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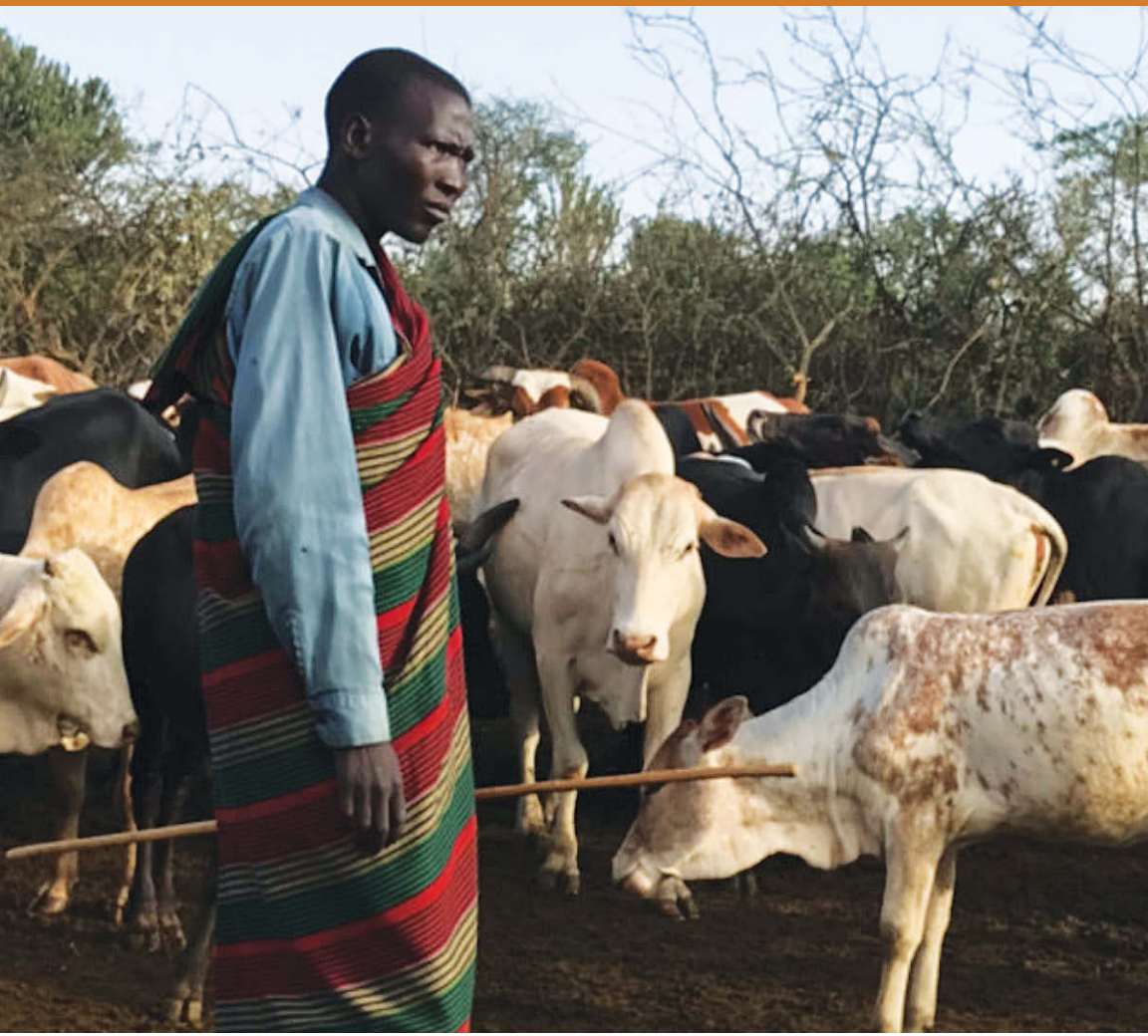

PASTORALISM IN UGANDA
Theory, Practice, and Policy

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Tufts UNIVERSITY
FRIEDMAN SCHOOL OF NUTRITION SCIENCE AND POLICY
Feinstein International Center

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Theory, Practice, and Policy

First Edition 2019

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Preface

This textbook is a general reference on pastoralism theory, practice, and policy. It enables students and other readers from various professional backgrounds to understand how pastoralism functions as a system, its contributions to local, national, regional, and global economies and sustainable environmental management, and its role in promoting peace and harmony between pastoral and other communities. The textbook demonstrates the significant value of pastoralism today and its strategic role in contributing to Uganda's Vision 2040.

This texbook interrogates pastoralism as a livelihood system in terms of its origin, rationale, and where it is practiced today. It examines the three basic pillars of pastoralism and the interdependence of each pillar within the system as a whole. These pillars are:

- Natural resources
- The livestock herd
- Pastoral society and institutions.

It is important for the reader to note that pastoralism is found in some of the most challenging, as well as rich and fertile, environments on earth, from the Nile and the Rift Valleys to the steppes of Mongolia and the edges of the Sahara Desert, as well as in mountainous and lowland regions in Europe.

The textbook looks at the opportunities and the constraints to livelihoods in pastoral areas in Uganda. It examines the sustainability of natural and livestock resources management in theory and in practice. It also looks at the strategies employed by pastoral communities to manage and benefit from variable and unpredictable conditions in the arid and semi-arid regions (ASAL). In addition, it investigates how effectively pastoral institutions contribute to the proper and rational utilization of rangeland resources as well as the socio-economic contribution of pastoralism at the local, national, and international levels. The textbook facilitates discussion on the role and contribution of pastoralism to national and regional development objectives, and debates its place in a modern and changing world. In other words, pastoralism does not exist in a vacuum—it interacts with other production systems and is impacted by government policies.

Using scientific evidence and case study material, the textbook demonstrates the logic of pastoralism in environments characterized by highly variable and unpredictable conditions, including drought. It shows how pastoralism is a rational livelihood and land use system regulated by, and proactively exploiting,

ecology with complex modes of social, political, and economic organization that enables it to prosper in the high spatial and temporal diversity of dryland environments. It also shows that pastoralism, far from being outmoded and uneconomic, is highly dynamic and intricately linked into the modern world, contributing significantly to national and international markets in Uganda and beyond.

This textbook will be of interest to students pursuing various degree courses and career pathways, be it as researchers in range ecology, veterinary science, sociology, or economics. It will also be of interest to students who wish to become managers and technicians in rural development, government officers in the field of livestock or health services, or even private sector employees in engineering or information technology. Having a good understanding of the rationale of pastoral systems and how they work will enable all students, but particularly those who will work in pastoral areas, to ensure their work maintains the well-being of pastoral communities and that of the environment on which those communities depend.

1 Introduction to pastoralism

By: C.D. Waiswa, Animal Production and Rangeland Resources Management Scientist, Gulu University

SUMMARY

This chapter introduces pastoralism as a production system and as a livelihood in Uganda and worldwide. It then discusses some of the changes that pastoralists are currently experiencing:

- Pastoralism is a diverse livelihood, but one that is centered on the raising of livestock and usually involves diverse forms of livestock mobility. Pastoralism takes advantage of the characteristic variability and instability of rangeland environments.

- Pastoralism, and the domestication of livestock, originated between 11,000 and 7,500 years BP (before present) in the Horn of Africa and North Sahara. Around 5,000 years BP, livestock spread south into East Africa, and herding was mixed with other activities, such as farming and hunting. More specialized pastoralism emerged later, between 3,000 and 2,000 years BP.

- Pastoralism is found worldwide, and pastoralists are diverse groups of people who depend on livestock for their economic, social, and cultural livelihoods. However, pastoralists often combine the rearing of livestock with other activities, such as agriculture and trade.

- In Uganda, there are a number of different pastoralist groups that share key common characteristics, but which are also very diverse. Pastoralists are externally differentiated; they vary in the extent of livestock they keep and the different activities in which they are involved. Pastoralists are also internally differentiated; they vary along gender, age, and wealth lines.

- Pastoralism in Uganda is dynamic and fluid, and pastoralists respond to changes that are taking place in their social, economic, political, and physical environments. There are a number of forces currently affecting pastoralism that are causing changes. Some pastoralists are able to benefit, and others lose out. These changes include government policies on pastoralism, increasing education, new technology, tourism, conversion of rangeland to other uses, income diversification, and growing inequalities.

- Many people believe that the crisis facing pastoralists in Uganda and the Horn of Africa more generally is a result of their production system. Pastoralism, characterized by seasonal mobility of livestock in search of nutritious pastures and water, is widely believed to be a primitive way of life that is uneconomic and environmentally destructive, and no longer

able to provide pastoralists with sustainable and decent livelihoods. The recent droughts in the region seem to confirm this, prompting policies, particularly in the face of global climate change, to settle pastoralists and introduce them to modern agricultural and livestock production techniques. These perceptions, however, are ill-informed and not based on a full understanding of the science that underpins pastoralism as a livelihood and economic system.

Issues for reflection

1) Why is it difficult to provide one definition of pastoralism or pastoralist people?

2) What are the reasons for the high diversity of pastoral groups found in Uganda and beyond?

3) Why are pastoral livelihoods particularly vulnerable to global forces, such as climate change, human population growth, and land use change?

1.1. DEFINING PASTORALISM

There are several definitions of pastoralism. Box 1.1 presents some of the common definitions that have been used in the past.

Box 1.1. Some definitions of pastoralism/agro-pastoralism

Pastoral production systems are those "in which at least 50% of the gross incomes from households (i.e., the value of market production and the estimated value of subsistence production consumed by households) comes from pastoralism or its related activities, or else, where more than 15% of household's food energy consumption involves the milk or dairy products they produce" (Swift 1988). In comparison, agro-pastoralists are those who derive more than 25% but less than 50% of their incomes from livestock and most of the remaining income from cultivation.

African pastoralism is defined by a high reliance on livestock as a source of economic and social well-being, and various types of strategic mobility to access water and grazing resources in areas of high rainfall variability (African Union 2010).

Pastoralism refers to any predominantly livestock-based production system that is mainly extensive in nature and uses some form of mobility of livestock (Hatfield and Davies 2006).

One of the more recent definitions of pastoralism is given in the Policy for the Development of Arid and Semi-Arid Lands (ASALs), adopted by the government of Kenya in January 2012. This definition is particularly interesting because it characterizes pastoralism as a production and social system that **takes advantage** of the unstable and unpredictable environmental conditions that are characteristics of the drylands:

> *The term refers to both an economic activity and a cultural identity, but the latter does not necessarily imply the former. As an economic activity, pastoralism is an animal production system which takes advantage of the characteristic instability of rangeland environments, where key resources such as nutrients and water for livestock become available in short-lived and largely unpredictable concentrations. Crucial aspects of pastoralist specialisation are: (1) The interaction of people, animals and the environment, particularly strategic mobility of livestock and selective feeding; and (2) The development of flexible resource management systems, particularly communal land management institutions and non-exclusive entitlements to water resources.* (Republic of Kenya 2012: iii)

Pastoralism is a production system closely linked with cultural identity, one that relies on raising livestock on pastures that may be commonly or privately managed and accessed through agreements based on negotiation, reciprocity, and competition. Livestock are social, cultural, and spiritual assets, as well as economic assets, providing food and income for the family within and between generations.

Livestock management strategies in a pastoralism system include herd mobility and diversification, with a high proportion of female livestock. Typically, pastoralism (as opposed to other livestock production systems) derives economic benefits from lands not suited to crop cultivation and is dependent upon periodic access to more productive pastures during regular dry seasons or drought. In agro-pastoral systems, in addition to livestock production, there is some form of crop cultivation. Pastoralists adopt several livelihood coping strategies in response to the difficult circumstances they are confronted with. Some of the key pastoralists' strategies include: (1) controlling access to water to ensure rational pasture management and peace; (2) using mobility not only to avoid risks such as disease but also and mainly to access nutritive pastures that are scattered and variable across the rangelands to enhance productivity; (3) maintaining pastoral resources under an overarching common property tenure regime, with nested rights of control and access to specific, high-value resources regulated by negotiation and reciprocity rather than fixed rules as a way to interface with variablity (Figure 1.1 and 1.2).

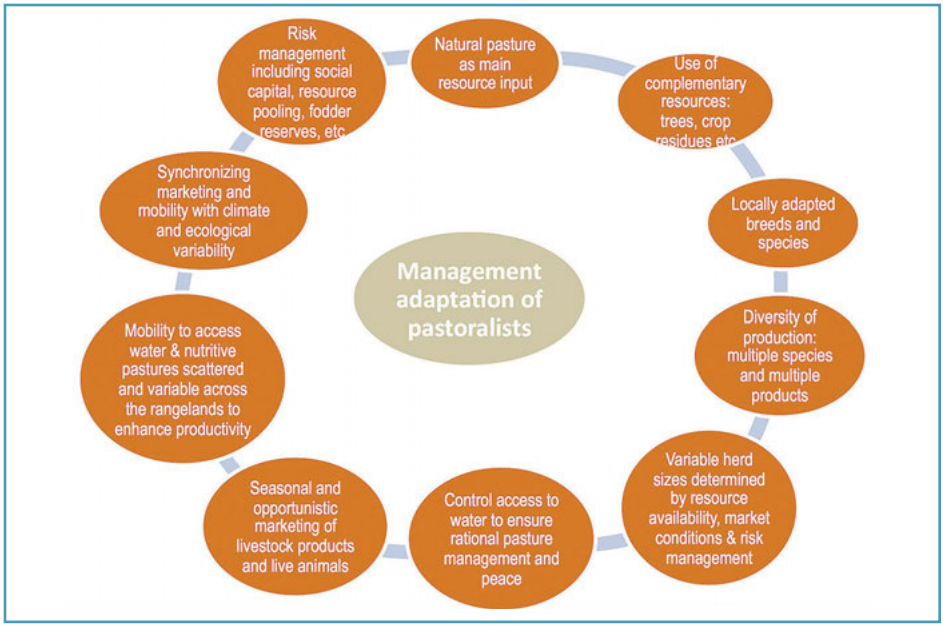

Figure 1.1. Management adaptation of pastoralists (Adapted from Davies et al. 2016).

Pastoralism is distinct, or different from, other types of livestock production, such as ranching and dairying, which require greater levels of input, higher labor and management requirements, and have larger production targets for commercial markets.

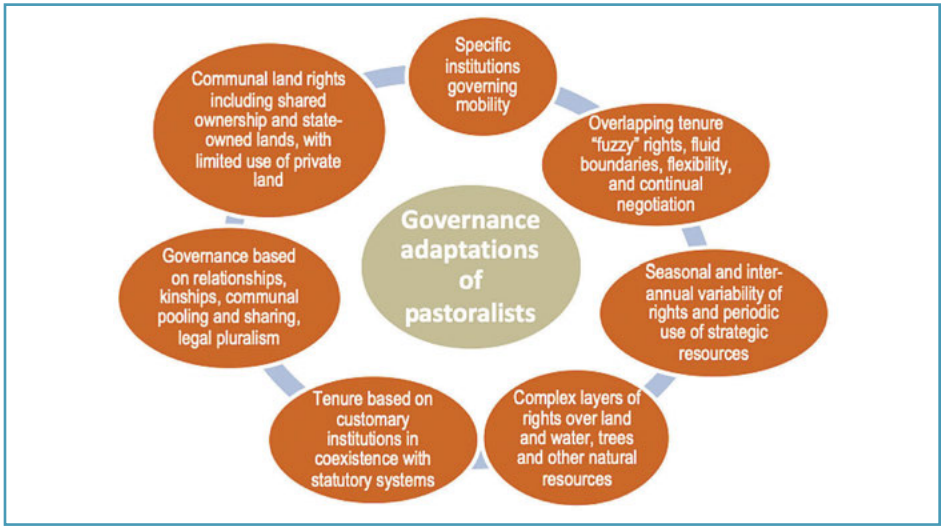

Figure 1.2. Governance adaptations of pastoralists (Adapted from Davies et al. 2016).

1.2. WHO ARE PASTORALISTS?

Pastoralists are people who **depend largely on livestock for their food and income**; livestock are used for both subsistence and marketing, and pastoralists also look to livestock to define their cultural identity.

Pastoralists in Uganda and East Africa are a heterogeneous group characterized by varying aspects of ethnicity and sociocultural set-ups, production forms, and strategies (ODI 2010). The variations include the degree of mobility or sedentarization, key livestock types, engagement and dependence on pastoral activities (especially levels of dependence on livestock for food and income), management practices, geographical location, nature of engagement with the market, and numerous other factors, all of which contribute to the difficulty of constructing a versatile definition.

This book uses a combined economic and cultural definition of pastoralism, encompassing both those for whom livestock and livestock products are their main livelihood source, and those for whom livestock does not provide the main source of income but who remain connected to pastoralist society.

Pastoralism combines a dependence on livestock with social structures and traditional practices, specific beliefs and institutions, and sets of laws and customs. By necessity, the definition involves a certain degree of fuzziness (Davies et al. 2016). In particular, it covers those whose livelihoods and culture are predominately shaped by livestock and their management. It also covers those who no longer herd animals either through loss of livestock or because they earn their living in another sector, but who nevertheless maintain social and economic links with those who still herd animals or who have some desire to return to pastoralism. It also includes agro-pastoralists who are involved in both extensive livestock production and crop farming where the relative importance of either

Figure 1.3. Karimojong pastoralists sell livestock to supplement their diets and also support basic family needs, contrary to popular opinion. Photo credit: KDF

Figure 1.4. Karimojong boys milking sheep. Shoats are important sources of milk for the family when cattle herds have emigrated during drought periods. Photo credit: KDF

Figure 1.5. Karimojong women carrying meat from slaughtered cattle. Karimojong pastoralists occasionally slaughter for home use. Photo credit: KDF

livestock or crops to the household economy will vary between families and from year to year depending on such factors as rainfail, market prices, and household labor. In a pastoralist setting, all members of the family—men and women, young and old—are involved in livestock production and marketing, as well as other livelihood activities, and in maintaining the health and safety of the family.

We also recognize that not all the people within pastoral areas are pastoralists and acknowledge the various ways in which the different East African countries addresse this issue. In Ethiopia, authorities have superimposed a pastoralist‘ tag over geographical areas where these groups dominate. In Kenya, arid and semi-arid districts are clearly demarcated but are not officially labelled pastoralist. In Uganda, while the general public is aware of different pastoral groups (often referred to by the derogatory term Balaalo), the government has only recognized the Karimojong and the Karamoja Region as pastoral. Tanzania presents a unique situation where ethnicity is avoided in pursuit of national integration.

Pastoralists in Uganda and East Africa live in very different environments, but usually in marginal areas, geographically close to national borders. Such areas can be wet, cool highlands; dry, hot lowlands; swampy wetlands or along riverine forests; and get their water from different sources. By our definition, however, all these environments share a common characteristic: **unpredictable and highly variable access to pasture and water within and between years**.

Pastoralists raise different species and breeds of livestock: cattle, camels, goats, sheep, and donkeys.

Pastoralists combine livestock production with other activities such as agriculture, trade, firewood, non-timber forest products, and tourism.

Figure 1.6. Karimojong rear various species of livestock to meet different domestic needs and also optimize use of natural resources. Both young and old are involved. Photo credit: Daniel Aleper

Box 1.2. Key characteristics of ranching and dairying

Key characteristics of ranching systems:

- Livestock are grazed within defined and **fixed boundaries** (usually fenced).
- Natural resources are managed through **private regimes**.
- Ranching is **commercially oriented** (mainly beef) for home and export markets.
- Livestock represent purely an **economic asset**.
- Livestock depend on natural pastures as well as purchased feeds.
- Ranching mainly depends primarily on **hired labor**: both technical and manual.
- A key livestock management strategy involves **herd splitting** through separation using fences and controlled stocking rates.

In many of the areas where ranching is practiced, the rainfall regime allows for **dependable crop cultivation and predictable pasture production**.

Key characteristics of dairy systems:

- Dairying involves **high levels of input**, e.g., feed/concentrates.
- Dairy systems produce **higher milk yields** than less intensive systems.
- The **focus is on milk** production.
- Dairy stock represent an **economic asset**.
- High yielding breeds and/or cross-breeds are used.
- Management and labor requirements are high.
- Dairying requires a **sophisticated marketing chain** to enable the products to be sold.
- Many dairy units are indoors, supplemented at times by fenced grazing land.

1.3. HISTORY AND ORIGINS OF PASTORALISM

A picture of the history and origins of pastoralism continues to evolve, based on a range of different sources of information and evidence, from linguistics to archeological finds to most recently genetics. Rock art, Egyptian wall paintings, and Zimbabwean figurines have all provided the clues to the chronology, husbandry practices, and the cultural importance of pastoralism. Traces of technology associated with animal husbandry, including leather, pottery for milking, and enclosures, combined with careful analysis of the remains of animals in association with those of human settlements have been used to build up a picture of the gradual divergence between wild and domesticated animal species and the existence of pastoralism over time and space.

There is evidence of indigenous domestication of livestock between 11,000 and 7,500 years BP (before present) in the Horn of Africa and the North Sahara. The Saharo-Sahelians of the Middle Nile are thought to have had domesticated cattle first, around 9,500 BP, predating the first domestic cattle in southwest Asia by a thousand years or more. Sheep and goats were first domesticated around 11,000 BP, in present-day Syria and Palestine, from where they spread southwards into northeast Africa (Homewood 2008).

Pastoral culture spread from the Nile Valley and North Africa, probably through the agency of the ancestors of present-day Berber populations. "Across North Africa, the descendants of the Capsians (ancestors of the Berbers) practiced a Mediterranean form of agro-pastoralism by 7,000–6,000 BP, based on cattle, sheep and goats, alongside cultivation of the Middle Eastern wheat and barley domesticates" (Homewood 2008, 16). From 7,000 BP on, pastoralism based on domesticated cattle, sheep, and goats spread south, leaving vivid portrayals in rock art through the central and southern Sahara. As the climate of the Sahara dried, gradually becoming uninhabitable, populations moved southwards and eastwards again. The Sahara is believed to have become uninhabitable for cattle between 5,000 and 4,000 BP. It is around this time that it is thought that livestock spread into East Africa from the north, where herding was mixed with other activities such as cropping, hunting, and fishing (Homewood 2008). Groups practicing specialized pastoralism appeared later, with evidence of specialized pastoralists emerging between 3,000 BP and 2,000 BP (Marshall 1990).

Camels were the last animals to be domesticated into African pastoralism and were introduced to the Horn of Africa between 4,500 and 3,500 BP (Homewood 2008). Camels continue to spread to other arid areas of the continent.

A comprehensive description of the origins and spread of African pastoralism and a more recent history of the major African pastoralist groups can be found in Homewood (2008, 10–49).

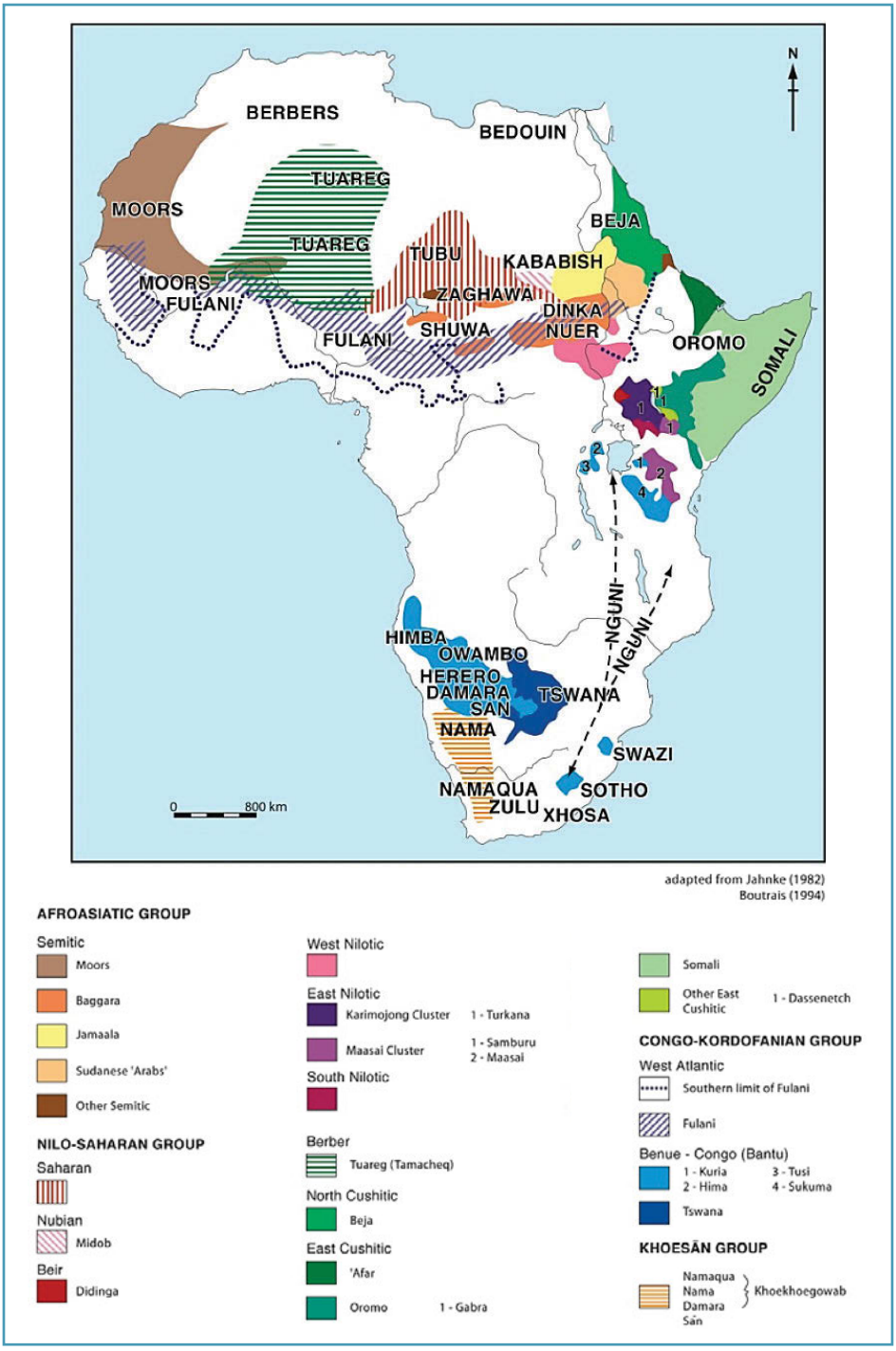

Figure 1.7. Pastoral areas and ethnic groups in Africa. Source: Homewood and Randall 2008.

