Institutions

These include government (e.g. KWS, NEMA, NDMA, DRSRS, KALRO, KEFRI, NMK,) and various Non-governmental organizations (e.g. ILRI, ICRAF, etc). In a bid to deal with the impacts of land fragmentation and offer support to pastoralism, community umbrella associations (such as South Rift Land Owners Association and Northern Rangelands Trust) have also come up.

RECOMMENDATIONS

Resource Management

Water stress management: This can be achieved through rain water harvesting such as building dams and water pans for provision of water for people, livestock and even wildlife. This will help save women and children traveling long distance in search of water. These will also help prevent soil erosion and nutrient losses through runoff

Pasture management: Pastoral land is often faced with tragedy of the commons where the land is overgrazed leading to reduced pasture, soil erosion and conflicts between pastoralists. Some of the key pasture management options include re-seeding of degraded areas and proper grazing management practices such as seasonal grazing rotation cycles - setting aside dry season grazing reserves - and control of invasive species.

Protection of dryland riparian forests: Vegetation along rivers and streams (lagas) in rangelands should be enhanced. This mosaic of linier vegetation cover will be crucial for carbon sequestration as well as useful for bee keeping activities and source of animal fodder.

Creation of wildlife conservancies: This will help raise revenue and create employment opportunities from eco-tourism activities. These conservancies are used as grass banks for drought grazing while conserving wildlife habitats. This land use attracts external wildlife conservation funding for biodiversity existence. They generate income, create jobs for community members, support households and facilitates education for the youth in the area.

Develop monitoring and early warning systems - Integrate indigenous knowledge and modern predictive modelling and climatic forecasting technology into early warning system to identify indicators of climate change and their impacts e.g. animal feed security, emergence of new diseases and negative ecological impact.

Payment for Ecosystem Services: Counties should negotiate for payment for ecosystem services such as carbon credit market and REDD+

Equity in resource access: Provide incentives for upstream communities to adopt land uses that do not affect quality and quantity of environmental services available to downstream communities

Resource Management

Awareness and Extension services: Enhance awareness creation and technology transfer through platforms such as workshops, seminars, radio programs to enhance the promotion adaptation. This can be supported through Public private partnerships

Community involvement and stewardship: Strengthen community stewardship on sustainable resource management, promote participatory land use planning and environmental governance as embodied in the devolution of resources. Communities capacity should also be strengthened to effectively participate in strategies and processes that enhance adaptation to climate change.

Enhance livestock values addition: Conduct value chain analysis of ASAL products and link pastoralists to regional and global livestock markets to strengthen livestock-based livelihoods. This can be achieved through county government investing in market oriented livestock product processing factories.

Policy and Practice

Discourage land fragmentation: The existing communal land tenure systems should be safeguarded through negotiated agreements that facilitate the access to and sharing of livestock resources between communities, group ranches and counties. Encouragement of land consolidation and formation of conservancies should be promoted to ensure sustainable land use. Under the conservancy arrangement mechanism to promptly assess and compensate livestock losses to predation or injuries should be negotiated and implemented.

Sustainable Resource use: Resources should be harvested in a sustainable manner, these may range from sand, fodder, wood, water etc. In particular, the use of plant branches for fencing should be discouraged.

Livestock diversification: Keeping of drought tolerant livestock species, that are also resistant to diseases and train community members on animal health care

Human-wildlife conflicts mitigation: Conflicts such as disease transmission, livestock predation and competition over water and grazing from the establishment of conservancies and will require proper mitigation to ensure co-existence with wildlife.

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How this policy brief was produced

Various national legislations, strategies, policies, laws and recent research work relating to rangeland rehabilitation through reseeding were reviewed and analysed then validated through consultative stakeholder meetings involving county government officials, expert institutions and local communities.

Acknowledgement:

NMK, KALRO, NDMA & Kajiado, Marsabit, Isiolo and Garisa County governments and respective Pastoral Communities
Project: Rangeland Management for improved Pastoral Livelihoods in Kajiado, Marsabit, Isiolo and Garissa Counties
Funding: Kenya Climate Smart Agriculture (KCSAP)
Editors: Mulwa, R.Malaki,P.,Wasonga,V.,Luseweti, A.,Madindou,L., Ogeto,M.,Meroka, B. and Golicha, D. Published ©2022

POLICY BRIEF

SUSTAINABLE USE OF KENYAN RANGELANDS

IN A CHANGING CLIMATE

Adaptation Mechanisms for the ASAL Counties



With particular reference to Garissa, Kajiado, Isiolo and Marsabit Counties

NATIONAL MUSEUMS OF KENYA
WHERE HERITAGE LIVES ON

WORLD BANK GROUP

KALRO



Earth Dam for Rain water harvesting in Rangelands

What is Climate change?

Climate change describes a change in weather patterns such as temperature and rainfall in a region over a long period of time, typically three decades or more.

The arid and semi-arid lands (ASALs) or rangelands cover about 80% of the total Kenyan land. Rangelands play crucial role in livestock production and wildlife conservation as well as provision of diverse ecosystems goods and services. In particular, pastoralism contributes to the national economy as it accounts for 70% of Kenya's livestock production; a sector that contributes 12% of the national GDP. Unfortunately, rangelands are highly susceptible to the adverse effects of climate change. Some of the key outcomes of climate change include increased frequency and severity of droughts and floods which lead to land degradation and gully erosion, and increased temperatures leading to decreased forage production and land productivity. All these climate change manifestations are likely to have huge negative impacts on the ASAL's livestock productivity, hence livelihoods of pastoralists. Impacts of climate change on livestock production can be mediated through changes in feed resources. Such changes can have significant impacts, albeit indirectly, on livestock productivity, the carrying capacity of rangelands, the buffering ability of ecosystems and their sustainability, besides the occurrence of livestock diseases and parasites.

