



PEACE, PROSPERITY AND
REGIONAL INTEGRATION

REGIONAL STRATEGIC FRAMEWORK: RANGELAND MANAGEMENT FOR ARID AND SEMI-ARID LANDS OF THE IGAD REGION



ICPALD





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DISCLAIMER

This Regional Rangeland Management strategic framework was prepared with financial assistance from the World Bank through the Regional Pastoral Livelihoods Resilience Project (RPLRP). As such, the designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of IGAD. Any opinions, findings, conclusions, or recommendations expressed are solely those of the author and consulted representatives of IGAD Member States, and do not constitute in any way the official position of IGAD Centre for Pastoral Areas and Livestock Development (ICPALD) and the World Bank.

Cover Photo: Cattle in a Ranch in Laikipia County

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FOREWORD

Rangeland ecosystems in arid and semi-arid lands (ASALs) stretch over 60 percent of the IGAD region landmass. It is an important economic resource, has ecological significance and cultural values for the inhabitant pastoral and agro-pastoral communities. It provides feed for domestic animals, wood for fuel and construction, raw materials for household consumption and for industries including honey and minerals and other rangelands products – directly supporting livelihoods of more than 10 per cent of the region's population. The management of the rangelands, now and into the future, is therefore of great interest and consequence to the whole region.

Rangelands in the IGAD region are undergoing changes as a result of climatic stresses, weak governance institutions and unregulated use. Maintaining and improving rangelands productivity, to match with the competing needs of growing livestock, wildlife and human populations, requires some form of planned inputs. Such inputs can be financial, technological, improved practices, governance institutions, research and among others. Governments and communities in the IGAD Member States have been exercising different rangeland management practices. However, these efforts have so far been largely piecemeal, uncoordinated and not informed by a clear well-articulated regional strategy.

In recognition of the shared rangeland resources, interconnectedness of issues and shared responsibilities amongst the countries and communities, the IGAD Center for Pastoral Areas and Livestock Development (ICPALD) has facilitated the process of developing this strategic framework with inputs from rangeland stakeholders in the region including government and non-state actors. It was planned that this framework would guide the preparation of context specific strategy at national and sub-national levels in each of our Member States. It is my humble wish that this will come to pass in the not too distant future.

Dr. S. J. Muchina Munyua

Director, ICPALD

ACKNOWLEDGEMENTS

This Regional Rangeland Management Strategic Framework (RRMSF) is a product of comprehensive literature review of policy documents, plans, strategies of the IGAD Member States and other related information, as well as consultative meetings held in Ethiopia, Kenya, Sudan and Uganda.

The RRMSF received substantive input and review by experts and consultative teams comprising individual rangeland experts, as well as representatives of stakeholders and partner institutions within IGAD Member States. IGAD is grateful to the lead consultant, various experts, academia, government officials and representatives of development agencies and communities for their invaluable contributions that formed the basis of this strategy.

EXECUTIVE SUMMARY

Rangelands in the IGAD region are the backbone of livestock industry and contribute significantly to the member countries' national GDP by providing various economic and livelihood opportunities. They comprise about 60 – 70% of the total land area and are home to pastoralist and agro-pastoralist communities whose livelihoods mainly depend on extensive livestock production and rain-fed agriculture. With over 60% of livestock population found in the rangelands, livestock sector contributes 10% – 50% of the region's individual countries' agricultural GDP. Besides livestock production, these areas support rich diversity of flora and fauna of socio-cultural, economic and ecological importance. They are also sources of mineral, oil and gas and provide a host of ecosystem services including acting as watersheds and supporting important biogeochemical cycles. However, rangelands in the IGAD region are facing a number of challenges. These include inadequate policies: legal, institutional and organizational frameworks; declining range condition and productivity due to degradation and land fragmentation; and, poor regulation of access to rangeland resources due to weak governance institutions.

Other challenges are insecure land rights and tenure; restricted cross-border and inter-community herd movement; inadequate research, extension and human resource capacity to support implementation of rangeland management programmes; poor knowledge management system; low investment in sustainable rangeland management skills; and frequent droughts and climate change. The drought and erratic flood episodes normally result in depletion of water and pasture resources, often leading to conflict over the scarce resources, as well as livestock losses.

Sustainable management of the vast rangelands in view of the aforementioned challenges therefore remains one of the major concerns for researchers, policy makers and development practitioners in the IGAD region. It is against this background and recognizing the interconnectedness of issues, shared responsibilities amongst countries that IGAD undertook the development of the RRMSF for the ASALs in the region.

In preparing the RRMSF, ICPALD employed the principles of ownership, participation and partnership with the IGAD Member States and various stakeholders. The RRMSF is therefore a product of mixed approaches that included comprehensive literature review, consultative meetings and key informant interviews, as well as field observations conducted among selected Member States of IGAD namely; Ethiopia, Kenya, Sudan and Uganda, between January and July 2019.

The reviewed literature included Member States policies, strategies, reports and other documents and scientific publications, while stakeholders

consultation were mainly with rangeland management experts, decision makers, development agencies and pastoral and agro-pastoral community representatives. The situation analysis focussed on the challenges facing rangelands in the region, existing interventions, opportunities and priority actions to achieve sustainable rangeland management. In addition, the RRMSF was subjected to a validation exercise in a workshop attended by participants from the IGAD Member States representing practitioners, academia and civil society.

The broad objective of the RRMSF is to achieve sustainable rangeland management in IGAD region by addressing challenges facing rangelands through harmonization of policies and practices among the Member States, as a way of complementing the efforts of the IGAD Member States in sustainable rangeland management. The RRMSF, comprises proposed interventions based on 10 strategic objectives drawn from the literature review and consultations with experts and decision makers in the region. In addition, the RRMSF presents resources required to deliver the activities, expected outputs and outcomes, as well as indicators for their attainment as prerequisite for achieving sustainable and equitable access to rangeland resources.

The RRMSF is composed of four main sections. Section one presents definition of rangelands, background information on characteristics of rangelands, and their global extent. This section also presents an overview of the rangelands of the IGAD region highlighting the spatial coverage, socio-economic and ecological significance, the justification and objective of RRMSF, as well as the methodological approach used in the development of the Strategic Framework. Section two covers the situation analysis and brief overview of the main challenges and threats to sustainable rangeland management in the region. Section three presents a review of global, continental and regional policies and agreements related to rangeland management. Section four contains the strategic actions designed to realise the overall goal of sustainable rangeland management in the ASALs of IGAD region.

Lastly, conclusions are drawn from the challenges, existing interventions, opportunities and priority actions in the IGAD region.

The action plan of the RRMSF comprises the following strategic objectives and the associated interventions:

Strategic Objective 1: To improve policy and legal framework for rangeland management by supporting processes towards requisite policy environment and institutional support. This is expected to be achieved through implementation of existing policies or formulation of new ones where they do not exist, as well as through harmonization of rangeland related policies.

Strategic Objective 2: To strengthen organizational capacity for rangeland management through staffing, budgeting and equipping Departments and Agencies responsible for rangeland management, both at national and sub-national levels. It also include recognition and facilitation of traditional institutions of rangeland management to discharge their roles. This will ensure that rangeland issues receive requisite attention, and that there is adequate capacity to respond to challenges as they arise.

Strategic Objective 3: To improve rangeland health and productivity through reseeding and management of invasive species and re-introduction of native species, grazing management through participatory rangeland management planning and sustainable land management (SLM) practices. This is expected to result in increased rangeland plant cover and diversity; reduced soil erosion and vegetation degradation; improved range condition resulting in increased availability and improved quality of pasture.

Strategic Objective 4: To strengthen governance of rangeland resources through recognition and mainstreaming of customary institutions and development of legislation to enable enforcement of by-laws. This is expected to ensure regulated access and responsible use of rangeland resources.

Strategic Objective 5: To secure land rights and tenure regimes in the rangelands through formulation of land policies and enactment of relevant land laws. Emphasis will be given to the consolidation of rural land laws and regulations, leveraging on the existing customary institutions to develop rangeland rights; and development and implementation of frameworks for regional and national land policies.

Strategic Objective 6: To regulate rangeland use through land use policies and planning. This will entail formulation of land use policies and requisite laws by Member States; designation and gazettement of livestock corridors; and capacity building for rangeland managers in participatory rangeland management; and formulation of policies to harmonize and regulate multiple uses for optimization of benefits from the rangelands.

Strategic Objective 7: To establish and/or operationalize trans-border within countries, transhumance agreements and inter-community resource sharing mechanisms for free, safe and peaceful sharing of rangeland resources. This will require functional bilateral and multilateral cross-border and negotiated inter-community resource sharing agreements to facilitate movement of people and livestock across communities and national boundaries, and therefore ensure even use of the range landscapes and reduced conflicts over resources.

Strategic Objective 8: To improve research, extension, human resource capacity and knowledge management through support of research activities and training of various cadres of rangeland management personnel. This will involve awareness raising and deepening understanding of rangeland ecosystems and pastoral production system among experts and decision makers.

Strategic Objective 9: To promote investment in sustainable rangeland management by creating various incentives. Among these are; revealing total economic value of rangelands and creating opportunities for value addition of rangeland products to attract private investment in rangeland management.

Strategic Objective 10: To strengthen drought risk management and climate change adaptation and mitigation through appropriate drought risk management and interventions. Among them is mainstreaming climate adaptation into development planning; strengthening existing regional drought early warning system and contingency fund to permit early action in case of impending drought; and promotion of ecosystem based adaptation and mitigation measures through payment of ecosystem services approaches and livelihood diversification.

Whereas considerable progress has been made in formulating policies related to rangeland management in individual IGAD Member States and regionally, there are still significant challenges that could be addressed by harmonizing the existing policies and drawing lessons from on-going interventions in various countries.

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ABBREVIATIONS AND ACRONYMS

AEZ	Agro-Ecological Zone
ALRMP	Arid Lands Resource Management Programme
AU	African Union
CBAHW	Community Based Animal Health Workers
CCCCF	County Climate Change Fund
COMESA	Common Market for Eastern and Southern Africa
CRM	Climate Risk Management
EBA	Ecosystem Based Adaptation
EWS	Early Warning System
FAO	Food and Agriculture Organization
FDRE	Federal Democratic Republic of Ethiopia
FEWS	Famine Early Warning System
GDP	Gross Domestic Product
GIS	Geographic Information System
GIZ	German Society for International Cooperation
GoK	Government of Kenya
ICPALD	IGAD Center for Pastoral Areas and Livestock Development
IGAD	Intergovernmental Authority on Development
IIED	International Institute for Environment and Development
ILRI	International Livestock Research Institute
IUCN	International Union for Conservation of Nature and Natural Resources
LEWS	Livestock Early Warning System
MS	Member State
NDVI	Normalized Difference Vegetation Index
PRM	Participatory Rangeland Management
RPLRP	IGAD Regional Pastoral Livelihoods Resilience Project
RRMSF	Regional Rangeland Management Strategic Framework
SDG	Sustainable Development Goal
SLM	Sustainable Land Management
SRM	Sustainable Rangeland Management
TBNRM	Trans boundary Natural Resource Management
TEV	Total Economic Valuation
TVET	Technical Vocational Education and Training Institute
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNEA	United Nations Environment Assembly
UNEP	United Nations Environment Programme
USAID	US Agency for International Development
WISP	World Initiative for Sustainable Pastoralism

INTRODUCTION

1. Definition of Rangelands

In the context of this strategy, rangelands refer to types of land within Arid and Semi-Arid Lands (ASALs) dominated by natural or semi-natural vegetation suitable for extensive livestock production and wildlife conservation (Homewood, 2004; Pratt et al., 1966; <http://globalrangelands.org>), but are less suitable for arable farming due to climatic limitations such as scarce and unreliable rainfall, high evapo-transpiration and poor soils (FAO, 2008). Allen et al. (2011) define rangelands as “Land on which the indigenous vegetation (climax or sub-climax) is predominantly grasses, grass-like plants or shrubs that are grazed or have the potential to be grazed, and which is used as a natural ecosystem for the production of grazing livestock and wildlife”. Earlier definitions of rangelands by Pratt et al. (1966) and Pratt and Gwynne (1977) depict rangelands as “land carrying nature or semi-natural vegetation which provides habitat suitable for herds of wild or domestic ungulates. All these definitions characterize rangelands as lands supporting vegetation suitable for grazing/browsing where livestock are managed extensively and feed on native vegetation; where rainfall is considered to be too low or erratic for agricultural cropping or for improved pastures production.¹ Rangelands include annual and perennial grasslands, shrub and dry woodlands, savannah, tundra, and desert (Pratt and Gwynne (1977).

