, the services were inadequate. FGDs showed dissatisfaction with the type and quality of extension services offered as explained in Box 7.

“We, pastoralists are not taken seriously by government. Crop farmers are given fertilizers and enough extension workers, but not us. This ward, large as it is with a population of over 20,000 heads of cattle has only one veterinary staff that has no means of transport, no equipment, no drugs and no office. The vet is not even resident. He only comes when there is vaccination to mobilize us take animals for the exercise. The Community Disease Reporters are no longer working after the Veterinary Board restricted their services. Surely, we need to be treated fairly. Government should hire more vets and adequately facilitate them to serve us.”

Box 7: Statement by Francis Lekula, Chief Oldonyiro, Isiolo Sub-county

4.1.11 Civil Society Organizations

The study revealed existence of a number of CSOs that promote issues of pastoralists. These among others included Pastoralists Forum Ethiopia (PFE), Land for Life in Ethiopia, Pastoral Development Network of Kenya (PDNK) and Coalition of Pastoral Civil Society Organizations (COPACSO) in Uganda. These organizations also support pastoralists to build their capacity for engagement with policy processes at both local and national levels. They collaborate with Pastoralist Parliamentary Groups (PPGs) in Kenya, Uganda and Ethiopia, which bring together law makers representing pastoralist constituencies. They also play a critical role in advocacy for pastoralism and campaign for the domestication and implementation of the regional policies that are supportive of pastoralism to ensure that pastoralists benefit from opportunities within the region.

4.1.12 Early Warning Systems (EWS)

The study showed existence of EWS. However, these were reported to be inadequate, paid very limited attention on livestock and seen as focusing mostly on crop sector. It was noted that the systems were unreliable, with inaccurate and inappropriate data that was difficult for end-users to interpret. The field observational tours and photography revealed presence of weather stations in the study area though some were non-functional and had been abandoned (Plate 6).

Plate 6: Weather Stations



4.1.13 Emerging Issues

There were a number of emerging issues identified in the study area (Table 4). Prolonged dry spells and droughts were the biggest challenge faced by communities in the IGAD pastoral rangelands. Isiolo, West Pokot and Pokot South sub counties are the most severely affected. These sub counties seem to be in the rain shadow. Transect drives and FGDs in Isiolo alluded to the absence of a permanent river since the drying up of Ewaso Nyiro due to cultivation and irrigation upstream. Limited water infrastructure development initiatives were also observed, thus making these areas most susceptible to prolonged dry spells and droughts.

Table 4: Emerging issues

Responses (%)															
Issues	Kaab	Kotido	Morot	Nakp	Amud	W/ Pok	Pkt South	Isiolo	Garb	S.Om	Das	Ham	Gnag	Reg. Bur	Total
Conflicts & Insecurity	41.7	37.5	11.1	25.0	9.1	16.7	0.0	16.7	25.0	25.0	20.0	33.3	28.6	20.0	21.9
Prolonged Dry spells & Drought	8.3	12.5	44.4	37.5	36.4	50.0	50.0	50.0	25.0	12.5	40.0	16.7	28.6	20.0	30.5
Land Degradation	8.3	12.5	11.1	0.0	27.3	16.7	20.0	16.7	25.0	25.0	0.0	16.7	14.3	20.0	15.2
Animal Diseases	16.7	25.0	22.2	12.5	18.2	16.7	30.0	0.0	0.0	25.0	20.0	16.7	28.6	20.0	19.0
Inadequate Policies & laws	8.3	0.0	0.0	12.5	9.1	0.0	0.0	16.7	25.0	12.5	20.0	16.7	0.0	20.0	8.6
Wild fires	16.7	12.5	11.1	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8
															100

Some other emerging issues identified included disease misdiagnosis, especially by CAHWs leading to wrong treatment of diseases contributing to livestock deaths; lack of disease control infrastructures; poor feeder roads; breakdown of the traditional principles; poor access to healthcare services, which make the communities resort to using herbs; limited access to education, hence the high illiteracy rate and cultural stigmatization; Climate Change with its associated events like floods and more severe droughts. High poverty level was forcing some communities to resort to environmentally unfriendly activities that include charcoal burning, quarrying and deforestation. The absence of adequate marketing facilities was also identified as a cause of the low off-take rates of livestock.

