



**Support for Effective Cooperation and Coordination of Cross-border Initiatives (SECCCI) Project in the Cross-borders of Ethiopia, Kenya and Somalia**

**IGAD Training Manual for Rangeland Management and Diversified Livelihoods in the SECCCI Project Clusters**

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## **Disclaimer**

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Thank You,

**Dr. Guleid Artan, Ph.D.**

**Director, ICPAC.**

## Executive Summary

Rangelands cover a significant part of IGAD's land area and host a significant proportion of the MS rural population. With the current demographic trends, rangelands and all rangelands in general will continue to experience increasing population and settlements as population growth demands more space that seems only available in the rangelands. In addition, rangelands represent diverse ecosystems, natural resources, people/societies and multiple uses and functions and are therefore vital for the ecological, environmental, economic and social functions they play. Rangelands support life for those living within them and also for those living outside them. Key economic activities supported by rangelands include livestock production, dryland agriculture, wildlife conservation and related activities and to a lesser extent mining.

The rangelands within IGAD region are predominantly used for livestock production, mainly through pastoralism. It is estimated that, 25 million pastoralists and 240 million agro-pastoralists depend on livestock as their primary source of income and about 16 per cent of the population relies on pastoralism which contributes significantly to the Gross Domestic Product (GDP) of many nations (FAO, 2009). However, over recent decades, pastoralist livelihoods have come increasingly under pressure and are caught in a downward spiral of resource depletion, and diminishing resilience against climate and non-climate changes. Furthermore, the impacts of rangeland degradation, for example, reducing the potential of rangeland ecosystems to provide goods and services and the acute shortage of pasture land is forcing local communities to abandon traditional systems of livestock-based livelihoods and engage in alternative options.

In arid areas, livestock-based livelihoods remain critical as fewer diversification options exist, but in many rangeland regions, diversification based on natural resource may provide various possibilities that can benefit local communities. The efficient and multiple use of rangeland resources is critical for strengthening the resilience of socio-ecological systems by enhancing the adaptive capacity of vulnerable pastoral communities to the impacts of climatic and non-climatic drivers of change through diversified livelihoods, as well as other approaches. Even though diversification of livelihoods can offer opportunities for pastoralists and agro-pastoralists, if not properly managed, it can also add to the pressures on them. Past research shows that while some forms of diversification enhance welfare, others can increase risk thus the need for training manual to inform and rationalize various interventions in rangelands.

In an effort to address the identified gaps and challenges in sustainable rangeland management and livelihood diversification, the support for effective cooperation and coordination for cross-borders initiative (SECCCI) project in Ethiopia, Kenya and Somalia, under its outputs *'enhancing capacities of relevant actors to engage in cross-*

*border cooperation, at local level and develop processes to ensure interventions are attuned to the local contexts and benefit community support and ownership'*, initiated development of a training manual on rangeland management and diversified livelihoods with thematic training modules, whose contents will be regularly updated to provide an up-to-date training of trainees (TOT) courses to the government technical staff and community members who will be drawn from the cross-border pastoral and agro-pastoral communities in the three SECCCI project clusters in Kenya, Ethiopia and Somalia.

The training manual adopts a modular approach under the broad thematic areas for training:

- Thematic Area 1: Sustainable rangeland management.
- Thematic Area 2: Livelihood diversification within rangelands.
- Thematic Area 3: Building resilience in rangelands.

The developed training manual aims to build capacity on rangeland management and diversified livelihoods in the three clusters of South Omo-Turkana, Moyale-Marsabit and Mandera, in close collaboration with IGAD specialized centres so that they can effectively be engaged in cross-border cooperation to strengthen resilience of communities and create greater economic and employment opportunities through enhancing plans and processes related to the rangeland management, animal production and pastoral livelihoods, in the three countries of the IGAD region.

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## **Acronyms and Abbreviations**

ASALS	Arid and Semi-Arid Lands
GDP	Gross Domestic Product
FAO	Food and Agriculture Organization of the United Nations
IGAD	Inter-Governmental Authority on Development
ICPAC	IGAD Climate Prediction and Application Centre
ICPALD	IGAD Center for Pastoral Areas and Livestock Development
NGO	Non-Governmental Organization
NRM	Natural Resource Management
SECCCI	Support for effective cooperation and coordination for cross-borders initiative
SRM	Sustainable Range Management
TOT	Training of Trainees
UNDP	United Nations Development Program
UNEP	United Nations Environment Program

## **INTRODUCTION:**

### **The Importance Of Rangelands**

Rangelands, though generally perceived by many to be of low significance, have supported people's livelihoods for thousands of years. There is a growing recognition of the importance of rangelands, for example in meeting global food security as well as other needs of dryland and non-dryland populations (Mortimore, 2009). Rangelands cover a significant part of IGAD's land area and host a significant proportion of the MS population. With the current demographic trends, rangelands and all rangelands in general will continue to experience increasing population and settlements as population growth demands more space that seems only available in the rangelands. In addition, rangelands represent diverse ecosystems, natural resources, people/societies and multiple uses and functions and are therefore vital for the ecological, environmental, economic and social functions they play. Rangelands support life for those living within them and also for those living outside them. Key economic activities supported by rangelands include livestock production, dryland agriculture, wildlife conservation and related activities and to a lesser extent mining.