1.2 Classification of Rangelands

1.2.1 Classification Based on Aridity

Based on aridity index, rangelands are classified into various agro-ecological zones (AEZs) that include hyper arid, arid, semi-arid and dry sub-humid. The AEZs are derived from moisture indices (annual rainfall expressed as a percentage of potential evaporation - Eo) (Sombroek et al., 1982). The relevant rangeland zones are categorized as semi-humid to arid regions covering AEZs four (IV), five (V), six (VI) and seven (VII), all having moisture indices of less than 50 percent and receiving ≤ 1000 mm mean annual rainfall (Table 1). Whereas there are pockets of agriculturally high potential areas in the rangelands, most parts of the rangelands are arid and semi-arid with high crop failure. The AEZ VI (semi-humid to semi-arid) is productive rangeland with marginal agricultural potential; AEZ V (semi-arid) with annual rainfall typically less than 600 mm is mainly comprised of dry thorn-bush land with dispersed trees and is only suitable for extensive livestock production; AEZ VI is arid, and AEZ VII is very arid and is classified as desert.

¹ (<https://www.agric.wa.gov.au/rangelands/rangelands-glossary>)

Table 1: Classification of Arid and Semi-Arid Lands (ASALs)

AEZ	r/E_0 (%)	r (mm)	E_0 (mm)	Climatic Designation
IV	40-50	750-900	1800-1880	Semi-humid to semi-arid
V	25-40	525-750	1880-2095	Semi-arid
VI	15-25	520-525	2095-2150	Arid
VII	<1	170-320	2150-2280	Very arid

r = Average annual rainfall; E_0 = Average annual potential evaporation

1.2.2 Physiognomic Classification

Rangeland vegetation includes grasslands, shrublands, savannahs and woodlands, with some degree of intermediate vegetation associations between the dominant forms (Reid et al, 2007; Pratt et al., 1966; Pratt and Gywnne, 1977):

- **Shrublands**

These are vegetation classes composed of mainly multi-stemmed woody vegetation, which are smaller in stature to trees but larger than herbs. Shrubs range from 1 - 8 meters tall depending on the bio-physical environments, and often dominate areas receiving about 200 - 700mm of rainfall per year (Reid et al, 2007).

- **Woodlands**

Woodlands are characterized by tree canopy cover of more than 10% and herbaceous layer and unlike the forests that form interacting and closed canopy crown, in woodlands the crown have larger openings that give rise to shrubs, herbs or grass to survive. The woodlands are classified on the basis of tree density and ground cover: closed, sparse, and those with understorey of shrubs, herbs and grasses. Woodlands are normally found in areas receiving average annual precipitation of between 300 and 1000mm per year. Some of the dominant woody vegetation species in the region's rangelands are members of the Acacia genera such as *A. tortilis*, *A. drepanolobium*, *A. reficiens*, *A. xanthophloea*, *A. brevispica*, *A. mellifera*, among others. The Acacias are often interspersed with other species, among others, *Balanites aegyptiaca*, *Commiphora* species, *Combretum* species, *Croton* species, *Adansonia digitata*, and *Euphorbia* species (Reid et al, 2007).

- **Grasslands**

Grasslands are found in areas with sufficient moisture for grasses to grow; but where biophysical conditions and anthropogenic disturbances do not favour growth of trees. They occur in areas that receive average annual rainfall ranging from 100 - 600mm. The grasslands are dominated by grasses and grass-like herbaceous plants with less than 10% tree and shrub cover. The main grass species include *Themeda triandra*, *Chloris gayana*, *Cynodon dactylon*, *Panicum maximum* and *Setaria sphacelata*, *Aristida species*, *Eragrostis superba*, *Cenchrus ciliaris*, *Chrysopogon species*, *Pennisetum species*, and *Hyparrhenia species*, among others (Reid et al, 2007). When rainfall exceeds 400 mm per year, shrubs or even forest flourish resulting into intermediate sub-types such as bushed grasslands and wooded grasslands.

1.3 The Geographical Context of Rangelands

1.3.1 Global

Globally, rangeland ecosystems cover about 40% of land area occupied by more than 38% of the total global population (MEA, 2005). Figure 1 shows global distribution and extent of rangelands.

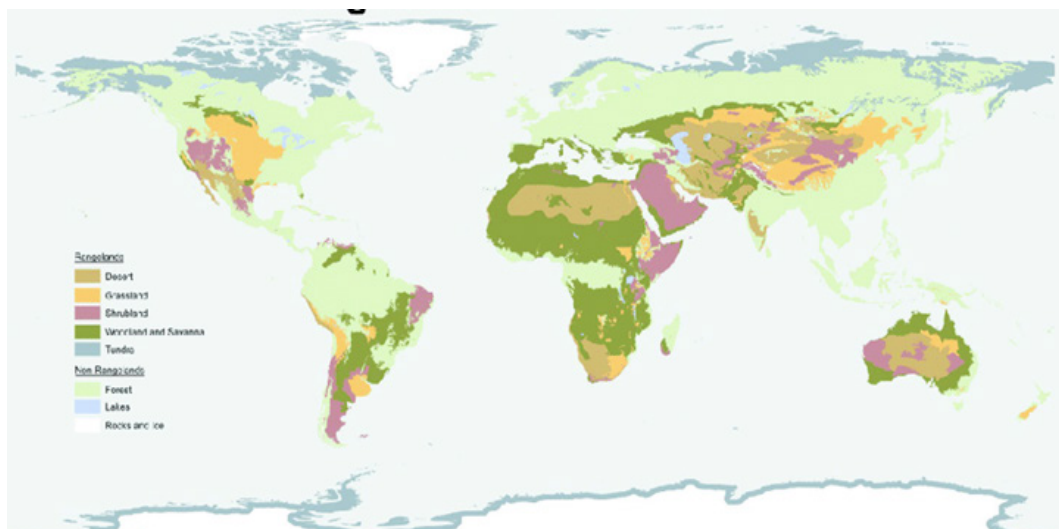


Figure 1: Rangelands of the World

1.3.2 Africa

In Africa, approximately 43% of land surface is classified as rangelands, more than half of the 70% of the terrestrial surface that is categorized as drylands (UNEP, 2009). With approximately 40% of the continent's land dedicated to pastoralism (Bollig et al., 2013; FAO, 2018.), it is the main source of livelihoods for the rural population in the vast rangelands of Africa.

1.3.3 IGAD Region

The IGAD region consists of eight countries namely Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan, Sudan and Uganda and supports human population of about 300 million within a total area of 5,209,975 sq. km out of which about 60 -70% is classified as arid and semi-arid rangelands (IGAD, 2017; IGAD, 2015). Figure 2 shows the extent of rangelands in the IGAD region.

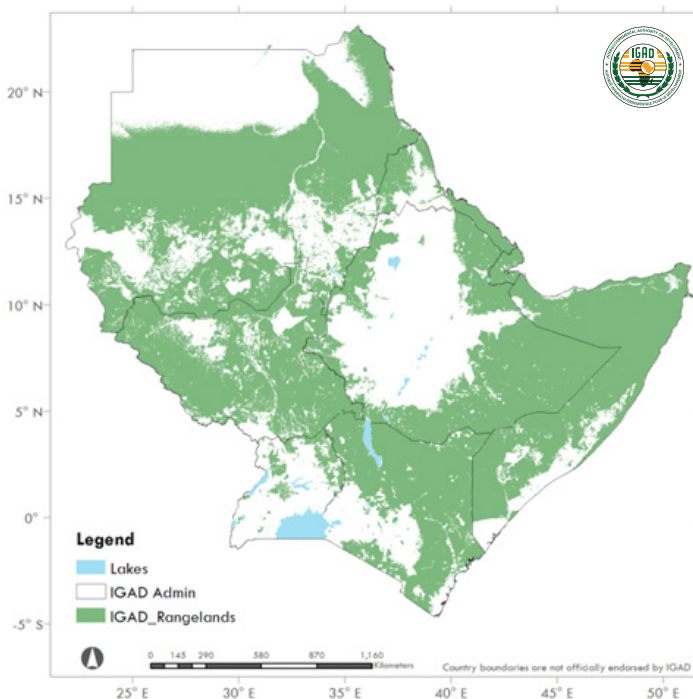


Figure 2: Rangelands of IGAD Region

1.4 Significance of Rangelands

1.4.1 Socio-Economic and Ecological Importance of Rangelands

Rangelands are mainly inhabited by native communities whose main livelihood activity is extensive livestock production, which relies mainly on natural vegetation. According to UNCCD report of 2009, rangelands support approximately 2 billion people worldwide (Hutchinson et al. 2011; MEA, 2005), 268 to 325 million pastoralists & agro-pastoralists in Africa (UNCCD, 2009). About 69% of the rangelands in developing countries are used for livestock production (Safriel et al., 2005) and contributes 10% of global meat production (Rodriguez, 2008). Livestock production in rangelands accounts for between 50% and 80% of agricultural gross domestic product (GDP) in developing countries (Neely et al., 2009; Mortimore et al., 2009). In the IGAD region, rangelands are the backbone of livestock industry that provides various economic opportunities along the value chain, therefore contributing

significantly to the member countries' national GDPs. Extensive livestock production, characterized by seasonal herd mobility to track pasture and water over expansive rangelands, is the dominant land use in the ASALs of IGAD employing up to 90% of pastoralist populations in the region. About 53% of the regions cattle (51 million), 71% of the goats (58 million) and 68% of the region's sheep (58 million) are found in the ASALs (FAO, 2008). Pastoral production is found at all scales of operations, with most being small herds, providing meat, milk, blood, hides and skins, as well as transport, storage of wealth, means of social security and obligations, security against disasters, obtaining goods and services through barter and generation of cash through local trade or export markets (FAO, 2008). In the Horn of Africa, livestock sector contributes 10% – 50% of the individual countries' agricultural GDP (Behnke et al., 2011; ICPALD, 2013; ICPALD 2017).

Besides livestock production, rangelands are habitats for a diversity of flora and fauna of both socio-cultural, environmental and economic significance. They are a source of various goods such as timber and non-timber products such as fibre, gum and resins, honey, medicinal and food plants, minerals, oil, gas, among others. In addition, the ecosystems provide various services that include water catchment, scenic beauty, as well as habitat for wildlife that form the basis of ecotourism in respective countries. Rangelands also host sacred sites that are valued for spiritual and religious purposes. These sites often conserve islands of indigenous biophysical resources, including important biodiversity, as well as being linked to the cultural identity of certain ethnic groups (Wild and McLeod, 2008, Verchurren et al., 2010). Rangelands therefore have high cultural diversity closely linked to the ecosystem diversity.

Generally, rangelands in Africa are the new frontier for development; as Africa's population grows, rangelands serve as sinks for the immigrant populations from the agriculturally high potential areas. In addition, with infrastructure development and large scale investments, as well as expansion of urbanization, towns located in the rangelands currently act as business hubs that link the frontiers to the rest of the countries.

1.5 Managing Rangeland Ecosystems

1.5.1 The Socio-Economic-Biophysical Nexus in Rangelands

Rangelands are multifaceted ecosystems of deeply interwoven social-cultural, economic, ecological, geopolitical and climatic interactions (Figure 3). The socio-cultural and ecological factors are intricately linked determining rights and access to and use of rangeland resources. The ecological factors that include range condition and spatial and temporal variations influence resource

use pattern and social relations among resource users in the rangelands. In turn, the socio-ecological components are inherently influenced by economic factors that inform certain decisions regarding access and use of resources.

Climate is however the main driver of ecological condition of the rangelands as it determines seasonal variations in availability, quantity and quality of pasture and water, ultimately affecting socio-cultural and economic variables in the rangelands. Current climatic extremes and shifts in inherent climate variability that are believed to constitute the climate change, are therefore considered a threat to healthy rangelands and secure pastoral and agro-pastoral livelihoods. Given the social, cultural, ecological and economic complexity of the rangelands, any effort towards achieving healthy and sustainable rangeland ecosystems and secure livelihoods, should therefore never address the individual components of the ecosystem in isolation.