Pastoral rangelands have also become easy targets to land grabbing and acquisition. Land is being taken from communal users without compensation for other purposes, including cultivation on different scales (photo 5), mining concessions and for nature conservation, among others.

Photo 5: Commercial Banana Production in Dasenech

Invasive plant species were also identified to be undermining pastoral resilience. Some of the most prevalent invasive plants compromising rangeland productivity were identified as *Calitropis procera*, *Prosopis juliflora* and *Parthenium hysterophorus* (plate 5)

Plate 7: Invasive Plant Species



Additionally, inadequate access to market was also highlighted as another constraint in increasing the welfare of the pastoral and agro-pastoral households in the study area. Marketing is so essential to pastoralists, not only as a mechanism where pastoralists exchange their livestock and livestock products for cash, but also facilitates destocking of animals during drought (Turner and Williams, 2002; Barrett and Luseno, 2004).

4.2 Gaps and Solutions

A number of administrative, social economic, political, ecological and technological factors still constrain rangeland management and delivery of extension services in the IGAD rangelands. These have had detrimental effects and negatively impacted on the welfare of the people in the region. These are as outlined in Table 5 below.

Table 5: Gaps and Solutions

Pertinent areas	Gaps	Solutions
International, continental and regional commitments	Limited political and institutional framework for Member States to implement.	Institute rewards and sanction mechanisms to enlist compliance
	Inadequate requisite resources, both financial and skilled human resources	Assign adequate resources and build capacity
	Inadequate infrastructure and the difference in political doctrine and economic policies in the Member States	Need for harmonization of political, economic doctrines and invest in infrastructure
Member States' land/range use laws and policies	Do not adequately address the principle of equitable access to land and tenure security for all landholders and users	Need for review of the existing frameworks
	Limited policy documentation on land use/ rangeland management in all Member States, e.g. there are no popular (summarized) versions and documents aren't translated into local language	Fast track development of policy documents on land use planning and rangeland management in all IGAD Member States
	Inadequate/lack of implementation of laws and policies	Strengthen sensitization and enforcement
	Inadequate specific funding for policy development and implementation	Solicit deliberate adequate funding for policy development and implementation
	Limited political goodwill and adherence to policy and legal framework	Institute advocacy and capacity building for leaders
	Conflicting interests for land and other resources	Include pastoralism as a legitimate and effective land use system that contributes to national economies
	Inadequate seasonal pastoral mobility	Support inclusion of pastoral mobility in frameworks
	Minimal consultation/involvement of the concerned stakeholders in investment decisions	Develop accountable decision-making and effective representation
	Underutilization of indigenous knowledge	Formal recognize traditional pastoral institutions and indigenous knowledge to ensure cultural and ecological diversity for resilience
	Limited coordination in development efforts	Fast track, intensify, and improve coordination efforts
		Strengthen pastoral institutions and community organizations as key facilitators for coordination between public institutions
	Contradiction and conflict between traditional and formal systems	Reconcile and harmonize states and pastoral communities to co-exist
		Improve consultations and participation mechanisms for pastoralists, recognizing them as citizens with legitimate rights
	Lack of supportive legal frameworks for traditional institutions	Develop appropriate frameworks that recognize customary systems and strengthen synergies with statutory systems
Insufficient awareness on the need for better governance and management of rangelands	Build capacity and create awareness	
Inefficiencies in the governance institutions	Strengthen governance institutions	
Underutilization of the existing resources	Promote efficient use, protect and conserve resources	