The rangelands within IGAD region are predominantly used for livestock production, mainly through pastoralism. It is estimated that, 25 million pastoralists and 240 million agro-pastoralists depend on livestock as their primary source of income and about 16 per cent of the population relies on pastoralism which contributes significantly to the Gross Domestic Product (GDP) of many nations (FAO, 2009).

In terms of ecological significance rangeland vegetation helps protect often fragile soil profiles, store carbon, provide habitat for wild fauna and flora, and acts as catchments or watersheds for large river systems (Lund, 2007). It is estimated that rangelands store up to 30 per cent of the world's soil carbon in addition to the substantial amount of above-ground carbon stored in trees, bushes, shrubs and grasses (FAO, 2009). Rangelands are also vital in water regulation and provision and host a diverse range of perennial, seasonal or ephemeral wetlands (Tooth and McCarthy, 2007), some of which are important for pastoralists particularly for dry season grazing or during drought, and are also vital for crop production. Rich biodiversity of both plants and animals also reside in the rangelands. In fact, a large number of crop genetic materials are known to originate in rangelands e.g. many food crops, such as wheat, barley, sorghum and millet. Rangelands are now also popular tourism destinations, backed by rich wildlife, unique landscapes (e.g. flat and rocky terrains), and significant cultural and spiritual shrines.

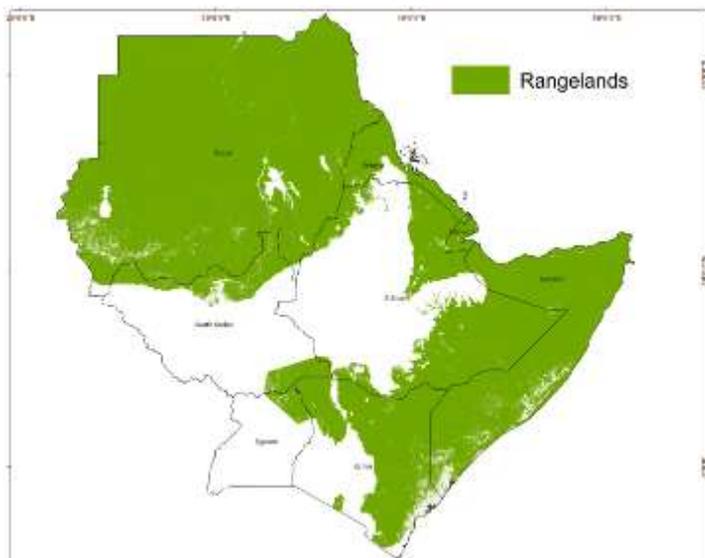
The socio-economic dimension of rangelands is characterized by a higher than average levels of poverty and are home to the most marginalized people. Hence, sustainable dryland management and development are key in achieving the MDGs particularly poverty reduction and environmental sustainability. For example, in Kenya the highest

incidence of poverty is found in the arid and semi-arid lands, where more than 65 per cent of the population lives below the poverty datum line (Mwangi, 2009). Poverty is both an effect and cause of environmental degradation – an effect of degradation as a degraded ecosystem provides fewer goods and services, and a cause of degradation as people strive to eke out a living from a diminishing and variable resource base. The relevance of development in rangelands and rangelands is underscored by the suffering of its people as is reminiscent of drought and flood effects and aggravated by climate change.

Although the role played by rangelands in life support systems now seems obvious, until recently only a few governments and societies understood their values. The dynamics of rangelands are still not yet fully understood by policy makers, development agents and communities and hence inadequate importance has been attached to them although impacts of misuse are clearly seen by observers. This lack of knowledge has been reflected also in national economic data which give more emphasis on agriculture in arable land with little being mentioned about the contribution of rangelands.

### **IGAD Rangeland Coverage**

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 (IGAD, 2017; IGAD, 2015). About 65% of the IGAD region landmass is Arid and Semi-arid Lands (ASALs) characterized by low erratic rainfall with vast rangelands.



**Figure 1: IGAD Rangelands Boundaries – Shaded in green. (Source: Farah and Amdihun, 2016)**

## **The Training Manual**

In an effort to address the gaps and challenges in sustainable rangeland management and livelihood diversification, the support for effective cooperation and coordination for cross-borders initiative (SECCCI) project in Ethiopia, Kenya and Somalia, under its outputs ‘enhancing capacities of relevant actors to engage in cross-border cooperation, at local level and develop processes to ensure interventions are attuned to the local contexts and benefit community support and ownership’, initiated development of a training manual on rangeland management and diversified livelihoods with thematic training modules, whose contents will be regularly updated to provide an up-to-date training of trainees (TOT) courses to the government technical staff who will be drawn from the cross-border pastoral and agro-pastoral communities in the three SECCCI project clusters in Kenya, Ethiopia and Somalia.