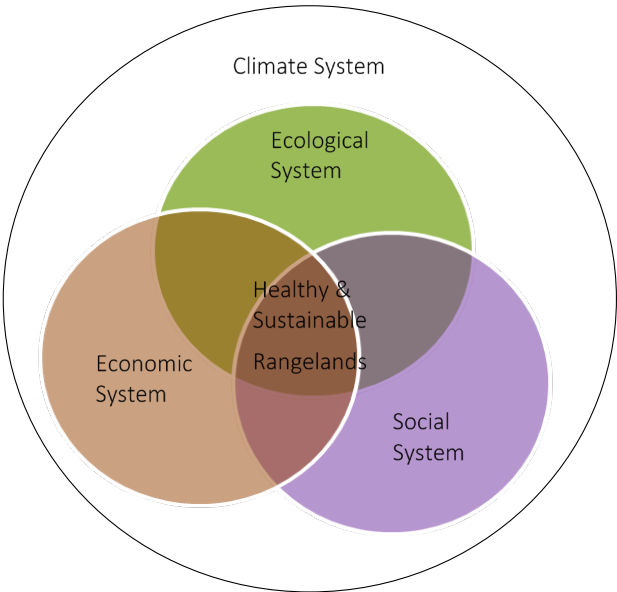


Figure 3: *Rangelands as Complex Socio-Ecological Systems*

1.5.2 Rangeland Management

Rangeland management is the art and science of optimizing production from the rangeland ecosystems. It mainly involves manipulation of vegetation and animals to achieve even and optimal use of range resources. The classic range management is based on four principles namely: the right type of animal; the right number of animals; the right time of grazing; and the right frequency of grazing. However, under the Africa’s pastoral context, the focus is not only on manipulation of the environment and grazing animals alone but a host of other factors that allow pastoral communities to harness rangeland resources

which are unevenly distributed in space and time. These considerations include mobility that allows tracking of resources across spatial and temporal scales; institutions (customary and statutory) that regulate resource use and ensure peaceful and equitable access to rangeland resources; secure land rights; security and peace; supportive policies and legislations; social, economic and human resources; as well as capacity to cope with drought and adaptation to climate change.

Even though rangelands are ideally managed for multiple uses, extensive livestock production is the dominant economic activity in these areas. Therefore, sustainable pastoral production system would reflect sound rangeland management. In view of this, there is no doubt that rangeland management and pastoral production system development in Africa are inseparable and therefore must be addressed concurrently for sustainable and resilient rangeland environments and livelihoods.

1.6 Justification for the Regional Rangeland Management Strategic Framework

Rangelands in the IGAD region, like elsewhere in the continent, not only have local significance but also ecological and socio-economic importance that transcend national boundaries. Therefore, the challenges facing rangelands in the IGAD region necessitate the need for a strategy that promotes an integrated landscape approach, which brings together multiple stakeholders to create a balance among competing needs and interests towards sustainable rangeland management. In recognition of the shared rangeland resources; interconnectedness of issues and shared responsibilities amongst the countries and communities, there is need to harmonize rangeland management policy and legal frameworks and practices across IGAD region. It is imperative to develop a common approach towards rangeland management for not only trans-boundary rangeland resources but also the entire interconnected rangeland ecosystems in the IGAD countries.

A regional rangeland management strategic framework (RRMSF) is particularly required to address the problem of weak linkages and coordination of policies on rangeland development and actions by stakeholders. Harmonization of the policies and practices is necessary for synergy and specifically for the purpose of minimizing overlaps and enhancing efficiency of development programmes. Ultimately, the Strategic Framework is expected to compliment ongoing efforts to enhance resilience of arid and semi-arid ecosystems and livelihoods by supporting the formulation and implementation of policies aimed at sustainable management of rangeland ecosystems, which area resource base for millions of people living within and outside the drylands of IGAD region.

1.7 The Objectives of the Strategic Framework

The broad objective of the Strategic Framework is to achieve sustainable rangeland management by addressing challenges facing rangelands in IGAD region through harmonization of policies and interventions among Member States of IGAD region.

Specifically, RRMSF seeks to:

- Offer a basis for IGAD Member States to formulate and operationalize sound rangeland management policies and actions as pre-requisites for sustainable rangeland development;
- Promote consensus for shared principles as the basis for securing land rights, access to rangeland resources by all users and enhancing rangeland and livestock productivity for sustainable livelihoods;
- Suggest actions aimed at achieving healthy and productive rangelands, as well as equitable access to range resources that Member States can adopt in keeping with their respective national rangeland contexts.

1.8 Methodological Approach

A combination of methods were employed in collecting pertinent information, including literature review and consultations with a wide range of stakeholders on rangeland management and pastoral issues in selected IGAD member countries namely; Ethiopia, Kenya, Sudan and Uganda. The stakeholders included pastoralist and agro-pastoralist communities, national and sub-national governments, researchers, academia and development agencies. Key informant interviews, direct observations and consultative meetings were used to gather relevant information on key challenges, existing interventions, opportunities and priority rangeland management actions in the respective Member States. Among the reviewed literature included continental, regional and national policies and proclamations related to rangeland, and their limitations and implications for sustainable rangeland management. The review also included various reports and scientific publications on challenges facing rangelands, rangeland condition and trends, existing rangeland management interventions and recommended actions to achieve sustainable rangeland management in the region. The priority interventions comprising strategic objectives and corresponding activities were developed based on the situation analysis drawn from both literature and consultations with various stakeholders in the region. Finally, the draft RRMSF was subjected to a validation exercise in a workshop attended by participants from the Member States (MS), among them Ethiopia, Kenya, Somalia, South Sudan, Sudan and Uganda.

SITUATION ANALYSIS

2.1 Challenges and Threats to Sustainable Rangeland Management in IGAD Region

Rangelands in IGAD region are facing a 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. The main constraint to extensive livestock production, which is the main livelihood activity in these areas, revolves around diminishing productivity of the rangelands and access to pasture and water driven by a number of factors that work in a concerted way to undermine rangeland health and pastoral livelihoods. Figure 4 summarizes the key challenges facing rangeland management in IGAD region and their consequences.

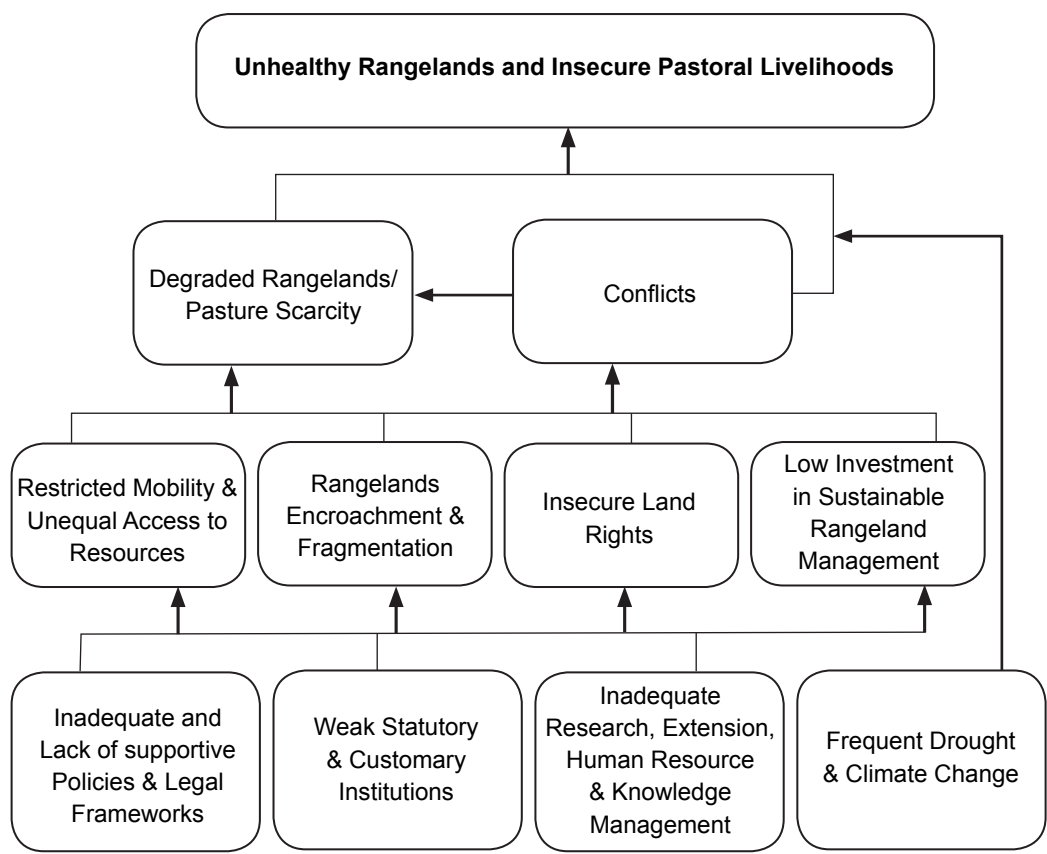


Figure 4: Cause-Effect Framework of Challenges in the Rangelands of IGAD Region

The following section briefly describes some of the key challenges in the rangelands of IGAD region identified from literature reviews and consultations with various stakeholders in the region.

2.1.1 Inadequate Policy, Legal, Institutional and Organizational Framework

Despite some effort by IGAD Member States in developing policies related to rangeland management, there are some fundamental gaps in policies and institutional framework for rangeland management in the region (ICPALD, 2017). Whereas previous policies have been anchored on misconceptions about the drylands and pastoralism, a general paradigm shift informed by a better understanding of the ASALs and opportunities for enhancing sustainable rangeland management in Africa through policy and institutional frameworks continue to emerge. For example, the on-going progressive regional integration push for mobility of pastoralists across borders has been recognized as one of the approaches of managing transboundary rangelands resources. However, in most Member States of IGAD region, there are no clear government Ministries or Departments responsible for solely rangeland management, and the mandate is normally scattered in various state departments dealing with livestock production, agriculture, natural resource, with the consequence that little attention is given to rangeland issues with regard to staffing, budget allocation and appropriate policies.

2.1.2 Rangeland Degradation

Land degradation in the context of drylands is: “a reduction or loss, in arid and semi-arid and dry sub-humid areas, of the biological or economic productivity and complexity of rainfed cropland, irrigated cropland, or range, pasture, forest and woodlands resulting from land uses or from a process or combination of processes, including processes arising from human activities and habitation patterns” (UNCCD, 1994). Of key interest in the rangeland ecosystems is the biological degradation that normally manifests in loss of vegetation cover; increase in undesirable plant species; bush encroachment and soil erosion of various types associated with intensification of use.

Majority of the drylands in Africa suffer various forms of environmental degradation and at varying degrees, including, soil erosion, destruction of wildlife habitats, loss of biodiversity, salinization of irrigated areas and soil compaction (AU-IBAR, 2012). Evidence from Normalized Difference Vegetation Index (NDVI) shows that Sub-Saharan Africa (SSA) accounts for 17% of the global 3.623 billion ha that experienced land degradation between 1982 and 2006, with the Eastern, Central and Southern African sub-regions experiencing the most-wide spread degradation (Le et al., 2014). Probably rangeland degradation in IGAD region is mainly associated with land tenure change that is accompanied by conversion of rangelands to other uses such as settlements and crop cultivation. Such land use changes alter range utilization patterns and restrict herd mobility thereby leading to range degradation (Maitima et al., 2009; Kimiti et al., 2018). Rangeland degradation therefore undermines

the ability of dryland communities to cope with the inherent challenges of a complex and dynamic system. Figure 5 shows land degradation pattern in IGAD region.