1.4. PASTORALISM WORLDWIDE AND IN EAST AFRICA

The International Fund for Agricultural Development (IFAD) estimates the total number of pastoralists at nearly 200 million worldwide (Rota and Sperandini 2009). From the steppes of Central Asia to the highlands of South America, the types of livestock herded by pastoralists depend on the climate, environment, and geographical area, and include camels, goats, cattle, sheep, yaks, horses, llamas, alpacas, reindeer, and vicunas.

However, data describing the number and importance of pastoralism worldwide are highly incomplete. Indian pastoralism in the Rajasthan Desert has been extensively researched, but insecurity in Pakistan and Afghanistan has limited the degree to which pastoral systems have been documented and understood. Similarly, there are regions of Turkey and northwest India that are also poorly documented in literature. In Central Asia, particularly in Mongolia and the Commonwealth of Independent States, there is a growing interest in supporting pastoralism, but the extent and practices of Mongol and Kazakh herders in northwest China are still vague, as Chinese-dominated regions of Central Asia have been off-limits for research for decades. Andean pastoralism, once considered a borrowing from European traditions, is now known to be an ancient tradition, but studies describing these systems are again patchy.

East African pastoralism is better researched, with a number of scholars focusing on some of the main pastoral groups, including the Maasai (Spear and Waller 1993), the Turkana (Lamphear 1993), the Ariaal (Fratkin 1991), the Borana and Rendille (Fratkin 2001), among more general regional or Africa-wide texts (e.g., Anderson and Broch-Due 2000; Fratkin et al. 1994; Galaty and Bonte 1991; Hodgson 2000; Homewood 2008).

There are estimated to be 30 million pastoralists and agro-pastoralists in the Greater Horn of Africa (Somalia, Ethiopia, Kenya, South Sudan, Eritrea, Djibouti, Sudan, Tanzania, and Uganda) (FAC CAADP 2012). In these countries, pastoralists have been shifting between a range of livestock- and non-livestock-based activites for millenia, but with livestock remaining central to their social, economic, and cultural livelihoods. Pastoralism in these areas is diverse and dynamic, as pastoralists are continually responding and adapting to the opportunities and challenges that face them.

1.5. PASTORALISM IN UGANDA

Pastoral areas constitute around 44% (approx. 84,000 km^2) of Uganda's total land mass, and around 10% of Uganda's population (3–3.5 million people) are pastoralists (Byakagaba et al. 2018). Like in many other parts of Africa,

pastoralists in Uganda share many common features, including their reliance on livestock and livestock products, a cultural identity associated with livestock, and expertise in livestock rearing in arid rangelands (Box 1.3). They also share common problems of land alienation, poverty, environmental degradation, and conflict. For these reasons, they are often "lumped together" as a homogenous group.

Figure 1.8. Karimojong women discussing issues of common concern as pastoralists. Photo: peoples@climatefrontlines.org

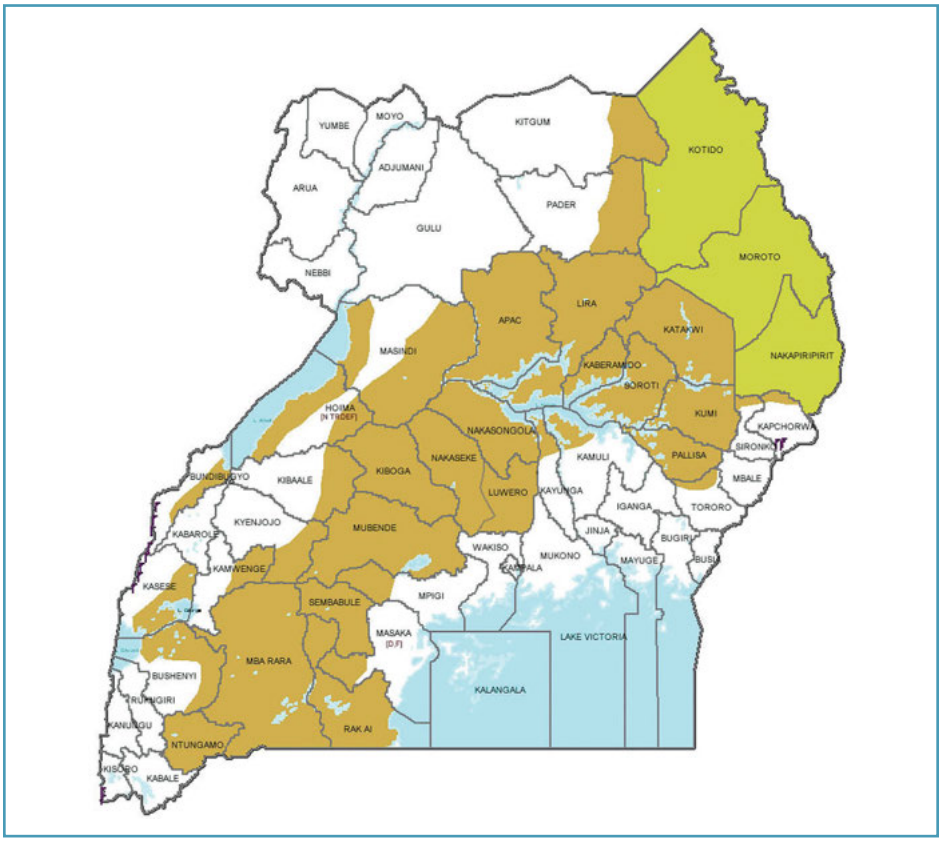

Figure 1.9. Map of Uganda showing the cattle corridor or rangeland districts (shaded brown and green) where pastoralism is predominantly practiced. Adapted from Barihaihi 2010

Box 1.3. Key characteristics common to pastoral systems in Uganda

- Families depend on livestock for a significant proportion of their food and income.
- Many pastoralists cultivate crops and carry out other economic activities to meet their subsistence needs.
- Livestock are raised for a mix of subsistence (particularly milk) and market needs (e.g., livestock sales to buy food, to pay taxes, etc.).
- Livestock herds are composed mainly of indigenous breeds.
- Livestock represent more than just economic assets. They are social, cultural, and spiritual assets too. They define and provide social identity and security.
- Livestock are largely dependent on rainfed pastures for their diets, including crop residues in some systems.
- Pastoralism depends on the work and expertise of all family members, usually divided by gender and age.
- Key livestock management strategies include: herd mobility, raising several species of animals (diversification), active management of age structure and sex ratio, herd splitting, and maintenance of a high proportion of female livestock.
- Pastoral resources are managed through a mix of common property and private regimes where access to pastures and water are negotiated and dependent on reciprocal arrangements.
- Pastoralism is characterized by adaptation and evolution to constraints of climate, economic, political change, and opportunities facing them.
- Pastoralism is characterized by its ability to realize economic benefits from environments characterized by high uncertainty and variability.

Figure 1.10. Expression of socio-culutral identity among Karimojong pastoralists. Photo credit: peoples@climatefrontlines.org

In fact, pastoral systems in Uganda are highly diverse, complex, and dynamic. Principally, there are two ethnic groups in Uganda whose members are pastoralists.

1. **Karimoja cluster**: The three principal ethnic groups in Karamoja are the Dodoth in the north, the Jie in the central region, and the Karimojong (subdivided into the Bokora, Matheniko, and Pian groups) in the south. The Pokot, an unrelated tribe from a separate linguistic group, are located near the border of Kenya in the southeast of the region. There are also several minority ethnic groups: the Labwor (a sedentary group in the west), the Tepeth, Nyakwe, Ik, Ngipore, and Ethur who are located in the mountainous and border areas.

2. **Southwestern cluster**: These are mainly the Bahima who are spread throughout the greater Ankole Region. However, due to increasing grazing land availability, forced sedentarization, and loss of tranhumance coridors, they have spread to the neighboring districts of Sembabule, Mpigi, Butambala, Hoima, Kiboga, Masindi, Nakaseke, Luwero, Nakasongola, and Kayunga.

Figure 1.11. The **Batwa** *ethnic group of agro-pastoralists in southwestern Uganda. Animals provide skins and hides for clothing, in addition to food and financial resources. Photo: The Daily Monitor blogger*

The many faces of pastoralism in Uganda and East Africa in general are

characterized by diversity in the environments in which they live, the species and breeds of livestock they raise, their cultural practices, their specific livelihood strategies, and the way in which they are responding to outside pressures.

Pastoralists within a community are differentiated by gender, age, and wealth. Importantly, pastoralism is not just about the management of livestock. It also involves livestock products (milk, hides, and, in some cases, dung), and integrating other activities such as agriculture, non-timber forest products, and trade.

Levels of engagement in and the types of non-pastoral activities that support pastoral livelihoods will vary within and between groups based on geographic location, age and gender, and access to markets, among others.

Because of this, not all pastoralists are affected in the same way by problems of drought, land alienation, conflict, etc.

1.5.1 The changing faces of pastoralism in Uganda

Pastoralism in Uganda is not static or unchanging. Pastoralism is dynamic and is constantly responding to change in the social, economic, political, and physical environment. Pastoral cultures are also "modernizing" and adapting to the forces of change around them. Some of these forces include:

- Education
- Global trade and monetization of the economy
- Technology, such as mobile phones
- Increasing urbanization
- Increasing involvement by non-governmental organizations (NGOs) and the private sector.

Changes are taking place for the better, as well as to the detriment of pastoralism and pastoralists. Some of these changes are described below. Not all pastoralists are equally affected by these changes; some will benefit, while others are losing out as result of their age, gender, or other social distinctions.

- **Greater government recognition of pastoralism.** Although misunderstanding persists about the nature and rationale of the pastoral production system, pastoralists are becoming members of parliament (MPs) and ministers, and/or powerful in business. At the same time, there is an emergence of a pastoral civil society movement.

- **Wealth and livestock ownership is increasingly concentrated** among fewer people, while the number of livestock stays static over the long term. This results in fewer wealthy people and many more poor.

Figure 1.12. Examples of forces of change impacting on pastoralism. Modernity is changing the cultural, social, and economic dynamics dynamics among pastoralists: Left: education (Photo credit: Kelley Lynch/Save the Children USA); middle: mobile phones (Photo credit: KDF/The Karamoja Pastoralist), and right: youth embracing modern culture (Photo credit: peoples@climatefrontlines.org).

Figure 1.13. Tourists visit rangelands and **kraals** *in Karamoja. Photo credits: Kara-Tunga pictures (left) and Teba Emma 2017 (right).*

- **Education** is increasingly available for pastoralists, including women, though there is still much more to do with respect to access and the content of the curriculum.

- Pastoralists (men and women) are increasingly involved in the **cash economy**.

- **Mobile phones** are bringing new opportunities for trade, accessing information, and managing livestock movements and pastures.

- **Tourism** is increasing in pastoral areas, with both positive and negative effects. For example, in some cases tourism has provided useful additional revenue for local populations, while in others, regulations around wildlife management have restrained natural resource use and mobility, with the effect of reducing local incomes.

- **Pastoral resources in the rangelands**, particularly the more highly productive areas essential for dry season survival, **continue to be converted to other uses such as**:
  - Agriculture
  - Private ranches and game ranches
  - National parks and other protected areas
  - Bush encroachment as a result of insecurity or exclusion
  - Irrigation (often leading to the loss of critical dry season reserves and access to water).

Figure 1.14. Natural pastures, particularly the more highly productive areas essential for dry season survival, continue to be converted to other uses.

- **Income sources continue to diversify** as population numbers rise and poverty increases. For example, poor pastoralists are turning to charcoal production to make a living, which is degrading the environment in some places. Charcoal production is increasingly controlled by wealthy businessmen and traders in some places.

- The **nature of conflict in pastoral areas is changing**. Until the recent trend of replacing traditional weapons with modern machine guns was contained by government's forceful disarmament, raiding had hitherto become more violent and sometimes driven by external forces.

- **Famine and violence** are increasingly affecting pastoral communities, pushing them into refugee camps where they are dependent on external food aid.

The next chapter introduces the "three pillars of pastoralism"—the natural resources, the herd, and the family and wider social institutions—and shows how these three key components of the pastoral system are interdependent and interrelated.

In the subsequent chapters, this book takes a closer look at the social, economic, political, and physical changes that are occurring in the environments in which pastoralists live and make their livelihood. These changes are bringing both constraints and opportunities to pastoralism, and to the sustainability of pastoral systems.

REFERENCES AND FURTHER READING

Anderson, D.M., and V. Broch-Due. 2000. *The poor are not us: Poverty and Pastoralism in Eastern Africa*. James Currey Ltd.

AU. 2010. Policy framework for pastoralism in Africa: Securing, protecting and improving the lives, livelihoods and rights of pastoralist communities. Department of Rural Economy and Agriculture, African Union Commission. Addis Ababa. **http://rea.au.int/en/sites/default/files/Pastoral%20Policy%20Framework%20-%20Low%20res.pdf**.

Barihaihi, M. 2010. Uganda's disaster risk reduction and climate change adaptation status report for African Climate Change Resilience Alliance. CARE, Oxfam, Save the Children, Overseas Development Institute, and World Vision.

Blench, R. 1999. Why are there so many pastoral groups in East Africa? In *Pastoralists under pressure*. Fulbe Societies Confronting Change in West Africa, ed. V. Azarya, A. Breedveld, M. De Bruijn, and H. van Dijk, 29–50. Leiden: Brill.

Davies, J., P. Herrera, J. Ruiz-Mirazo, J. Mohamed-Katerere, I. Hannam, E. Nuesri, and C. Batello. 2016. Improving governance of pastoral lands. Food and Agriculture Organization of the United Nations (FAO).

FAC CAADP 2012. Pastoralism in the Horn of Africa: Diverse livelihood pathways. Future Agricultures. FAC CAADP policy brief 06. March 2012. **www.future-agricultures.org/policy-engagement/policy-briefs/1531-pastoralism-in-the-horn-of-africa-diverse-livelihood-pathways/file**.

Fratkin, E. 1991. *Surviving drought and development: Ariaal pastoralists of Northern Kenya*. Boulder, CO: Westview Press.

Fratkin, E. 2001. East African pastoralism in transition: Maasai, Boran and Rendille cases. *African Studies Review* 44(93): 1–25.

Fratkin, E., K. Galvin, and E. A. Roth. 1994. *African pastoral systems: An integrated approach.* Boulder, CO: Lynne Rienner.

Galaty, J. G., and P. Bonte. 1991. *Herders, warriors and traders: Pastoralism in Africa.* Boulder, CO: Westview Press.

Hatfield, R., and J. Davies. 2006. Global review of the economics of pastoralism. World Initiative for Sustainable Pastoralism/IUCN, Nairobi, Kenya. **https://cmsdata.iucn.org/downloads/global_review_ofthe_economicsof_pastoralism_en.pdf**.

Hodgson, D. 2000. *Rethinking pastoralism in Africa: Gender, culture and the myth of the patriarchal pastoralist.* Oxford: James Currey.

Homewood, K. and S. Randall. 2008. *Ecology of African pastoralist societies.* Oxford: James Currey.

Lamphear, J. 1993. Aspects of becoming Turkana. In *Being Maasai: Ethnicity and identity in East Africa*, eds. T. Spear and R. Waller. London: James Currey.

Marshall, F. 1990. Origins of specialized pastoral production in East Africa. *American Anthropologist* 92:873–94.

ODI. 2010. Pastoralism demographics, settlement and service provision in the Horn and East Africa. Transformation and opportunities. Humanitarian Policy Group. Overseas Development Institute, London.

Republic of Kenya. 2012. Sessional Paper No. 8 of 2012 on National Policy for the Sustainable Development of Northern Kenya and other Arid Lands. Ministry of State for Development of Northern Kenya and Other Arid Lands. **http://adaconsortium.org/images/publications/Sessional-Paper-on-National-policy-for-development-of-ASALs.pdf**.

Rota, A., and S. Sperandini. 2009. Livestock and pastoralists. IFAD thematic paper. **www.ifad.org/lrkm/factsheet/pastoralists.pdf**.

Smith, A. B. 1992. *Pastoralism in Africa: Origins and development ecology.* Athens: Ohio University Press.

Spear, T., and R. Waller. 1993. *Being Maasai: Ethnicity and identity in East Africa*. London: James Currey.

Swift, J. 1988. Major issues in pastoral development with special emphasis on selected African countries. FAO, Rome and Institute of Development Studies, University of Sussex, UK.

2. Pastoralism as a system: the three pillars

By: C.D. Waiswa, Animal Production and Rangeland Resources Management Scientist, Gulu University

SUMMARY

This chapter introduces the three pillars of pastoralism, and discusses how each pillar or component interacts with the others to make up the pastoral system:

- Pastoralism can be thought of as a system where pastoralists use a number of strategies, based on livestock, to take advantage of the variable resources and maintain their natural environment.

- The three main components of the system—or the three pillars of pastoralism—are the natural resources, the herd, and the family and other social insitutions. These three components make up the pastoral system itself and are common to all pastoral systems in Uganda and beyond:

  1) Natural resources comprise the food and water that livestock and people depend on.

  2) The herd is made up of a composition of different animals. They are economic assets, but social, cultural, and spiritual assets too.

  3) The family and other social insitutions are the wider network of institutions in which the pastoral family and the herd live. Each member of the family will have different roles to play, and the family itself is set within a wider network of rules, obligations, and operations.

- The three pillars of pastoralism are interdependent. They interrelate and impact on each other, thereby allowing the pastoral system to function.

Issues for reflection

1) In what ways do the key components of the pastoral system depend on one another?

2) Why is the view of the three pillars of pastoralism an important concept to use when developing policies, practices, and interventions in pastoral systems?

Pastoralism is a system by which familes, living in areas characterized by high levels of variability and unpredictability in rainfall, raise livestock as a primary source of livelihood and cultural identity.

Within the system, rules and strategies help to manage the risks that are a

What is a system?
A system is a unified whole of regularly interacting and interdependent components or units. In other words, a system is a set of things that are connected and work together to form a more complex whole.

The constituent parts of the system influence each other and are influenced by the wider environmement in which it operates.

defining charateristic of pastoralism: environmental risks associated with the variable and unpredicitble environment where pastoralism takes place; and risks associated with markets, disease, policy change, and insecurity.

For emphasis, as indicated in Chapter 1, livestock provide the key cultural, social, and economic identity of pastoralism, but increasingly pastoralists are engaged in other forms of livelihood activities. Pastoralists are also farmers, lawyers, soldiers, security watchmen, artists, and artisans. Thus, as well as through their livestock herd, pastoral families derive livelihoods from a range of economic activities. These will vary in importance and frequency from one group to another, from one family to another, and from one individual to another, as a function of their gender, age, wealth, and location, as well as broader political, social, and environmental conditions. This dynamism is a key feature of dryland livelihood systems.

2.1. THE PILLARS OF PASTORALISM

Pastoralism is a production system with three distinct components that are independent and interact with each other:

- The **natural resources** (pasture, water, minerals)
- The **herd** (livestock)
- The **family** and other wider social institutions, including labor and governance.

These three components can be thought of as the **three pillars of pastoralism**—the principal components that make up the pastoral system itself (Figure 2.1).

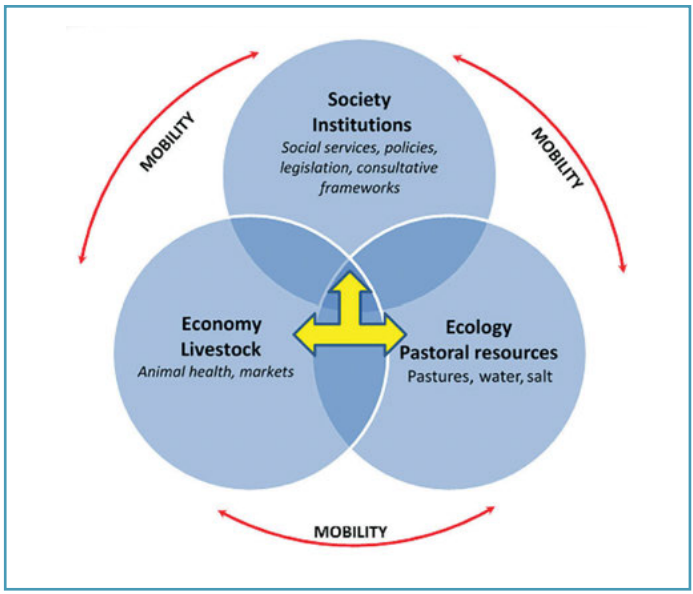

Figure 2.1. The three pillars of pastoralism. The box containing the three pilllars represents the social, political, and economic context in which pastoralism exists today.

These pillars are common to all pastoral systems in Uganda and represent the **essential resources** needed to practice pastoralism.

In the above model, there are various processes that influence the functioning and integrity of each of the three pillars. However, these component pillars represented by the blue circles do not exist and function independently but interact with each other to ensure the integrity and optimal functioning of the entire system. The green dotted line in Figure 2.1 indicates that the "pastoral system" is bound within an external environment composed of national, regional, and internal policies; market dynamics; service provision; conflict and insecurity; climate change; population growth, etc. The processes within each pillar, the interactions between the pillars, and the influence of the external environment result in complex, very dynamic, and sometimes unpredictable phenomena, varying in both space and time. In the arid and semi-arid environment where pastoralism is predominantly practiced, mobility is an important feature to ensure productivity of a pastoral system. Mobility takes advantage of spatial and temporal availability of pastures and water, and avoids diseases, drought, and floods that may be present in a different location.

Other resources, such as veterinary drugs or supplementary animal feeds, such as molasses or cottonseed cake, may support or impact one or more of the pillars.

Many pastoralists do not have easy access to veterinary drugs, education, and markets, but even without these they can still raise livestock and support their livelihoods. Similarly, the importance of "land" lies in the resources that it provides—water, forage and grazing, timber, etc.—for people, for animal production, as well as other for livelihood systems. Good policies are essential to provide an "enabling" environment to let pastoralism flourish. In other words, policy issues and markets are the contexts in which the pastoral system operates and can either have positive or negative impacts.

2.1.1 Natural resources

Livestock need to eat and then they need to drink before needing to eat again. Water, trees, shrubs, grasses, legumes, and salt pans constitute the resources found within the rangelands on which livestock and the pastoral family depend.

Pastoralism exists in parts of the world where rainfall is highly variable and unpredictable in time and space. This impacts the quantity and nutritional quality of plants. The availability of nutrients for livestock, strongly influenced by rainfall patterns as well as plant species and soil types, are generally short lived and spatially scattered across the rangelands. In pastoral systems, livestock depend almost exclusively on these pastures and use mobility in a strategic manner to access the most nutritious plants and water between seasons and years.

2.1.2 Livestock herd

Key livestock species in pastoral systems include cattle, camels, sheep, goats, and donkeys. The exact composition of a family's herd or flock will vary according to the family's situation, the season, and the environment in which they live. Livestock in pastoral systems represent more than just economic assets. They are social, cultural, and spiritual assets too. They define and provide social identity and security.

Figure 2.2. Some of the common livestock species kept by pastoralists in arid and semi-arid areas of Eastern Africa. Source: Ethiopian Pastoralism Common Course Textbook, 2015.

Figure 2.3. Women too participate pastoral activities such as milking. Photo credit: Kate Eshelby, Borana

Figure 2.4. Women are experts in marketing milk, milk products, and small stock; rationing milk for sale and home use; and managing young stock and planning for day-to-day welfare of the family.

2.1.3 The family/social institutions

Pastoralism depends on the work and expertise of all family members, usually divided by gender and age. Support within the family and between families is vital to ensure pastoralists can maximize opportunities and spread risks. It is impossible to consider the pastoral family without considering the wider social and economic institutions within which they live.

The family provides the labor, technical knowledge, marketing expertise, and social networks that allow the system to function. Different members of the family contribute in different ways. For example, women are experts in marketing cattle milk, milk products, and small stock, as well as being experts in animal health, monitoring the growth and health of calves and their mothers, deciding how much cattle milk to take for the family, and informing decisions about when the family needs to move, based on the quality and quantity of milk being produced. Negotiations among clan leaders (older men) are implemented and influenced by the social and economic networks established by younger men who are herding and taking livestock to markets.