The training manual adopts a modular approach under the broad thematic areas for training:

- Thematic Area 1: Sustainable rangeland management
- Thematic Area 2: Livelihood diversification
- Thematic Area 3: Building resilience in rangelands

### **Purpose and objectives of the training manual**

The overall objective of this training manual is to build capacity on rangeland management and diversified livelihoods in 3 clusters of South Omo-Turkana, Moyale-Marsabit and Mandera, in close collaboration with IGAD specialized centres so that relevant actors can engage in cross-border cooperation to strengthen resilience of communities and create greater economic and employment opportunities through enhancing plans and processes related to the rangeland management, animal production and pastoral livelihoods, in the three countries of the IGAD region. The manual will ultimately help to improve sustainable management of rangelands and boost resilience of pastoralists in the region.

The envisaged training will complement farmer field school (FFS) training with that of the community-based participatory rangeland management.

### **Training Manual Approach**

This training manual addresses training challenges facing the marginalized and neglected cross-border pastoral and agro-pastoral communities in Ethiopia, Kenya and Somalia. The training manual aims to build capacities cross-border pastoral and agro-pastoral communities on sustainable rangeland management and enhancing livelihood resilience at community levels. The specific manual training activities will be broader but tailored

to the local context and will reflect the gaps and priorities of the relevant livelihood activities at cross-border areas.

The approach is to select candidates who know how read and write for middle-level college courses and practical trainings while community-based rangeland managers will be requested to nominate trainees who might be semi-literate but are knowledgeable in rangeland management, animal husbandry and pastoral livelihoods. All the trainees, under this training manual, will all be literate to some degree and will include; secondary school and middle level college leavers but will all be selected from and by their communities. The trainees, after graduation, will be linked to a sustainable and affordable range extension services and rangeland science professionals; and county and zonal natural resource and environment offices. The training manual also advocates for the importance of gender mainstreaming into the training plan.

## **THEMATIC AREA 1: SUSTAINABLE RANGELANDS MANAGEMENT**

It is widely acknowledged that for sustainable development to be realized, the environment and natural resource base upon which development relies must be sustainably managed for the current and future generations. The concept of sustainable rangeland management (SRM) or more specifically, sustainable NRM has over the years drawn attention and attempts have been made to define SRM. As defined by TerrAfrica (2009), and for the purposes of this manual, best practices in SRM should “increase land productivity and maintain ecological resilience, be cost efficient with short payback (economic viability), easy to learn, accepted, effectively adopted and taken up (socially and culturally accepted), and should be environmentally sustainable (contributing to the improvement of soils, water, and flora and fauna (biodiversity))”.

A wealth of experience in SRM already exists but has not yet been adequately tapped and shared (Schwilch *et al.*, 2009), and due to lack of formal communication pathways among institutions, some of the lessons learnt have been confined to the agencies involved and often getting lost at the close of individual range management projects and programmes (IFAD, 2004). The development of a training manual with a common pool of knowledge related to SRM technologies and approaches for implementation and dissemination provides the basis for successful up-scaling (TerrAfrica, 2009).

It is therefore envisaged that the documentation and dissemination of some of the key lessons and best practices in promoting rational range use in IGAD’s rangelands will serve to spur adoption and scaling up of the practices among relevant actors, particularly governments, development agencies and local communities. The following section describes some of the training modules on best practices for sustainable rangeland management.

The modules under this thematic area are designed to provide relevant knowledge required for better understanding of the prerequisites for sustainable rangeland management. At the end of the session, trainees are expected to:

- i. Understand the principles of rangeland management for improved productivity;
- ii. Describe and design implementation of best practices of rangeland management;
- iii. Understand basic concepts of climate risk management in rangelands;
- iv. Comprehend holistic rangeland management principles for sustainability.

## Module 1: Fodder Production

Scarcity of pasture associated with the temporal and spatial variability of rainfall and human interference in the rangelands continues to be a challenge for sustainable use of rangelands in Africa. According to FAO, there has been a reduction in pasture with the total land area under pasture and fodder having decreased in IGAD region, partially due to the fact that large grassland areas have been destroyed or converted to agricultural land. Demand for livestock feed in rangelands has therefore increased. A big challenge for settled pastoralists whose herds have limited mobility is the lack of animal feed during the dry seasons, especially in times of drought.