Furthermore, these ecosystems face a number of land care and resource management challenges. These challenges emerge from a combination of policy, governance, economic factors as well as nomadic lifestyle that have gradually led to uncoordinated and unsustainable land use practices in ASALs. There is therefore need for upscaling pastoralists' adaptation options as well as the right policy and enabling environment to cope with resulting impacts of climate change in rangelands. This brief examines and recommends how pastoralists in Marsabit, Isiolo, Garissa and Kajiado Counties can adapt and enhance resilience to climate change under the prevailing land tenure systems.

Climate Change related terms frequently used in this brief

Vulnerability Vulnerability is the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes e.g. floods, drought etc. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity.

Adaptation Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

Resilience The ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organisation, and the capacity to adapt to stress and change

Changing Land Tenure in Rangelands

Pastoralism is known to thrive in vast communally-owned grazing areas that allow for a nomadic and flexible lifestyle enabling access to scattered and seasonally available resources particularly pasture and water. Seasonal grazing zones are created and controlled by community elders to allow for equitable access in accordance with customary law. Indeed, the government has made attempts to formalize rangeland governance framework e.g. through the introduction of the group ranch concept. However, due to managerial failures of many group ranches, this land tenure is gradually changing to smaller private holdings as a result of land subdivision that are unsuitable for the extensive livestock farming practices typical of rangelands. This change of land tenure presents a challenge to pastoralists' resilience and adaptation to climate change.

The apparent loss of communal land management has also led to expansion of both rain-fed and irrigation crop farming in the ASALs that are already experiencing frequent droughts and unreliable rainfall. While these two agricultural land uses are often seen as adaptive measures to climate change, they are unsuitable for the ASALs. Rain-fed farming is particularly susceptible to the damaging impacts of drought that is frequent in rangelands. Habitat transformation (clearing and burning bushland) intensifies negative climate change impacts by disrupting ecosystem services. On the other hand, irrigation farming's demand for scarce water resources and requirement of large tracts of land can have even more harmful impacts on the pastoral economy as grazing areas will be reduced. Other forms of private tenure entail fencing, paddocking, rotational grazing, fodder feed purchasing and destocking during drought. Such land uses disrupt the nomadic pastoral system and wildlife dispersal routes get closed which has been a cause of conflicts (human-human/human-wildlife conflicts) and degradation of this fragile ecosystem in some areas.

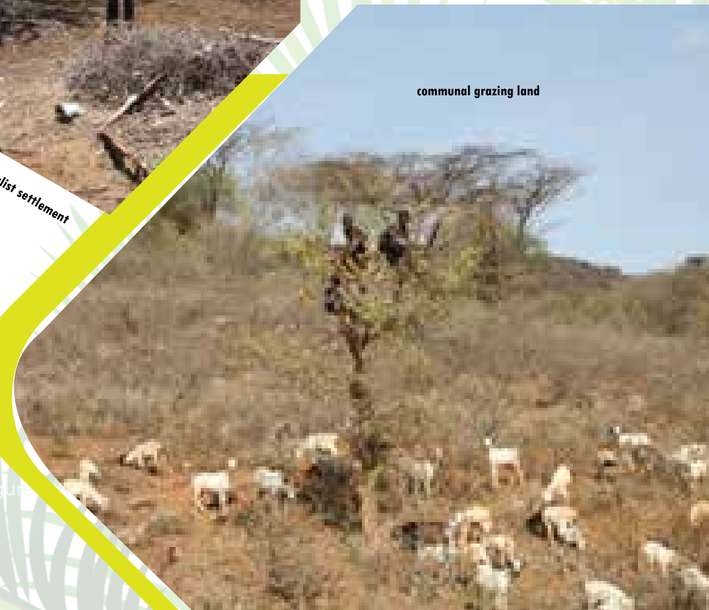
Various, ASAL counties have embraced land tenure transformation to different extents. For example, communal tenure system constitutes over 80% of both Marsabit and Isiolo counties while Garissa and Kajiado counties retain 90% and 30% as communal land respectively.

Policy and Institutional Context

Intergovernmental Panel on Climate Change (IPCC) and 1992 UN Framework Convention on Climate Change (UNFCC) are among the key international climate change agreements to which Kenya is party. At national level, there are many policies and legislations on land use practices that can enhance adaptive capacity and resilience to climate variability among Kenyan pastoralists. They include: The National Land Policy, Community Land Act, Environment Management and Coordination Act, Wildlife Management Act and Forest Act among others. Rangelands are adjudicated under the Community Land Act 2016. The Constitution of Kenya 2010 and Vision 2030. Development Strategy for Northern and other Arid Lands identify vulnerability to climate effects, insecurity, under-development and marginalization as the key challenges of land use management in the ASALs. The National Spatial Plan (2015 – 2045) presents an attempt to harmonize the various sectoral laws and policies on general land management in Kenya. However, implementation of these policies is uncoordinated and some are contradictory.



Temporary pastoralist settlement



communal grazing land