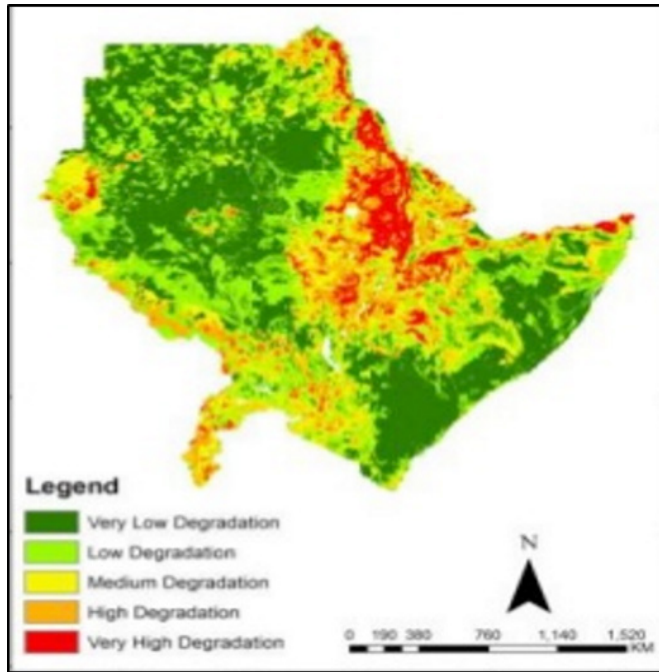


Figure 5: Land Degradation Index Map for IGAD (May –Sept, 2010)

In addition to loss of rangeland cover, undesirable plant species that do not originally belong to the rangelands tend to invade and increase with pressure of use, as well as land use changes, competitive ecological advantages, and climate change (Pasiiecznik et al., 2001). One such invasive species, which is now common in the IGAD region is *Prosopis juliflora*, an evergreen tree native to South America, Central America and the Caribbean. Having been introduced in Africa in the 1820s (Kyuma, 2016), the earliest introductions being in Senegal, South Africa and Egypt in the early to late 19th century (Pasiiecznik et al, 2001), *P. juliflora* has since spread and invaded other areas forming dense, impenetrable thickets and is associated with unfavorable impacts on human economic activities (Mwangi and Swallow, 2005). *Prosopis juliflora* invasion has been reported as a challenge in Ethiopia (FDRE, 2014); Kenya and Sudan (Mwangi and Swallow, 2005); and Somalia (Michele, 2016). Other invasive and weedy species reported in the region include *Acacia reficiens*, *Parthenium hysterophorus*, *Ipomea kituensis*, *Opuntia ficus-indica* (Kenya); *Calotropis procera* and *Latana camara*, *Solanum incanum*; *Senna spectabilis*; *Phytolaca species*; *Mimosa species*; *Cymbopogon species* (Uganda); *Calotropis procera*; *Ipomoea carnea*; *Zornia glocholiata*; *Ischaemum brackyatherum*, *Ocimum basilicum*; *Acacia nubica* and *Sorghum purpureo-sericum* (Sudan).

The downward trends in rangeland condition in the region is also associated with declines in water quantity and quality, as well as aquatic and riparian habitats. The processes of rangeland degradation are exacerbated by increasing climate variability and frequent droughts, which lead to pasture scarcity and consequently loss of livestock productivity. The depletion of various water resources including the underground sources, rivers and water pans is expected to worsen with climate change and increasing periods of drought in the rangelands of IGAD region.

2.1.3 Weak Governance of Rangeland Resources

A key feature of the drylands in Africa is the strong social organization and customary institutions that have helped pastoralists to adapt to uncertainty and due to their flexibility have contributed to enhanced resilience in rangeland ecosystems (AU-IBAR, 2012; ICPALD, 2017). The traditional institutions have been very instrumental in governing rights to water, land and other rangeland resources, as well as in conflict resolution. Whereas the formal and informal (traditional) institutions in Africa's ASALs have coexisted and evolved over time, the dual application of the two especially where they are not integrated, poses serious challenges to effective and sustainable governance of rangeland resources. In addition, control of access and management of rangeland resources under traditional institutions has over time been weakened mainly by unsupportive policies and a tendency for state-centric natural resource management common in Africa. Like in other parts of Africa, IGAD region is facing a breakdown of the traditional institutions that govern access to grazing lands (AU-IBAR, 2012), leading to an 'open access' scenario characterized by lack of corresponding regulatory mechanisms to control use of resources.

2.1.4 Insecure Land Tenure, Land Use Change and Rangeland Fragmentation

Land tenure determines the rights of use and access to land and its resources and therefore plays an important role in determining the land management options available to users. Property rights regime in the rangelands of IGAD exhibit multiple and overlapping rights that are authorized by multiple institutions across different jurisdiction (ICPALD, 2017). Even with the existence of statutory laws, the natural resources in the rangelands are traditionally owned, managed and used collectively by different users often under different tenure arrangements (IIED and SOS, 2010). Changes in land tenure may therefore alter the behaviour of individuals and local communities leading to land degradation, for example, overgrazing following the settlement of nomadic pastoralists. Most of IGAD Member Countries do not have clear land policies, and where they exist there are often difficulties in implementing them

given the complexities in harmonizing them with the existing customary land laws. Such confusion in dual application of land laws is evident in Ethiopia's Regional States (ICPALD, 2017). In addition, where land policies already confer ownership to communities as in the case of Kenya through the community land Act (GoK, 2016b), there are still lack of subsidiary legislation to enable implementation of the laws.

Rangelands throughout sub-Saharan Africa are currently undergoing major pressures including land fragmentation arising from land tenure and land use change driven by land demand for agriculture, as well as conservation. In East Africa, for example, the general trend has been towards land privatization, and fragmentation of former communal holdings (Olson, 2006). The most common type of fragmentation in the rangelands of IGAD region is the conversion of rangeland into large scale agriculture, residential and urban development (Flintan, 2011). Rangeland fragmentation in the Horn of Africa has led to reduction of access by herders to vital grazing and water resources (Hobbs et al., 2008), competition over resources between herders and wildlife, sedentariness of pastoralists and increases in the intensity of resource use in areas where water and grazing remain accessible (Olson, 2006).

2.1.5 Restricted Transboundary and Inter-Community Resource Sharing

Given the spatial and temporal distribution of rangeland resources, communities living in the arid and semi-arid rangelands have developed mobility as a coping strategy for harnessing these resources when and where they exist. To ensure peaceful co-existence with neighbors, pastoralist communities traditionally negotiate access to resources outside their territories. Such resource sharing and herd mobility agreements were traditionally sanctioned through customary institutions, which also served as conflict resolution structures. However, most of the customary institutions have been rendered ineffective, more so, resource sharing arrangements made under such institutions can only be sustainable if integrated with statutory protocols, especially in the case of transboundary movements.

There has been relatively good progress in formulation of policies and agreements concerning transboundary movements in Africa following the Economic Community of West Africa States (ECOWAS) legislative framework for cross border mobility, which provides for International Transhumance Certificate to be used by pastoralists in the 15 Member States (IIED and SOS, 2010). In 2009, Common Market for Eastern and Southern Africa (COMESA) region drafted policy framework for food security in pastoral areas, which seeks to harmonize national policies to support pastoral movement and efficient use

of transnational rangeland ecosystem and promote livestock trade (African Union, 2010). In addition, the East African Community (EAC) developed the EAC Transboundary Ecosystems Management Bill, to provide for the management and regulation of Transboundary Ecosystems in the EAC (EAC, 2010), which is expected to enhance management of rangelands particularly with regard to wildlife, pastoralism and water resources. At regional scale, IGAD region has developed a Protocol on Transhumance that will ensure that animals move across the region legally and safely, as well as give pastoralists rights and obligations through the engagement of local leaders and security agencies across the region. Similarly, the African Union developed a Pan African pastoral policy framework which aims to secure, protect and improve the lives, livelihoods and rights of African pastoralists (African Union, 2010).

Despite the efforts in formalization of herd movements across borders, including bilateral and multilateral memoranda of understanding among countries with shared resources in IGAD region, most of the agreements are yet to be operationalized. The consequences of the situation include conflict over resources and rise in transboundary livestock diseases. In addition, failure to recognize and allow the customary institutions to play their role in mediating among pastoral communities has also led to increasing cross-border and inter-communities' conflicts currently witnessed in the region. Such conflicts normally lead to confinement of livestock herds to smaller areas thereby causing rangeland degradation.

2.1.6 Inadequate Research, Knowledge Management, Extension and Human Resource Capacity

Limited research funding for rangeland management is evident in IGAD region. In Ethiopia, for example, major fund for agricultural and rangeland research comes from government sources (Abate et al., 2014). However, the intensity of the country's agricultural research investment effort remains far below the Sub-Saharan African average (Beintema and Menelik Solomon, 2003) and is one of the lowest in Africa standing just at 0.19% in 2011. This could partly be due to limited resources that have to be shared among competing needs. This may also still be largely due to underestimation of value of rangelands in the region. Generally, there is scarcity of data on pastoralism and rangelands as indicated in the report "A case of benign neglect: Knowledge gaps about sustainability in pastoralism and rangelands" by Johnsen et al. (2019). Even in some IGAD Member States where considerable research studies on rangeland management have been done, the application of their findings is rather low (Personal communication, Rangeland Scientist, Ethiopia). This could be partly attributed to the approach but largely on the lack of involvement of the target

users and beneficiaries. Another challenge is lack of qualified rangeland experts to implement the policies on rangeland management, as well as lack of lower cadre personnel to provide the extension services. Only three countries (Kenya, Ethiopia and Sudan) in IGAD region have Universities and middle level institutions offering courses related to rangeland management.

2.1.7 Inadequate Investment in Sustainable Rangeland Management

There is generally low investment in rangeland management compared to other sectors such as agriculture. This has been mainly attributed to the traditional misconceptions about rangelands and pastoral productions system, as well as lack of empirical evidence on the value of rangeland ecosystems and pastoral production system. Rangelands have been persistently undervalued as information on their comparative and competitive advantages over alternative land uses is inadequate (Gituku et al., 2015). This has resulted in the unfair distribution of resources to rangeland areas, which has left them lagging behind in terms of development (Iruata et al., 2015). This lack of understanding of rangelands' contribution to the region's national economies is partly to blame for the unsupportive policies, little attention and limited investment that rangeland management receives in national budgets (Davies 2007). Whereas the government and policy makers have always battled with insufficient data and information to make informed decisions, especially when it comes to development for rangelands, in instances where such data exist, they are often underestimated due to failure to capture the enormous non-tangible benefits of rangelands. The consequence is the lack of interest and incentive to allocate requisite budget and develop appropriate policies for rangeland development. The value of rangelands and pastoral ecosystems therefore continue to remain largely invisible (Kratli, 2014) and less attractive for governments and private investors.

2.1.8 Recurrent Drought and Climate Change

The impacts of drought in the rangelands is normally manifested in depletion of water points and reduced forage and livestock production, leading to food insecurity. Livestock and human deaths are common during droughts. Major droughts in the region occur about every ten years and moderate droughts every three or four years (GoK, 2013). Figure 6 presents long term drought occurrence in IGAD region.

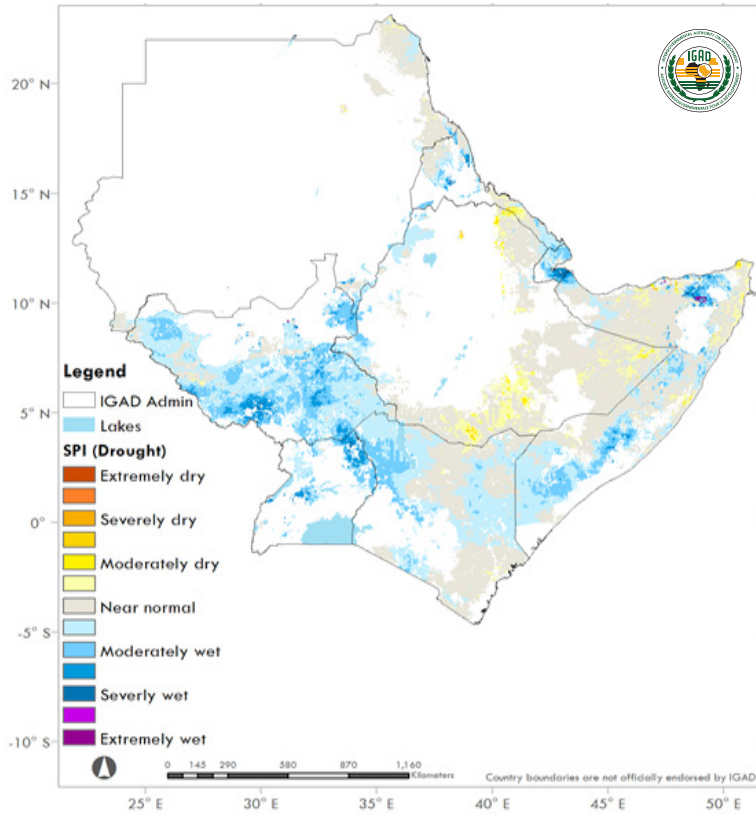


Figure 6: Long-term Average Drought Episodes in IGAD Region

Drought has adverse impacts on ecosystems and biodiversity as it lowers the vigor and productivity of vegetation and may lead to the decline or loss of certain species, or invasion by less desirable but more drought-tolerant species (GoK, 2016a). Climate change is expected to exacerbate the sustainability of most production systems, threaten long-term agricultural productivity and food security (FAO, 2012).