Some of the practices promoted under this module include:

- i. Forage bulking and conservation storage of hay and/or silage
- ii. Erecting enclosures for standing forage provides opportunities to ensure livestock have access to high quality forage all year-round.
- iii. Fencing off of areas and rotation of the grazing livestock on several pieces of land is a suitable option to regulate the intensity and timing of grazing.
- iv. Rehabilitation of pasture land with improved grass varieties e.g *Bracharia spp hybrid (Mulato)* and legumes<sup>1</sup> for higher yield, higher nutritive value and palatability of forage.



Figure 2: Fodder growing

## Module 2: Grazing management

Under this module, the contents address the basic principles of range management. The aim is to improve livestock management strategies by enhancing grazing management best practices to sustain the productivity and health of rangelands (Illius *et al.*, 1998 and Ash *et al.*, 2011). Grazing management is a major way to conserve rangelands.<sup>2</sup>

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<sup>1</sup> several legume species as suitable for reseeding degraded marginal lands: *Trifolium angustifolium*, *T. campestre*, *T. haussknechtii*, *T. lappaceum*, *T. pilulare*, *T. purpureum*, *T. resupinatum*, *T. scabrum*, *T. speciosum*, *T. stellatum*, *T. tomentosum*, *Medicago rigidula*, *M. noeana*, and *M. rotata*

<sup>2</sup> Jason Sircely. Managing degradation in East African rangelands. *International Livestock Research Institute and Natural Resource Ecology Laboratory*. 2015.

Some of the principles include:

- i. Maintenance of livestock numbers that are commensurate with available forage supply,
- ii. Uniform distribution of animals within the range,
- iii. Vegetation maintenance through alternating periods of grazing and rest,
- iv. Using the most suitable kinds of livestock.
- v. Setting up designated wet and dry season grazing areas

In cases of rotational and deferred grazing, it is recommended that the partitioning of land should be based on ecological variation, and the timing and duration of grazing be worked out separately for each land type and for each grazing territory in order to account for biophysical variations - mainly soils and vegetation.

### **Module 3: Water harvesting and conservation technologies**

Rangelands are areas with limited water (and moisture) resources and hence management of water resources poses a major challenge in promoting sustainable utilization of the rangelands. Good water resources management in rangeland is paramount in order to sustain the productive capacity of the land and to better cope with water scarcity and the extremes of droughts and floods. The key to sustaining productivity of uplands and downstream areas is to manage land and water resources in concert with one another.

The practices highlighted in this manual are mainly for rainwater harvesting techniques:

- i. Collection and concentration of rainfall run-off in micro-catchments, cut-off drains, sand dams, ponds and rock catchments.
- ii. Management and conservation of rangeland wetlands/watersheds<sup>3</sup>

### **Module 4: Rangeland Rehabilitation and conservation**

In degraded rangelands, the reduction of stock number and controlled grazing is recommended to lower grazing pressure in order to facilitate rehabilitation (Wessels *et al.*, 2007 and Li *et al.*, 2011). As alluded to by Woodfine (2009), the target of SRM in pasture and range management is maximization of the capture, infiltration and storage of rainwater into soils, which promotes favorable conditions for increased vegetation cover, soil organic carbon, and resulting in sustainable utilization of above and below ground biodiversity.

Some of the rangeland rehabilitation principles articulated under this module includes:

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<sup>3</sup> Dryland watershed management encompass measures for prevention of land degradation along riparian areas, rehabilitating degraded watersheds and through compensation mechanisms for upstream (watershed) communities who undertake land improving activities and promote compatible land uses.

- i. Propagation of plants and encouraging grass growth through hand cutting woody, prescribed fire on some species, cutting trees and preserving enclosures, resting of pasture land (deferred grazing),
- ii. Reseeding and movement during dry seasons,
- iii. Enclosures have been used where grazing is excluded for a specified period of time,
- iv. Labour saving technologies such as tractor plough can be very useful in land preparation before reseeded,
- v. Low cost reseeded technologies such as use of a pitting machine is critical for up-scaling,
- vi. Introducing agroforestry<sup>4</sup> that entails the integration of woody perennials with agricultural crops, pastures and livestock on the same land management unit.

Under this training module, the manual advocates for incorporating scientific and indigenous knowledge in the management of rangeland would contribute significantly to halting and reversing the land degradation and improving the carrying capacity of the rangeland management of rangelands.



**Figure 3: Degraded rangeland**

## **Module 5: Climate Change Management**

Climate change has led to the problem of conflict and migration in drought prone areas. Climate is among the crucial factors in having essential resources such as water, food,

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<sup>4</sup> Agroforestry has multiple benefits - it contributes to animal fodder, human food, and woodfuel, thus reducing pressure on rangeland resources. It also provides several ecosystem services that include climate change mitigation through carbon sequestration. The role of forests and woodlands in combating desertification and conserving watersheds are critical, especially for ensuring long-term food security

energy and other important resources in these areas. Sensitivity to climate variability and change cannot therefore be ignored. Therefore, communities and stakeholders including decision makers and resource managers are working towards timely, trusted, usable and tailored information for decision-making in rangeland management.