2.2. THE DYNAMICS AND INTERACTION OF THE PILLARS OF PASTORALISM

The three pillars of pastoralism do not exist in isolation from each other; they interact so that the sum is more than the whole.

Livestock bring cultural and social identity and security to the family, as well as economic security and health. Natural resources are impacted in both positive

and negative ways by the livestock that depend on them, and this is influenced by the decisions made by members of the family about, for example, how many livestock to keep, when to move, and which livestock to keep where. Box 2.1 outlines these interactions in more detail.

Box 2.1. Interactions between the three pillars and the broader policy context

- **The herd has an impact on natural resources.** By eating pastures, animals have a direct impact on plants.
- **Natural resources have an impact on the herd.** Plants provide food for animals.
- **The family has an impact on the herd.** Family members take the animals to pasture, provide them with water, occasionally slaughter them, etc.
- **The herd has an impact on the family.** The herd provides milk, meat, and blood.
- **Natural resources have an impact on the family.** Natural resources provide fuel wood, water, food, and medicines.
- **The family has an impact on natural resources.** Wood is cut for shelter, wells are dug for water, pastures are burned, etc.
- **Wider social and economic institutions have an impact on natural resources and the family.** Traditional institutions can manage access to some natural resources; they also manage conflict.

In the following three chapters, each of the three pillars is considered in turn, helping to build an understanding of the role each plays, and demonstrating the internal logic and rationale of pastoralism as a system that, if allowed to function according to its logic, can take advantage of the resource variability characteristic of the dry rangelands of the cattle corridor in Uganda.

FURTHER READING

FAO. 2001. Pastoralism in the new millennium. FAO animal production and health paper no. 150. **www.fao.org/docrep/005/y2647e/y2647e00.htm**.

Fratkin E. M., and R. Mearns. 2003. Sustainability and pastoral livelihoods: Lessons from East Africa and Mongolia. *Human Organization* 62(2): 112–122. **www.smith.edu/anthro/documents/FratkinandMearnsSustainabliltyand PastoralLivelihoods.pdf**.

3. Pillar One: the environment and natural resources in pastoral areas

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Other contributors: G. Kawube, D.K. Aleper, P. Lukol

SUMMARY

This chapter considers Pillar One of the pastoral system and explores the dynamics of natural resources. It looks at the factors that influence the availability and nutrititional quality of resources, the interaction between these resources and livestock, and how pastoralists influence the dynamics of these resources.

- In Uganda, there are a number of different types of environment, including highland areas, lowland areas, wetlands, and riverine forests. These different types of environment determine the quality and nutritional quantity of natural pastures available to livestock, and how this varies between wet and dry seasons.

- In the wet season, grasses have high nutritional value for livestock diets, but in the dry season, grasses are of low nurtritional value, and trees and shrubs become much more important and can maintain livestock productivity.

- Rainfall in a given rainy season is highly variable and unpredictable. Generally, there is a positive correlation between the quantity of rainfall and the quantity of pasture that grows. However, this is not necessarily true in terms of the nutritional quality of pasture, which can be greater under lower rainfall levels depending on the soils. The variability in timing and location of rainfall also has an effect on plant growth and thus its nutritional value for livestock. Nutritional value is also dependent on the species of the plant and soil type.

- Rangeland pastures are therefore made up of a patchwork of pasture areas at different stages of growth and with different levels of plant growth and nutritional quality. Pastoralists employ a number of strategies to exploit this variability in pasture, including livestock mobility, selective breeding of livestock, and species diversity. Dryland plant species also have a number of mechanisms by which they maximize their survival against grazing and drought periods.

- From one year to the next, rainfall is very erratic in pastoral systems in Uganda, with a large variation in annual and seasonal rainfall and periodic drought. Increasing climate variability and changes in the intensity of frequency of droughts and floods is likely to have a large impact in pastoral systems, to which pastoralist will be required to adapt.

- The standing biomass is the amount of grass that remains after the end of the rainy season. In pastoral systems, this is the major source of food for

livestock that has to last them through the dry season to the next rainy season. Pastoralists have strategies to allow them to manage the standing biomass wisely to enable their herds to access fodder throughout the dry season.

- Livestock can have both a positive and negative effect on pasture: intensive livestock grazing can damage pastures if not given sufficient time to recover; however, livestock grazing can also stimulate plant growth and aid regeneration.

Issues for reflection

1) Why are pastoralists and livestock best placed to make use of these natural dryland pastures?

2) Why are livestock-plant interactions important for the maintenance of these dryland areas, and what would happen if livestock grazing were removed?

3) What are some of the possible effects that a change in climate (rainfall, temperature) will have on dryland pastures and thus livestock grazing strategies?

4) What strategies do pastoralists use to ensure sustainable use of drylands and survival of stock during the drought?

5) What are the socio-cultural institutions that regulate equitable access and use of variable natural resources to ensure sustainance of livelihoods?

Livestock eat a variety of different resources (Box 3.2). Natural pastures (which include grasses, legumes, and forage from shrubs and trees) are the major source of feed for the majority of pastoral livestock in Uganda. Other resources, such as cottonseed, hay, crop residues, and irrigated pastures, will improve the livestock diet if pastoralists can access them, but for many pastoralists this is difficult or impossible.

Box 3.1. Key points: natural pastures

Natural pastures are the most important source of feed for most livestock in Uganda. Natural pastures are found in different environments with different characteristics that will affect the nutritional quality and quantity of pastures and how they grow.

The natural resources that are essential for pastoral production in Uganda are:

- Grasses and legumes.
- **Certain herbs and trees products** (pods, leaves, bark). These are also important as food and medicine for people.
- **Water** for people and livestock.
- **Natural salt pans** and **crop residues** (in certain areas) for livestock diets.
- **Wood** for fuel, fencing, building, etc.

Pastoralists access different pastoral environments in different seasons. Thus, in order to understand why they do this, we must first understand the basic dynamics of pastures.

A note on "availability"

AVAILABILITY of pasture and water to pastoralists and their livestock is based on the QUANTITY AND DISTRIBUTION of those resources in the rangelands, as well as the conditions of ACCESS to those resources. In other words, there may be water in the well, but availability depends on whether or not you have rights to that water, as well as the necessary technology or ability (e.g., labor) to draw the water from the well.

In this chapter, the focus is on availability of natural resources IN TERMS OF THEIR QUANTITY AND QUALITY OVER TIME AND SPACE. Access to resources is defined by social and cultural institutions, as well as policy, which are discussed further in Chapters Five and Six.

Box 3.2. What do livestock eat?

- Grasses and legumes
- Shrubs and browse plants
- Tree pods, leaves, bark, and flowers
- Salt from salt licks or even water in some cases
- Crop residues such as maize, sorghum, cotton, or sugar cane
- Hay
- Industrial byproducts such as molasses, cottonseed cake

3.1. TYPES OF NATURAL PASTURE

Natural pastures are found in many different environments in Uganda, from the dry, hot lowlands to the wetter, cooler highlands. The natural environment (rainfall, temperature, soil type and aspect, humidity, etc.) determines the species of the plants and the nutritional quality and quantity of pastures, and their distribution in time and place (See Figure 3.1).

- Highland areas are cooler and receive more rain that is less variable. Pastures will be more abundant and stay greener for a longer period than in the lowlands. However, large animals such as cattle are reluctant to graze on steep slopes.

- Lowlands have higher temperatures and less, more variable, short-duration rains. Permanent water sources will be more scarce. Pastures will be mainly composed of grasslands, shrubs, and acacia-type trees. There will be minerals, such as salt pans, but the risk of disease may be higher due to warmer conditions.

- Wetlands or swampy areas in drylands will have high temperatures. Some areas will have permanent dry season water, and some vegetation will remain green through the dry season. There may be more disease, especially from liverflukes and footrot.

- Riverine forests in the lowlands will have high temperatures. Permanent water will support forests, shrubs, and possibly some grassland, and there may be infestation with tsetse flies resulting in *nagana* disease.

Highlands and lowlands, wetlands, and riverine forests are all important sources of natural pasture for pastoralists, representing wet and dry season pastures or places of refuge during drought years and disease outbreaks. In some pastoral systems, wetlands or swamps or riverine forests are very important, providing green grass or tree products and water during the dry season (Scoones 1992). In other pastoral systems, highland areas can be important sources of water and pasture during the dry season (Potkanski 1997).

Rangelands that have areas of permanent water in the dry season attract production systems other than pastoralism, such as irrigated sugar cane production, produced along the banks of a permanent river. The cultivation of these crops often undermines the ability of pastoralists to access water and find fodder for their livestock during the dry season (Behnke and Kerven 2013). This destabilizes the functionality of the pastoral system.

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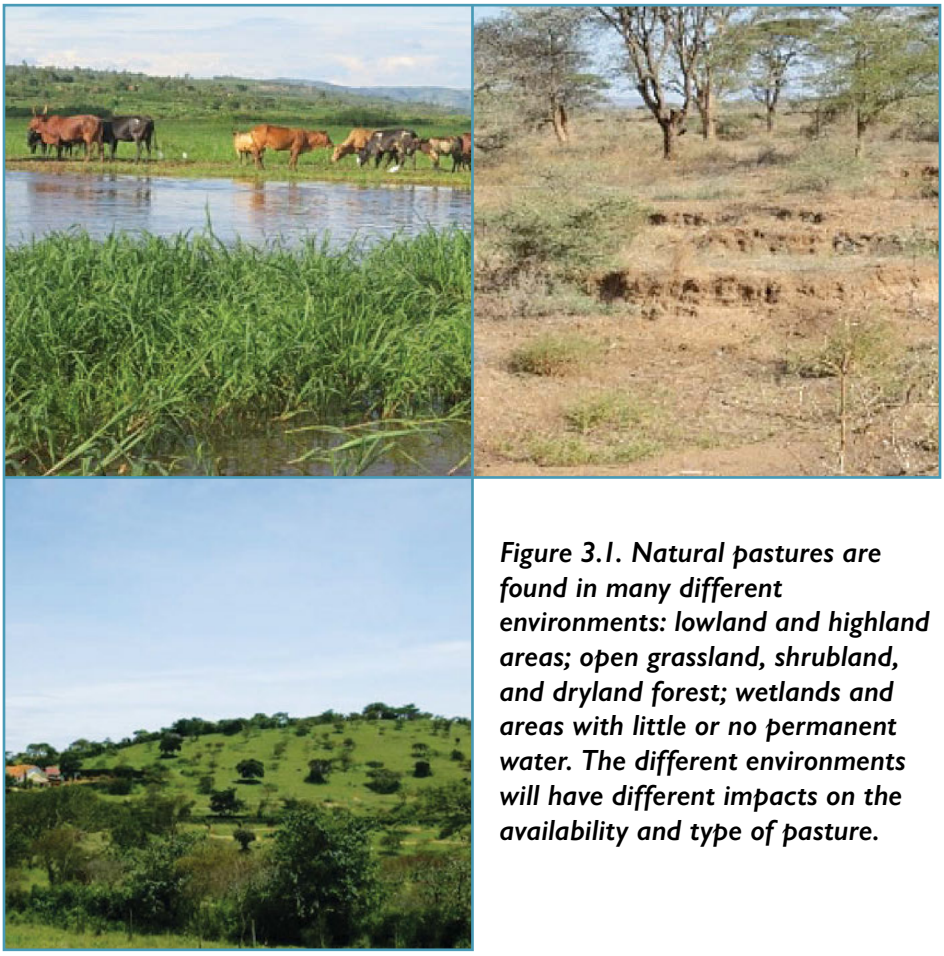

Figure 3.1. Natural pastures are found in many different environments: lowland and highland areas; open grassland, shrubland, and dryland forest; wetlands and areas with little or no permanent water. The different environments will have different impacts on the availability and type of pasture.

3.2 DISTRIBUTION OF NATURAL PASTURES IN UGANDA

Grasslands of the pastoral areas in Uganda lie within a diagonal stretch of about 84,000 sq. km from the northeast tip (Kotido District) to the southwestern part (Isingiro District) of the country, commonly referred to as the "cattle corridor." While different locations are usually associated with a dominant type of vegetation in the herb and upper storey layers, much of the existing rangeland composition is a result of many factors such as climate, intensity of grazing, and human activities such as burning, cultivation, and cutting of trees/shrubs.

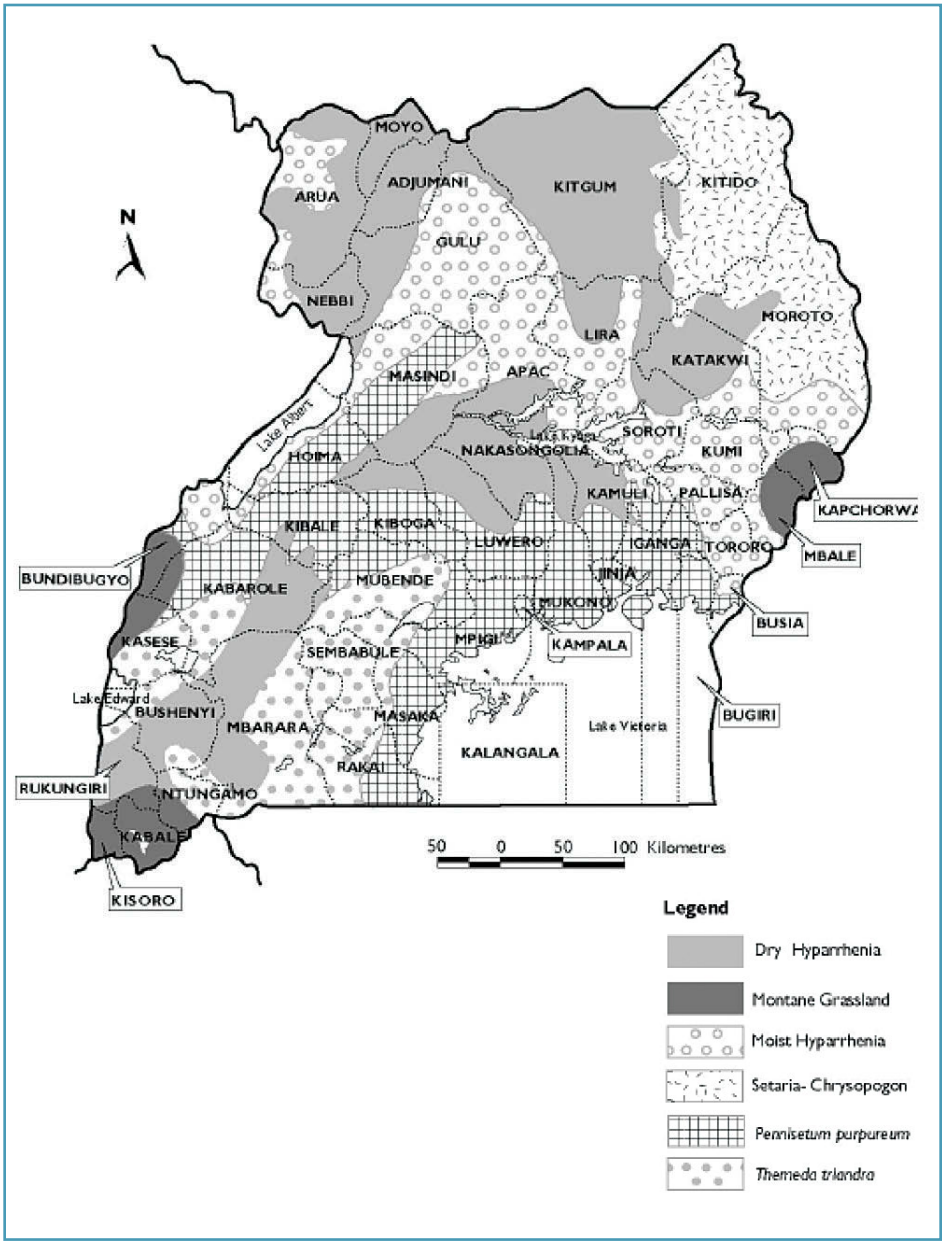

Figure 3.2. Natural grasslands of Uganda (Adapted from Sabiiti 2001 and Mwebaze 2002).

Table 3.1. Key grasslands in rangeland commonly used by pastoralists in Uganda

Grassland type	Annual rainfall	Location	Key grass species
Moist *Hyparrhenia*	1,000 mm–1,500 mm	Southwestern and northeastern Uganda	*Hyparrhenia rufa, Panicum maximum, Chloris gayana* (Rhodes grass), *Brachiaria* spp.
Dry *Hyparrhenia*	550–750 mm	Nakasongola, Nakaseke, Kibaale, and Rukungiri	*Hyparrhenia filipendula* (fine hood grass), *Hyparrhenia dissoluta Setaria sphacelata* (broadleaf setaria), *Themeda triandra* (red oat grass), *Cenchrus ciliaris* (buffelgrass), *Cynodon nlemfuensis*
Themeda triandra	769–1,120 mm	Most important constituent of grass communities in pastoral rangelands of the cattle corridor	*Themeda triandra, Brachiaria brizantha* (beard grass), *Panicum maximum, Chloris gayana, Cynodon nlemfuensis,* and *Setaria sphacelata* **Important weed grasses:** *Cymbopogon afronadus* (lemongrass) and *Imperata cylindrical* (speargrass)
Setaria-Chrysopogon	750–1,000 mm, but 350 mm –500 mm further east	Karamoja	*Setaria incrassata, Themeda triandra, Sorghum* spp., *Eriochloa nubica* (cupgrass)

Adapted from: Sabiiti 2001 and Mwebaze 2002

Across the rangelands in Uganda, there is a large diversity of herbaceous and browse species that provide forage for grazing animals (Table 3.1, Figures 3.2 and 3.3.). The diversity is in terms of type, nutritional value, yield, growth characteristics, and resilience to moisture stress. This diversity is reflected in the differences that exist in different parts of the country in terms of amount of rainfall and its distribution as well as soil characteristics. This partly explains why some species have a wide geographical spread, sometimes spanning across the entire cattle corridor, while others have restricted distribution.

Chloris gayana

Hyparrhenia rufa

Panicum maximum

Cymbopogon afronadus

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Setaria incrassata

Cenchrus ciliaris

Brachiaria brizantha

Themeda triandra

Figure 3.3. Examples of key grass species in the natural grasslands in the cattle corridor of Uganda.

3.3. FACTORS DETERMINING THE QUANTITY AND NUTRITIONAL QUALITY OF NATURAL PASTURE

The quantity and nutritional quality of grasses, shrubs, and trees available to livestock have important implications on the health and productivity of livestock and pastoral livelihoods. Identifying and understanding the factors that influence the availability and nutritional quality of natural pasture allows us to understand the rationale underpinning pastoralists' management decisions and strategies.

Different fodder plants grow and reproduce at different rates and in different conditions. Seasons, rainfall, altitude, fire, wildlife, livestock, and soils all affect the quality and quantity of different grasses and trees.

3.3.1 Variation in rainfall (moisture availability) between the wet and the dry season

The variations in moisture for plant growth between the wet season and the dry season have an important influence on the quantity and nutritional quality of pastures between these seasons. This is **normal** in semi-arid areas of Uganda.

Pasture grasses in wet season are "alive" and going through their life cycle. They are richer in protein, digestibility, and minerals but contain a lot of water at the beginning of the rains. In contrast, during the dry season, many grasses have either completed their life cycle (e.g., annuals) or are dormant (e.g., perennials). They have very little water content, lower protein content, and are low in digestibility (See Figure 3.4 below). Either extremes of the seasons, wet or dry, are equally not good for grazing animals as nutrient intake is low. Early in the rains, grasses have a lot of water; thus, the bulk of feed consumed is water. Late in the dry season, the bulk of feed comsumed consists of a greater proportion of indigestible material.

Seasonal changes in the nutritional quality of grasses

Grass species	Water		Protein		Digestibility	
	Wet season	Dry season	Wet season	Dry season	Wet season	Dry season
Themeda triandra	95	5	14	4	76	37
Panicum maximum	94	6	20	5	85	45
Eragrostis superba	95	5	13	5	78	47

Figure 3.4. The rainfall received during the wet season impacts the quantity and nutritional quality of pastures. Pastures in the wet season contain more water and are richer in protein, digestibility, and minerals. Source: Ekaya 2001.

This variation has implications for pastoralists. During the wet season, because grasses are of a higher nutritional value, animals put on weight, produce more milk, and are in better condition. In the dry season, however, because grasses are of a lower nutritional value, livestock lose weight and are less productive. In the drylands, these fluctuations are normal and are not a result of bad pastoral management. Rather, pastoralists learn and integrate this variability into their livestock management strategies (Krätli 2015).

Low nutritional content of grass species during the dry season means that trees and shrubs are important for livestock diets during dry seasons and droughts. During the dry season, trees and shrubs are generally more succulent and have higher levels of protein, digestibility, and minerals than the surrounding grasses (Figure 3.5). Access to trees during the dry season can thus provide livestock with a higher nutritional diet, thereby reducing livestock weight loss and maintaining a level of productivity that would not be possible if they only grazed on grasses (Topps 1992). However, such trees are usually found in inaccessible areas such as hill tops or conservation areas (Figure 3.6).

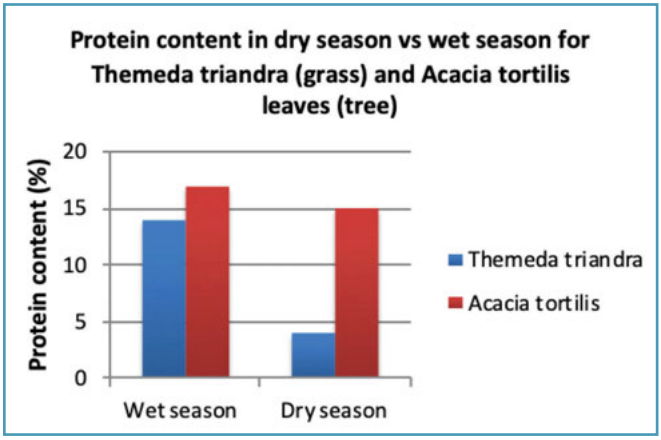

Figure 3.5. Diferential protein content between grasses and tree foliage during the wet and dry seasons.

Figure 3.6. In many places, trees and shrubs are found in strategic locations, which are not of easy access to pastoralists (e.g., protected forests, wetlands, highlands). This is undermining livestock productivity during the dry season.

Figure 3.7. Rainfall is highly localized in space. This means that pastures do not grow evenly over the rangelands during the rainy season.

3.3.2 Variation in rainfall amount and distribution in time and space within the rainy season

In Uganda, rainfall is unevenly distributed within the rainy season. The amount of rainfall that falls in any given rainy season is highly variable in time and space. Furthermore, the distribution of rainfall from one rainy season to the next is also highly variable in time and space. No one rainy season has the same rainfall patterns as another. This means that not only is rainfall highly variable, but it is also highly unpredictable.

Rainfall variability and unpredictability is common to all areas of Uganda, not just the dry lowland pastoral areas. However, the degree of variability and unpredictability is higher in those areas that receive less rainfall, i.e., the dry lowlands. All pastoral areas the world over share this common characteristic: rainfall is highly localized in space, highly variable in time, and thus very unpredictable. See Figure 3.7.

To understand the impact of variation of rainfall in time and space on the quantity and nutritional quality of pasture, we must understand the way in which grasses and other pasture species grow.

Total seasonal rainfall amount has an important influence on natural pastures. In general, there is a correlation between the total amount of rainfall and the total amount of pasture that grows; i.e., the more it rains, the more pasture will be produced. This is a positive correlation between the amount of seasonal rain and the amount of biomass (pasture) produced within the season (Figure 3.8).

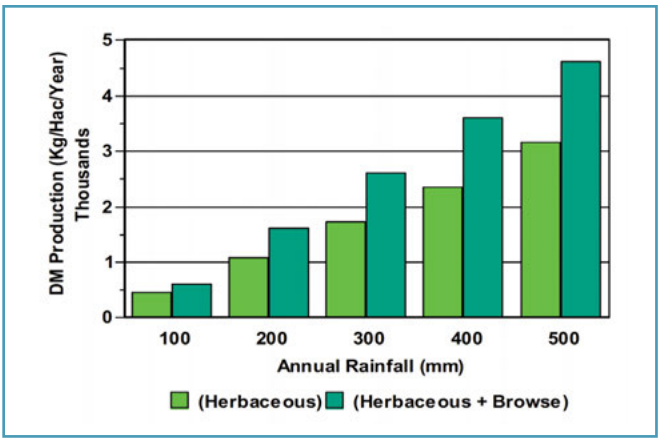

Figure 3.8. As annual rainfall increases, so too does the quantity of pasture as measured in kg dry matter/hectare/year (kg DM/ha/yr) (Schwartz et al. 1991. Location: Marsabit, Kenya).

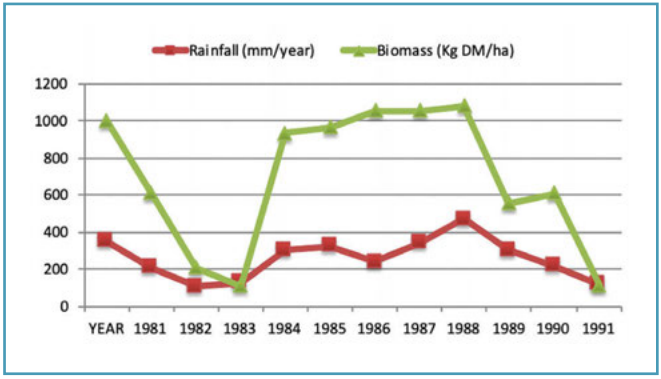

Figure 3.9. Annual rainfall and biomass production in the Sahel (northern Senegal) between 1981 and 1992 (Thébaud 2004).