The most devastating impact of drought and climate change in the rangelands is its role in amplifying range degradation, leading to pasture scarcity and the subsequent reduction of livestock productivity due to loss of condition and death.

A REVIEW OF RANGELAND MANAGEMENT RELATED POLICIES, STRATEGIES, AGREEMENTS AND INITIATIVES

Most governments in the Horn of Africa recently started investing moderately in drylands with particular emphasis on developing pastoralism and improving livestock production, but in most cases ignored sustainable management of the rangeland resource base. Much of the failure is attributed to the poor understanding of the socio-ecological and climatic complexity of rangeland ecosystems, coupled with inadequate institutional support and biased development agenda. The situation is often made worse in the absence of requisite policies and legislation on which to anchor development interventions aimed at achieving sustainable rangeland management. This section gives an overview of some of the global, continental and regional rangeland management related policies, strategies, resolutions and initiatives.

3.1 Global Agenda, Resolutions and Initiatives

Globally, the United Nations Summit of the 2030 Agenda for Sustainable Development underscored the fact that socio-economic development will depend on the sustainable management of our planet's natural resources (UN, 2015). The report of the summit underscores the UN's determination to conserve and sustainably use natural resources such as freshwater, forests and drylands and to protect biodiversity, ecosystems and wildlife, tackle water scarcity, strengthen cooperation against desertification, reduce land degradation and drought, and to promote resilience and disaster risk reduction. In this regard, it is noteworthy mentioning some of the UN-Sustainable Development Goals (SDG) relevant to sustainable rangeland management, such as:

- **SDG 1:** End poverty in all its forms everywhere;
- **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;
- **SDG 16:** Promote just, peaceful and inclusive societies.

At the Convention on Biological Diversity COP 13 in Cancun in December, 2016, 28 government and 48 civil society organizations signed a strong statement that recognizes the value of rangelands, grasslands and pastoralism for

biodiversity. Since 2010, at least 10 such declarations and statements have emanated from gatherings of pastoralists around the world. Pastoralist organisations and pastoralist representatives continue to take center stage. For example, the World Alliance for Mobile Indigenous Peoples, campaigns to have a more visible profile and platform to press for pastoralists' rights to development, exchange best practices and solutions to problems, and revive and reinforce cultural traditions and diversity.

The Food and Agriculture Organization of the United Nations (FAO) has developed a Technical Guide on "Improving governance of pastoral lands" (Davies et al., 2016). Its Pastoralist Knowledge Hub advocates for sustainable pastoralism, pastoralist-friendly policies and a strong pastoral civil society. The initiative supports the sustainable management of rangelands: *"Improved rangelands and pastoral systems are a critical step towards food security, not only for pastoralists, but also to meet the growing world demand for healthy livestock products"*. Likewise, the United Nations Convention to Combat Desertification (UNCCD) urges "development and implementation of national and regional policies, programmes and measures to prevent, control and reverse land degradation and mitigate the effects of drought through scientific and technological excellence, raising public awareness, thereby contributing to poverty reduction" (UNCCD, 2008).

Since 2016, the United Nations' attempt to designate International Year of Rangelands and Pastoralists (IYRP) has gained a lot of support from various organizations. This led to the formalization of an IYRP Steering Committee that has spearheaded and actively engaged stakeholders and governments globally through meetings and events. During the United Nations Environment Assembly conference held in Nairobi in May of 2016 (UNEA-2) (UNEP, 2016), a resolution on **"combating desertification, land degradation and drought and promoting sustainable pastoralism and rangelands"** was passed by 158 countries, **calling for, among others, raising global awareness**. Another resolution approved at the Assembly highlighted the scarcity of information on pastoralism and rangelands and the need to conduct scientific research, starting with a gap analysis of existing data and information on rangelands and pastoralism.

During the fourth session of the UN Environment Assembly (UNEA-4) held in Nairobi from 11 - 15 March, 2019, a resolution on innovations in sustainable rangelands and pastoralism submitted by the African Group was endorsed by members of the Assembly. The resolution recognizes the critical role that sustainable rangelands and pastoralism play in addressing environmental challenges, maintaining biodiversity and ecosystem services, and other natural resources, and contributing to food security, sustainable tourism and socio-economic development, particularly to indigenous peoples, and local

communities. The resolution further urges Member States and invites all relevant stakeholders to raise awareness and promote innovative solutions for sustainable management of rangelands and pastoralism taking into account traditional knowledge on sectors such as agro-pastoralism, livestock, agroforestry, agriculture, renewable energy and ecotourism.²

3.2 Continental Policies

In Africa, only a few national governments and external actors recognize the importance of rangelands and pastoral livelihoods, or support them with appropriate policies and interventions. Pastoral communities living in the rangelands therefore rely heavily on customary or informal rights, which have become increasingly weak and ineffective. This situation, coupled with the absence of explicit attention to secure pastoral land rights threatens sustainable rangeland management in the continent. Over the recent decades, pastoralists across Africa have been calling for a continent-wide policy framework that can secure and protect the rangelands and pastoral livelihoods across Africa. The expectation is that such policy would move pastoral development efforts beyond the traditional single sector approaches, and embrace innovative ideas around sustainable rangeland management, effective governance and integration of livelihoods with expanding market opportunities. Some of the policies at continental level include the following:

- i. The African Union (AU) Policy Framework (AU, 2010a) for Pastoralism** underlines 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. In addition, the AU's framework emphasizes that rangeland policies and land use plans should consider:
 - Local people's participation in planning and implementation involving all beneficiary stakeholders who have recognized status and rights in rangeland and economic activities;
 - Community-driven initiatives for training in formal and technical skills to advance rangeland development and conservation;
 - Gender concerns for equitable access to land by men and women to motivate sound rangeland production systems and to promote people's welfare;
 - Needs to be cognizant of and protect the knowledge and culture of the indigenous people to reverse land degradation;

² (http://www.unep.org/about/sgb/cpr_portal/Portals/50152/2-24/K1607149_UNEPEA2_RES24E.pdf); <https://globalrangelands.org/international-year-rangelands-and-pastoralists-initiative>)

- Effective regulations for land use and administration that need to be in place to improve the livelihoods of pastoralists and agro-pastoralists and to strengthen their institutions through motivation, support and investment in physical and social infrastructure to enhance incomes and contribute to the economy; and land as the central factor in leveraging other productive sectors.

The policy aims to promote 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. It focusses on conflicts management and promotion of shared co-existence between people, flora and fauna, taking into account transparency and accountability with all responsible stakeholders.

ii. The AU Land Policy Framework (AU, 2010b) was developed by the African Union for the purpose of ensuring appropriate strategies and effective implementation of land policies. The Framework was approved and adopted in 2009 and aims 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 land legislation that will enhance tenure security for women and men. It is also designed to engage development partners and donors as they mobilize resources and build capacity to support land policy development and implementation. The policy framework encourages African governments to address concerns related to the status of land administration systems, land rights delivery systems and land governance structures and institutions. It also urges governments to ensure adequate budgets to support the development or review of the needed land policies and implementation efforts.

The AU framework and guidelines on land policy in Africa 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 and wildlife and biodiversity conservation and therefore calls for sustainable rangeland practices, as well as 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.

3.3 Regional Strategies

Regionally, the IGAD Environment and Natural Resources Strategy (IGAD, 2007)

has the four strategic objectives that are relevant and supportive of rangeland management in the region, namely:

- i. To improve the framework for environmental and natural resources governance in the IGAD region;
- ii. To develop information required for sound environmental and natural resources management and make it readily available;
- iii. To enhance capacity of Member States for improved environmental and natural resources management and;
- iv. To enhance the capability for environmental and natural resources research and development in the region.

The IGAD constitutive instrument article 13 outlines areas of cooperation, proposes to strengthen land resource monitoring systems and harmonize existing national plans of action for marginal lands and drylands management.

3.4 National Policies and Strategies

Whereas some of the IGAD MS may not have specific policies for rangeland management, most of them have developed or are in the process of developing related policies that have implications for rangeland management. Table 2 presents some of the rangeland management related policies and strategies in various IGAD MS.

Table 2: Some Rangeland Related National Policies and Strategies in IGAD Region

Country	Policy/Strategy/Plan	Status
Uganda	Rangeland Management and Pastoralism Policy, 2017	Draft, under review
Sudan	The Rangelands and Forages Resources Development (Rationalization Act, 2015)	Operational
	Pastoral Strategic Action Plan for Semi Desert and Low Rainfall Savanna Sudan (2014-2024).	Operational
South Sudan	National Livestock Development Policy	Operational
	Ministry of Animal Resources and Fisheries (MARF), Policy Framework and Strategic Plans (2012-2016)	Operational
Ethiopia	Pastoralist Development Policy and Strategy, 2018	Draft
	National Strategy on <i>Prosopis Juliflora</i> Management, 2017	Finalized
	The Federal Rural Land Administration and Use Proclamation No. 456/2005	Operational

Country	Policy/Strategy/Plan	Status
Kenya	Rangelands and Pastoralism Strategic Plan, 2018-2028	Draft, under review
	Vision 2030 Development Strategy for Northern Kenya and other Arid Lands, 2012	Operational
	National Policy for the Sustainable Development of Arid and Semi-Arid Lands, 2017	Operational
	Agricultural Sector Transformation and Growth Strategy (ASTGS), 2019-2029	Operational

Despite current efforts to formulate both regional and national policies, there is little coordination and synergy among countries especially those with shared resources across their borders. This calls for the harmonization of the existing policies and practices to form the basis for collective action to ensure effective and sustainable management of rangeland resources that transcend national boundaries in the region.

The section below presents the context of the challenges in the rangelands of IGAD region, proposed strategic objectives, interventions and expected outputs and outcomes.

STRATEGIC ACTIONS FOR ACHIEVING SUSTAINABLE RANGELAND MANAGEMENT

4.1 Overall Goal

The broad objective of the Strategic Framework is to achieve sustainable rangeland management by addressing challenges facing rangelands in the IGAD region through harmonization of policies and practices among Member States, as a way of complementing the efforts of the IGAD Member States in sustainable rangeland management.

This is expected to be achieved by promoting:

- i. Compatible sustainable rangeland management through supportive policies and governance systems;
- ii. Provision of adequate resources to support sustainable rangeland management, reliable, timely and readily available data and information;
- iii. Capacity building for organizations working on rangeland and natural resources management (extension, research and policy); and
- iv. Research on and adoption of new, appropriate and affordable technologies.

Figure 7 presents the proposed strategic objectives aimed towards the desired goal of achieving sustainable rangeland management in the region.



Figure 7: *Objective Tree for Achieving Sustainable Rangelands*

This section presents the impact pathways for priority interventions comprising 10 Strategic Objectives with clusters of activities drawn from literature review and consultations with experts, decision makers, development agencies and communities in IGAD MS. Also presented are the various input/resources required to achieve the objectives, outputs and outcomes, as well as their indicators all aimed at ultimately achieving **“sustainable and equitable access to rangelands resources”** in IGAD region (Tables 3-13).

4.2 Strategic Objective 1: Improve Policy and Legal Frameworks for Rangeland Management

4.2.1 The Challenge: Inadequate Policy and Legal Framework

Despite the existence of various policies and strategies aimed at supporting sustainable rangelands management at continental level, they have not been fully downscaled to national and sub-national levels. In addition, several attempts by governments in IGAD region to address problems in the rangelands through formulation of policies, legislations and interventions face fundamental gaps in contextualizing policies and legislations to the rangelands and pastoral production systems. Literature review and

consultations with stakeholders in IGAD Member Countries reveal that most countries in the region lack requisite policy and legal framework required to achieve sustainable rangeland management. A number of policies related to rangeland management have been in the draft form for a long time, examples being the cases of Uganda and Ethiopia, whilst where they have been finalized, such as in the case of Kenya (Sessional Paper No. 8 of 2012 on the National Policy for the Sustainable Development of Northern Kenya and other Arid Lands (GoK, 2012); and National Policy for the Sustainable Development of Arid and Semi-Arid Lands (GoK, 2017) and in the case of Sudan (Rangelands and Forages Resources Development (Rationalization Act, 2015 (GoS, 2015) , their implementation is rather weak.