Some of the best practices highlighted in this manual are:

- i. Provision and access to good climate information that helps in reducing climate related challenges that occur, within cross-borders,.
- ii. Provide climate information in a usable form that meets planning and policy-making needs,
- iii. Adopt early warning systems inform pastoralist communities on weather trends and disasters and alert them for effective preparedness and response,
- iv. The communities within the clusters to take advantage of the Grassland Project Protocol developed by the Climate Action Reserve<sup>5</sup>,
- v. Adopting drought mitigation strategies including,
  - a. Herd Management and Herd Splitting
  - b. Contingency planning for drought risk reduction,
  - c. climate change adaptation and
  - d. social protection such as Hunger Safety Net Programme (HSNP)

## **Module 6: Increasing Mobility**

Livestock production is the key production system in the IGAD rangelands. Rangelands exhibit extreme spatial and temporal variability in the quality and availability of forage (O'Reagan and Schwartz, undated). Annual and seasonal variability in rainfall is an important cause of instability in semi-arid environments. Therefore, flexible and opportunistic management practices are required to realize the sustainable economic yield from rangelands (Illius *et al.*, 1998). In this regard, mobility is an important way of coping with this seasonal and ecological/landscape variability.

Cross border transhumance corridor development is seen as a means of promoting and enhancing resilience of the cross border agro-pastoralists and pastoralists. Mobility is the first measure taken to solve shortage of livestock feed and water. There is strong evidence that more mobile pastoralists are better able to withstand droughts than those who have become partially or completely sedentarized. Pastoralism either in form of transhumance or nomadism involves livestock mobility and is viewed as an efficient system of livestock production in rangelands. Livestock mobility is vital for production, trade and survival

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<sup>5</sup> landowners can now generate carbon credits by preserving grasslands and avoiding the climate impacts of land conversion, including the release of soil carbon, application of nitrogen-based fertilizers and use of carbon-emitting machinery.

especially during times of crisis, particularly drought and conflict (IIED and SOS, 2010) and hence contributes greatly to pastoral resilience.

Accordingly, this manual articulates that:

- i. Livestock mobility is one of the key pastoralist risk management strategies which also promote resilience of rangeland ecosystem.
- ii. Mobility is also important for trade particularly in livestock and livestock products, which significantly contributes to livelihoods in terms of food security among other benefits.
- iii. Mobility supports livestock trade through transhumance with designated routes.

There is need for negotiated arrangements (verbal or written) between neighbouring pastoral groups and non-pastoral groups (agriculturalists) to make it possible for livestock owners to access wetter areas far beyond the usual animals' grazing range especially in times of drought. This manual highlights practical examples to enhance mobility:

- i. Where semi-arid rangelands border on areas where crop production is possible, nomadic pastoralists and settled agriculturalists should have mutually beneficial arrangements where livestock use crop residues in the dry season, allowing the crop farmer to make use of manure (nutrient cycling)
- ii. Anchor transhumance on peace agreements between respective traditional rulers to allow for common exploitation of pastureland and minimizes situations (due to resource scarcity and displacement).
- iii. Build in mechanisms for conflict prevention, management and resolution in programs that promote pastoral mobility.

## **Module 7: Trans-boundary and ecosystem & Landscape approach**

Rangelands ecosystems in IGAD region span across local and national political boundaries necessitating sharing of resources and ecosystem services. Key among the shared resources are forests, wildlife, grazing lands and water catchments, which calls for resource management approach that is more transnational/cross-border. In addition, cross-border communities have seamless cultural interactions, and activities in one country or jurisdiction can significantly affect environmental and social systems in the other/neighbour (InWEnt and GTZ, 2005). Trans-boundary natural resources management (TBNRM) is therefore important not only in promoting sustainable natural resource management but also for stronger sub-/ regional integration and cohesion. The adoption of ecosystem management approaches is supported by empowering communities, sharing knowledge and stakeholder partnerships on a large scale (Mortimore, 2009).

This manual advocates for practices that maintain the interconnectedness and interdependence of ecosystems and communities such as:

- i. Harmonizing of policies across national borders and collaboration in the management of shared ecosystems,
- ii. Coordination and dialogue to foster institutional collaboration from local to regional levels,
- iii. Ensuring socio-economic benefits for all groups of people,
- iv. Incorporating peace building, trade facilitation and infrastructure development so as to
  - a. improve regional ecological management,
  - b. increases economic opportunities,
  - c. decrease cultural isolation, fosters peace and,
  - d. provide a basis for further collaboration

## **Module 8: Wildlife-livestock-human interaction management**

Wildlife and livestock co-exist in some of the Africa rangelands, particularly outside protected areas (e.g. national parks) and the management of their interaction provides a key challenge to NRM managers and affected communities. In addition the relationship between wildlife and livestock is known to be mutualistic. The management of both wildlife and livestock present great potential for livelihoods particularly due to expected economic returns from tourism in case of wildlife and livestock marketing.