However, given that the distribution of seasonal rainfall is variable both in the amount of rain that falls at each rainfall event and when it falls relative to the life cycle of the plant, it is not always the case that there is a positive correlation between the amount of total seasonal rainfall and the amount of pasture (biomass) that will grow. Evidence from the Sahel shows that even if the total rainfall is roughly the same from one year to the next, it is not necessarily the case that the same amount of pasture will be produced from one year to the next (Thébaud 2004; see Figure 3.9).

This is because rainfall in the wet season tends to come in a "start–stop" fashion of varying amounts. In some years, the distribution of the timing and amount of

rain is such that it supports the reproductive cycle of pastures, while in other years the pattern of rainfall is such that seeds do not germinate, or if they do, the subsequent distribution of rainfall does not enable them to survive and complete their cycle.

Therefore, the timing of rainfall and its amount can affect seed germination and the subsequent growth of the plant through to maturity and the production of new seeds. This also has implications for potential pasture growth the following year.

Furthermore, there is not a positive correlation between the amount of rain and the nutritional quality of pastures in terms of minerals and protein. Research in the Sahel shows that pastures in the northern Sahel, close to the desert where rainfall is low, are more nutritious than pastures in the southern Sahel where rainfall is higher (Breman and De Wit 1983; see Box 3.3).

The availability of plant nutrients in pastoral areas is also affected by the scattered and "start–stop" nature of the rainfall. Due to the variable nature of the rainfall, plants do not grow everywhere at the same time or at the same speed. Pastures in pastoral areas are thus composed of a wide variety of plants at different stages in their growth cycle and growing at different rates throughout the rainy season.

Box 3.3. Pasture quality in the Sahel (Source: Breman and De Wit 1983)

In the Sahel, the most nutritious pastures are found in areas of lower rainfall in the band of land just below the Sahara Desert. Soils in the Sahel are generally sandy with low levels of nitrogen, phosphorous, and other nutrients. Under conditions of heavy rain, these soils are easily leached, and although a lot of pasture may grow it is of low nutritional value. Thus, in the northern Sahel belt where rainfall is much lower, the soils are not as badly leached, and although less pasture grows it is of higher nutritional quality than many pastures found further south where rainfall is greater.

Research by Bremen and de Wit in the 1980s calculated with water availability rising from 50 to 1,000 mm annually shows that the total mean production increases from nearly 0 to 4 metric tons per hectare, but the protein content decreases in the fully-grown plants from 12 to 3%.

Thus, low water availability produces a small amount of biomass, but of good quality and higher water availability results in more biomass of increasingly inferior quality.

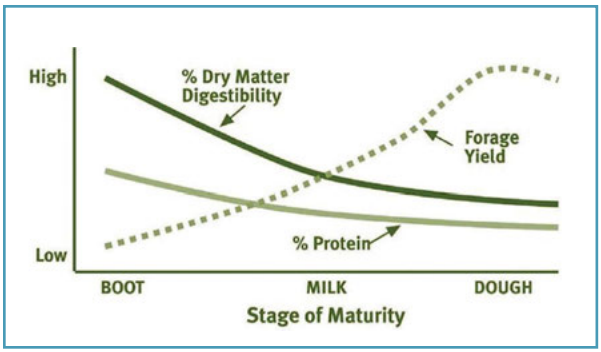

Figure 3.10. How stage of maturity affects quality and yield of grasses (Adapted from Blaser et al. 1988).

Because the nutritional quality of plants vary throughout their growing cycle, the rangelands as a whole are composed of a complex and highly dynamic patchwork of plants with varying levels of nutritional quality. Figure 3.10 demonstrates how maturity stage of grasses influences nutrient content (e.g., protein levels), dry matter yield and digestibilty of the grass.

Protein content and digestibility of the grass are high at the boot (flower head emergence) stage but decrease as plant maturity progresses through the milky (soft) and dough (hardened) stages of seed. However, forage dry matter yield increases with maturity due to the increasing amount of fiber and decreasing water content. Therefore, the art in timing grazing is to balance having animals take in feed to fill the stomach and having them take in more digestible nutrients.

The situation is further complicated by the fact that there are different species of pasture and different soil types, all of which also have an impact on the nutritional quality of pastures. The rangelands in pastoral areas are made up of a mosaic or patchwork of pasture areas, each at different stages of growth, producing different amounts of grass, and, more importantly, each offering different levels of nutritional quality.

3.3.3 Inter-annual variability of rainfall and drought

One of the defining characteristics of pastoral areas is a high level of variation in rainfall from one year to the next. The historical records in Figures 3.11 and 3.12 show that large variations in annual rainfall and frequent droughts are common; these are normal phenomena in pastoral systems of East Africa. In Figure 3.11, mean annual rainfall between 1980 and 2006 was 362 mm per year. However, in only 8 out of 26 years was rainfall close to this mean. Most years, the rainfall was either far greater than or far less than 362 mm (FIC and IIED 2013). Figure 3.12 showing deviations from mean annual rainfall in Lodwar, Kenya between 1923 and 1986 shows a similar trend. In this case, the mean annual rainfall in Lodwar was 181 mm per year, but there were only 8 years out of 43 years that rainfall levels were within 10% of this long-term mean (Behnke et al. 1993).

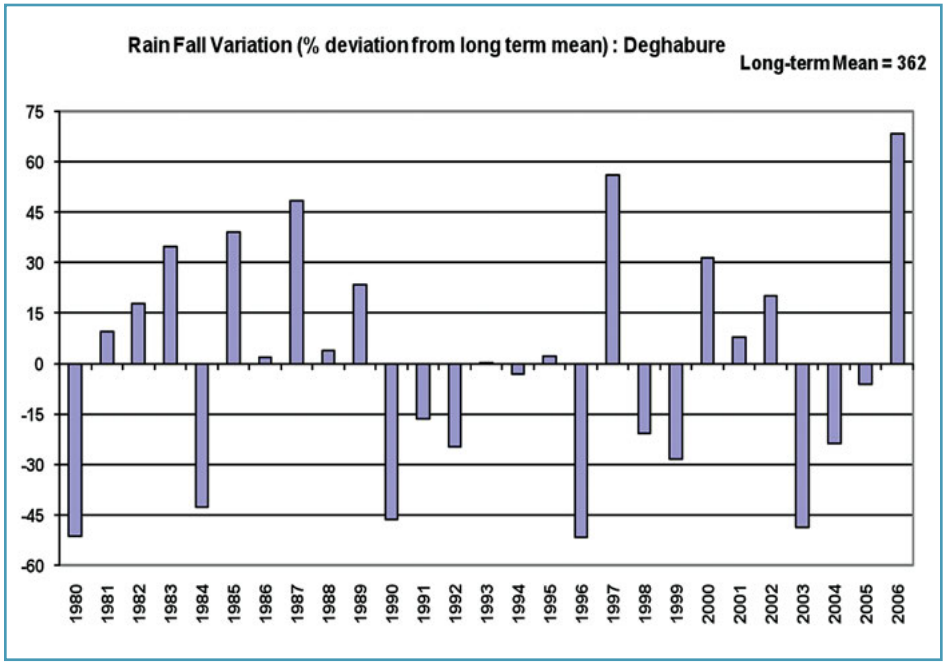

Figure 3.11. Rainfall variation in Deghabure, Ethiopia between 1980 and 2006.

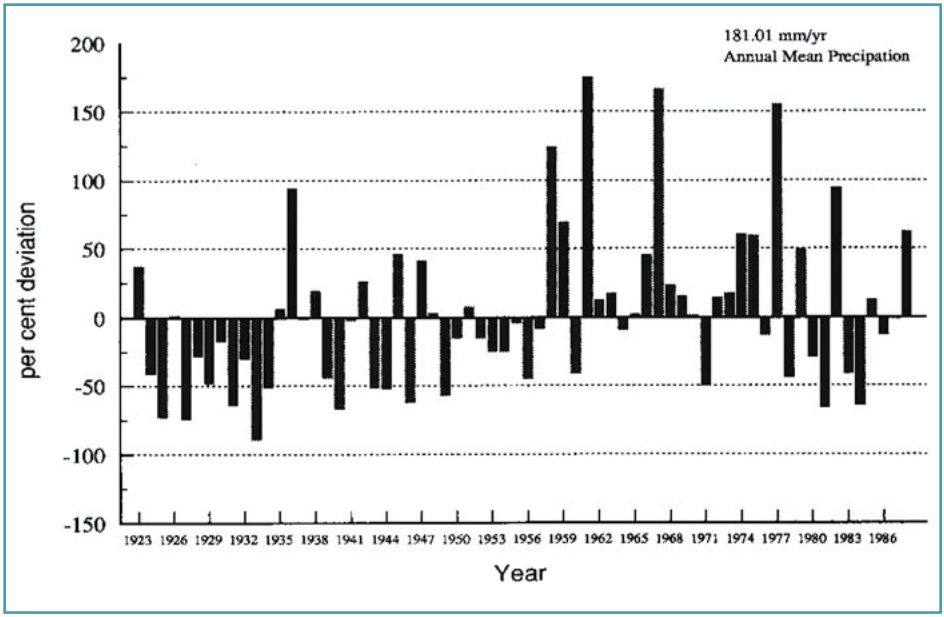

Figure 3.12. Deviation from the mean of rainfall in Lodwar, Kenya.

3.3.4 Climate change and rainfall in pastoral areas

There is a high degree of agreement between the different climate change models of likely trends in the East African region, unlike many other parts of the world (IPCC 2014). This can therefore give us some confidence in their projections. The models all agree that:

- Temperatures will rise.
- In the medium term, there are likely to be successive years of poor rains, increases in drought-related shocks, and more unpredictable and sometimes heavier rainfall.
- In the longer term, seasons are likely to shift in time with more intense rainfall.

However, not all models agree on how the start or the end of the rains will be impacted, or on what will happen during the dry season.

These changes are likely to have an impact on the growth of pastures and availability of water. A greater frequency of drought is also likely to have an impact on herd density and overall productivity of the pastoral production system (Thornton and Herrero 2010).

However, pastoralists are already well adapted to rainfall variability and utilize a range of strategies, institutions, and networks to enable them to respond to climatic uncertainty, for example through livestock mobility and switching herd species composition (Chapter 4). Given the right policies and support, pastoralists can continue to adapt to climate change. They have an important role to play in this areas where other land uses and livelihoods are more likely to fail (see Chapter 8 for more on the opportunities and constraints of climate change).

Box 3.4. Key points: pastoralism and drought

Historical records show large variations in annual rainfall, and frequent droughts are common; these are normal phenomena in pastoral systems of East Africa.

Climate change models predict increased variability of rainfall in the region.

"Downscaled" models indicate an increase in rainfall in the main rainy season due to more intense downpours.

3.3.5 Role of fire on pastoral rangelands

Pastoralists have a long tradition of using fire as a tool to manage pastures, but the impact of fire on the quantity and quality of pastures is very variable depending on several factors, including the type of plant. Hitherto, traditional fire management practices were carefully organized, and pastoralists would consider other components of their livelihood system when planning. For instance, pastoralists often follow a seasonal timeline, burning pastures mainly at the end of the long dry season, just before the short rains. According to Byakagaba et al. (2018), fire is an important tool used in management of rangelands and its exclusion:

- Fire accelerates the rate of woody plant (shrubs and trees) encroachment into rangelands, with decreases in palatable species and increases in unpalatable species, which has negative effects on herbivorous livestock production. For instance, fire exclusion has contributed to the transition of grasslands to scattered and closed Acacia woodlands and loss of grass species in northern Uganda (Smart et al. 1985). The grasses that declined due to fire exclusion include *Sporobolus robustus, Sporobolus pyramidalis, Hyparrhenia filipendula, Hyparrhenia rufa, Paspalum auriculatum, Setaria spp., Brachiara brizantha*, and *Digitaria adscendens*.

- Fire can lead to decreases in forage quality, plant vigor, nutrient cycling and availability, to greater fire intensities and severities, and to increased insect and disease epidemics in rangelands (Keane et al. 2002), which can adversely affect pastoralists' livelihoods.

In general, **controlled and planned fire** is essential in sustaining grassland ecosystems and increasing plant productivity in savanna rangelands through:

- Reducing above-ground herbaceous biomass, releasing nutrients that were previously immobilized in organic matter, and removing litter to stimulate early growth at the start of the rains.

- Improving the palatability and nutritional value of existing forage in rangelands and improving forage production (Sabiiti et al. 1992), while patch mosaic burning promotes heterogeneity. For instance, some grass species such as *Imperata cyrindrica* (spear grass), *Cymbopogon afronardus,* and *Sporbolous pyramidalis* are only palatable as new sprouts after a fire burn.

- Stimulatation of some legume and grass seed (e.g., *Themeda triandra*) to germinate as they require a "heat shock" (or **scarification**) to break the seed coat or dormancy they entered at the beginning of the dry season.

- Reducing pest challenge, especially ticks (that spread disease such as East Coast fever) and intestinal worms that hatch from animal droppings.

Figure 3.13. Intense fires at the end of the dry season can reduce the potential of a grassland to regenerate in the next rains as much of the seed bank in the soil is destroyed. Photo credit: Waiswa D.

In spite of the several advantages of fire on grasslands, negative attitudes towards the use of fire in rangeland management have persisted in Uganda and in other regions of Africa. This is because of the colonial bias of conserving forests and woodlands and the perceived fears that fires can cause increased soil erosion and subsequently loss of soil fertility and biodiversity. Opponents of fire have also viewed it as having deleterious effects on woody and grass species richness (Smart et al. 1985) and thought that it precipitates the decline of trees by inhibiting emergence of more young trees from seedlings that would have germinated from the soil seed bank (Nangendo 2005). It is also argued that regular fires reduce production and nutritional value of grasses and enhance growth of non-palatable grass species (Harrington 1974).

Fire exclusion has also been further promoted by national and international conservation civil society organizations that have advanced the notion that fire is harmful and leads to land degradation (Furley et al. 2008; Hoben 1996). Increasing recognition that fire exclusion reduces carbon dioxide emissions by storing carbon in woody biomass and soils has further encouraged restrictions on burning in the current era of climate change (Houghton et al. 1999; Tilman et al. 2000) where practices that are perceived to reduce emissions are being promoted.

Some key positive effects of fire

- Some UNDESIRABLE woody plants are killed, therefore reducing encroachment of bush into pasture.
- Fire stimulates growth of nutritious pastures.
- Livestock disease pests can be controlled using fire (ticks, vectors, e.g., tsetse fly, snakes, etc.)
- Burning removes accumulated litter on the ground, thus stimulating seed germination.
- Coarse and low-quality pasture is burnt out to give way for fresh sprouting.
- Fire can be used to determine animal distribution over the range space.
- Some plant species, e.g., *Themeda triandra* need fire for their seeds to germinate and thrive.
- Generally there is a trend of increased grassland production associated with burning.
- Grasslands that are frequently burnt usually have better-quality pastures (higher protein) than those not burnt at all.
- Burning increases the amount of plant nutrients available in the soil.

When properly used and managed, fire can be an effective pasture management tool.

Some key negative effects of fire

- Severe fires kill trees and shrubs as well as grasses.
- Standing hay, which is a key livestock feed, is burnt out, thus reducing feed supply.
- Fires reduce ground cover by vegetation, thus exposing soils to wind and water erosion.
- Fires can change species composition of pastures towards species that are fire tolerant yet not of high value for grazing.
- Burning reduces soil organic matter.
- Burning kills some soil-burrowing animals and those that live within vegetation mass.

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Effects of fire on soil properties

- Reduces amount of organic matter/litter on the soil.
- Depending on the season of burning, fire may reduce the loss of soil moisture (reduced transpiration) due to reduction in vegetation cover.
- Increase in soil alkalinity (pH) due to the increased release of minerals into the soil, e.g., phosphorus and nitrogen. This improves fertility of the soil, e.g., nitrogen.
- High fire heat creates cracks in some soils. Seeds of certain grasses, e.g., *Themeda triandra* bury themselves in these cracks, thus easily germinating when moisture becomes available. The seeds are also protected from being destroyed or eaten up.

3.4 TYPES OF PLANTS FOUND IN THE DRYLANDS

Plants can be categorized into **ephemerals**, **annuals**, and **perennials** based on their life cycle.

- **Ephemerals**, as the name implies, are plant species with a short life cycle, whose seeds germinate, grow to produce new seeds, and then die in a very short time. Depending on the total seasonal rainfall and plant species, ephemerals in Uganda may complete their life cycle in from two weeks to three months. In very dry regions, such as the Sahara Desert, the life cycle may be as short as a few days following a rare rainfall event.

- **Annuals** are plant species with a life cycle that takes approximately twelve months or less to complete (from seed to seed).

- **Perennials** are plant species that usually live for three or more years. During the rainy season, perennials develop new growth, while during the dry season they tend to lie "dormant."

Rainfall amount and variability, as well as topography and interactions with livestock, are all factors that impact the species composition of a pasture. Annual grass species predominate in the drier lowland regions (often these will be the rainy season pastures for livestock in pastoralist systems), while perennial species are more predominant in mid-altitude and highland regions, and are more typically found in dry season pastures (see Table 3.2).

Table 3.2. Impact of rainfall amount on species composition (Short and Gitu 1990 and Ekaya 2001. Location: Marsabit, Kenya)

	Highland	Mid-altitude	Lowland
Altitude (masl*)	1,200	800	550
Annual rainfall (mm)	900	500	200
Perennials (%)	98	80	< 5
Annuals (%)	2	20	60
Ephemerals (%)	0	0	35

*meters above sea level

3.4.1 Mechanisms by which dryland plant species ensure their own survival

Dryland plants species have biological mechanisms to respond to high rainfall variability and unpredictability and thus maximize the chance of their survival as a species. These mechanisms include the following:

- Ephemeral and annual grass species produce very high quantities of seed. Since rainfall, particularly at the start of the rainy season, comes in a "start–stop" manner, seeds may germinate but then die for lack of rain. Thus, for the species to survive, plants produce a lot of seeds, thereby enabling several phases of germination to take place to coincide with sufficient and well-distributed rainfall to enable the seedlings to grow to maturity and produce the next generation of seeds.

- Furthermore, plant seeds react to differences in rainfall amounts and timing to ensure that the species as a whole reproduces itself (e.g., not all germinating at the same time, with some seeds lying dormant in the ground for years before they germinate). Some seeds may require very high temperatures associated with fires to successfully germinate.

- The great quantity of seeds produced per plant can ensure long-term successful germination year on year, provided the conditions are right. In some pastoral areas, there is evidence that shows that seeds can remain dormant in the ground for 20 or 30 or even more years waiting for the right conditions to come to germinate.

- Perennial grass species do not need seeds to survive from year to year, but survive by maintaining a root stock in the ground during the dry season that sprouts in the rainy season or when triggered by events such as fire.

Production of seeds by perennial plants allows the plant to spread further and also creates genetic variation that makes the species more robust and resistent to disease (Figure 3.14)

Plants have complex mechanisms to ensure the species is not made extinct either by erratic rainfall or animals. For example:

- Grasses react to differences in rainfall amounts and timing to ensure that the species as a whole reproduces itself (for example, not all seeds germinate at the same time).
- Grasses produce thousands and thousands of seeds to perpetuate the species.
- Grasses in drier areas generally produce more seeds per plant than grasses growing in wetter areas.

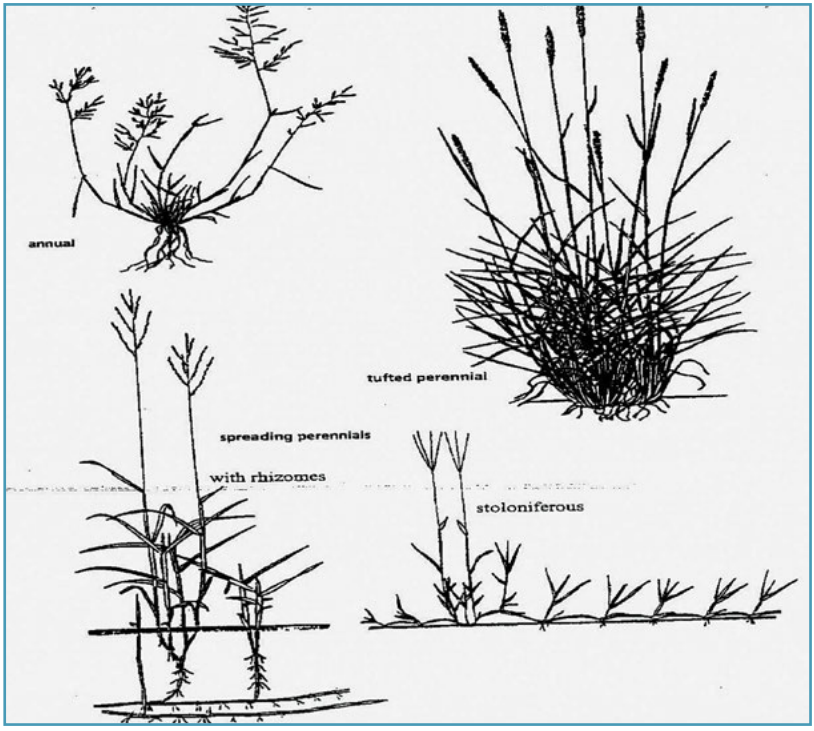

Figure 3.14. Different types of grass species, annual and perennial, showing their reproductive strategies. Rhizomes and stolons allow the plant to spread vegetatively through their root systems, without the need for seeds to germinate each year.

- Most grasses have various defense mechanisms to protect themselves from being over-grazed to ensure they complete their cycle and produce seeds for the next generation.

Dryland pastures are DIVERSE, COMPLEX, ADAPTABLE, and RESILIENT. Contrary to popular perception, they are not **fragile** (Krätli 2015). Like other ecosystems (wetlands, highlands), they have the capacity and the potential to "fix" themselves and to "bounce back." This is largely because of the seed bank in the soil. However, like all other ecosystems, the pastoral rangelands have to be carefully managed; care has to be taken not to damage or destroy their capacity to "fix themselves."

Box 3.5. Key points on seasonality of rainfall

1. There is a positive correlation between seasonal rainfall and pasture production.
2. Rainfall has an impact on the species composition of pastures.
3. Rainfall amount within the rainy season varies from one year to the next.
4. Not all rainfall events are useful for good pasture growth.
5. Even if total rainfall in a season or year is about the same, the amount of pasture biomass produced is not necessarily the same.
6. Rainfall in pastoral areas is unevenly distributed in space and time, unreliable, and unpredictable.
7. Implication of (6) is that the quantity and nutritional QUALITY of pastures are also scattered in time and space, and mobility is essential to reach these pastures.
8. Through mobility and selective feeding, livestock are able to get a higher nutritional diet than they would if they remained sedentary. This maintains or increases their productivity.
9. Dryland plants produce thousands and thousands of seeds, which germinate in different phases according to rainfall.
10. Dryland pastures have mechanisms and physical structures that enable them to thrive in their environment.
11. Dryland pastures are diverse, complex, and **resilient**.

3.5 PASTURE MANAGEMENT: THE INTERACTION BETWEEN LIVESTOCK AND PASTURE

In this section we look at the interaction between animals and plants, and again must start by understanding more about the nature of plants and their reproductive cycle.

Once the rainy season is over, there is little or no new pasture growth. Annual grass species will die, while perennial grass species lie dormant. Grass growth during the rainy season therefore represents the feed supply over both the rainy and the dry season. The amount of grass that remains at the start of the dry season is called the **standing biomass**. See Figure 3.15.

The standing biomass at the end of the rains represents the total amount of pasture available for livestock until the next rainy season and as such represents an important source of food for livestock during the dry season, one which has to be carefully managed. The standing biomass will reduce throughout the dry season for a number of reasons:

- It may be eaten, by livestock and wildlife as well as termites, birds, and rodents.
- It may be damaged by wind and by unseasonal heavy rain.
- It can be trampled by livestock or wildlife.
- It can be destroyed by fire.

Since the grass does not grow, any losses are irreversible until the next rainy season begins and new annual grasses germinate or perennial grasses start growing again.

Managing the speed at which this standing biomass is eaten over the dry season before the arrival of the next rainy season is very important. If it is eaten too quickly and exhausted before the production of fresh pasture with the arrival of the rains, livestock will suffer, and there may be soil erosion. However, if standing biomass is not eaten, it can hamper the sprouting of fresh pasture when the rains arrive and over time lead to bush encroachment.

Ideally, the standing biomass should be consumed gradually over the dry season to ensure it lasts until the arrival of the rains and the growth of fresh new pasture. If it is consumed too quickly, animals may have nothing to eat until the arrival of the next rainy season. Furthermore, depleting all the standing biomass may lead to a greater risk of wind and water erosion of the soil. However, if the standing

Figure 3.15. Standing biomass at the end of the rains represents the total amount of pasture available for livestock until the next rainy season (Left: end of rains or beginning of dry season; right: end of dry season or beginning of next rains).

biomass is not sufficiently consumed by the end of the dry season, there is a risk it will rot when the rains come, forming a sodden layer that prevents the sprouting of new pasture.