Table 3: Action Plan for Improving Policy and Legal Framework for Rangeland Management

Goal	To establish supportive policy and legal environment for rangeland management.
Interventions	<ul style="list-style-type: none"> • Harmonization and implementation of existing policies through development of strategies and action plans; • Formulation of national rangeland management policies and strategies where they do not exist; • Advocacy and lobbying for domestication of regional and continental policies and rolling out of national and sub-national policies; • Creation of rangeland management coordination unit at IGAD and development of rangeland management implementation framework for the IGAD region; • Re-structuring and building institutional and organizational capacity for rangeland management by creating relevant departments responsible for such management and requisite staff establishments to enable delivery of their mandate.
Input/Resources	<ul style="list-style-type: none"> • Funds to facilitate development of policies, advocacy and lobbying of governments and establishment of rangeland management coordination unit at IGAD; • Policy and advocacy experts to facilitate the activities; • Advocacy toolkit for governments; • Political goodwill.

Goal	To establish supportive policy and legal environment for rangeland management.
Expected Outputs	<ul style="list-style-type: none"> • New and revised national rangeland management policies, strategies and action plans; • Regional and continental policies downscaled and implemented at national and sub-national levels; • Active parliamentary pastoralist groups and fora; • Rangeland management coordination unit at IGAD established; • Streamlined and strong government departments and agencies with skilled rangeland management staff.
Output Indicators	<ul style="list-style-type: none"> • Number of policies, strategies, plans and programmes developed by Member Countries; • Number of Member Countries which have domesticated regional and continental policies; • Number of active pastoralist parliamentary groups and fora across the IGAD region; • Number of countries with specific government departments with the mandate of rangeland management; • Number of rangeland management experts in the government Departments; • Operational IGAD Rangeland management coordination unit.
Expected Outcomes	<ul style="list-style-type: none"> • Increased resource allocation and commitments to support sustainable rangeland management and equitable governance; • Effective coordination, implementation and monitoring of rangeland management activities;
Outcome Indicators	<ul style="list-style-type: none"> • The amount of budgetary allocation to rangeland management projects by IGAD MS; • Number of implemented rangeland management projects within IGAD MS; • Number of IGAD Member States which have adopted supportive policies, strategies and regulations for sustainable rangeland management and governance.

4.3. Strategic Objective 2: Enhance Organizational Capacity

4.3.1 The Challenge: Low Organizational Capacity

There exist low organizational capacity in IGAD Member States, especially within the specific government ministries and agencies charged with the

responsibility of overseeing and implementing development programmes in the rangelands. Most of the government departments and agencies have poor basic infrastructure such as office space, information and communication technology (ICT) equipments, as well as skilled personnel in rangeland management. There is normally inadequate funds and poor staffing at all levels as there are only a few staff with professional qualifications in rangeland management, which undermines implementation of rangeland management interventions in most IGAD Member States. Despite the important role played by traditional institutions in rangeland management, they are rarely recognized by governments and therefore in the absence of statutory institutions, there is little regulation of access and use of rangeland resources at local level. Additionally, uncoordinated sectoral policies in most IGAD Member States often lead to segmented and poor implementation of development interventions, as well as inconsistent and misplaced rangeland management mandates. For example, in several MS, rangeland management mandate is often under the departments of livestock production, usually in the Ministries dealing with Agriculture, whereas livestock production is just one component of rangeland management. This normally results in inadequate consideration of rangeland issues with regard to staffing, budget allocation and requisite policies.

Table 4: Action Plan for Improving Institutional and Organizational Capacity for Rangeland Management

Goal	To establish and/or strengthen supportive institutional and organizational framework for rangeland management.
Interventions	<ul style="list-style-type: none"> • Strengthen capacity of government Departments and agencies in charge of rangeland management by improving infrastructure such as buildings, equipments and staffing; • Establish specific Departments and agencies for rangeland management both at national and sub-national levels to ensure rangeland issues are given the requisite attention; • Build capacity of personnel and ensure staffing of relevant government departments with personnel skilled in rangeland management to ensure they deliver on their responsibilities; • Train lower cadre staff to provide extension services on rangeland management; • Establish a unit at IGAD to coordinate rangeland management in the region; • Recognize and facilitate traditional institutions of rangeland management to discharge their roles; • Ensure there is adequate budgetary allocation to enable implementation of rangeland management interventions.

Goal	To establish and/or strengthen supportive institutional and organizational framework for rangeland management.
Input/ Resources	<ul style="list-style-type: none"> • Funds to support establishment of institutions, infrastructure, train and deploy skilled rangeland management personnel; • Supportive policies, strategies and plans; • Rangeland management experts to support capacity building.
Expected Out-puts	<ul style="list-style-type: none"> • Strengthened institutional and organizational capacity in rangeland management; • Well-equipped and staffed government departments and agencies; • Skilled rangeland management staff; • Increased budgetary allocation for rangeland management.
Output Indicators	<ul style="list-style-type: none"> • Number of new and streamlined government Departments; • Number of staff with rangeland management skills; • Value/number of equipment and rangeland management staff employed; • Amount of budget allocated to rangeland management.
Expected Outcomes	<ul style="list-style-type: none"> • More attention given to rangeland management issues; • Increased rate of success of rangeland management intervention projects;
Outcome Indicators	<ul style="list-style-type: none"> • Number of institutions and organizations involved in rangeland management; • Number of successfully executed rangeland management projects.

4.4 Strategic Objective 3: Improve Rangeland Health and Productivity

4.4.1 The Challenge: Soil Erosion, Declining Vegetation Cover, Forage Production and Plant Diversity

The deterioration of rangeland condition and trend in the IGAD region is mainly manifested in the biological indicators that include loss of vegetation cover and biodiversity; soil erosion; and depletion of water sources. These are mostly attributed to the poor grazing management practices (traditional and modern), restriction of herd mobility and therefore increased pressure on available grazing lands. In addition, there occur within some localities injudicious resource uses such as charcoal burning and wide-scale fuel wood extraction, which further exacerbate the downward trend in rangelands

condition in the region. Although overgrazing is normally blamed for the observed rangeland degradation, the root causes are land tenure and land use changes that have altered the rangeland use pattern and made it difficult to practice mobility as a way of spreading pressure over the landscapes.

Table 5: Action Plan for Restoration of Rangeland Cover, Plant Diversity and Productivity

Goal	To restore range vegetation cover, diversity and productivity.
Interventions	<ul style="list-style-type: none"> • Range reseeding through silvopastoral systems involving indigenous grasses, multipurpose trees and shrubs to restore diversity, stabilize the soil, improve rangeland condition and pasture quality; • Establishment of seed system through multiplication and bulking of indigenous grass and tree seeds for rehabilitation of rangelands; • Participatory grazing management and rangelands management planning for restoration and rehabilitation of degraded rangelands; • Integrating Sustainable Land Management (SLM) (through soil and water conservation techniques, enclosures); • Rehabilitation of rangelands along stock/migration routes and provision of services along the routes e.g. veterinary services, water points and supplementary fodder; • Promotion of fodder production and bulking modelled around the traditional pasture reservation and where possible both rainfed or irrigated commercial production; • Support private sector participation in commercialised fodder production; • Support on-station and on-farm research on fodder production and conservation; • Promote investment in appropriate and participatory water resources development and management in the rangelands.
Input/ Resources	<ul style="list-style-type: none"> • Supportive government policies; • Certified seeds for range grass and tree species; • Skilled human resource in rangeland management, hydrology and water resource management; • Funds to facilitate community mobilization and implementation of rehabilitation activities; • Empirical evidence from research to guide rangeland health improvement; • Maps of range condition and trends.

Goal	To restore range vegetation cover, diversity and productivity.
Expected Outputs	<ul style="list-style-type: none"> • Increased rangeland plant cover, diversity and productivity; • Reduced soil erosion; • Increased SLM practices; • Increased grass seeds and fodder production, increased fodder storage and pasture reserves.
Output Indicators	<ul style="list-style-type: none"> • Area of rangelands considered to be healthy; • Number of SLM practices in member countries; • Amount/tons of fodder and grass seed produced.
Expected Outcomes	<ul style="list-style-type: none"> • Improved range health and condition; • Increased availability and improved quality of pasture.
Outcome Indicators	<ul style="list-style-type: none"> • Above ground forage biomass per hectare of land; • Number of months of pasture and water availability.

4.4.2 The Challenge: Spread of Invasive and Weedy Plant Species in the Rangelands

Besides soil erosion and vegetation loss, deterioration of rangelands health in the IGAD region is further caused by bush encroachment and invasion by less desirable plant species that have increasingly altered rangeland ecosystems' structure and function in areas where they exist. The major invasive and increased plant species that indicate downward trend in rangeland health in the region include: *Prosopis juliflora* (in Kenya, Ethiopia, Somalia, Djibouti and Sudan), *Parthenium hysterophorus* (in Kenya and Ethiopia), *Opuntia ficus-indica* (in Kenya and Uganda), *Ipomea kituensis* (in Kenya and Sudan) and *Acacia reficiens* (in northern Kenya); *Calotropis procera* (in Ethiopia and Sudan); *Lantana camara* (in Ethiopia and Uganda). These species invade critical grazing areas often replacing desirable forage species of high grazing value. They modify ecological structure and functioning of rangeland ecosystems therefore compromising their potential to support extensive livestock production, as well as altering the habitats thereby posing a challenge to wildlife conservation.

Table 6: Action Plan for Management of Invasive and Weedy Plants Species

Goal	To control and manage invasive plant species to ensure restoration of rangeland ecosystem structure and functioning.
Interventions	<ul style="list-style-type: none"> • Rangelands characterization and mapping spatial coverage of invasive species and their impacts; • Promoting research to guide invasive species management and use (alternative uses and management e.g comparative studies on control by utilization versus eradication, as well as the economics of invasives to inform management interventions); • Form national and regional task force and action plan for control of invasive plant species; • Scale out good practices in invasive species control and management by making use of lessons from previous and on-going projects in the region.
Input/ Resources	<ul style="list-style-type: none"> • Supportive government policies, strategies and plans on control and management of invasive species; • Financial resources to support implementation of activities (interventions and research); • Skilled human resource in invasive species management; • Invasive species management guidelines/manuals.
Expected out-puts	<ul style="list-style-type: none"> • Increased desirable forage cover and diversity; • Increased forage production.
Output Indicators	<ul style="list-style-type: none"> • Above ground forage biomass per hectare of land; • Extent of cover and diversity of desirable range species.
Expected Outcomes	<ul style="list-style-type: none"> • Improved range health; • Increased availability and quality of pasture; • Increased range and livestock productivity.
Outcome Indicators	<ul style="list-style-type: none"> • Acreage of reclaimed/restored rangelands.

4.5 Strategic Objective 4: Strengthen Governance of Rangeland Resources

4.5. 1 The Challenge: Weak Statutory and Customary Institutions

Customary institutions of natural resource governance have traditionally been critical in regulating access to and use of grazing and water resources in the rangelands. Even where the formal institutions exist, they have coexisted and evolved over time, with the traditional institutions always taking precedence especially where application of statutory laws is weak as is often the case in the vast rangelands of IGAD region. However, the traditional institutions

and practices that hitherto ensured sustainable management of rangeland resources have been weakened over time and are no longer effective in their roles. This has been mainly due to lack of recognition by governments of Member States, as well as unsupportive policies.

Table 7: Action Plan for Strengthening Governance of Rangeland Resources

Goal	To establish and/or revitalize rangeland resource governance customary and statutory institutions.
Interventions	<ul style="list-style-type: none"> • Review, strengthening and mainstreaming of traditional institutions and practices, as well as enhancing statutory frameworks, practices and institutions that govern access and management of pasture, water, minerals, wildlife and forest resources; • Development of legislation to enable enforcement of by-laws for the customary rangeland management institutions used by the pastoralists and agro-pastoralist communities; • Participatory mapping of the key grazing and water resources, migratory routes and capacity building of the communities on Participatory Rangeland Management (PRM) through peer to peer learning and pastoral field schools; • Outscaling PRM using guidelines already piloted in MS e.g Ethiopia and currently in Kenya (Baringo County) as a way of ensuring effective consultation and participation of communities in rangeland management interventions.
Input/ Resources	<ul style="list-style-type: none"> • Supportive government policies; • Funds for PRM outscaling, capacity building and lobbying activities; • PRM guide and experts for governance.
Expected Outputs	<ul style="list-style-type: none"> • Mainstreamed customary rangeland management institutions and practices; • Conducive legal framework for binding customary rangeland management constitutions and laws; • Improved capacity of land users, to implement traditional rangeland resource management practices; • Participatory Rangeland Management Plans and Monitoring and Learning; • Increased recognition and application of PRM practices in the IGAD region.
Output Indicators	<ul style="list-style-type: none"> • Number of customary rangeland management institutions, policies and laws; • Number of countries or communities practicing PRM; • Number of practitioners and communities trained on community-based rangeland management and PRM.