This training manual recommends community conservancy approach as one of the best practices in managing rangelands used jointly by wildlife and livestock due to its multiple contribution, in terms of rangeland conservation, livestock and wildlife management, and opportunities for diversification of livelihoods for instance through ecotourism. In this approach, communities set aside land for conservation, grazing and settlement within a single land use plan.

The following principles are highlighted as key:

- i. Sustainability is pegged on policy environment, institutional capacity of communities, and equitable benefit sharing among other factors.
- ii. The conservancy approach involves participatory land use planning where the community is the key player.
- iii. It entails setting up mechanisms for conflict resolution; benefit sharing, compensation and resource governance and building management capacity of the community.

Wildlife conservation is a viable land use option in some of the ASALs and the conservancy approach therefore, provides a good strategy for the reintroduction of

wildlife in areas that were previously rich in wildlife but have lost a great deal of the wildlife due to loss of habitat arising from anthropogenic forces.

## **THEMATIC AREA 2: DIVERSIFIED LIVELIHOODS**

### **Introduction: Livelihood diversification in IGAD rangelands**

Over recent decades, however, pastoralist livelihoods have come increasingly under pressure and are caught in a downward spiral of resource depletion, and diminishing resilience against climate and non-climate changes (Dong et al. 2010; Eneyew 2012). The impacts of rangeland degradation, for example, reducing the potential of rangeland ecosystems to provide goods and services (Vasquez et al. 2010), and the acute shortage of pasture land is forcing local communities to abandon traditional systems of livestock-based livelihoods and engage in alternative options.

Livelihood diversification in a pastoral society refers to attempts by individuals and households to find new ways to raise incomes and reduce environmental pressures, and can be seen as a management tool for coping with risks. (Ellis 2000; Little et al. 2001; Eneyew 2012). In arid areas, livestock-based livelihoods remain critical as fewer diversification options exist (Eneyew 2012), but in many rangeland regions, diversification based on natural resource may provide various possibilities that can benefit local communities. Generally, the efficient and multiple use of rangeland resources is critical for strengthening the resilience of socio-ecological systems by enhancing the adaptive capacity of vulnerable pastoral communities to the impacts of climatic and non-climatic drivers of change through diversified livelihoods, as well as other approaches (Dong et al. 2011; Dong et al. 2012). However, although diversification of livelihoods can offer opportunities for pastoralists and agro-pastoralists, if not properly managed, it can also add to the pressures on them (Watson and Binsbergen 2008; Eneyew 2012). Research shows that while some forms of diversification enhance welfare, others can increase risk (Little 2009).

The modules under this thematic area are designed to provide relevant knowledge required for better understanding of the prerequisites for sustainable rangeland management. At the end of the session, trainees are expected to:

- i. Know the feasible alternative livelihood options within rangelands;
- ii. Understand the guiding principles to achieve diversified livelihoods within rangelands;
- iii. Understand the role of markets and trade in livelihood diversification.

## **Module 1: Integrated crop-livestock systems**

The interaction between pastoral and agro-pastoral/agricultural communities has been one of interdependence, whereby pastoralists have benefited from agro-communities through gaining access to crop residues in their fields for their livestock whilst agricultural communities have benefited through fertilization of their farms from animal dung. Integrated crop-livestock farming systems have been shown to improve cycling of nutrients between rangelands, croplands and stall-fed (zero grazing or “cut and carry”) livestock production systems (Woodfine, 2009). This is done within a coordinated network of livestock management, fodder production and controlled grazing. It has been observed that crop residues may contribute to increased availability of better quality feed in the dry season and that livestock fed on crop residues perform better than livestock grazing natural pastures (Mark *et al.*, 2004). Crop-livestock systems in rangelands are found across many countries in IGAD, where more prominently it has evolved for a long time mainly among agro-pastoralists.



**Figure 4: Crop-livestock farming**

## **Module 2: Fuel Wood and Charcoal Burning**

Fuel wood and charcoal sales are becoming the top alternative income sources for the pastoral communities. In recent decades, this has led to adoption of new income-generating activities such as the sale of firewood and the making and sale of bricks and charcoal on a commercial basis to an increasing urban population requiring them for construction and fuel. Wood is used to fire the bricks, as well as for charcoal, with effects on land cover.

## **Module 3: Fishing**

Fishing is evident in pastoralist areas to supplement their livelihoods by selling the fish. Pastoralists are diversifying their incomes through fishing, increasing their resilience to

drought, and fishing communities have launched village savings and loan associations that have boosted their incomes, helping members to meet their daily livelihoods.