Contrary to popular belief, livestock can benefit pasture and the environment and do not necessarily degrade or destroy the environment. Grazing livestock (or wildlife) play an important role in promoting healthy pasture growth (McNaughton 1979). In addition to enhancing the natural regeneration of plants and reducing excessive litter cover, livestock have other beneficial impacts on pastures and the environment. These include:

- Trampling of the soil and the burying of seeds;
- Transporting of seeds on their coats;
- The natural regeneration of trees (through digestion);
- Cycling of nutrients in the ecosystem and fertilizing the soil (dung).

However, just as with any production system, under certain conditions, livestock may also degrade the environment and damage its potential to "fix" itself. Overgrazing may be defined as when pasture is exposed to intensive grazing for extensive periods of time without sufficient time to recover. There must be a minimum residual level of plant cover (both annuals and perennials): (i) to avoid soil erosion and thus the loss of the seed bank; (ii) to avoid soil compaction affecting germination; and (iii) to enable the regrowth of perennial grasses.

According to the United Nations Convention to Combat Desertification (UNCCD), degradation occurs when there is a reduction or loss of the **biological or economic productivity** of the land under different production systems as a result of the impact of those production systems and/or other human activities (see Box 3.6).

In the drylands of Uganda, a major cause of the loss of biological and economic productivity of the rangelands would be caused by the loss of the seed bank in the soil. However, given the huge extent of the rangelands (approximalety 84,000 ha), this is very unlikely to happen under pastoral management strategies where livestock are highly mobile.

The UNCCD definition has been criticized for suggesting that degradation only occurs in arid, semi-arid, and dry sub-humid areas. The reduction or loss of biological or economic productivity of land can occur in all ecosystems if they are badly managed (e.g., rainforests).

However, overgrazing and degradation of the rangelands can occur under specific conditions:

- **At the start of the rainy season when seeds begin to germinate.** If animals are sedentary, they will continuously graze and trample the new

Box 3.6. Definition of desertification and degradation according to the United Nations Convention to Combat Desertification (UNCCD)

For the purposes of this Convention (Art. 1):

"'desertification' means land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities;

'land degradation' means reduction or loss, in arid, 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…"

Source: United Nations Convention to Combat Desertification (1994, 4–5)

shoots and prevent the grasses completing their annual cycle and producing seeds for the next generation of pastures. This is particularly important where annual species dominate. Over time, this may lead to the disappearance of certain species of grass. However, if animals are free to move, once the rains are well established, they will disperse.

- **At the end of the rainy season before annual and perennial grasses have had a chance to produce their seed for the next crop.** Again, if animals are unable to move, there is a danger that they will eat and trample the grasses before they produce their seeds. Over time, this may lead to the disappearance of certain species of grass.

- **When animals are sedentary and graze the same area throughout the rainy season.** This will prevent the pastures completing their reproductive cycles.

- **When animals repeatedly walk along the same paths**, as this will contribute to gully formation and soil erosion.

3.5.1 Pastoralists' strategies to exploit variability in pasture

This variable distribution of nutrients in pastures is not necessarily a constraint for livestock production and productivity. Pastoralists have several strategies to exploit this variability to increase the productivity of their animals.

- **Livestock mobility** is probably the most important strategy. Through livestock mobility, pastoralists are able to lead their animals to those areas where the pastures are at the peak of their nutritional content. In this way they are able to feed their animals on a more constant diet of high nutritional pastures throughout the rainy season than would be the case if they did not move. Mobility is therefore of critical importance.

- **Selective breeding of livestock.** Pastoralists are constantly reviewing the composition and the quality of their livestock to meet their production objectives in the context of the wider ecological and economic environment. In those environments where there is high variability in pastures, pastoralists very carefully breed livestock that are able to exploit the unpredictable environment in which they live (Krätli and Schareika 2010). The case study presented in Box 3.7 below illustrates how Niger pastoralists carry out targeted breeding. Through controlled breeding and selection, they keep animals that are not only able to reach distant pastures (through mobility), but once they are there to carefully choose those plants in the rangelands that are the most nutritious. Pastoralists have found by observing their animals that some of them are more

"selective feeders" than others and are able to identify those plants that are more nutritious than others. This is called selective feeding.

- **Species diversity.** Most pastoralists keep several different species of livestock—camels, cattle, sheep, and goats—to enable them to make optimal use of the variable rangelands and pastures.

Box 3.7. Selective breeding among the Wodaabe in Niger (Source: Krätli and Schareika 2010)

The Wodaabe of Niger are successful pastoralists because they are highly-skilled livestock managers and breeders. From one generation to the next, they very carefully breed cattle that are able to exploit the unpredictable environment in which they live: animals that can reach and find the most nutritious grasses available. Essential characteristics include the capacity to travel great distances and to cope well with little water and very high temperatures. But there is more to these animals' special capacity for drylands production.

The Bororo Zebu kept by the Wodaabe are bred and trained to feed selectively in order to get the most nutritious diet from the range. They pick and choose from over forty different plant species, including not only grass but also shrubs and trees and even wild melons and water lilies. Their selectivity applies to the parts of a plant, to different plants of the same species, and to combinations of species, as well as to different seasons and even different times of the day. Combined with mobility, these skills enable a herd to efficiently track and exploit the unpredictable concentrations (spikes) of nutrients on the drylands range.

The Wodaabe compare the relationship between grass and browse to the relation between their own staple food, millet porridge (*nyiiri*) and its accompanying sauce (*li'o*). Their cattle are stimulated to graze as much as possible. They graze better and more when they find what they like—soft, delicious grass—and when they are given the opportunity to range any time during day and night. They graze badly when disturbed, for example by the bad smell of droppings, by pasture infested with grasshoppers, by the smell of a carcass, by grass that is brittle or spiky. During the wet season when fodder is abundant and cattle are easily satisfied, expert herders deliberately expose individual animals to their favored "bites" in order to keep their appetites high.

3.5.2 Mobility: the heart of pastoral management systems and culture for sustainable natural resources use

Mobile pastoralism is highly suited to the management of rangelands and provides both economic and environmental benefits. Mobility is a key pastoral management strategy that pastoralists use to access variable and patchy resources such as fodder, water supplies, and shelter. As such, mobility helps them maintain high livestock productivity under conditions of high resource variability. Mobility is also important to avoid problems like drought, disease, wildlife, and conflict, and is important to selling products in volatile markets. It is a flexible, adaptive, and appropriate strategy to manage variable environments.

Livestock mobility is not an end in itself but a means for effective rangeland management and is a key tool in preventing and managing risks. However, mobility has a deep social and cultural influence among pastoralist communities and is often central to their identity and relationships. Pastoralists connect land where aridity or altitude limit the use options with more humid or lower altitude areas that may be shared by many other users.

Pastoral mobility is influenced by the condition of essential resources and infrastructure that are needed for movement, including water points, livestock tracks, pastures, and campsites. Degradation or loss of these facilities can greatly compromise mobility. Pastoralist land tenure systems need to secure such natural and artificial infrastructure while maintaining flexibility in their use. This tension between security and flexibility imposed by mobile patterns makes the allocation of land rights a complex task.

Delimitation, mapping, and legal protection of pastoral infrastructure may often be necessary, but it also may affect their operation. Sometimes, fixing rights or permanently defining some structures like livestock tracks can lead to the disappearance of others, reducing flexibility and interfering with pastoralist movements. Mobility is threatened by numerous factors, including access to social, educational, or health services, or to security and legal services. In addition, many multilateral donor agencies have also contributed to the entrenchment of specific "anti-mobility narratives" through budgetary support of government agencies responsible for managing environmental resources, including rangelands. According to Byakagaba et al (2018), policies that promote individualization of land and sedentarization in East African pastoral areas have limited livestock mobility and flexibility in use of rangeland resources. Consequently, this has led to a breakdown of social networks that provide safety nets and thus has caused a decline in rangeland productivity and increased livestock mortality during drought, and has negatively affected the livelihoods of pastoralists. Thus, securing governance for effective tenure of pastoral lands usually has to address a wide range of interrelated challenges if it is to achieve success.

Livestock mobility reduces the risk that degradation will occur in the dry rangelands for the following reasons:

- Most grasses produce hundreds of thousands of seeds, and it is very unlikely livestock will eat them all.
- Certain grasses protect themselves from overgrazing.
- Due to erratic and scattered rainfall, not all seeds germinate at the same time within the season or between years.
- Livestock never eat the whole plant. They crop it and move on, thereby allowing the plant to regrow. Some plants benefit from being eaten.

By being mobile, livestock allow plants to recover and help stimulate plant growth, reducing the risk of degradation. Mobility is discussed further in the next chapter entitled "Pillar Two: the herd."

3.6 WATER, NATURAL PASTURE, AND PASTORALISM

This section considers the characteristics and factors influencing water. Water is an essential natural resource not just for the herd but also for the family. Understanding the links between water, natural pastures, and the family is important for appreciating how the pastoral system works as a system.

Water provision in the drylands has frequently been considered from two perspectives: (i) the need to provide water for livestock, with limited attention on how it will impact pasture management or (ii) the need to provide domestic water, where the focus has been on issues of water quality and accessibility, particularly for women. Rarely are the dual requirements of water for both livestock and people considered in policy and development projects in the pastoral areas of Uganda.

Water sources and rights over their use are critical in determining access not only to water but also to pastures and other resources in pastoral areas. The location, legal status, and technical characteristics of a water source are critical components that determine the conditions under which pastoralists can access and manage pastures. Reference will be made to both water and natural pastures in Chapter 5 when the pastoral family and institutions that govern natural resource use are introduced.

In this section, the types of water sources available and used by pastoralists and the links between water and natural pasture are described. In particular, it includes:

1. The different types of water sources used by pastoralists and the implications for labor and family health.

2. The relationship between pasture and water, during the dry season in particular.

3. The importance of the technical characteristics and legal status of water points for sustainable range management.

3.6.1 Types of water sources (and their implications on labor demands and family health)

Pastoralists use many different water sources in Uganda, all of which have different characteristics and conditions of access, particularly in the dry season. In pastoral areas, most water points serve both livestock and domestic needs. Water has important implications for women's workload and the health of the family. It is important to identify these different water sources in order to get an overall picture of how the pastoral system works.

Water sources in pastoral areas can be categorized in three different ways:

1. Underground water vs. surface water;

2. Natural water points vs. man-made water points;

3. Dry season (permanent and temporary)vs. wet season.

In many cases, the same water point will serve for livestock and people.

Figure 3.16. Wells as a source of water for livestock in dryland areas. Photo credit: Alais Morindat and Gritty.org.

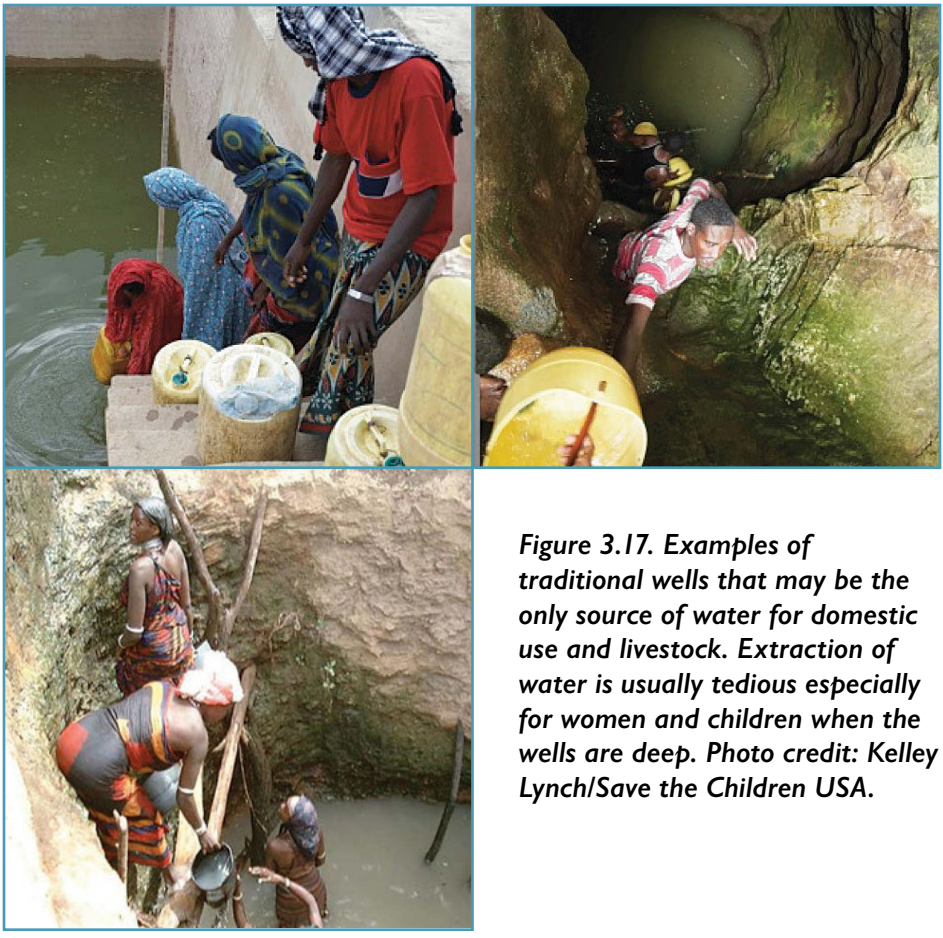

Figure 3.17. Examples of traditional wells that may be the only source of water for domestic use and livestock. Extraction of water is usually tedious especially for women and children when the wells are deep. Photo credit: Kelley Lynch/Save the Children USA.

Depending on the type of water source, watering livestock and collecting water for domestic needs is hard work for all the family, both men and women. See Figure 3.17. However, while watering livestock is generally not a major activity for men in the wet season, fetching water for the family needs is a daily year-round activity for women, one which is generally harder in the dry season. In the wet season, water is more available and accessible due to surface ponds, but there are issues of its quality and hygiene and the impact of poor family health on women's labor (e.g., looking after sick family members).

The **physical and technical characteristics** of the water point will influence:

- The amount of time and effort women spend drawing water;
- The quality of the water (hygiene).

Both of these will have an impact on:

- Women's time;
- Their health and that of their family;
- The time they will spend looking after sick people (children, elderly).

The **distance of the water point from the homestead** will influence the time spent fetching water. This will affect the amount of time women have for other activities.

The **management system** of the water point will affect the amount of time spent fetching water. For example:

- If there are no provisions for separate watering points for people and livestock, women often have to wait until the livestock of their family/clan is watered before gaining access to the watering point;
- This will affect the amount of time women have for other activities.

The availability of donkeys may determine:

- The amount of water that can be transported back to the homestead;
- The frequency of visits to the water point;
- The amount of water available for domestic use.

Box 3.8. Key points on water sources

Pastoral systems in Uganda have a variety of water sources, both for livestock use and human use.

The labor and time requirements for utilizing the water sources, particularly in the dry season, will vary depending on the technical and physical characteristics of the water point.

The quality and hygiene of water in Uganda's pastoral systems have an impact on family health. This has implications for women's labor demands.

3.6.2 The relationship between water and pasture

For the majority of pastoralists in Uganda, watering livestock is most critical in the dry season. This is because animals need more water more often, and because surface water and pasture become drier and scarcer as the dry season progresses.

The number of water points and their distance from natural pastures will determine the frequency and distance livestock have to trek to reach water and pasture. Understanding the dynamics of these movements, and particularly the distance animals have to trek before returning to find water, is critical.

Different livestock have different water requirements in terms of both frequency and amounts. On average during the dry season, camels require 60–80 liters per day, but can last 5 days or longer without water, while sheep require just 4–5 liters but must drink every 1–3 days. Cattle must drink 30–40 liters on average per day and should drink every 1–3 days.

The "grazing circumference" represents the pasture area "attached to" or associated with that water point (Figure 3.18). In the dry season, it represents the total amount of pasture (standing biomass) that is available to livestock using that water point until the next rainy season. It is therefore important to manage it very carefully to ensure the animals have enough pasture until the start of the next rains. If the pasture is eaten too quickly, before the arrival of the rains, livestock will suffer.

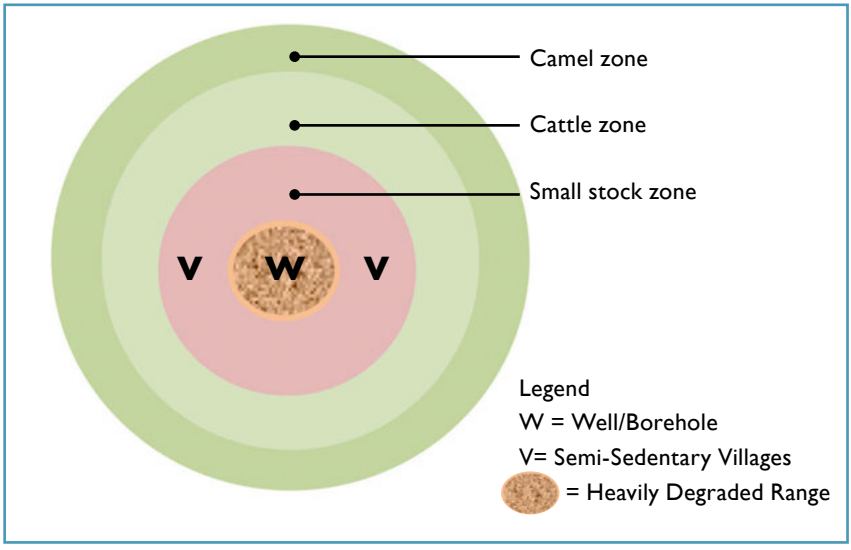

Figure 3.18. Illustration of management of grazing resources in relation to location of water for livestock.

There are two factors determining the speed at which dry season biomass is consumed: the **number of animals using a water point** and **the time they spend there**. The more animals around a water point and the more time they spend there, the quicker the standing stock will be eaten and finished up.

The more water that a water point provides, the more animals that can be watered there in one day. This will have an impact on the speed at which pastures are eaten in the grazing circumference of that water point.

3.6.3. The technical characteristics and legal status of water points are crucial for sustainable range management

The number of animals that can be watered in one day depends on the technical characteristics of the water point as well as the legal status and control of public access. The type of water supply and control over its access can thus have a crucial impact on the speed at which pastures are eaten in the grazing circumference of that water point.

Underground water sources like traditional wells and springs will have a limited capacity, while modern water points such as boreholes powered by diesel or solar pumps tend to provide more water than traditional water points. And the more open the accessibility to that water (e.g., a pond versus a borehole), the harder it is to control the number of livestock accessing the source. Traditional wells where water is drawn by hand using buckets are a more labor-intensive source of water, particularly for larger stock, and are labor intensive in terms of long-term maintenance. However, when pasture is scarce, the fact that wells are only able to provide water to a limited number of livestock each day provides an indirect means of controlling access to pasture.

The legal status of a water source and whether or not groups or individuals have the rights, or capacity, to control the number of animals that use them thus determines the degree to which pastoralists are able to manage the stocking rates on pastures. **Access to a water point is the key to access to pasture:** no access to water and the livestock must move to a different area.

Most modern water points developed by government and donor projects are considered public resources open to use by all citizens and for all purposes, including domestic use and consumption. Committees or associations set up to manage such water points normally have no authority to manage the number of animals that use it. Access is usually determined by the capacity of pastoralists to pay for water rather than the availability of pasture within its "grazing circumference." This has led to the concentration of many animals around water causing degradation and conflict. This degradation may take the form of a scarcity of palatable species and/or soil erosion and gully formation, depending on

topography and soil type. In contrast, access to water points under the management of pastoralists using their own rules and regulations is very carefully regulated to ensure a balance between the availability of pasture and the number of animals drinking from the water point. See Box 3.11.

Figure 3.19. Example of livestock how people and livestock share in arid and semi-arid environments (Dembi pond in Dida Hara, Borana, Ethiopia). Photo credit: Alais Morindat and Gritty.org

Figure 3.20. Smaller water bodies are often prone to contanimation by livestock and will not sustain water supply for a long period of time. Photo Credit: KDF

Figure 3.21. Larger water bodies are usually cleaner and sustain many animals over a longer period of time. Photo Credit: KDF

It is better to have more, smaller water points in a network, each producing relatively little water, which will ensure livestock are well distributed over a wider area, thereby rationalizing pasture utilization in the dry season. It is also critical to give water user committees of public water points the right to control the number of animals that can use it so as to manage pastures in a sustainable way.

There are thus a number of key factors that need to be in place to manage the number of animals using a water source:

- Local people have the authority to regulate access;
- There is negotiated access, both within the group and with outsiders;
- The principle of reciprocity is in play.

Finally, we should not forget that water development in pastoral areas has to serve both domestic and livestock needs, while at the same time being sensitive to the surrounding environment and resources.

Box 3.9. Karamoja wells

In Karamoja, a well is known as *akare*. Wells constitute the most common source of permanent water for Karamoja pastoralists, especially along river beds or large water catchments and highlands areas. For example in Karamoja, key water sources are found along Lokichar water catchment, and Kobebe, River Omaniman, River Loteneputh, and Nakurobuin in Napak District, River Kanyangareng, River Chosan, River Katabok, and Takariamiron Valley tank in Amudat District, River Lopelipel, River Sangar, and River Loyoro in Kaabong District, Longor water catchment in Kotido District, and Lochagar water catchment in Nakapiripirit District.

A water catachment is refered to as *echor*. This is owned and managed by a clan through their clan head. The clan head is responsible for the management, use, and access of this *echor*. The wells are set up in this catchment or river bed by respective *kraals* or family heads who then own, manage, and determine access to particular wells.

During the dry season, the clan head is responsible for coordinating access to the catchment area for different clans (outsiders known as *ngimoe*). This is done in consultation with respective *kraal* heads. This is for purposes of shared ownership of decisions taken and ensuring a rationale distribution of arriving livestock from different *kraals* to the wells. If the *kraal* heads agree to the request of foreigners to be allowed to use the *echor* for a particular period of time, they shall then be assigned to particular wells either directly or indirectly. Directly means the *foreigners* shall be assigned wells and their leaders take control of temporary ownership, management, access, and use. Indirectly means *foreigners* will be tagged to respective wells where they shall be subordinate to the original owners, and rights of access and use shall be determined by the original *kraal* leaders. Usually, this process is long and starts prior to the onset of the dry season. This process is known as *etamam*.

Where the agreement to use *akare* in that *echor* is directly tagged to the original owners of the *echor* and *ngakare* (pl.), the animals of the owners start to water first before the animals of the visitors.

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The visitors are asked to make their own troughs called *ngatubai*. These are curved out of huge tree trunks. During the need to clean *akare*, all teams work together, including for the tasks of fencing and desilting.

In near watering points (5–10 km), women are responsible for watering livestock, especially in shallow wells. They also bring some food for the herders at the watering points. After watering livestock, women fetch water for domestic use from *ngakarei* (pl.).

When the livestock has migrated very far (> 40 km), across district and regional boundaries, women remain visitors to the *kraals*, and they usually just bring food for the herders as they collect the meat and milk products for home consumption.

Etamam *is where emmissaries are sent ahead of the herds to map out resources (especially water and pasture) and negotiate for them before the herds arrive. In Karamoja, offers of bulls for celebration and negotiation are carried out here by the visiting herders.*

Box 3.10. Key points

In the dry season, access to water is the KEY to sustainable pasture management.

Two factors are critical to accessing water:

- **Technical characteristics** determine water discharge rates and thus the number of animals that can be watered.
- **Legal status** of the water point determines who has authority to control access.

3.7 MOBILITY PATTERNS OF PASTORALISTS IN RESPONSE TO VARIABILITY IN PASTURE AND WATER RESOURCES

Figure 3.22 below presents a simplified description of how pastoralists manage the rangelands over the year according to season. Karimojong pastoralists use a typical grazing plan in what is dubbed "grazing circumference" across the rainy and dry seasons. Within the local grazing areas, the pastoralists restrict seasonal grazing to specific areas, reserving a section of the rangeland to act as fodder banks. Initially at the start of the normal rains, livestock are moved to grazing areas and water points closer to permanent homesteads (e.g., within a radius of 1 km) and then back to the settlements. But as pasture availability decreases, herders move further into fodder reserves closer to the watering points.