Pertinent areas	Gaps	Solutions
Extension	Blanket content that does not take into account variations in agro-ecological zones.	Address differences in agro-ecological zones with emphasis on enterprises
	Limited production practices and omits other stages of the value chain which are important for optimizing returns	Incorporate value propositions in extension to ensure creation of more income to farmers
	Inadequate resources, i.e. personnel, technical and infrastructure	Recruit, train and equip extension workers with pastoral extension materials and early warning
		Adopt a regional approach to offering extension in ASAL
		Adopt and popularize pastoral tailored e-extension in addition to the existing extension systems.
		Legalize operations of CAHWs/ CDRs
	Irregular visits due to poor motivation of staff	Adequately facilitate extension workers.
		Pay adequate hardship package to extension staff working in rangelands
	Weak research-extension linkage	Strengthen the academia-research-extension linkage so that solutions are location-specific and adequately answer farmers' problems
	Pre-occupation of extension experts with implementation of a number of government/state functions	Relieve rangelands' extension staff from other government assignments
Inadequate on food safety and nutrition	Consider both food safety and nutrition in the context of vet extension and delivery approaches	
Inadequate on marketing and value addition	Incorporate marketing and value addition aspects in extension	

4.3 Opportunities

The IGAD rangelands have a number of opportunities that, among others, include:

a) International and Continental Pastoral Organizations

There is a growing number of international and continental organizations. Among them are the World Initiatives on Sustainable Pastoralism (WISP), World Alliance of Mobile Indigenous People (WAMIP), International Land Coalition (ILC) Rangeland Initiative, Indigenous Peoples of Africa Coordinating Committee (IPACC) and most recently, the FAO Pastoralist Knowledge Hub that are making significant contribution towards strengthening the voice of pastoralists and improving governance of rangelands.

Relatedly, IGAD can also leverage on the presence of the Association for International Agricultural and Extension Education (AIAEE), as well as the African Forum for Agricultural Advisory Services (AFAAS) to promote efficient extension services in pastoral areas and enhance productivity of its vast rangelands.

b) Demand for Organic Foods

There is an ever increasing preference for organic foods at the international market with consumers willing to pay a premium for organic products including pasture-raised products (Stampa et al., 2020). IGAD livestock are naturally grazed on the vast rangelands

and can therefore fetch premium prices if more investment is targeted at harnessing the vast rangelands to boost production of a number of products.

c) Regional Economic Blocks

All IGAD Member States also belong to several Regional Economic Communities (RECs) that can help to propel transition to modern and productive pastoral societies. Some of these RECs include the East African Community (EAC), the Common Market for Eastern and Southern Africa (COMESA) and the Preferential Trade Areas (PTA). The RECs constitute the building blocks of the African Economic Community that include the African Continental Free Trade Area (AfCFTA).

On account of its membership to RECs and strategic location with access to the Indian Ocean and Red Sea, the IGAD region has ready market and unrivaled potential to serve as a bio-products' production and distribution base to service Africa, Europe, the Middle East, South Asia and other parts of the globe. Currently, IGAD Member States export substantial surplus of unprocessed agricultural products to a number of African countries, EU, the Middle East, and USA among others, which robs the region of considerable amount of revenue and employment opportunities. The IGAD region can thus take advantage of accruals from trade to pursue more investments targeted at processing, value addition and sustainable utilization of its vast resources.

d) Proposed Developments in the Region

The proposed regional developments for example the establishment of the Lamu Port South Sudan Ethiopian Transport (LAPSSET) corridor with Isiolo International Airport already completed will open up the IGAD rangelands to the external world. These developments together with the proposed creation of resort cities are projected to contribute to more markets that can lead to rapid transformation of these rangelands.

e) Presence of Development Partners

There are a number of development partners that are willing to support the region to harness the vast bio-resources through efficient systems of production, consumption and processing while delivering on the region's quest for industrialization, job creation, shared prosperity and sustainable development. The key development partners in the IGAD region, among others, include FAO, Veterinarian Sans Frontier (VSF) the World Bank, United Kingdom's Department for International Development (DFID), African Development Bank, Japan International Cooperation Agency (JICA) and USAID. A number of these partners also support extension services in the region, e.g. FAO is involved in capacity building of both livestock farmers and staff.

f) New and Emerging Technologies

The compendium of new and emerging technologies has created a platform for technologies like Artificial Intelligence (AI), big data, Biotechnology, Internet of Things (IoT) to transform economies. IGAD can therefore leverage these to improve production and harnessing of its rangeland resources.