Goal	To establish and/or revitalize rangeland resource governance customary and statutory institutions.
Expected Outcomes	<ul style="list-style-type: none"> Improved rangeland management and health; Equitable access to rangeland resources and reduced conflicts over resources.
Outcome Indicators	<ul style="list-style-type: none"> Number of months of pasture and water availability; Incidences of conflict over resources.

4.6 Strategic Objective 5: Secure Rangeland Rights and Tenure

4.6.1 The Challenge: Insecure Land Rights and Tenure in the Rangelands

In the past, pastoralists within IGAD region had access to vast tracts of rangeland that were managed through customary institutions at different levels and for different resources. The sound management of rangelands was, and in some cases still is, promoted through norms of inclusion designed for pastoral activities. However presently, there occur complex property rights regimes within the rangelands of IGAD region owing to tenure changes that have taken place. Tenure pluralism where customary and statutory land tenure systems for the same resource overlap often exist, leading to loss of exclusive rights to full ownership of land by pastoralists. The subsequent confusion in policy and land administration in turn becomes a source of conflict, insecurity and inefficient use of the rangeland resources.

Harmonization of customary and statutory land laws poses significant challenges for rangeland managers and policy-makers. For example, even though the statutory land laws give substantial ownership and user rights to communities, in reality they either lack subsidiary legislation to allow enforcement or are unclear in their application as is the cases in Kenya's community land Act and Ethiopia's Federal and Regional State land laws.

Table 8: Action Plan for Securing Rangeland Rights and Tenure

Goal	To secure land rights and tenure regimes to ensure equitable access to resources and provide incentive for users to engage in sustainable rangeland management.
Interventions	<ul style="list-style-type: none"> Harmonization of customary and statutory land laws; Recognition and formalisation of common property tenure regimes through registration of customary, individual or family or community "collective" landholdings within rangelands; Building on the existing customary institutions to develop rangeland rights and formalize tenure at more appropriate scale (landscape level);

Goal	To secure land rights and tenure regimes to ensure equitable access to resources and provide incentive for users to engage in sustainable rangeland management.
Input/ Resources	<ul style="list-style-type: none"> • Collaboration and co-operation from the communities living in the rangelands; • Supportive policies and political goodwill.
Expected Outputs	<ul style="list-style-type: none"> • New and revised land tenure policies and laws; • Integrated statutory and customary rangeland rights and tenure; • Land tenure and land laws that are appropriate to the local contexts of the rangelands.
Output Indicators	<ul style="list-style-type: none"> • Number of Member States with rangeland land tenure policies and laws; • Number of cases of integrated statutory and customary rangeland rights and secure tenure regimes.
Expected Outcomes	<ul style="list-style-type: none"> • Recognition and formalisation of common property tenure regimes in the rangelands; • Secure national and regional pastoral community land rights and tenure systems.
Outcome Indicators	<ul style="list-style-type: none"> • Number of rangelands/pastoralist communities with secure land rights.

4.7 Strategic Objective 6: Regulate Rangeland Use and Planning

4.7.1 The Challenge: Rangeland Encroachment and Fragmentation

Rangelands in the IGAD region are currently facing major pressures including land fragmentation arising from land tenure and land use change driven by land demand for expansion of agriculture, conservation, settlement, infrastructure development, extractive industries associated with mineral mining and exploitation of oil, gas and geothermal resources, among others. The general trend has been towards land privatization and fragmentation of communal rangelands. The most common type of rangeland fragmentation in the region is conversion into large scale agriculture, residential and urban development. In some countries, rangeland fragmentation has led to restriction of access by pastoralist communities to critical grazing and water resources. The restricted mobility results in sedentariness of pastoralists, increase in grazing pressure around settlements, competition and conflicts over scarce rangeland resources among pastoralist communities. The rampant rangeland conversion is mainly attributed to lack of regulated land use, inadequate land use policies and rangeland planning.

Table 9: Action Plan for Regulating Rangeland Use

Goal	To develop regulations and plans to ensure appropriate and sustainable use of rangelands.
Interventions	<ul style="list-style-type: none"> • Formulation of land use policies, land use plans and requisite laws by Member States to enable regulation of rangeland use; • Harmonize and regulate multiple uses for optimization of benefits from the rangelands; • Development and implementation of policies to regulate extractive industries to ensure they mitigate the environmental, socio-cultural and economic impacts by investing on sustainable land management and sharing benefits with communities; • Promotion of participatory rangeland use planning and customary grazing management practices among pastoralist communities; • Cadastral survey to identify and map the physical boundaries of rangelands; • Regulation and registration of seasonal movements, protection of grazing areas and livestock corridors and development of pastoral/grazing zones and water points; • Development and implementation frameworks for national land policies.
Input/ Resources	<ul style="list-style-type: none"> • Supportive government policies; • Maps of spatial expanse of rangelands and livelihood zones (multiple uses); • Funds to support interventions; • Expertise in land use planning and land use policies.
Expected Outputs	<ul style="list-style-type: none"> • Revised and new rangeland use policies and plans; • Rangeland use planning integrated into rangeland development plans; • Maps showing physical boundaries of rangelands in Member States; • Gazetted cattle corridors to facilitate seasonal livestock movements.
Output Indicators	<ul style="list-style-type: none"> • Number of rangeland use policies, plans and enacted laws; • Number of Member States with rangeland maps showing physical boundaries of rangelands; • Number of Members States showing critical resources including gazetted livestock corridors.

Goal	To develop regulations and plans to ensure appropriate and sustainable use of rangelands.
Expected Outcomes	<ul style="list-style-type: none"> • Reduced encroachment and conversion of rangelands to other land uses; • Increased livestock mobility and therefore more even use of rangelands and reduced incidences of conflicts; • Increased role of rangeland users in decision-making processes; • Improved and sustainable rangeland land use.
Outcome Indicators	<ul style="list-style-type: none"> • Spatial proportions of unfragmented rangelands; • Number of pastoralist communities/regions using rangeland use plans; • Number of livestock corridors in use.

4.8 Strategic Objective 7: Establishment and /or Operationalizing of Cross-Border and within Countries Transhumance Agreements and Inter-Community Resource Sharing Mechanisms

4.8.1 The Challenge: Restricted Transboundary and Inter-Community Resource Sharing

Livestock mobility is a key adaptation mechanism in the rangelands and a crucial strategy for risk management in the unpredictable environments in the ASALs. Given the spatial and temporal variations in the rangelands, the uneven distribution of grazing and water resources in the landscape, the need for mobility often goes beyond community territories and national borders. Transboundary natural resource management (TBNRM) approach is therefore a prerequisite for sustainable management of rangeland resources that traverse the communal and national borders. In addition, cross-border transhumance agreements are required to ensure free and peaceful movements of livestock herds across borders with shared rangeland resources. Whereas IGAD gives a lot of emphasis on the cross-border transhumance mechanisms which has seen the development of the IGAD transhumance protocol and establishment of eight Cross Border Clusters for intervention, much hasn't been achieved towards operationalization of the various bilateral and multilateral transboundary agreements in the various cross border clusters. In the absence of operational transboundary transhumance protocol, there is restricted access to grazing and water resources during dry periods, often accompanied by conflicts and incidences of cross-border livestock diseases. In addition, little attention and recognition has been given to inter-community negotiated resource sharing

agreements and conflict resolution mechanisms, with governments preferring to use state machinery to restore peace during conflicts. Such interventions are however short-lived as they are not entrenched in the customary systems, and therefore not respected by the communities.

Table 10: Action Plan for Establishing/Operationalizing Cross-Border and within Countries Transhumance Agreements and Inter-Community Resource Sharing Mechanisms

Goal	To ensure equitable access to transboundary rangeland resources and peaceful inter-community resource sharing.
Interventions	<ul style="list-style-type: none"> • Inventory and mapping of the rangeland resources and safe mobility routes to inform sharing mechanisms; • Fast tracking of the operationalization of the cross-border bilateral and multi-lateral agreements for the international borders with shared resources; • Strengthening and where possible mainstreaming of the traditional transboundary herd movement and resource sharing agreements; • Institutionalisation and strengthening of traditional inter-community locally negotiated access to rangeland resources, and cross-border resource sharing, conflict resolution and peace building mechanisms; • Establishment of Transboundary Natural Resource Management (TBNRM) within the cross-border clusters and across territorial boundaries among communities within countries to foster interaction among communities and promote landscape approach to sustainable rangeland management.
Input/ Resources	<ul style="list-style-type: none"> • Funds to roll-out the activities; • Conflict resolution and peace building, rangeland management, and policy experts; • Supportive national and regional policies.
Expected Outputs	<ul style="list-style-type: none"> • Bilateral and multilateral cross-border agreements; • Strengthened cross-border inter-communities herd movement and rangeland resource sharing mechanisms; • Recognized intercommunity negotiated resource sharing agreements and conflict resolution mechanisms; • Cross-border livestock disease surveillance unit; • TBNRM projects in the cross-border clusters; • Cross-border conflict resolution and peace committees.

Goal	To ensure equitable access to transboundary rangeland resources and peaceful inter-community resource sharing.
Output Indicators	<ul style="list-style-type: none"> • Number of cross border bilateral and multilateral agreements; • Number of Inter-community resource sharing and peace agreements; • Number of functional cross-border livestock disease surveillance units; • Number of TBNRM projects in cross-border clusters; • Number of cross -border conflict resolution and peace committees.
Expected Outcomes	<ul style="list-style-type: none"> • Enhanced herd mobility and peaceful and equitable sharing of grazing and water resources; • Enhanced peace and security among pastoral communities; • Reduced livestock diseases incidences across the borders; • Enhanced rangeland ecosystem services.
Outcome Indicators	<ul style="list-style-type: none"> • Number of cross-border conflicts and security incidences; • Number of cross-border livestock disease incidences.

4.9 Strategic Objective 8: Improve Research, Extension, Human Resource Capacity and Knowledge Management

4.9.1 The Challenge: Inadequate Research, Extension and Technical Training, and Poor Knowledge Management

Whereas research capacity in rangeland management in IGAD region is fair, there is limited and unreliable research funding. In addition, there is little knowledge among actors and mindset based on misunderstandings of rangeland ecosystems and pastoral production system. Even though, a lot of studies have been done, there is still poor documentation especially on the good practices in rangeland management and indigenous knowledge leading to inadequate awareness of the existing resource base and lack of regular rangeland resource assessments and monitoring. There is inadequate rangeland extension system due to lack of skilled manpower, as well as limited knowledge sharing and technology transfer among the various stakeholders. In addition, the application of research recommendations is weak and out scaling of successful projects is inadequate, further compounding the poor dissemination and adoption of new innovations and technologies. There exist low institutional capacity especially within the specific government ministries and agencies charged with the responsibility for overseeing and implementing development programmes in the rangelands.

Table 11: Action Plan for Improving Research, Extension, Human Resource Capacity and Knowledge Management

Goal	To build research, training and human resource capacity and strengthen knowledge management system.
Interventions	<ul style="list-style-type: none"> • Establishment of rangeland management training and research fund for enhanced capacity in rangeland management in IGAD region; • Strengthening the existing research, training and extension institutions as centers of excellence in rangeland management and improve coordination among them; • Establish rangeland observatory sites in the IGAD MS to enable assessment and monitoring of rangeland condition and trends; • Support Universities and Technical and Vocational Education and Training (TVETs) to develop and deliver rangeland resource management curricula; • Co-generation of knowledge through integration of indigenous knowledge in rangeland management research, extension and interventions; • Establishment of multi-stakeholders digital knowledge management system and strengthening networks for sharing information and knowledge on rangeland management within the region; • Improve linkage between research and extension through rangeland research network and communities of practice; • Use research evidence to change the negative narratives and misconceptions about rangeland ecosystems and pastoral production system.
Input/ Resources	<ul style="list-style-type: none"> • Funds to support training (scholarships), research and establishment of regional rangeland centers of excellence; • Supportive policies, strategies and plans; • Rangeland management experts to support capacity building.
Expected Outputs	<ul style="list-style-type: none"> • Rangeland management incorporated into existing University and TVET training programmes and institutional capacity built to offer training in rangeland management; • Existing research and extension institutions strengthened and coordination among them improved; • Regional rangeland research fund established; • Research information that reflect the realities and interventions that are responsive to local needs; • Regional rangeland management centres of excellence established in existing training institutions.