Subsequently as drought progresses, with availability of grazing becoming further away from homesteads, herders migrate out with livestock, leaving just a few behind to provide milk and blood for people left at home. As they migrate,

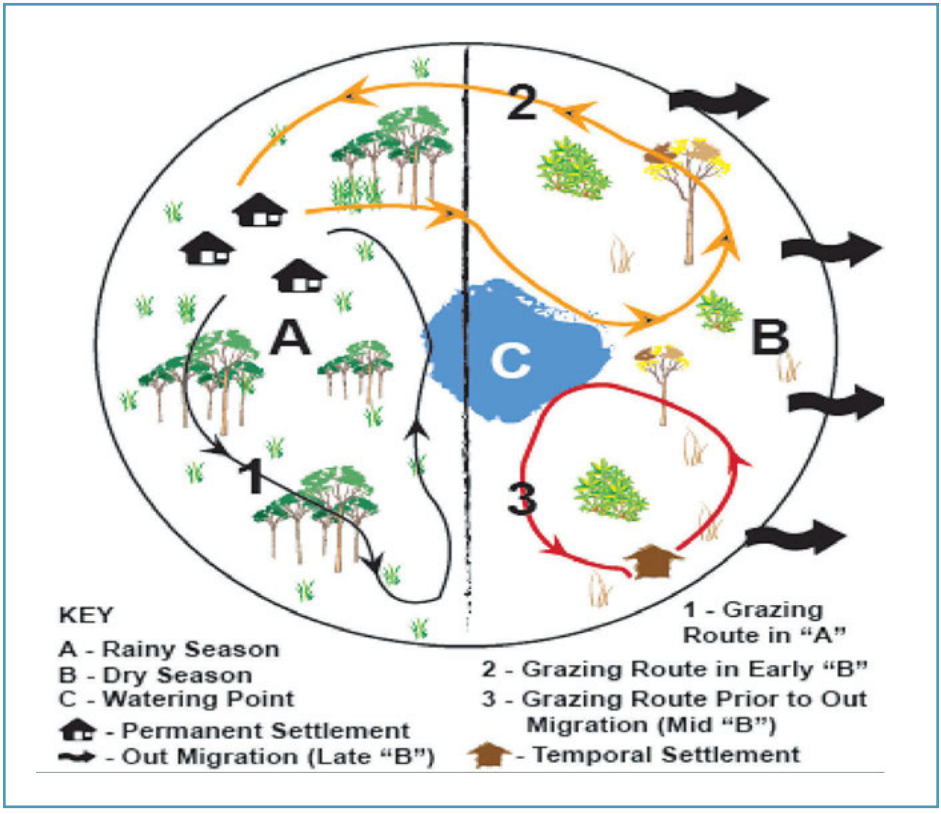

Figure 3.22. Typical plan, scheduling, and activity in a "grazing circumference" for Karimojong pastoralists (Source: Obin 2018).

temporary makeshift settlements are built in the fodder reserves along migratory routes whose locations vary depending on the year's rain. The planning and scheduling of movements within and outside this grazing circumference is to ensure that they optimally/economically use the spatially and temporally distributed pasture and water sources for their stock to survive until adequate resource become available again.

The size of the of the grazing circumference is very variable depending on location. For instance, it is approximately 12 km on average in Karamoja with a range of 3 to 30 km for Moroto, Napak, and Nakapiripirit. This could have far-reaching implications for women and girls, especially for households without donkeys, if the same water sources are used for domestic purposes.

3.8 SOCIO-CULTURAL INSTITUTIONS, POLICY ISSUES, AND LEGAL FRAMEWORKS GOVERNING THE MANAGEMENT OF NATURAL RESOURCES

This final section under Pillar One considers the socio-cultural institutions, policy issues, and legal frameworks that govern the management of natural resources in pastoral areas in Uganda.

Box 3.11. Karimojong decision-making dynamics in the use of natural resources

Pastoralists have well-structured cultural institutions aimed at regulating the use of pastures and water since the sustainability and health of these resources determine survival and livelihoods of resident and neighboring pastoral communities. The cultural institutions are organized in a hierarchical manner, with the lowest tier dealing with decision making at the household level, while higher tiers deal with issues involving clans, communities, or villages. The organization of the decision making regarding use of and access to grazing depends on whether the grazing is within or outside the locality. For instance, in Karamoja the following socio-cultural organization is used to regulate resource use.

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Within Karamoja

When grazing within Karamoja, these institutions focus on local information sharing about weather patterns, livestock diseases, resource-use dispute settlement, weather forecasts, and pasture resource conditions. The tiers for power of influence are arranged as follows.

1. ***Eree:*** This is a household level of organization where decisions for daily herd management, for example, are taken along age and gender lines. For instance, young boys are responsible for grazing calves, while men take charge of distant grazing, including out-migration. Women and girls do most of the domestic chores, including fetching water and providing supplementary feed to stock that remain in the homestead

2. ***Aperit* or *Ekeno:*** This is a decision-making meeting for different families regarding grazing resources issues and is commonly held at a household fireplace. It is concerned with decision making in the use of common resources and sharing of information between close households.

3. ***Ekokwa:*** This is a local court at village or *manyatta* level. Its role is in the control of local grazing areas and settling of village or inter-village disputes related to pasture/water resources as well as boundary conflicts.

4. ***Akiriket* or *Etem:*** This is a higher-level council constituted by different *Ekokwas*. In addition to regulating pasture and water use, it is responsible for harmonizing inter-clan disputes/relationships, making proclamations about migration (when, where to go, and route to follow), weather forecasts, and security. It is also a place to discuss threats and challenges, and perform rituals/offer sacrifices. This council sits in designated forested areas within the community gazetted (or "*Akiriket*") for traditional functions. These areas are properly mapped out, documented, and integrated in community environment programs where mobilization and support is accorded to elders to have regular meetings in these areas to deter encroachers.

5. ***Akeru:*** This is an annual general meeting for council of the elders who superintend the different *Akirikets*.

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Outside Karamoja

The set-up and roles of these institutions change when pastoralists move out of Karamoja to other districts. Here, they instead guide settlements, scout pastures, engage foreign communities, respond to conflicts, and relay information to those back home. The hierarchy of decision making is organized as when grazing occurs within Karamoja.

1. **Key individuals:** These make decisions for respective households or groups of households regarding their livestock and grazing.

2. ***Aperit* (fireplace at a *kraal*):** These are responsible for guiding decision making within a *kraal* and sharing information critical for managing their stock, especially during times of difficulty.

3. ***Awui:*** This tier of decision making is at *kraal* level and is governed by a key opinion leader called *Arwonit* whose role is to guide the scouting for pastures and water control as well guide settlements in the routes/areas of migration.

4. ***Alomar* or merged *kraals*:** A number of *kraals* come together with a leader elected out of the individual *kraal Arwonit* for collective decision making. The organization mandates the leader, on behalf of the pastoralists, to engage and negotiate with other communities to allow access to water and pasture. This tier also designs strategies for action in cases of conflicts with other communities during migration. Cases of serious conflicts during out-migration are taken at a higher cultural council level (i.e., *Akiriket*) to match the resistance from other communities from which they are sourcing pasture or water.

These civic institutions are reinforced with powerful and deterrent by-laws, sanctions, punishments, or fines, including slaughtering a bull for elders. On some occasions, the pastoralists can use threats and violence deliberately to either deter encroachers or as a tool to access range resources in areas where they are denied entry. However, the local powers of pastoral clan and community leaders' adjudication in cases of conflicts and crimes are being eroded by government regulatory interventions. For instance, some punishments such as flogging culprits are not acceptable, and some local cultural court decisions can be challenged legally, thus encouraging various levels of impunity among offenders.

3.8.1 Features of pastoralist systems that determine governance arrangements

Since pastoralists typically use land and other resources collectively, the narrowest sense of ownership (i.e., the right to control a resource in a complete and exclusive way) fits poorly with their traditions and livelihoods. Pastoral property rights are better understood as overlapping rights, often with rights to one resource nested within a different set of rights over another resource, operating at multiple spatial scales with different authorities and functions.

Pastoralists' rights need recognition in all the territories they use, even if they belong to different regions or countries or are ruled by different systems of tenure. This may include periodic usufruct rights to land that is considered outside the rangelands, such as some drought reserves. Despite this apparent difficulty, historically, land tenure systems have proven adequate for sustainable management of rangelands and their resources.

3.8.2 The role of customary pastoral tenure systems

Customary land tenure systems play a major role in rangeland governance, but their function remains poorly recognized and rarely supported by land policies. Government policy has often been misguided due to the usually erroneous assumption of "the tragedy of the commons" (Hardin 1968), in which completely free access to a shared resource (rangelands in this case) leads to overexploitation and eventually to its complete depletion. More recent work on common property regimes clearly shows not only how systems of collective management work, but why they are both necessary and efficient (Ostrom et al. 1994). Traditional community-based systems, even those with quite flexible access rights, have demonstrated their sustainability and the effectiveness of their regulatory institutions. By assuming the absence of control, many governments have invoked policies to nationalize land, which has led to the weakening or collapse of local common property regimes, creating a "tragedy of the commons" where none formerly existed.

Customary systems are not static: they continuously adapt to changes in economic, social, political, cultural, or environmental conditions. Bringing customary land tenure systems under the realm of statutory law may offer new opportunities and benefits for pastoralists, but many initiatives have failed in this regard, concentrating wealth, privileges, and decision-making powers in the hands of the most powerful individuals in the group (Dressler et al. 2010). This is corroborated by a Somali case study where the minority wealthier people with finacial and political capital to comodify and privitatize grazing and water resources override customary systems, thus disenfranchising the poor out of livelihoods (Box 3.12). Reforms intended to secure rights for poor and marginalized people need to have enough flexibility to accommodate the

complexity of rights and practices at multiple levels. This includes addressing gender inequities found in many traditional pastoralist institutions.

Box 3.12. Privatization of water points (example from Somali Region)

Extracts from: Catley, A., and Y. Aklilu. 2012. Moving up or moving out? Commercialization, growth and destitution in pastoralist areas. In: Catley, A., Lind, J. and Scoones, I. (eds.), *Pastoralism and development in Africa: Dynamic change at the margins.* Oxford: Earthscan.

"Commercialization mainly benefits wealthier herders, who not only acquire larger herds, but also use their influence to gain more control over key resources such as water and grazing. These actors have financial and political capital to secure control of resources, especially where formal institutional arrangements for tenure are vague or overlooked locally. As hitherto communal resources become privatized, poorer herders are excluded or struggle to make the payments needed to access these resources. Hence, their ability to stay in the pastoral system is further reduced. Accounts of rangeland enclosures and private water development in these areas are numerous and go back many years. Examples include the massive expansion of private water *berkads* in parts of the Somali Region of Ethiopia (Sugule and Walker, 1998; Devereux, 2006; Aklilu and Catley, 2010), and the emergence of private rangeland enclosures in Borana since the 1970s (Kamara et al., 2004; Angassa and Ofa, 2008; Aklilu and Catley, 2010). In some areas, these resource access problems are worsened by bush encroachment and in all areas population growth means that increasing numbers of households need to acquire a minimum herd to exist as pastoralists. Although these general trends are well described in the literature, few researchers have looked specifically at declining natural resource access in terms of wealth groups, and who is most affected. The apparently robust and growing livestock export trade indicates that at least so far, wealthier herders are not unduly hindered by limited access to water or grazing which in turn, indicates that poorer herders are relatively more affected.

When compared to other trends affecting vulnerability in pastoralist areas, the occurrence of drought is still a major factor—as it was 100 years ago or more. However, with increasing numbers of poorer herders with relatively few animals per household and with reduced access to resources, the

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impacts of drought will be more evident and in part, this explains the concerns of humanitarian actors. In addition, increasing appropriation of communal water and rangeland by wealthier pastoralists and commercial owners further limits the capacity of poorer herders to respond to drought, while also enhancing the drought resistance of the wealthier herders. In part this explains why the livestock export trade continues to grow despite recurrent droughts and increasing levels of destitution."

3.8.3 Overlapping rights for variable resources

Pastoralists require secure access to specific resources at different times of the year, including grazing lands, wells, salt pans, trees, and other resources, and these rights are usually ruled by principles of flexibility and reciprocity. Many pastoral societies require that territorial boundaries remain uncertain—***often referred to as fuzzy***—with continual negotiation over access in which individuals or user groups re-evaluate their share of, and level of control over, strategic resources (Davies et al. 2016). This can create tension with the sedentary communities with whom pastoralists share resource rights, particularly where statutory law gives priority to settled populations and to tenure claims based on cultivation and permanent (year-round) use.

A frequent pitfall of land reform is the rigid and arbitrary definition of the boundaries of a community while ignoring the claims of neighboring groups. When property rights are rigidly formalized, overlapping interests are neglected through the establishment of exclusive forms of ownership of resources. As a landscape is progressively surveyed, demarcated, and allocated, pastoralists' mobility may be obstructed and their practices of repeatedly renegotiating access rights to resources become less effective, essentially depriving them of those rights.

This complexity transforms the concept of communal property into a more sophisticated flexibly defined tenure, the so-called "fuzzy access rights" (FAR). FAR dominates tenure arrangements in uncertain environments, and they are implemented through culture-specific mechanisms based on formal negotiations and informal arrangements. The distinguishing characteristics of FAR include complex rights over land and resources. Those rights can be defined in multiple dimensions: overlapping rights to different resources in the same land (e.g., different rights for fodder, fruits, fuel), partial rights (e.g., the right for herds to pass through but not graze a patch of land), asymmetric rights (e.g., the owner cannot deny access to herds but he or she is entitled to a compensation), flexible boundaries (e.g., livestock tracks that vary annually), time-bound rights (e.g.,

Box 3.13. Nested and flexible pastoral rights: examples from Uganda and Mali (Adapted from Davies et al. 2016)

"A typology of nested rights is reflected in the case of Ugandan Karimojong pastoralists. The boundaries of customary pastoral territory claimed by the tribe as its home base are relatively fixed and identifiable by landscape features. Each clan, subclan or faction has an annual grazing area through which it moves seasonally, that usually extends outside the home base. The geographical boundary of this grazing area is extremely fluid from year to year because of variability in rainfall. In many sites (particularly areas of relatively high value), each annual grazing area is intended to be self-sufficient. However, in times of need, access by other clans or factions is agreed through negotiation (Niamir-Fuller, 1999).

The inland delta of the Niger River in Mali provides a valuable insight into how overlapping and nested rights work. The area hosts particularly valuable natural resources on a vast scale, which have created complex systems of overlapping rights and competing resource uses. A piece of land may support pastoralism, farming and fishing, practised by resident and non-resident herders, farmers, agro-pastoralists and others, who may succeed one another over different seasons. Competing claims are governed through arrangements like the Dina system. The effectiveness of such customary systems has been well-documented, along with their capacity to adapt over time. The systems combine interethnic nested and flexible rights, along with the internal nested and flexible rights to specific areas controlled by 'masters of grazing' embedded in a matrix of negotiating and sharing (Cotula and Cissé, 2006)."

definition of grazing and resting periods for communal rangelands), and mutual trust and reciprocity.

This complexity, in addition to the coexistence of customary and statutory regimes (legal pluralism), creates a wide set of overlapping and sometimes contradictory regulations: local cultural norms, colonially imposed rules, formal and informal institutions, customary, statutory, and modern legislative frameworks, and religion-related influences. Consequently, rights need to be codified in a manner that does not interfere with the flexibility and adaptability inherent to pastoral systems, or at the very least, codification should ensure enough space for negotiation and agreement over resources.

3.9 CONCLUSIONS

3.9.1 Natural pastures

Natural pastures are the main source of feed for livestock in pastoral systems in Uganda, but these resources are:

- **Variable** in quantity and nutritional quality from one season to the next. Pastures in the wet season are more abundant and more nutritious. They contain more water and are richer in protein, digestibility, and minerals.

- Also composed of **trees** and **tree products**, which are important in the pastoral system, particularly in the dry season to compensate for the lower nutritional quality of grasses. Trees have higher levels of water, protein, and digestibility than grasses, particularly in the dry season, and as such are important for livestock diet. Trees are also important in the pastoral system for other reasons (food, shelter, medicine, etc. often central to women's livelihoods).

- **Scattered** in **time** and **space**. The "stop–start" nature of rainfall results in some rains being "useful" (adequate) for pasture growth, while other rains may be too little (not useful), depending on the distribution in time. This results in uneven growth of pasture over time. Rainfall is also highly localized in space, resulting in uneven distribution of pasture across the rangeland.

- **Unpredictable** within the rainy season and from one year to the next. Total annual rainfall varies greatly. This has an important impact on the quantity, quality, and composition of pastures.

3.9.2 Soil type and fire

These also have an important influence on pasture composition, quantity, and quality. The positive and negative impacts of fire on pastures include:

- **Positive effects:** reduces bush encroachment, stimulates growth of nutritious pastures, controls pests such as ticks, and improves soil fertility.

- **Negative effects:** severe fires can kill trees and shrubs and destroy standing hay for livestock, reduce ground cover and thus expose the soil to erosion, change species composition towards fire-tolerant species of low grazing value, and reduce soil organic matter.

3.9.3 Impacts of livestock

Livestock have positive and negative **impacts on pastures**. These include:

- **Positive:** reduces dead biomass, thus facilitating new growth and reducing pests; stimulates growth of grasses; dung fertilizes the soil; hoof action tramples the soil, which facilitates water infiltration; animals help with seed dispersal and germination; etc.

- **Negative:** When animals are not mobile, they can overgraze the pastures. This is most dangerous at the start of the rains when animals concentrate on new grass growth and during the peak of the rains when plants are about to seed.

3.9.4 Managing water and pasture

The technical characteristics and distribution of water points and their legal status are critical for ensuring the sustainable management of pastures in the dry season. Managing the stock of standing biomass at the end of the rainy season is particularly important, since in many parts of Uganda this represents the fixed quantity of pasture available to the animals until the next rainy season. Access to water can be the key to managing access and density of livestock use.

Pastoralists have a range of strategies adapted to these key features of pastoral rangelands, but some of these strategies are becoming less feasible due to constraints, which are often out of the control of the pastoralists themselves.

In pastoral areaas, uneven distribution of rain in time and space is NORMAL, and pastures are very scattered across the rangeland within the rainy seasons.

Pastoralists have two main means by which they can optimize the productivity of their livestock herds in the face of an unpredictable and shrinking resource base: managing the structure and composition of their herd and mobility. Both of these are examined in more detail in Chapter 4 where “Pillar Two: the herd” is introduced.

Although pastoralists have many strategies to manage the variable and unpredicatble drylands environment, these are increasingly ineffective due to a range of issues and constraints beyond their control. See Table 3.3 below.

Table 3.3. Summary of characteristics of natural pastures and how pastoralists harness those resources

KEY FEATURES OF NATURAL PASTURES	STRATEGIES	CONSTRAINTS
Natural pastures are: • **Variable** from one season to the next; • **Unpredictable** from one year to the next; • **Scattered** over an area due to variations of rainfall in time and space.	• Mobility is the key response to variable, unpredictable, and dispersed pasture. • Fire is used as a tool to stimulate growth and quality of pastures.	• Mobility increasingly constrained by new land uses (farming, border controls, conflict). • In Uganda, there is still some misunderstanding about the use of fire.
Water is the key to pasture management, particularly in the dry season.	• Controlling access to water controls access to pastures. • Reciprocity allows pastoralists to move from one water point to another in the dry season.	• Traditional water management weakened. • Modern water supplies attract livestock concentration, settlement. • Privatization of water sources.
In certain areas, livestock have to compete with wildlife for natural pastures and water.	• **Mobility** is a key response to avoid competition with wildlife.	• National parks and other conservation areas restrict access for livestock, while many wildlife may spend a significant amount of their time outside protected areas on pastoral rangelands.

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There are strategic pastoral areas: riverine forests, escarpments, wetlands, saltpans, etc.	Controlling access to strategic resources by: • Establishing settlements near permanent dry season water or wetlands; • Leaving behind some family members in these settlements when the herds move; • Repeatedly returning on a regular basis to the same area so that others begin to recognize your "rights" over these resources.	• Access by pastoralists to these strategic areas is increasingly constrained by: voluntary villagization; privatization; commercialization; conflict, etc.
In some pastoral systems, it is important to have access to agricultural areas.	Negotiating access to agricultural areas. This makes some pastoral systems more secure: • Access to crop residues as the dry season starts. • In drought years, agricultural areas often provide "refuge zones" for pastoralists.	• Mobility constrained, lack of sustained contact between pastoral and farming groups, breakdown of social relations between groups, conflict.

REFERENCES AND FURTHER READING

Abebe, Y. D., and K. Geheb. 2003. Wetlands of Ethiopia. Proceedings of a seminar on the resources and status of Ethiopia's wetlands. IUCN Wetlands and Water Resources Programme. **https://portals.iucn.org/library/efiles/documents/wtl-028.pdf**.

Bakker J. P., P. Poschlod, R. J. Strykstra, R. M. Bekker, and K. Thompson. 1996. Seed banks and seed dispersal: Important topics in restoration ecology. *Acta Botanica Neerlandica* 45:461–490.

Behnke, R. H., and C. Kerven. 2013. Counting the costs: Replacing pastoralism with irrigated agriculture in the Awash Valley, north-eastern Ethiopia. IIED climate change working paper no. 4. IIED, London. **http://pubs.iied.org/10035IIED.html**.

Behnke, R. H., I. Scoones, and C. Kerven. 1993. Range ecology at disequilibrium: New models of natural variability and pastoral adaptation in African savannahs. ODI/IIED, London.

Bekker, R. M., G. L. Verweij, R. E. N. Smith, R. Reine, J. P. Bakker, and S. Sneider. 1997. Soil seed banks in European grasslands: Does land use affect regeneration perspectives? *Journal of Applied Ecology* 34:1293–1310.

Blaser, R., R. C. Hammes, Jr., J. P. Fontenot, H. T. Bryant, C. E. Polan, D. D. Wolf, F. S. McClaugherty, R. G. Klein, and J. S. Moore. 1988. Forage – animal management systems. *Virginia Polytechnic Institute Bulletin* 86–7.

Breman, H., and C. T. De Wit. 1983. Rangeland productivity and exploitation in the Sahel. *Science* 221 (4618): 1341–1347.

Byakagaba, P., A. Egeru, B. Barasa, and D. D. Briske. 2018. Uganda's rangeland policy: Intentions, consequences and opportunities. *Pastoralism* 8 (1): 7.

Cotula, L., and S. Cissé. 2006. Changes in 'customary' resource tenure systems in the inner Niger delta, Mali. *The Journal of Legal Pluralism and Unofficial Law* 38 (52): 1–29.

Coughenour, M. B. 1991. Spatial components of plant-herbivore interactions in pastoral, ranching, and native ungulate ecosystems. *Journal of Range Management* 44 (6): 530–542. **https://journals.uair.arizona.edu/index.php/jrm/article/viewFile/12870/12147#page=4**.

Davies, K. W., C. S. Boyd, J. D. Bates, and A. Hulet. 2016. Winter grazing can reduce wildfire size, intensity and behaviour in a shrub-grassland. *International Journal of Wildland Fire* 25 (2): 191–199.

Davies, J., L. Poulsen, B. Schulte-Herbrüggen, K. Mackinnon, N. Crawhall, W. Henwood, N. Dudley, J. Smith, and M. Gudka. 2012. Conserving dryland biodiversity. International Union for Conservation of Nature (IUCN), Nairobi. **www.unccd.int/Lists/SiteDocumentLibrary/Publications/drylands_bk_2.pdf**.

Dressler, W., B. Büscher, M. Schoon, D. A. N. Brockington, T. Hayes, C. A. Kull, J. McCarthy, and K. Shrestha. 2010. From hope to crisis and back again? A critical history of the global CBNRM narrative. *Environmental conservation* 37 (1): 5–15.

Ekaya, W. N. 2001. Nutritional characteristics of selected grass and browse species from Kenya's pastoral ecosystem. *Journal of Human Ecology* 12 (3): 171–175.

Feinstein International Center, Tufts University (FIC) and International Institute for Environment and Development (IIED). 2013. Pastoralism and pastoral policy in Ethiopia. Facilitators manual Module 1. Feinstein International Center, Friedman School of Nutrition Science and Policy at Tufts University and International Institute for Environment and Development.

Flintan, F., R. Behnke, and C. Neeley. 2013. *Natural resource management in the drylands in the Horn of Africa*. Brief prepared by a Technical Consortium hosted by CGIAR in partnership with the FAO Investment Centre. Nairobi. **http://globalallianceforaction.com/docs/Natural%20resource%20management.pdf**.

Furley, P. A., R. M. Rees, C. M. Ryan, and G. Saiz. 2008. Savanna burning and the assessment of long-term fire experiments with particular reference to Zimbabwe. *Progress in Physical Geography* 32 (6): 611–634.

Keane, R. E., K. C. Ryan, T. T. Veblen, C. D. Allen, J. A. Logan, B. Hawkes, and J. Barron. 2002. The cascading effects of fire exclusion in Rocky Mountain ecosystems. In *"Rocky mountain futures." An Ecological Perspective.* ed. Jill S. Baron, 133–152. Washington, DC: Island press.

Hardin, G., 1968. The tragedy of the commons. *Science* 162 (3859): 1243–1248.

Harrington, G. N. 1974. Fire effects on a Ugandan savanna grassland. *Tropical grasslands*.

Hoben, A. 1996. The cultural construction of environmental policy: Paradigms and politics in Ethiopia.

Homewood, K. M. 2004. Policy, environment and development in African rangelands. *Environmental Science and Policy* 7 (3): 125–143.

Houghton, R. A., J. L. Hackler, and K. T. Lawrence. 1999. The US carbon budget: Contributions from land-use change. *Science* 285 (5427): 574–578.

IIED/SOS Sahel. 2009. Modern and mobile. The future of livestock production in Africa's drylands. Edited by de Jode, H. **http://pubs.iied.org/12565IIED.html**.

IPCC. 2014. Chapter 22: Africa. In Climate change 2014: Impacts, adaptation, and vulnerability. Part B: Regional aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. **www.ipcc.ch/pdf/assessment-report/ar5/wg2/drafts/fd/WGIIAR5-Chap22_FGDall.pdf**.