#### **Module 4: Honey Production**

There is growing interest in dry land bio-enterprise, with innovative projects in areas across the IGAD rangelands. Bee-keeping is the fastest-growing SME activity in the pastoralism region. Honey production is a commercially viable enterprise, especially along the riverine ecosystems and higher altitude locations. However, diversifying into honey production does not always result in improved livelihoods but that successful beekeepers were able to sustain their families.

#### **Module 5: Processing and Selling Hides and Skins**

This module seeks to promote commercial processing and sale of hides and skins as an alternative income source. The proposals are to overcome the major constraints being capital, skills, quantity of skins sold to the tanneries, transportation and market linkages.



**Figure 5: Processing of hides and skin**

#### **Module 5: Basket-Making and Handicrafts**

Commercial basket-making (and associated activities) supports a network of producers, traders and transporters in most areas and is especially important in the livelihoods of households located along dry-river valleys. The principal products produced include mats, baskets and brooms, and an assortment of wooden goods.

#### **Module 6: Harvesting Wild Products**

Diversification through gums and resins marketing is not competitive with pastoralism; rather, it is supportive as it encourages mobility. The harvesting of gum and resin involves extensive movements across the landscape because trees bearing these products are

spatially distributed. In addition to their economic and ecological contributions, gum and resin products also provide several other benefits. These include their uses as medicines for human and animal illnesses, for hygienic and perfuming (fumigation) of cloth and the body by women, for animal feed, and for food and chewing gums, particularly during dry seasons and droughts.

The manual highlights the following best practices:

- i. combine herding and harvesting gums and resins to
- ii. facilitate mobility and enhance both pastoralism and the collecting of wild products, such as gums and resins.

### **Module 7: Promotion of dryland products (production and marketing)**

Dryland communities largely depend on natural resources for their livelihoods. Sustainable livelihoods in the rangelands need to take cognizance of the alternatives available for livelihood diversification that is vital for enhancement of food security and household incomes among other benefits. Studies, have established that there is great potential for the production of dryland products. Among the key potential dryland products are animal based (skins, wool and milk among others), plant based genetic resources (e.g. Aloe vera, frankincense, myrrh, gum arabica, and medicinal herbs), honey, handicrafts and minerals all of which have a ready market locally and abroad. For example, there is a high international demand for gum arabica and Aloe vera. In Sudan, gum arabica is a major item of export. Besides relying on the biological resources, dryland physical landscapes can be packaged as nature 'products' for their unique aesthetic value, which can support recreational income generating enterprises that have minimal negative environmental impact.

This manual highlights the following practices to boost production and trade:

- i. Improved institutional capacity is often poor,
- ii. Institute favourable policy and legal framework to progress in production and marketing of rangeland products,
- iii. Improve production and access to markets for rangeland products
- iv. Undertake sustainable management of natural resources,
- v. Encourage private sector participation through partnership with local communities<sup>6</sup> by implementing facilitative policy environment, locally and globally,
- vi. Advance availability of cheap technologies for processing rangeland products,
- vii. Build technical and business skills.

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<sup>6</sup> For example, it was observed in Ethiopia that bio-enterprises established and developed by or with the private sector have been sustained

## Module 9: Alternative use of invasive species within rangelands.

Even though invasive species like *Prosopis juliflora* shrub that has long caused nightmares for local communities, it is currently providing an alternative source of wood to produce sustainable charcoal while supporting the livelihoods of rural households in drylands. This module proposes the following activities:

1. Building capacity and skills in tree management. For example, they did not thin or cut down some stems or branches to promote growth, reduce formation of thickets (in the case of *Prosopis*) or replant when they cut native species.
2. Support for farmers and charcoal producers.
3. Formation of local charcoal producer associations.



Figure 6: Charcoal briquettes from prosopis and farmer support in tree management

## **THEMATIC AREA 3: RESILIENCE BUILDING IN IGAD RANGELANDS**

### **Module 1: Increased Adoption of Agricultural Technologies**

Although local livestock breeds are considered to be more tolerant to climatic extremes, keeping improved livestock breeds and growing improved varieties of crops coupled with use of agro-chemicals to maximize yields increases productivity which increases resilience. The livelihood of most of the people in the rangeland region strongly depends on rain-fed agriculture and pastoralism. Agriculture employs about 60-80% of the population which is in stark contrast with the limitations imposed by conditions in the arid and semi-arid lands, which receive less than 600mm of annual rainfall and comprise about 70% of the area of the region.

This manual therefore suggests:

- i. Investment in pasture production technologies ensures pasture feed availability and continuous livestock production which ensures household food and nutrition security and increased income.
- ii. The adoption of such technologies has potential for increased productivity of livestock and crops in the pastoralist areas, leading to optimum domestic consumption and in some cases, sale of excess farm products to provide cash for other household needs.
- iii. To guard against food insecurity, households purchase and store grain in anticipation of drought for fear of increasing grain prices that come with prolonged droughts.