g) Availability of Traditional Pastoral Institutions and Indigenous Knowledge

The presence of elaborate traditional institutions together with rich IK, immense social cohesion and community approach to solving problems related to environment and

natural resources' management that have facilitated pastoralists and agro-pastoralists to adapt to the variable and uncertain rangeland ecosystem can be harnessed in designing community-based risk management projects. The community approach to issues that underpins the traditional safety net systems can also be used successfully in harnessing range resources and promoting transformational shared prosperity. Further, the notable well-built internal conflict management mechanisms among pastoral communities can be leveraged on to avoid and manage conflicts; ensure that interventions are conflict sensitive; and to enhance collaboration and cooperation.

h) Increased Awareness on Climate Change

In the recent past, there has been a lot of interest and attention given to Climate Change issues, not only at global stage, but also at continental, regional and national levels. Relatedly, there is availability of funds for investments in Climate Change related issues. Since the IGAD rangelands have significantly suffered from the vagaries of Climate Change, the region can leverage on the interest in addressing Climate Change to develop its rangelands.

g) The Vastness and Rich Biodiversity of Rangelands

The IGAD rangelands are vast expanses of land with various flora and fauna that contribute to sustainable economic production of goods, services and other indirect benefits. The rangeland ecosystems also act as watersheds, carbon sinks and recreation sites. They are also home to various wild animals that form the basis of tourism and harbor sacred and spiritual sites that have cultural values. The IGAD region has potential to harness even more from its rangeland resources provided there are enabling investments together with conducive policy, legal and regulatory frameworks.

h) The Weather Conditions

The prevalent weather conditions characterized by abundant sunshine and wind plus the abundant biomass that remain relatively undeveloped can be harnessed into renewable energy for livestock and domestic uses. This will contribute to reduction on fossil oil dependence and range degradation.

5.0 PROPOSED RANGELAND USE PLANNING, EXTENSION AND INVESTMENTS

Achievement of sustainable rangeland management in the IGAD region should be driven by strong commitment to embracing agricultural systems adaptable to ecological and climate variability to optimize not only food and feed production, but also use existing opportunities for local value addition and revitalize pastoral rural communities. This will require coherent rangeland use planning, strong extension service systems and robust investments.

5.1 Rangeland Use Planning Framework

An effective rangeland use planning framework should address the bottlenecks in the existing frameworks. It should be one that among others emphasizes:

a) Gender Mainstreaming

In order to effectively manage rangeland resources and ensure equitable access to those resources, it is important to recognize that both women and men play essential but different roles in using, conserving, and managing rangeland resources. There is therefore need for gender mainstreaming to support incorporation of a gender perspective in planning and management of rangeland resources.

Drawing on the different knowledge and skills of women and men provides a larger pool of solutions for addressing issues of environmental degradation. Building the capacities of both women and men through training and making technologies accessible can reduce the pressure on natural resources and enhance the ecosystem functions and services that rangelands provide. Addressing the different needs of women and men and reducing gender inequalities does not only benefit people, but also helps improve rangeland conservation and management.

In addition, there should be promotion of women's rights and entitlement over land, water and markets to ensure equity and provide the basis for efficient planning of land use in the IGAD rangelands.

b) Strengthening Pastoral Communities' Capabilities

Strengthening the pastoral communities' capabilities to achieve social and development objectives including poverty reduction, can enable them to claim their rights, utilize opportunities within rangelands and make full contribution, both economically and ecologically. Relatedly, Davies and Nori, 2008 opined that strengthening pastoralists' rights so that they can better manage climate variability was a better alternative than the costly investments in technical solutions. Therefore, there is need to address the fundamental development needs, such as access to education, extension, markets, health services, and security among others that compound the decline in adaptive capacity and undermine pastoral resilience. This can go a long way in promoting sustainable livelihoods, rural development, as well as environmental sustainability of the resources on which pastoral and agro-pastoral communities depend.

c) Effective Participation

Participation of pastoralists and agro-pastoralists in defining solutions is important to

ensure that strategies adopted improve their well-being. It is necessary to enhance pastoral and agro-pastoral community participation and responsive, accountable representation in decision-making arenas and processes related to their land. This will demand regulations for securing participation and serious commitments to representation in decision-making and empowerment of communities to stand up for their rights.