Krätli, S. 2015. Valuing variability: New perspectives on climate resilient drylands development. IIED. Ed. H. de Jode. **http://pubs.iied.org/10128IIED.html**.

Krätli, S., and N. Schareika. 2010. Living off uncertainty: The intelligent animal production of dryland pastoralists. *European Journal of Development Research* 22 (5): 605–622.

Macharia, P. N., and W. N. Ekaya. 2002. Effect of moisture availability on nitrogen and phosphorus uptake by plants under semi-arid soil conditions. *Journal of Human Ecology* 13 (5): 357–361.

McNaughton, S. J. 1979. Grazing as an optimization process: Grass-ungulate relationships in the Serengeti. *American Naturalist* 691–703. **www.jstor.org/stable/2459961?seq=1#page_scan_tab_contents**.

Mwebaze, S. 2002. Pasture improvement technologies. Working paper #18. Regional Land Management Unit (RELMA)/Swedish International Development Cooperation Agency (Sida).

Nangendo, G. 2005. Changing forest-woodland-savanna mosaics in Uganda: With implications for conservation.

Niamir-Fuller, M. 1999. Managing mobility in African rangelands. In McCarthy, N., B. Swallow, M. Kirk, and P. Hazell, eds. Property rights, risk, and livestock development in Africa, 102–132. International Food Policy Research Institute and International Livestock Research Institute. Washington, D.C. **www.ilri.org/InfoServ/Webpub/fulldocs/PropertyRights/Chapter7.htm#TopOfPage**.

Obin G. 2018. Assessing strategies for improving rangeland utilization in Karamoja: Integrating the pastoralists' perspectives. MSc. Thesis. Gulu University. Unpublished.

Ostrom, E., R. Gardner, J. Walker, and J. Walker. 1994. *Rules, games, and common-pool resources.* University of Michigan Press.

Potkanski, T. 1997. Pastoral economy, property rights and traditional mutual assistance mechanisms among the Ngorongoro and Salei Maasai of Tanzania. IIED pastoral land tenure series.

Sabiiti, E. N., J. B. Wamara, A. A. Ogen-Odoi, and R. W. Wein. 1992. The role of fire in pasture and rangeland management. *Nomadic Peoples* 31: 107–110.

Sabiiti, E. 2001. Pastures and range management. In J. K. Mukiibi, ed. *Agriculture in Uganda - Volume IV. Livestock and fisheries* (S. 237-288). Kampala: Fountain Publishers Ltd.

Smart, N. O. E., J. C. Hatton, and D. H. N. Spence. 1985. The effect of long-term exclusion of large herbivores on vegetation in Murchison Falls National Park, Uganda. *Biological Conservation* 33 (3): 229–245.

Scoones, I. 1992. Wetlands in drylands: Key resources of agricultural and pastoral production in Africa. Drylands issue paper no. 38. IIED, London. **http://pubs.iied.org/7287IIED.html**.

Short, C., and K. W. Gitu. 1990. Land use and agricultural potential in Kenya. Technical paper 92, 8.

Speedy, A., and P. L. Pugliese. 1992. Legume trees and other fodder trees as protein sources for livestock. Proceedings. FAO animal production and health paper. **www.fao.org/docrep/003/t0632e/T0632E00.htm#TOC**.

Schwartz, H. J., S. Shaabani, and D. Walther. 1991. range management handbook of Kenya. Vol. II, 1: Marsabit District. Ministry of Livestock Development, Republic of Kenya, Nairobi, Kenya.

Thébaud, B. 2004. Le pastoralisme au Sahel: Module d'animation et de formation. Associates in Research and Education for Development (ARED).

Thornton, P. K., and M. Herrero. 2010. The inter-linkages between rapid growth in livestock production, climate change, and the impact on water resources, land use, and deforestation. Background paper for the 2010 World Development Report, policy research working paper 5178, The World Bank, Washington, D.C. **https://openknowledge.worldbank.org/bitstream/handle/10986/9223/WDR2010_0002.pdf?sequence=1**.

Tilman, D., P. Reich, H. Phillips, M.Menton, A. Patel, E. Vos, D. Peterson, and J. Knops. 2000. Fire suppression and ecosystem carbon storage. *Ecology* 81 (10): 2680–2685.

Tolossa, D., and A. Baudouin. 2004. Access to natural resources and conflicts between farmers and agro-pastoralists in Borkena Wetland, north-eastern Ethiopia. *Norsk Geografisk Tidsskrift-Norwegian Journal of Geography* 58 (3): 97–112.

Topps, J. H. 1992. Potential, composition and use of legume shrubs and trees as fodders for livestock in the tropics. *The Journal of Agricultural Science* 118:1–8. **http://journals.cambridge.org/download.php?file=%2FAGS%2FAGS118_01%2FS0021859600067940a.pdf&code=63878ce36b9ab927a52396b9fb4b0cce**

United Nations Convention to Combat Desertification (UNCCD). 1994. **www.unccd.int/Lists/SiteDocumentLibrary/conventionText/conv-eng.pdf**

4. Pillar Two: the herd

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SUMMARY

This chapter introduces Pillar Two of the pastoral system, the herd, and looks at how the herd is managed in response to the natural resources available. Pastoralists use a number of known strategies to maintain an optimal balance between pastures, livestock, and people:

- Pastoralists actively manage their herd composition and structure:
  - By keeping different species of animals of local or mixed breeds, each with different characteristics adapted to the environment in which they live, pastoralists manage risk and ensure the maximal use of variable and scattered resources in the rangeland.
  - Indigenous breeds are better able to make optimal use of variable resources and are more resistant to drought and diseases.
  - Managing the age-sex composition of their herds allows a family to respond to the immediate and long-term requirements of the family. Animals are needed to produce milk, for reproduction, for cash, for social obligations, for insurance against risk, etc. Managing the right age-sex balance is a complex, full-time, and difficult task, especially in an environment characterized by variable and unpredictable resources.
- Pastoralists have different rights of ownership and use of their herds:
  - Few people actually have total rights over large herds. Different members of the family will have different rights of ownership and use over different animals. This helps to meet the day-to-day needs of the family and ensure the future viability of the herd and family.
  - Increasingly, because of poverty, pastoralists are looking after the animals of non-pastoralists, and this is bringing other problems, such as reduced mobility.
- Livestock diseases are a major constraint to livestock production in pastoral areas of Uganda and beyond. Pastoralists use mobility to manage pests and diseases, although access to veterinary services suited to the pastoral system is also very important.
- Although livestock feed largely on natural pastures such as grasses, legumes, shrubs, and trees, crop residues and harvested hay are potential nutritious sources of livestock feed in pastoral areas of Uganda.

- Pastoralists actively manage their herd structure to avoid risk and lessen the effect of drought by:
  - Investing in animals, particularly fertile females, to build up herd size as an insurance against drought, disease and raiding;
  - Selecting animals not only on the basis of cultural values but also for their genetic potential (e.g., drought resistance, fertility, good milk yields, ability to walk long distances, etc.);
  - Remaining mobile;
  - Splitting their herds to lessen the risks of overgrazing and exposure to disease and other risks;
  - Loaning animals "surplus" to subsistence requirements to family and friends as a form of social capital to protect against future drought and other risks;
  - Only selectively marketing their animals during drought, so that the herd can quickly multiply and grow following the drought period or any other distressful events.
- Mobility is an important strategy that pastoralists use to maintain high livestock productivity, to avoid problems such as drought, disease, conflict, wildlife, to access markets, and for social and cultural reasons. Mobility is becoming increasingly constrained due to the conversion of rangeland to alternative land uses, political and administrative boundaries, and insecurity, among others. This is reducing pastoralists' capacity to mitigate against risk, leading to increased vulnerability, poverty, and conflict.

Issues for reflection

1) Why should pastoralists care about their herd structure and composition?

2) What is the future for livestock mobility in a modern state?

3) What are the comparative benefits of pastoralism versus other forms of raising livestock, such as ranching, in rangeland areas?

4.0 INTRODUCTION TO THE HERD

The herd is an important pillar that combines and interacts with the other two pillars (natural resources and the family) to constitute the pastoral system. The herd is composed of livestock of different types, species, breeds, ages, and sexes that are kept to serve different purposes for the pastoral family.

In Uganda, the common breeds of cattle found in pastoral areas include the Karimojong Zebu in Karamoja and the Sanga/Ankole (longhorned cattle) in the southwest, predominantly among the Bahima and Basongara (Kugonza et al. 2011). Other breeds of cattle include the Small East African Zebu found in parts of Acholi, Lango, and Teso Regions. Intermediate breeds are mostly crosses between the Zebu and the Sanga cattle. These include the Nganda in central Uganda, the Nsoga in Busoga Region, and the Nyole and Alur cattle. Indigenous cattle make up 93.6% of Uganda's cattle herd (Kabi et al. 2015). The national cattle herd is comprised of 29.6% Ankole, 70.4% Zebu/Nganda, 0.8% beef/exotic cross breeds, while 5.6% are dairy exotic/cross breeds. In terms of cattle distribution, the eastern region has 23%, Karamoja Region 20%, the central region 19%, and the southwestern region 16% of the cattle in the country (Uganda Investment Authority 2009)

In Uganda, the diversity of livestock species kept include: camels, donkeys, cattle, sheep, pigs, poultry, and goats (Rugadya 2006). Livestock contributed 9.1% of total agricultural gross domestic production (GDP) or about 1.7% of total GDP in 2011. According to the national livestock census, livestock numbers in 2008 were estimated at 12.45 million goats, 11.4 million cattle, 3.4 million sheep, 3.2 million pigs, 0.15 million donkeys, 32,870 camels, and 1,590 horses. In addition, there were 27.4 million poultry. See Table 4.1 (MAAIF 2009).

In 2008, the Karamoja sub-region in northeastern Uganda had the highest number of camels at 32,030, (97.4%) in Uganda. Further, the sub-region was home to 91.3% of all national donkeys, 60.4% of horses, 20.0% of cattle, and 16.3% of goats (MAAIF 2009; Wilson 2017).

This chapter delves into the details of the herd as a key pillar of the pastoral system, comparing the different livestock production systems, livestock management systems employed by pastoralists, constraints to livestock production, and mobility as a management tool. The chapter concludes with a brief highlight of policy influence on herd dynamics.

Table 4.1. Livestock numbers by region in Uganda as per the 2008 livestock census

Livestock type	Central	Eastern	Northern	Karamoja
Cattle	2,475,860	2,488,470	1,641,840	2,253,960
Goats	1,676,050	2,599,980	2,696,100	2,025,300
Sheep	269,600	319,370	568,510	1,685,500
Poultry	10,788,370	11,301,030	8,128,280	1,442,070
Donkeys				960
Camels				32,030

Livestock type	Western	Uganda	2009	2010
Cattle	2,548,620	11,408,750	11.8	12.1
Goats	3,452,240	12,449,670	12.8	13.7
Sheep	567,390	3,410,370	3.5	3.6
Poultry	7,532,630	39,192,380	38.6	39.7
Donkeys				
Camels		32,870		

Source: MAAIF 2009.

4.1 LIVESTOCK PRODUCTION SYSTEMS

In a pastoral system, the livestock herd refers to the animals on which a pastoralist family depends and for which they care. Pastoralism is different from other forms of livestock production systems such as ranching that are found in Uganda and other parts of the world. Although livestock development programs in the African rangelands have historically been based on the systems of livestock ranching found in the US, Australia, and Europe, there are fundamental differences in the objectives of ranching and pastoral systems.

In ranching systems, productivity is measured in terms of the weight of beef produced per year, sold for meat or for fattening by others. However, in a pastoral system, meat production represents only one part of the use made of livestock. Pastoralists extract value from their livestock throughout their lives and postpone slaughtering them for as long as they have potential use for the pastoral family: to grow the herd, provide milk, or to provide a bride price or other social value

associated with the exchange of live animals. Meat is considered "a residual benefit to be realized only at the end of an animal's productive lifetime" (Behnke 1985b).

In contrast, ranching is a predatory system in that it exploits animals by killing them in their prime, yet does everything possible to ensure their well-being up to the time of slaughter. Thus, rather than considering meat production when comparing the productivity of these two systems, a fairer comparison would compare protein production and food energy. When this comparison was made between a Borana pastoral production system in southern Ethiopia and an Australian commercial ranching system, the Borana system was found to produce nearly four times as much protein and six times as much food energy from each hectare (Cossins 1984). Moreover, it is also necessary to look at resource usage in the production systems and to appreciate that pastoralism is the most suitable production system in the ASALs where most pastoralists are found.

The herd, in a pastoral context, is thus managed to support the ongoing needs of a pastoral family, providing meat, milk, one-off and regular cash demands, and the social and economic demands of a family today, tomorrow, and into the future.

4.2 LIVESTOCK MANAGEMENT PRACTICES

4.2.1 Herd composition

Herd composition refers to the number of different species (e.g., camels, goats, sheep, cattle) and breeds (e.g., Zebu, Ankole, and Jersey cows) within a herd. Herd composition is determined largely by local environmental conditions: some species and breeds are more resistant to drought or disease and different species have different dietary needs. However, herd composition also depends on the socio-economic status of the family and other factors.

For example, some breeds are able to cover greater distances in search of water and pastures, some produce more milk, some reproduce more quickly, and different species and breeds have different values at market (See Figures 4.1 and 4.2.). Pastoralists usually keep several species and breeds of livestock within the family herd. There are major advantages in diversifying the livestock within the herd, whether to meet different needs and objectives or to better manage the variable environment. For example:

- Different species are better able to exploit varied pastoral environments. Cattle and sheep graze on grasslands, while goats and camels prefer to browse. This makes good use of the available resources, as well as managing risk where rainfall is highly unpredictable over time and space.

Figure 4.1. Different livestock species kept by pastoralists. Top left: sheep; top right: goats; bottom right: cattle; bottom left: camels. Photo credit: KDF

Figure 4.2. Longhorned cattle common in southwestern Uganda.

- Different species are able to exploit the different seasons in different ways. Goats and camels prefer to feed on tree products and keep producing milk in the dry season when milk productivity of sheep and cows decline.

- Different species have different roles. Donkeys and camels are used for transport, goats are sold to meet immediate household needs or slaughtered to feed a guest. Cows provide milk and blood.

- Small stock are of lower value and can more easily be sold to meet occasional cash needs.

- If disease strikes, not all species may be affected, thus spreading the risk.

The diversification of species and breed has advantages in terms of herd economics, productivity and resilience. For instance, research in Niger shows how Wodaabe pastoralists breed cattle that are able to exploit the unpredictable environment in which they live, accessing and selecting the most nutritious grasses available (Krätli 2007). See Figure 4.3. This allows their animals to make the best use of the variable pasture conditions in the rangelands.

Diversifying the herd also comes at a cost. For example, different species may have to be taken to different pastures depending on their dietary and water needs; this requires extra labor.

Box 4.1. Definitions of livestock terms

Species: A group/classification of organisms consisting of individuals actually or potentially sharing a common gene pool. They produce viable offspring.

Breed: A race of animals within a species. Animals of the same breed usually have a common origin and similar identifying characteristics.

Herd resilience: The ability of a livestock herd to bounce back (recover) to usual levels of production, health, reproduction, etc. following a stressful period, e.g., feed and water scarcity during drought.

Herd structure: This refers to the proportion of the different types, ages, and sexes of animals in the herd.

Figure 4.3. Example of cattle types kept by Wodaabe pastoralists in Niger. The cattle have a traits like trekking ability and selective grazing that give them a competitive advantage in dry areas (Krätli and Schareika 2010).

In selecting breeds, pastoralists choose those most adapted to the local environment and their objectives. Indigenous species often have merits over cross-bred and exotic breeds as they are well adapted to mobility and very large variations in feed availability. For example, a study on Horro sheep found the breed well adapted to high seasonality in forage availability due to "compensatory growth" (Abegaz et al. 1996). Sheep grazed on natural pasture with no supplementary feed lost weight during the dry season, while supplemented lambs continued to gradually gain weight over the same period. Following the rains, however, the unsupplemented lambs that had lost weight caught up with the weights of the continuously supplemented lambs within two months.

Compensatory growth **can be defined as the rapid weight gain that follows a period of reduced nutrient intake of an animal, when it is placed back on a high-quality diet**. Compensatory growth is believed to be due to a reduction in maintenance energy requirements under stress, leading to more efficient feed conversion. It has been seen in the Zebu and other indigenous breeds of livestock.

Box 4.2. Indigenous versus imported breeds

Indigenous breeds are better adapted to their environment. They can produce meat and milk from natural pastures with limited inputs. If they can access nutritious pastures all year round, they are highly productive. They are more resistant to local diseases. They are better able to withstand the dry season and difficult watering conditions, and periodic droughts.

Imported breeds require a lot of inputs if they are to maintain high productivity. They are more susceptible to disease, and find it harder to cope with water, insufficient feed, and heat stress. While it is recognized that Holstein cows from Europe produce more milk than Zebu cows, it is largely because of the conditions in which they are reared (high nutritious diets supplemented with growth hormones; very sedentary conditions, thus very little energy used, etc.). A Holstein cow, if it has to live off the pastures in the catte corridor, will die, whereas a Zebu cow will thrive to produce milk and meat.

Box 4.3. Key points: herd composition

- Pastoralists generally keep several species and breeds of livestock.
- This diversification of species and breed has advantages in terms of herd economics, productivity and resilience, complementarity in resource use, and spreading of risk.
- Pastoralists raise indigenous species and breeds that have preferred merits over cross-bred and exotic breeds.

4.2.2 Herd structure

The herd structure refers to the different types of animals found within the same herd (e.g., male and female, castrated and uncastrated, old and young, etc.). As we have seen above, a pastoral herd serves multiple functions:

- It must produce meat and milk for family consumption to sustain the health and growth of the family.
- It must provide a potential source of cash to meet cash demands of the family for health, foods, and veterinary and education costs.

- It must sustain itself through reproduction and grow to offset losses due to drought, disease, and old age.

A herd is composed of animals of different ages and sexes, based on the objectives of the production system or the socio-economic status of the family (Table 4.2). There is no single herd structure: the structure of the herd will depend on the context and the objectives of the herd owner. A herd that has suffered major losses will need to be skewed towards reproductive females to rebuild the herd, whereas a herd being kept more as a capital investment might be skewed towards steers that can be easily sold.

Pastoralists actively manage their herd structure. For example, a typical Borana cattle herd in 1997 was made up of 63% female and 37% male animals (FIC and IIED 2013). In the past, pastoralists used to barter animals. Pastoralists are increasingly buying and selling animals in local markets to manage their herd structures. Pastoralist groups have specific names for animals depending on their

Table 4.2. Different roles served by cattle of different ages and sex

Category	Role
Male and female calves (0–3 years)	These animals represent the future capital of the family's herd.
Heifers (2–5 years)	These animals represent the future cows of the herd that will produce milk and more calves.
Bullocks (2–5 years)	These animals represent the future steers that will be sold to raise cash to pay school fees, buy cereals, etc.
Cows (+ 4–5 years)	The animals are needed to produce milk for the family food needs and sale (fresh or sour milk, butter, etc.). Cows are also needed to give birth to male and female calves.
Steers (+ 4–5 years)	Steers are sold to raise cash to pay for food, school fees, health care (both human and livestock), etc. They may also be used for special ceremonial purposes.
Bulls	A bull is needed to serve cows.

age, sex, and species. This is a reflection of the importance and complexity of maintaining a herd that responds to the needs of the family (Table 4.3).

Table 4.3. Names given to livestock of different ages, species, and sex by different pastoralist groups within Ethiopia (FIC and IIED 2013)

Livestock	Karimojong	Bahima	Afar	Hamer	Borana	Somali
Cattle	Ngibaren	Ente		Wonga /Kolla	Loon	Loo
Cow	Aete	Enzigiza	Sega	Wongo	Seha	Saa
Bull	Emong	Ennumi	Awru	Zia	Korma	Dibi
Ox	Echugat			Bua	Senga	Sagab
Steer	Emong ngolo idongitoi			Ota Gima	Jibicha	Sagab
Heifer	Emayo		Be'ra	Keteb	Goromssa	Qaalin
Calf	Itayok	Enyana	Rugage	Oto	Jebii	Wella
Sheep	Amesek			Yana	Holla	Laha
Ewe	Amesek		E'da	Yano	Hawicha	Lah
Ram	Emesek		Moru	Yata	Elemo	Wan
Lamb	Imesek		Me'rea	Yati Boko	Kerso	Wan
Goat	Akine		Re'ita	Kuli	Lelessaa	Rii/Ari
Buck	Ekoroe		De'behe	Kuli Zeaya	Korpesa	Urgi
Doe	Ameot		Raita	Kulu	Hawiti	Rii
Kid	Ikale		Bukele	Kuli Boko	Karota	Wahar
Camel	Ekaal	Engamiya	Ga'lla	Gamele	Gala	Ga'lla or Geel
Male	Ekaal		Rekuba	Gamalta		Rite
Female	Akaal		A'la	Gamalto		Haal
Young	Ikaal		Nerige	Gamalta Gima	Ogore	Nirig/ Qurbaa

Figure 4.4. Changes in herd composition can alter gender roles. Photo credit: Kate Eshelby

Herd structures are changing in pastoral systems. In some pastoral areas, pastoralists are increasingly keeping male animals for sale on the market as they become increasingly integrated into the cash economy—for school fees, electronic equipment, mobile phones, veterinary drugs, etc. And in East Africa and Uganda today, an increasing number of livestock are owned by non-pastoralists who use them as an investment.

These changes impact men and women in pastoral families differently. For example, fewer female animals in a herd results in less milk being produced for the family. Depending on the amount of milk, the size of the family and the nutritional quality of alternative foods being bought, this might impact negatively on family nutrition, especially of children. Less milk available for sale might also weaken women's economic position within the family and in society at large (Figure 4.4).

Box 4.4. Key points: herd structure

- Pastoralists carefully manage the age and sex ratios of their herds to balance the number and category of animals to meet family needs TODAY while planning for the FUTURE.
- Generally, pastoralists keep more female than male animals so as to get enough milk for the family TODAY while ensuring the birth of future animals TOMORROW.
- In some pastoral areas, herd structures are changing as pastoralists move into a monetized economy. This may have different impacts on men, women, and children within society.

4.2.3 Herd ownership and control

A common misconception of pastoralism is an assumption that a pastoralist caring for a large herd owns and controls all the livestock within that herd. This has contributed to the myth that many herders keep huge livestock herds for prestige or are resistant to selling their animals.

Where the herd belongs to a single family, animals may be owned by different individuals within that family. Animals are gifted to wives, children, or siblings. Therefore, the herder will not be authorized to dispose of those animals without the owner's consent. Specific animals in a herd may also be owned by members of a different family.

Box 4.5. Case studies (FIC and IIED 2013)

Galgallo Jillo is a Borana pastoralist living around Dubluk. He is Abba Ella (Konfi). He is responsible for herding 200 cattle, but he has only 10 cattle over which he has total rights. The remaining 190 are owned by relatives. For these, Galgallo can only make herding decisions .

Sora Arero lives in Dirre and is responsible for 65 cattle, of which only 35 are under his control. The remaining 30 are owned by three other relatives.

Box 4.6. Key points: livestock ownership

- The rights of use and ownership of livestock in a herd is complex. Most herds are composed of animals belonging to several people, and to which different people have different rights of use and ownership categories.
- In East Africa and Ethiopia today, some livestock are owned by people who do not herd them on a daily basis but rather use them as investment. This situation limits the power of the herder to make decisions.
- The above scenarios have often led "outsiders" and casual observers to conclude that pastoralists keep too many animals, and therefore need to destock, e.g., through sale.

Allocating different rights of use over different animals to meet the day-to-day needs of the family helps ensure the future viability of the herd and family. See Chapter 5 for more on how the multiple types of ownership and rights attributed to individuals within and between families over specific animals helps create social capital and forms of mutual obligation and assistance.

Livestock are increasingly owned by non-pastoralist or absentee owners, such as farmers, traders, and civil servants, who see their herds purely as a form of investment. There can be specific risks associated with herds, including a high proportion of animals belonging to non-pastoralist or absentee owners. Absent herd owners limit the power of the herder to make decisions about the size and composition of the herd, and if and when to move to find better pasture or conserve dry season pastures. This situation can be exacerbated with severe drought, when pastoralists must sell cattle in poor conditions for very low prices under duress (as we saw in Chapter 3, this impacts the quality of natural pasture for other pastoralist families).

4.2.4 Livestock health

Livestock diseases are a major constraint in the pastoral areas of Uganda. Even when livestock disease is not fatal, livestock diseases have a significant impact on productivity, fertility, and those of public health concern may lead to quarantines. Mobility has often been the most effective management tool available to manage disease load. For example, moving away from areas with dense vegetation during the rainy season reduces the risk of East Coast fever. Constraints to mobility, as well as lack of access to veterinary services, are the greatest challenge to livestock health in pastoralist areas.

Figure 4.5. Community animal health workers (CAHWs) are community members who have received basic, non-formal training in animal health care and who prevent and treat animal diseases within their communities.