### **Module 2: Support for Women-Owned Enterprises**

Gender is a principle of social differentiation that shapes pastoralist diversification strategies for resilience. Milk trade, petty trade in consumer items and foods, and other non-pastoral activities are dominated by women. In large towns, women can work as domestic workers, although these come with high risks of possible abuse and non-payment, as it has been observed in most parts of Uganda, Kenya and Ethiopia.

This manual therefore suggests:

- i. Support from government and NGOs to women to allow them form organized groups of pastoralists
- ii. Enrol ex-pastoralists into local savings and finance groups or group-based business ventures.

### **Module 4: Employment Programs for Youth**

Cash income from unskilled wage labour is reported in pastoralist households. The hired work includes cash-for-work programmes to create communities' assets, supported by

INGOs/NGOs and public socio-economic infrastructure development activities carried out within the territory, such as schools, health centres, veterinary clinics, government administration offices and roads. The number of small urban centres have increased considerably during the last few years, linked with increased creation of new local developments of public administrative, social, and economic infrastructures, under the government's decentralization programs. These programs have created job opportunities for the youths.

This manual therefore suggests:

- i. Creating opportunities for skilled labour have also been created, largely for local elites in public service occupations such as administration, police, schools, and health services.
- ii. Development of public infrastructure to create employment opportunity for unskilled labour as well.

### **Module 5: Value-Added Activities around Livestock Production and Trade**

In the Eastern African rangelands, employment and enterprises still revolve mainly around livestock production and marketing activities. Keeping more value in the pastoralist areas from livestock production and trade not only promotes beneficial diversification for households and communities, but also enhances regional development and productive linkages between towns and the pastoral sector. Presently, much of the fattening of livestock for markets and other value-added operations, as well as the incomes and employment that they generate, take place outside the dry-lands, denying herders and local traders a large proportion of the benefits from their livestock and livestock products.

This manual therefore suggests value-added activities to include:

- i. livestock fattening operations,
- ii. meat processing,
- iii. fodder production,
- iv. milk processing and trade,
- v. livestock transportation enterprises
- vi. Creating small enclosures for communal herders and small-scale traders for value-added finishing of livestock for markets.

### **Module 6: Cross-Border Cooperation**

Cross-border cooperation is a collaborative partnership between neighbouring states for the mutual benefit of communities residing on both sides of a shared international border to address common challenges. Such challenges may relate to building peace and security,

promoting regional integration and economic cooperation, achieving food security, attaining social and environmental security and reducing the number of displaced people.

Peace and security make cross-border movement and interaction possible and allow pastoral communities to access vital natural resources and engage in trading activities. The promotion of peace-building initiatives in conflict-affected communities in the Horn of Africa should therefore be prioritized in interventions aimed at strengthening pastoralists' resilience.

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## **ANNEX**

### **Proposed Appropriate Course Contents**

This section lists what are considered to be essential course contents for sustainable rangeland management and diversified livelihoods. The module structure and contents may not be exhaustive but contains detailed essential to be offered during training and will be regularly updated as may be required.

### **Proposed Sustainable rangeland management**

1. Rangeland ecology and management
2. Rangeland plant identification
3. Renewable natural resources
4. Principle of vegetation management
5. Global environment impact
6. Integrated rangeland management
7. Remote sensing of environment
8. GIS application
9. Range reseeding- range lands grass seeds reseeding management techniques
10. Bush control & invader species management (invasive and unpalatable plant species management in range lands)
11. Seed bulking in range lands
12. Range lands production systems: Community based range land management systems and community conservancy
13. Range lands pasture/ Fodder / hay production, preservation and conservation management
14. Water harvesting for range lands management- for grass/fodder/tree production
15. Natural pasture / grass improvements
16. Capacity building on community participatory Land management approaches
17. Soil and water conservation management in range lands
18. Nursery management and Tree planting in range lands
19. Sustainable range lands ecosystems management training
20. Leadership and governance management skills to improve governance on range lands
21. TOT training on rangeland managements and livelihood diversification.
22. Topics on Introducing an alternative to free range grazing

### **Proposed Livelihoods diversification courses**

Training courses to strengthen community skills and knowledge for increased diversified and sustainable food production systems production should include:

1. Sustainable livestock production systems in ASALs

2. Improving fodder/feed and pasture production in range lands
3. Entrepreneurship skills trainings for enhanced capacity to undertake agribusiness activities that improve economic empowerment of pastoral communities.
4. Apiculture management trainings (bee keeping and honey production)
5. Production of indigenous poultry trainings
6. Integrated Dryland farming techniques in range lands (vegetables gardening, micro catchment drip irrigation through use of water harvesting technologies.
7. Youth and women empowerment (gender trainings in range land management)
8. Community conservancy management in range lands
9. Community based livestock health-care trainings in rangelands
10. Seed production for food production in ASALs.