d) Effective Coordination

Coordination helps to improve the efficiency of different value chain actors by avoiding overlapping efforts and duplication of work. Besides, coordination also helps ensure unity of action in the face of disruptive forces, e.g. Climate Change. It reduces transaction costs in the context of solving the complex and diffuse problems associated with rangelands. To ensure that IGAD reaps optimum benefits, there is need to effectively coordinate activities of multiple actors (including governments) for complementarity towards a common goal. Welding together different players and actions, as well as subordinating individual state interests or efforts can ensure effective accomplishment of development activities in the region.

e) Legal Recognition of Customary Systems

Customary systems have evolved over hundreds of years to effectively manage and protect pastoral resources. Preservation of existing customary practices, such as herd movement requires legal recognition to provide for seasonal use of a wide variety of ecological resources.

Legal recognition of customary systems provides a basis for developing trust and respect, which creates the foundation for collaboration. It also empowers range users to safeguard their tenure rights against outsiders, including other communities and investors. It has the added value of allowing space for local ecological and social knowledge to flourish, and provides the basis for responding to change and addressing conflict. There is therefore need for all IGAD Member States to ensure development of national policies dedicated to rangeland ensuring fair treatment of pastoral issues and protection of their rights. Where states claim ownership of rangelands, these policies should recognize range users' rights to access and use of land and related natural resources. There is also need to review the existing land frameworks and incorporate pastoralism in land-use planning for long term sustainability. Efforts should also be made to fast track and operationalize the IGAD Protocol on Transhumance.

f) Recognition of Indigenous Knowledge

Indigenous Knowledge (IK) systems provide a fundamental link between social and environmental systems and contribute to maintenance of ecological diversity and biodiversity, which underpins food security (FAO, 2016). Pastoral and agro-pastoral communities in the IGAD region possess IK that has contributed to their socio-ecological resilience. There is therefore need to recognize IK as a critical component of the ecological-social interactions in sustainable rangeland use. This can be achieved through recognition and support of knowledge holders to improve ways of documenting and sharing the knowledge.

5.2 Extension

Extension and advisory services are important components of agricultural development strategies, even though the extension community's voice and experience are often marginalized in debates about strategy design and implementation. ICT-enabled extension has the potential to raise this voice and attract renewed attention to the role of extension. However, according to Davis (2008), there is no most preferred extension model for a particular country.

In order to effectively address veterinary extension services and make the IGAD pastoralists more resilient to environmental change, there is need for a flexible, pluralistic, participatory and client-oriented extension approach that harnesses ICT and the extension workers' intimate knowledge of their clients and life situations to plan for problem-oriented extension activities. This approach will permit extension staff not only to be transmitters of technical knowledge, but also to act as "socio-economic community workers" practicing participatory methods, recognizing and respecting gender issues, identifying indigenous needs and problem solutions, and serve as a link to the world outside the community.

In addition, achieving an effective agricultural extension service to accelerate development requires other important factors, such as markets, agricultural improved technology, availability of supplies, production incentives (quality seeds/breeds, fertilizers and herbicides) and transport. It will also require capacity building of the staff to be more equipped with knowledge in natural resource management and marketing of range products.

To supplement the efforts of extension workers, the practice of CAHWs/CDRs should be legalized. The selection of these cadres should also change to target those with at least certificate level of secondary education. They should be adequately trained to effectively handle livestock disease control and prevention. This therefore calls for an urgent need to streamline institutional and organizational structures, improve staffing and budgetary allocation of government ministries, departments and agencies charged with the responsibility of extension to enable them to effectively discharge their mandates.

Furthermore, Binswanger-Mkhize (2009) observed that small countries that dominate the African scene often lack financial capacity for public goods investments and opined that achieving success in agriculture can be better if done on a regional or sub regional basis. There is therefore need for IGAD to embrace a regional approach to offering extension services, more especially for its pastoral rangelands if it is to achieve meaningful sustainable rangeland management. This also calls for IGAD to pursue a strong international commitment to strengthening and revitalizing its extension services and personnel resources.