Goal	To build research, training and human resource capacity and strengthen knowledge management system.
Output Indicators	<ul style="list-style-type: none"> • Number of Universities and TVETs offering rangeland management programmes; • Number of centres of excellence for rangeland management in the region; • Number of personnel from TVETs and government departments trained in rangeland management; • Number of scholarships and research grants awarded in the region; • Number of rangeland observatory sites in the MS.
Expected Outcomes	<ul style="list-style-type: none"> • Critical mass of experts in rangeland management trained; • Substantial and relevant empirical evidence to inform rangeland management; • Proper targeting and site-specific rangeland management interventions.
Outcome Indicators	<ul style="list-style-type: none"> • Number of rangeland management experts trained; • Number of technical reports, guidelines, manuals, scientific publications and books produced.

4.10 Strategic Objective 9: Promote Investment in Sustainable Rangeland Management

4.10.1 The Challenge: Inadequate Investment in Rangeland Management

The low investment in sustainable rangeland management in IGAD region is mainly linked to the misconceptions about arid and semi-arid lands and the pastoral production system, as well as the lack of recognition of the value of rangelands and pastoral system to national, regional and continental economies. The systemic undervaluation of rangelands is linked to lack of data and information required to evaluate the comparative value of rangelands against the competing land uses. Because of this, there has been consistently little attention and progress towards having supportive policies. The result is comparatively low government budgetary allocation to rangeland management as compared to other sectors. In the absence of information on total economic value of rangelands, private investors are equally reluctant to invest in development of rangelands.

Table 12: Action Plan for Promoting Investment in Sustainable Rangeland Management

Goal	To increase investment in rangelands aimed at enhancing the resilience of rangeland ecosystems and livelihoods.
Interventions	<ul style="list-style-type: none"> • Provide incentives for public-private investment partnerships in sustainable rangeland management (SRM); • Total economic valuation (TEV) of rangeland ecosystem services to show socio-cultural, ecological and economic contribution of rangelands to form the basis for investment on SRM, policies formulation and resource allocation by governments; • Development of value chains and business models for fodder and other rangeland products such as meat, honey, gums and resins, fibre, among others; • Promotion of investment in complementary economic activities such as wildlife conservation and ecotourism, carbon trading, among others.
Input/ Resources	<ul style="list-style-type: none"> • Funds to facilitate sensitization and awareness raising activities, and TEV studies and development of value chains; • Environmental economics and sustainable land management experts; • Supportive policies.
Expected Outputs	<ul style="list-style-type: none"> • Empirical evidence on the value of rangeland ecosystem services; • Value chain of rangeland products developed; • Increased value addition of rangeland products; • Increased budgetary allocation and formulation of supportive policies for rangeland management by governments.
Output Indicators	<ul style="list-style-type: none"> • Number of scientific publications and reports on TEV of rangelands; • Number of value chains developed and value added rangeland products; • Supportive rangeland management policy documents; • Amount of budgetary allocation by governments.
Expected Outcomes	<ul style="list-style-type: none"> • Increased of investment in rangeland management by governments and private sector; • Diversified livelihoods and healthy rangelands.
Outcome Indicators	<ul style="list-style-type: none"> • Number of government and privately funded projects in the rangelands; • Number of adopted alternative livelihood activities.

4.11 Strategic Objective 10: Strengthen Drought Risk Management, Climate Change Adaptation and Mitigation

4.11.1 The Challenge: Frequent Droughts and Climate Change

The Horn of Africa is faced with frequent extreme climatic events manifested in recurrent droughts with rainfall increasingly becoming scarce, variable and unpredictable leading to pasture and water resources scarcity. Inadequate and fluctuating availability of fodder and water are attributed to both the extreme climatic conditions and lack of proper resource management plans. The situation is made worse by inadequate conservation and lack of strategic feed reserves which further constrains livestock production especially during the drought periods. Frequent droughts and increasing pasture scarcity necessitate regular and long distance movements with far reaching effects such as frequent conflicts over resources and ultimate loss of livestock productivity. Generally, there is low adaptation capacity due to minimal diversification and lack of value addition of rangeland products such as meat and plant products to compliment mainstream sources of income for pastoral communities. In addition, there is poor meteorological infrastructure, inadequate access and use of climate information, services and inadequate capacity to tap into climate change adaptation funds.

Table 13: Action Plan for Strengthening Drought Risk Management, Climate Change Adaptation and Mitigation

Goal	To build resilience of rangeland ecosystems to drought and climate change.
Interventions	<ul style="list-style-type: none"> • Mainstreaming of Climate Risk Management (CRM) into development planning at national and sub-national levels by developing a CRM frameworks for rangelands and awareness creation and training of relevant government personnel; • Leveraging on Ending Drought Emergencies (EDE) activities to protect and create productive assets such as water sources and reserve pastures to cushion pastoralists against drought impacts; • Strengthen existing regional drought risk management systems and emergency response through contingency funds; • Promotion of Ecosystem-Based Adaptation (EBA) to optimize use of the multiple resources in the rangelands through approaches such as community based wildlife conservation as away of diversifying sources of livelihoods through ecotourism; • Building capacity of communities and promotion of carbon trading and other Payment of Ecosystem Services (PES) approaches as incentives to the communities to engage in Sustainable Rangeland Management (SRM) for increased carbon sequestration and to ensure Land Degradation Neutrality (LDN).

Goal	To build resilience of rangeland ecosystems to drought and climate change.
Input/ Resources	<ul style="list-style-type: none"> • Funds to support the proposed activities; • CRM training module/manual for Climate change and disaster risk management experts; • Supportive government policies.
Expected Outputs	<ul style="list-style-type: none"> • CRM framework for IGAD MS; • Government personnel trained on CRM mainstreaming; • EBA and PES approaches adopted by IGAD MS; • Increased budgetary allocation towards climate change adaptation and mitigation.
Output Indicators	<ul style="list-style-type: none"> • Number of MS with CRM frameworks; • Number of government personnel trained on mainstreaming CRM; • Amount of budgetary allocation to climate change adaptation and mitigation; • Number of successfully executed climate change adaptation and mitigation projects.
Expected Outcomes	<ul style="list-style-type: none"> • Effective mitigation and adaptation to climate change in the rangelands; • Reduced drought related livestock and human deaths.
Outcome Indicators	<ul style="list-style-type: none"> • Number of resilient pastoralist households; • Level of livestock mortalities due to drought and other extreme climatic events.

5. IMPLEMENTATION FRAMEWORK

In order to actualize the RRMSF, an implementation framework is required to ensure domestication of the proposed interventions. Figure 9 presents a simplified implementation framework outlining the responsible institutions and organizations that constitutes the envisaged implementation structure and their roles in execution of the proposed actions.

5.1 Implementing Institutions & Organizations

The key players in implementation of the RRMSF will include:

- i. **National and sub-national government institutions:** Will be responsible for formulation of policies and resource allocations to support sustainable rangeland management; and implementation of interventions and provision of extension services.

- ii. **Research and academic institutions:** Will be expected to generate empirical evidence and innovative technologies and training to build human resource capacity (for both rangeland managers and decision makers).
- iii. **Communities, community-based organizations (CBOs), civil society organizations (CSOs):** Will have a role in co-production of knowledge and co-implementation of interventions and will be the ultimate beneficiaries of sustainable rangeland management. The CSOs will be expected to lead lobbying and advocacy for supportive policies, laws and development interventions.
- iv. **Development agencies:** Will be expected to participate in implementation of regional and national policies through resource mobilization to support interventions.
- v. **Private sector:** Will be needed for substantial investments in sustainable rangeland management through public-private partnerships in rangeland management.
- vi. **Mass media:** Will be crucial for publicity, advocacy and general information dissemination and communication.

5.2 Coordination, Planning, Monitoring and Reporting

To ensure effective and efficient implementation of the RRMSF, there will be need to establish national technical committees in each IGAD MS. The committees will comprise representation from relevant government ministries, academia and development agencies and will be tasked with planning and execution of activities related to RRMSF. In addition, the committees will be responsible for monitoring and evaluation, as well as reporting to the Regional Feed and Range Platform in IGAD Member States. ICPALD will rely on the regional Feed and Range Platforms for reporting purposes.

5.3 Oversight

The regional coordination of the implementation of the RRMSF will be undertaken by IGAD Center for Pastoral Areas and Livestock Development (ICPALD) whose role will be mainly oversight and collating and analysis of MS monitoring and evaluation reports to track performance of the implementation process and documentation of learnings.

5.4 Road Map for Domestication of the RRMSF

The IGAD Member States will be expected to domesticate the RRMSF either by aligning the existing rangeland management policies and strategies to the proposed interventions in the RRMSF or developing new strategies in line with the RRMSF. Each MS will be required to develop a road map for the planned activities and timelines as a basis for participatory monitoring and evaluation of progress towards domesticating the RRMSF by IGAD and MS.

CONCLUSION

Whereas some effort has been made in formulating policies related to rangeland management in individual countries and regionally, there are still significant challenges that could be addressed by harmonizing the existing policies and drawing lessons from on-going interventions in various countries. It is however important to note that policies related to rangeland management and pastoralism should not lose focus of the intricate nexus among the socio-cultural, economic, ecological and climatic factors that exist within IGAD rangelands. In addition, cultural and historical aspects, participation of the pastoral communities, recognition of the customary mechanisms of regulating resource access and use, as well as those used in resolving conflicts should be central to strategies and plans aimed at achieving sustainable management of rangelands. Furthermore, more attention need to be given to security of pastoral communal land rights and tenure, which supports mobility as the tenet of pastoral production system. It is therefore paramount that, beside other factors, formulation of rangeland management and pastoralism policies, strategies and plans aimed at achieving sustainable rangeland management considers the following:

- Championing of attitude change with regards to pastoralism and pastoralists, which has been based mainly on misconceptions and old paradigms depicting the system as archaic and pastoralists as irrational producers. On the contrary, several studies have shown that pastoral production system is well adapted to the precarious conditions in the ASALs and therefore the most suitable land use in the arid and semi-arid rangelands where crop failure is high under rain-fed conditions, and initial and maintenance costs for irrigated farming are often prohibitive. There is therefore need for experts and decisions makers to appreciate pastoralism as a production system with well-organized social and cultural values, and as a production system that has sustained the productivity of the rangeland ecosystems over the years and continues to support millions of people globally
- Mobility is a key strategy for harnessing transient resources that vary in availability, quantity and quality from time to time and one place to the other in the arid and semi-arid rangelands. In addition, it allows even use of rangelands and therefore distribution of pressure on the larger landscape that includes both inter-community and cross-border scales. However, effective herd mobility requires communal land tenure, customary institutions, security and peace as prerequisites.
- Any efforts towards achieving sustainability in the rangelands should consider participation of pastoral communities and acknowledgement of the legitimacy of indigenous pastoral institutions. The traditional institutions based on indigenous knowledge system and practices govern

the use of natural resources at local level and therefore play a pivotal role in sustainable management of rangelands. Their role encompasses traditional pastoral leadership and structures in rangeland governance, including conflict resolution, management of land rights and mobility, and facilitation of interactions and peaceful co-existence between pastoralists and other interest groups such as crop farmers with whom they share resources.

- Analysis of existing policies and proclamations points at the need to pay more attention to understanding rangeland ecosystems, their potential, as well as the needs of the communities inhabiting them as prerequisite for addressing the problems facing the ASALs in IGAD region. This calls for political goodwill and commitment of respective governments. As indicated by ICPALD (2017), *“Good land policies should guarantee access to and security of the land for the long-run and allow for flexible use; ensure equitable access in the distribution of land resources; protect, preserve, and conserve land and other natural resources for future generations; and facilitate planning, provision of basic services and infrastructure, and development and enforcement of land regulation. Such policies should be regularly revised in response to competing social, economic and political demands”*.

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