5.3 Investments

Despite both socio-economic and political recognition of the contribution made by IGAD rangelands, private or public investments to purposely develop them remain low (MAAIF, 2014). Pastoralists thus face chronic water shortages, livestock diseases and frequent droughts (Sabiiti and Teka, 2004). The sustainable development of rangelands and improvement of livelihoods for the dependent communities and those beyond should thus be a priority development agenda in the IGAD region. This calls for adoption of an integrated approach that stimulates productivity and induces implementation of sustainable natural resource management practices. To achieve this, a demand-driven participatory mechanism towards investments should be espoused since earlier approaches (top-down) that neglect local people

seem to have failed. This is because local people apart from being the direct beneficiaries and implementers of developed strategies, they possess a rich knowledge base about the dynamics of natural resources since they have lived in these areas for many years. The investments should involve interventions targeting, inter alia, increased land and livelihoods systems' productivity and water management options (Table 6).

Table 6: Proposed Investments

Type of investment	Proposed intervention
Water	Develop surface and underground water facilities (dams, borrow pits, valley dams, boreholes, etc.)
	Develop irrigation programs to support pastoralists produce food and feed to enhance food security
Renewable energy	Support the development and/or upgrade of renewable energy sources, e.g. wind and solar to support irrigation and reduce on fossil fuel dependence
Rangeland rehabilitation	Support restoration of rangeland health and productivity through reseeding, pasture production, invasive species control, grazing management, participatory rangeland management and Sustainable Land Management (SLM) practices
Feed	Develop quality feed production for all seasons and use it to achieve sustainable livestock production
	Introduce and scale-up drought tolerant pasture seed production units to promote pasture improvement and feedlot systems
	Support establishment of feed conservation with focus on construction of storage facilities
	Introduce appropriate technologies for feed processing, e.g. conversion of pasture into pellets
	Support use of crop residues and by-products from agro-industrial processing as additional feed to livestock
ICT	Strengthen the ICT infrastructure and advance e-services
Breeding	Introduce and support an elaborate and well-coordinated breed improvement scheme, preferably using dry tolerant breeds of livestock, e.g. Boran cattle, Galla goats and Blackhead sheep to increase productivity
Livestock health services	Establish strong Veterinary Preventive medicine and animal health institutions to improve livestock efficiency and increase their resilience to new risks, including those resulting from Climate Change
	Recruit more veterinarians, equip and adequately facilitate them
	Increase on number of veterinary diagnostic facilities, equip and maintain them
	Legalize, recruit, train and equip CAHWs to supplement veterinarians
	Build veterinary capacity through recruitment and training of existing staff in diagnostics, laboratory investigations, epidemiology, marketing and natural resource management

Type of investment	Proposed intervention
Value proposition (Embrace bioeconomy)	Develop and promote efficient value chains in use of range resources to address inter-connected societal challenges, such as feed, food and nutrition security; health; environment, natural resource depletion and Climate Change while achieving sustainable development
	Provide incentives for investment in sustainable rangeland management by establishing total economic value of rangeland ecosystems, developing conducive policy environment and creating opportunities for value addition of rangeland products to attract private investors
Capacity building	Support sensitization and capacity building for drought risk management, Climate Change adaptation and mitigation by mainstreaming climate risk management into development planning; promoting livelihood diversification and ecosystem based adaption; strengthening existing regional drought early warning systems
Research and Development	Support research activities and initiate training of rangeland management personnel, knowledge sharing and technology uptake, awareness raising by deepening understanding of rangeland ecosystems, as well as pastoral production systems among experts and decision makers
Early Warning Systems	Develop efficient early warning systems to enable prompt response and support resilience of range users
	Strengthen the existing Early Warning Information Systems for food security and put in place disaster preparedness response measures to mitigate extreme climatic events
Alternative livelihoods	Strengthen the alternative livelihood options, such as beekeeping to reduce over reliance on livestock
Livestock marketing	Improve marketing outlets for livestock and livestock products to enhance livestock farmers' income
	Develop marketing and processing infrastructure
Policy	Review the existing incoherent policies to effectively promote sustainable rangeland management
	Review existing laws and policies to legalize operations of CAHWs/CDRs
	Fast track approval and domestication of the regional protocol on cross-border transhumance to support inter-community peaceful and equitable access and sharing of rangeland resources
	Support development of legislations to enable enforcement of by-laws for effective regulation of access and management of rangeland resources

6.0 CONCLUSION

The IGAD rangelands provide goods and services that not only support livelihoods of millions of pastoralists and agro-pastoralists, but are also valued by many far beyond the IGAD region. The rangeland goods contribute to national, regional and global food markets, providing high-value livestock products to rapidly growing and increasing affluent populations. There is therefore need to ensure that these rangelands become more productive, sustainable and reliable. This can be achieved by strengthening the pastoral tenure, extension services and robust investments.

The social networks and institutions existent among pastoral range communities that sustain land tenure systems can also provide a starting point for other initiatives, including land planning, healthcare, education, extension or sustainable development projects. A hybrid pluralistic, client-based and client-oriented extension approach that harnesses ICT and the extension workers' intimate knowledge of their clients can contribute towards achievement of sustainable rangeland management in the IGAD region. IGAD Member States need to strengthen and revitalize their extension services by embracing a regional approach to offering extensions services if they are to achieve meaningful sustainable rangeland management. Functional participation of all stakeholders is critical in ensuring success of adopted strategies for sustainable rangeland management.

7.0 LESSONS LEARNT AND RECOMMENDATIONS

7.1 Lessons Learnt

There were a number of lessons learnt from the study. These among others included:

- Stakeholders' capacity building is necessary for achieving sustainable rangeland management;
- Pastoral and agro-pastoral communities in the IGAD have rich indigenous knowledge that they have relied on to protect the rangelands, but these are slowly fading out;
- Inadequate funding by governments result in inadequate staffing and delivery of extension services, thus frustrating efforts of achieving sustainable rangeland management;
- Functional participation of pastoral range communities is critical in ensuring success of adopted strategies for sustainable rangeland management;
- Inadequate commitment from Member States frustrates implementation of international, continental and regional agreements;
- Regional collaboration is critical to successful delivery of extension services and any development effort;
- Development and provision of irrigation facilities has the potential to transform the IGAD region into a food basket, not only for the range communities, but also for the region and beyond;
- Some IGAD Member States do not have dedicated national land policies leave alone specific ones for management of rangeland;
- There are several pockets of insecurity curtailing development in the rangelands;
- The IGAD Transhumance Protocol exists, but has not been actualized to enable development of cross-border climate resilient livestock infrastructures;
- Though IGAD rangelands are chronically water stressed, it has fertile virgin soils that can support feed and food production;
- No single government in the IGAD region is successfully offering adequate extension services, and;
- No single extension approach can adequately address extension needs of the rural pastoral communities.

7.2 Recommendations

- Capacity building and awareness-raising should be conducted as key steps towards the adoption of better technologies and practices in rangeland management.
- Functional participation of pastoral range communities should be promoted to ensure success of adopted strategies for sustainable rangeland management.

- Documentation and sharing of Indigenous knowledge among pastoral communities should be supported.
- Sufficient national funding should be provided to enable wider extension coverage and ensure all farmers receive adequate knowledge and technologies. IGAD with partners should source funding for regional projects to address common challenges regionally.
- IGAD Member States that don't have national land and rangeland policies should be supported to fast-track their development. This will go a long way in addressing the tenure system.
- Security should be improved upon to curb cattle rustling and ensure sustainable development in the IGAD rangelands.
- Member States should fast-track the domestication of the IGAD Transhumance Protocol to facilitate unrestricted cross-border livestock movement and development of cross-border livestock infrastructures.
- IGAD Member States should also expedite domestication of regional rangeland management strategy and any other policy frameworks that relate to management of rangelands.
- Communication infrastructure including ICT should be developed to boost the use of e-extension in addressing the extension needs of pastoral communities.
- The abundant sunshine and wind in the region should be harnessed into renewable energy to address the energy demand to transform the rural rangelands.
- Regional collaboration should be strengthened to improve delivery of extension services in the IGAD region.
- A hybrid digital extension approach should be developed and popularized to strategically plan and efficiently deliver problem-solving, demand-driven and needs-based agricultural extension services.

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