Livestock diseases have major impacts on livelihoods in Karamoja Region and other predominant livestock production regions of Uganda (Table 4.4). In particular, the impacts of tick infestations and tick-borne diseases, trypanosomiasis, peste des petits ruminants (PPR), and foot and mouth disease (FMD) were noted as among the most important in the Karamoja Region (Abebe 2016). In turn, these impacts were attributed to weak and ineffective veterinary service delivery (Abebe 2016). Weaknesses were evident in all components of the veterinary system, including poor facilitative services, weaknesses associated with the quality and sustainability of service providers, poor interactions between actors, and limited coordination (Abebe 2016).

Pastoralists in Karamoja rely on ethno-veterinary knowledge (EVK) to control these common livestock health problems using plant species and non-plant materials. Plant species are distributed over 116 genera and 54 families. Plants such as *Balanites aegyptiacus, Carissa spinarum, Warburgia salutaris*, and *Harrisonia abyssinica* are the most used of all species (Gradé et al. 2009). All different plant parts are used including bark, but underground parts are exploited more frequently than other plant parts. Most remedies listed used a single ingredient, typically soaked in water; only a few remedies used multiple plants. The route of administration is primarily oral, followed by topical applications. Almost all plants are collected from the wild (Abebe 2016; Gradé et al. 2009).

Areas such as Karamoja pose particular challenges for the design of veterinary services, because they are relatively remote, have poor infrastructure, and the

livestock herds are mobile. This situation increases the cost of conventional service-delivery models based on fixed-point facilities and makes the area unattractive for veterinary professionals (Abebe 2016). To address failures in veterinary services delivery, and following the decentralization period of the early 1990s, community-based animal health workers (CAHWs) were promoted by the government of Uganda and several NGOs. To date, there are several avenues through which animal health services can be accessed: government and private sector (CAHWs, backpack drug suppliers, and traditional healers).

Table 4.4. Livestock diseases and ethno-veterinary extracts used to control them

Karimojong name of disease	Scientific name	Plant	Karimojong name	Preparation
Loukoi	Contagious bovine pleuropneumonia	*Aloe tweediae*	Ecucuka	Water extract
Lokit	East Coast fever	*Aloe tweediae*	Ecucuka	Water extract
Lopid	Anaplasmosis	*Alium Cepa*	Ekitunguru	Water extract
Lonaru	Lumpy skin disease	*Acacia Abyssinica*	Eminit	Water extract, whole plant
Lotide	Anthrax	*Protea gaguedi*	Lolac	Water extraxt
Ewonokori	Blackleg	*Capparis spp.*	Lokecumani	Water extract
Ngikur	Intestinal parasites	*Cissus quadrangularis*	Egigith	Water extract, stem
Emadang/Singor	Tick infestation	*Euphorbiaecaea*	Jeriman	Water extract, whole plant
Ediit	Trypanasomiasis	*Aeollanthus spp.*	Lotuko	Water extract
Lokou/Chemuloi	Heartwater	*Euphorbiaecaea*	Jeriman	Water extract, whole plant
Lookot	Contagious caprine pleuropneumonia	*Aloe tweediae*	Ecucuka	Water extract
Emitina	Mange	*Albizia amara*	Ekwakwa	Oil extract
Etom	Pox	*Acacia spp.*	Ewalongor	Water extract
Akiurut	Diarrhea	*Acacia drepanolobium*	Eyelel	Water extract

Source: Gradé et al. 2009

The research by Abebe (2016) compared the animal health service providers in Karamoja in terms of accessibility, availability, affordability, quality, and acceptability (Table 4.5). The CAHWs were found to be more accessible, available, and acceptable compared to other service providers (Abebe 2016).

Table 4.5. Ranking of animal health services providers in the Karamoja Region

	Median score (range)						
		Private					
Indicators	Govt. Vet	Private Vet. Pharmacy	CAHWs drug shop	AHO*	CAHW	Backpack drug supplier	Traditional healer
Accessibility	2 (0–3)	5 (0–7)	8 (6–10)	7 (6–8)	10 (9–12)	5 (4–12)	13 (11–15)
Availability	2 (1–2)	6 (0–12)	11 (10–15)	11 (7–13)	8 (7–10)	7 (4–9)	5 (4–7)
Affordability	9 (9–10)	6 (5–6)	7 (6–7)	6 (5–6)	6 (4–6)	9 (8–9)	9 (8–10)
Quality	10 (8–10)	12 (11–13)	10 (8–10)	10 (9–11)	8 (6–8)	3 (1–3)	1 (0–2)
Acceptability	5 (3–6)	5 (4–6)	10 (8–11)	5 (4–6)	16 (14–18)	1 (0–2)	9 (9–11)

*Animal husbandry officer
Source: Abebe 2016

4.2.5 Livestock feed

Livestock fodder can come from natural pasture (grasses, shrubs, and browse plants), fodder crops (such as alfalfa), crop residues (such as maize, sorghum, cotton, or sugar cane), hay, and industrial byproducts (such as molasses and cottonseed cake). Here we consider hay as a livestock feed, and some of the opportunities and constraints it provides.

Hay as feed for livestock in the drylands of Uganda

Hay is grass harvested during the rainy season while still green and before it has produced seeds. This grass is then dried and transported to a barn to keep it dry before it is used. Hay is a very nutritious source of feed if properly harvested and stored.

In some pastoral groups (e.g., Borana in Ethiopia and Karimojong in Uganda), women are practicing haymaking on a small scale to feed small and sick animals during the dry season. Haymaking is also increasingly popular near large urban centers and in other parts of the cattle corridor, where zero-grazing livestock keepers pay people to harvest natural pastures, especially along road reserves and wetlands, to feed urban-based livestock.

While there are benefits associated with haymaking in the drylands of Uganda, there are considerable constraints and costs associated with the production and use of hay and other fodder crops for pastoralists:

- Haymaking requires a lot of labor during the rainy season to harvest, dry, transport, and store. Not all families may have enough spare labor to do this or the means to transport the hay. It also takes labor away from managing the herd to access nutritious pastures.

- Haymaking requires capital investments, which may not be available to every family: tools to cut the hay, a means to transport the hay, a barn or place to store the hay to keep it from getting wet. Many pastoralists are mobile, and thus moving the large quantities of hay may be difficult.

- A lot of hay is required to feed livestock during the dry season.

- Haymaking can cause conflict if it involves harvesting fresh grass from common property areas used by other members of the clan or group. Some groups consider this a form of privatization of the common property pastures.

- The hay has to be harvested while still green and before it produces seeds, because once grass begins to produce seeds, its nutritional value declines. This results in a depletion of the seed stock in the ground.

In Chapter 3 we saw the impact of rainfall, soil, fire, and livestock on the quality as well as the quantity of pasture, the relative advantages of annual grass species vs. perennial grass species, and the importance of browse to maintain livestock health and growth. Pastoralist indigenous knowledge of fodder plants is extensive and an essential component of herd management. Women may be the first to notice when the quantity or quality of pasture starts to impact the herd, through the quantity and quality of milk they are able to take from the cow, and the impact on the calves under their care.

4.3 CONSTRAINTS TO LIVESTOCK PRODUCTION

The growth rate of a herd is the net value of the increase in herd size (due to birth, buying new animals, animals gifted into the herd, inheritance, loans into the herd, etc.), less the rate at which animals leave the herd (due to death, sales, slaughter for meat, gifts out, etc.).

In the short term (two to three years), it is possible that a herd can grow in size quite quickly. In the longer term (20 years), the natural growth rate of livestock is

relatively slow, and there are many constraints affecting the rate at which a herd can grow. It is important to understand what these constraints are and their impact on the herd and the pastoral family.

Different types of animals have different reproductive rates: sheep and goats often have twins and have a shorter birth period than cattle or camels, so their numbers can grow much more quickly (Table 4.6). Diet and disease can affect reproductive rates. Poor nutrition and drought will lead to longer birth intervals, and mortality will be highest among calves due to lower milk production. Other factors that impact the rate at which a herd can grow include:

- Diseases (livestock to livestock and/or wildlife to livestock);
- Severe drought;
- Raiding, particularly in certain areas;
- Access to markets/social networks;
- Labor shortages.

In good years, livestock increase in number, but in bad years they die. Every year animals are also sold to raise money to buy food, pay school fees, and cover health expenses, or animals are used for social fuctions like marriage ceremonies, funeral rites, and other rights of passage, among others. The natural growth rate of a herd over a 20-year period is thus very slow in Uganda and elsewhere, and it is very difficult for pastoralists to double the size of their herds, unless they buy animals in high quantities or go raiding. See Table 4.6.

Table 4.6. Typical average annual growth rates of pastoral livestock herds over a 20-year period. Based on data and estimates from arid northern Kenya (Dahl and Hjort 1976).

Species	Growth in number of animals (%)
Camels	1.5
Cattle	3.4
Sheep	18
Goats	33

Livestock production and productivity indicators

Indicators used to record productivity in livestock include: age at first calving, calving interval, maturity period, weight gain, quantity of milk, lactation period, and productivity period, among others (Knodel 2018; Rahim 1997; Kaufmann 2005; Wario et al. 2016; Wilson 1982). During this inquiry, there was a paucity of studies specific to the pastoral areas of Uganda. Therefore the data presented here are from related comparable pastoral regions; for example, northern Kenya and southern Ethiopia (Tables 4.7, 4.8; Figure 4.6).

Table 4.7a. Age at maturity and period of productivity of livestock species

Livestock species	Maturity period+	Productivity period+
Cattle (East Africa)	10–22 months	10–12 years
Sheep (East Africa)	5–12 months	6–7 years
Goats (East Africa)	4–12 months	6–7 years
Camel (Saudi Arabia)	3 years	5–10 years

+The lower age limits represent fast growing breeds (improved), while the upper are for indigenous breeds. Source: Knodel 2018; Rahim 1997.

Table 4.8. Age at maturity and period of productivity of livestock species

Livestock species	Age at first caving (months)	Calving interval (months)
Cattle (Ethiopia)	52–56	17–19
Sheep (Sudan)	18	8.6
Goats (Southern Africa)	12–36	6.8–21
Camel (Kenya)	48–84	18–24

Sources: Kaufmann 2005–camels; Gwaze et al. 2009–goats; Wario et al. 2016–cattle; Wilson 1982–sheep

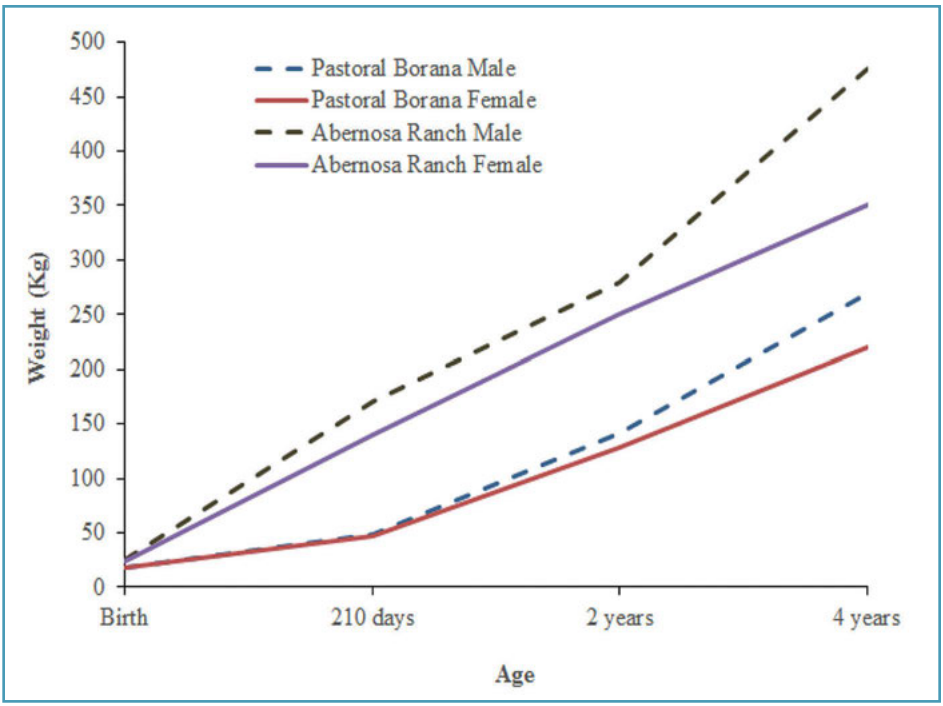

Figure 4.6. Cattle weights under different grazing conditions.

4.3.1 Herd dynamics and drought

While disease, labor, and other factors play a role in the potential growth rate of livestock herds, the **major factor limiting herd growth over time is the dynamics of natural pastures**. Even if disease and raiding are removed, the seasonal and annual variations in the nutritional **QUALITY** and, to a lesser extent, the quantity of pasture are still a major factor limiting the growth of livestock numbers in the pastoral areas of Uganda. **Drought** is arguably the most important determining factor of all. As a result, pastoralists have developed a number of strategies to respond to drought to mitigate livestock losses where possible (Oba and Lusigi 1987).

The main strategy to mitigate for variation in pasture quality and quantity is **MOBILITY**. Before looking at mobility in detail, we will look at specific responses in pastoral areas to severe drought.

Pastoralist drought-response strategies

A severe drought occurs when rainfall fails over one or more rainy seasons. In a drought, even if some rain falls, this will be more scattered and unpredictable in

time and space, and there will be less biomass and water available at the start of the following dry season. Pastoralists will need to move their animals more often and over longer distances in search of pasture, and some may move very long distances to "drought-refuge" areas. These conditions result in a deterioration in both livestock and people under stress from poor diet, higher susceptibility to disease, and a greater risk of death due to malnutrition, dehydration, and poor immunity.

In the marketplace, livestock prices will decline and then collapse, initially due to the poor condition of livestock and later due to the market being flooded with animals in poor condition. For pastoralists, this means they must sell more animals to purchase the same amount of grain or other products, resulting in unfavorable terms of trade.

Pastoralists have a number of different strategies to respond to drought conditions:

- Being mobile. Sometimes the whole family will move with the animals, at other times not. Those who remain, often the women, children, elderly, and sick or infirm will move to a nearby town.
- Looking for alternative sources of income through petty trade, manual labor, or migration to towns and cities.
- Selling livestock to purchase food (in spite of the poor terms of trade).
- Splitting their herds, keeping milking cows and weakened stock at the homestead close to water, and feeding them with supplementary fodder wherever possible.
- Loaning animals "surplus" to subsistence requirements to family and friends to help them rebuild their herds and develop social relations as a form of social capital as a hedge against drought and other risks. This also allows families to maintain a functional balance between herd and family size.
- Slaughtering calves to reduce the stress on their dams.
- Rebuilidng the cattle herd by raising and selling small stock.
- Gathering wild produce (such as berries, fruits, and leaves to supplement their diet or to sell at market).

- Negotiating access to private ranches and farms where the animals can graze on crop residues, and in return provide manure and improve soil fertility.

These responses are in contrast to advice often given to pastoralists to sell their animals before prices collapse during a drought, as well as to stay in one place to facilitate the delivery of food aid, medicine, tents, and blankets. However, there are a number of factors that make it **difficult for pastoralists to sell their animals before or during drought**.

Drought only occurs some time after the end of the dry season, i.e., when rains fail to arrive for one or more rainy season. While forecasters are getting better at predicting drought, such predictions still only occur some months or weeks before the rains are due, i.e., during or towards the end of the dry season. It is common for livestock to lose weight during the dry season, and many breeds found in pastoral areas are well adapted to put on weight very quickly once pasture becomes available again (**compensatory growth**). Since livestock have already lost weight by this time, when a drought hits, pastoralists are already facing poor terms of trade. It may make sense for a livestock owner to sell animals that are already in a very weak condition and likely to die, but such animals may not be able to make the journey to reach a market, reducing their value still further. An animal that looks strong enough to survive a few more weeks would quickly regain weight and condition once rains begin. As a result, pastoralists prefer to "hang on" to their animals and try and keep them alive (particularly young breeding stock), as these animals will reproduce quickly and allow them to rebuild their herd after the drought. **Pastoralists who manage to save as many animals as they can during the drought are in a stronger economic position than those who have few animals.**

Once the rains come, pastoralists know it quickly becomes prohibitively expensive to purchase livestock at the market, particularly in the case of fertile female animals, due to high demand and improved condition. Those pastoralists who have sold all or most of their animals will be very poor and will find it difficult to afford to buy such animals from the market. Furthermore, the livestock available in the market are unknown and likely to be those animals that have been sold off first, ones known to be poor milk producers, have low fertility, or to have suffered disease.

Thus, pastoralists who follow the advice of selling animals are at high risk of being stuck in a "**poverty trap**," unable to buy replacement animals and with a herd too small to support the family. **Complex ownership and use rights**, and **the age structure and sex-ratio of herds** are additional factors that may make it difficult for pastoralists to sell animals before or during drought.

Those who have kept enough animals alive, on the other hand, will enjoy favorable terms of trade at the market and will have a herd that can quickly multiply and grow due to the observed peak in fertility following drought. During drought years, it is thus critical to save the herd's core breeding animals. Families that are unable to retain their core breeding stock are effectively pushed out of the pastoral system and must find alternative livelihoods.

Box 4.7. Livestock marketing and drought

Pastoralists have sound economic reasons not to sell their livestock immediately, particularly when drought is very severe, as many pastoralists lose many animals and can become destitute. This is a social and economic tragedy, and needs to be addressed.

Drought responses that seek to help pastoralists preserve their breeding stock are more effective than conventional drought-response mechanisms based on delivery of food aid. Food aid benefits the poorest, but providing animal feed, veterinary inputs, and destocking helps in recovery and in rebuilding the herd post-drought (Abebe et al. 2008). Commercial destocking (often supported with loans to traders from development agencies) involves offering a fair price to pastoralists to buy livestock during drought, often facilitating purchases farther from markets than traders would normally reach, and purchasing more livestock than would otherwise be bought (Morton 2013). The reduction in livestock numbers increases the chances of survival for the remaining animals and provides much-needed cash to buy grains, veterinary supplies, and livestock feed (Abebe et al. 2008).

There are strong economic reasons to explain why pastoralists do not sell all their animals when a drought starts. It makes good sense for them instead to move in search of pasture, as those pastoralists who manage to save as many animals as they can during the drought are in a stronger economic position than those who have few animals. They can sell a few animals at a high price to buy relatively cheap cereals, thus reducing the pressure of the family to rely on the herd (for milk, sales, etc.).

Box 4.8. Key points: herd dynamics and herd growth

- The natural growth rate of a pastoral herd is slow. In the long run, there are many constraints—environmental, nutritional, health, and human-related—that affect the rate at which a herd can grow.
- BUT the major consistent factor limiting herd growth in the drylands of Uganda is highly variable nutritional quality of natural pastures.
- There are strong economic reasons to explain why pastoralists do not sell all their animals at the start of a drought. The main reason is the need to save the core breeding stock in order to be able to rebuild herds when the rains return.
- Conventional drought-response mechanisms based on delivery of food aid are less effective than those seeking to help pastoralists preserve their breeding stock.

4.4 MOBILITY AS A MANAGEMENT TOOL

Mobility is a very important strategy used by pastoralists to respond to the variability, unpredictability, and the dispersed nature of pastoral resources (IIED/SOS Sahel 2009; Niamir-Fuller 1999). It is thus important to understand how it works and how it affects different members of the family in different ways.

Non-pastoralists often classify mobility among pastoralists by the degree or extent of the movement:

Nomadic/nomadism: used to describe very extensive mobility over great distances and many years. Nomadism also implies that the entire family moves with the herd, and the family practices pastoralism uniquely. Nomadism is also said to be mainly found in very arid regions, where forage resources are patchy and highly irregular from year to year.

Transhumant/transhumance: used to describe the more regular movement of herds between well-defined wet and dry season pastures in order to exploit the seasonal availability of pastures. Transhumance may be horizontal; for example, moving from north to south following rainfall variations or vertical; for example, moving higher in elevation.

Pastoralists, however, describe mobility differently. Mobility is defined according to its **objective** (and not its extent), and pastoralists have rich and detailed vocabulary to describe specific types of and reasons for mobility (Table 4.9).

Table 4.9. Terms used by different pastoral groups for different types of mobility

Objective of mobility	Borana	Afar	Somali	Hamer	Karimojong
Resource management: search for pasture and water	dheedumsa	leda-guran	hayan	beriqe (bona weda)	arebokin
Moving to new pasture to preserve dry season grazing	godaansa dheeda	budda	naq raadis	darensa	awotokin
Moving due to insecurity	baqa	Dabo	baqo	shaookee	awotokin anaosia/asuro
Moving for social ceremonies	godaansa jila	-----		misha weda	alosit nasuban /eloto
Moving to prevent disease and find a clean place for livestock		gaba gurro		shaookee	awotokin alodeke
Move to salt and minerals		Beda		kooti weda	awotokin lodoot/ asamar
Move at the start of the rains for fresh pasture	dheeda badheesaa	-----		bargi weda	awuotun

There are four main reasons why pastoralists are mobile. They are listed below.

1. To maintain high livestock productivity

Mobility is critical to access the most **NUTRITIOUS** pastures in different geographical or ecological areas within and between seasons. While livestock mobility is increasingly recognized to be important in the drylands, many people think it is driven by pasture scarcity, i.e., pastoralists move to areas of new pasture when the area in which they are grazing their animals runs out of pasture. However, mobility is a strategy used throughout the year:

- **At the very beginning of the rainy season:** The first rains after the long dry season are very scattered. This is therefore a moment of great mobility as pastoralists move quickly to lead their animals to the fresh new grass that has not yet been trampled or eaten by other livestock. Animals are weak after the long dry season, and pastoralists want them to put on weight as soon as possible. When these early rains come, livestock do not want to eat the dry biomass anymore. They can "smell" the fresh grass, which is more nutritious.

- **Throughout the rainy season:** At this moment there is plenty of pasture, but livestock are constantly on the move to find the **best-quality pastures** that are available and to avoid those areas that have become over-congested or where pastures have been trampled or soiled by other animals. They also move to find other resources such as salt or to avoid wildlife (e.g., during the calving of wildebeest when there is a high risk of malignant catarrhal fever).

- **Throughout the dry season:** Here mobility is often more constrained and limited by pastoralists' access to a permanent water source. So long as there is available pasture and water, livestock will move on a fairly regular basis between the water source and the available pastures. Occasionally, if pastures run out and/or the water source dries up or breaks down, there will be exceptional movements to find another permanent water point with available pasture.

In some pastoral systems (e.g., the Baggara of Sudan), dry season movements can be very extensive, enabling livestock to access fresh pastures from specific ecological niches, when all around the rangelands are dry. In other systems, mobility is limited within years to a few hundred square kilometers (present-day Karamoja Region) but may extend considerably farther during drought periods, as happened in 2009 when Maasai in Laikipia negotiated access to graze on crop residues among the Kikuyu and Meru communities living near Mount Kenya (Letai and Lind 2013).

2. To avoid problems to their livelihoods

Such shocks include disease, insecurity, wildlife, or periodic droughts or floods. It may not be possible to predict where and when they will occur, but such shocks are a characteristic of pastoralist areas, and responding to them is a part and parcel of their management system.

3. To access markets within and between countries

Markets are very important to pastoralists; this is where they sell livestock and other animal products, where they purchase food and other items, and where they share and collect information. Markets are often far from the rangelands, requiring long treks. The advent of mobile phones has allowed pastoralists to get information about livestock prices at markets around the country and across borders. Maintaining clear livestock routes between major markets and grazing areas allows livestock to maintain their condition and weight, getting better prices from traders.

4. For social and cultural reasons

Families, clans, and individuals traditionally maintain reciprocal arrangements through marriages, baptisms, festivals, etc. These arrangements are an important part of negotiating access to pasture and water at times of need and are therefore an integral part of the management of pastoral systems.

Mobility has particular implications for women in pastoralist societies, who may take on different roles or experience greater workloads:

- Greater responsibility for looking after livestock. When men go away with the larger herd, women are responsible for looking after the remaining animals. They have to do this in addition to their usual duties.

- Greater insecurity for women remaining at the homestead to protect their herd and their remaining family.

- Greater responsibility for looking after the welfare of the family that remains, such as finding food and looking after the sick.

Women whose husbands have gone away play a greater role in family and even community-level decision-making processes such as negotiations with outsiders seeking access to the community's water and pasture resources.

Box 4.9. Description of mobility by the Karimojong in Uganda

Karimojong pastoralists categorize migration as either short term or long term. Short-term migration is usually triggered by regular seasonal changes, whereby herders temporaily migrate to a new location to access pasture, water, or salty grass. Once the rains reappear, they return to their place of residence. Long-term migration on the other hand is triggered by climate extremes such as extended dry spells and droughts. In this case, migrating groups move far away from their places of residence in search of pasture and water. They stay for extended periods of time. Sometimes they return to their places of departure in small numbers when the climatic extreme subsides, or they may never return (IG 2017).

Generally mobility is refered to as *AWOSI* by the Karimojong, while *AKISAM* is used to describe wet season migration that is less extensive in terms of distance and that is motivated by the search for salty pastures (IG 2017).

Historical migratory routes and patterns in Karamoja have changed considerably over time. Most migrations are now short term and often limited by administrative borders, as opposed to the past when long-term and long-distance migrations were more common. Migratory patterns have been affected by new settlements and competing land uses along traditional grazing routes, as well as border disputes. At the same time, migratory routes have changed as a result of the increased availability of water resources in the districts (IG 2017).

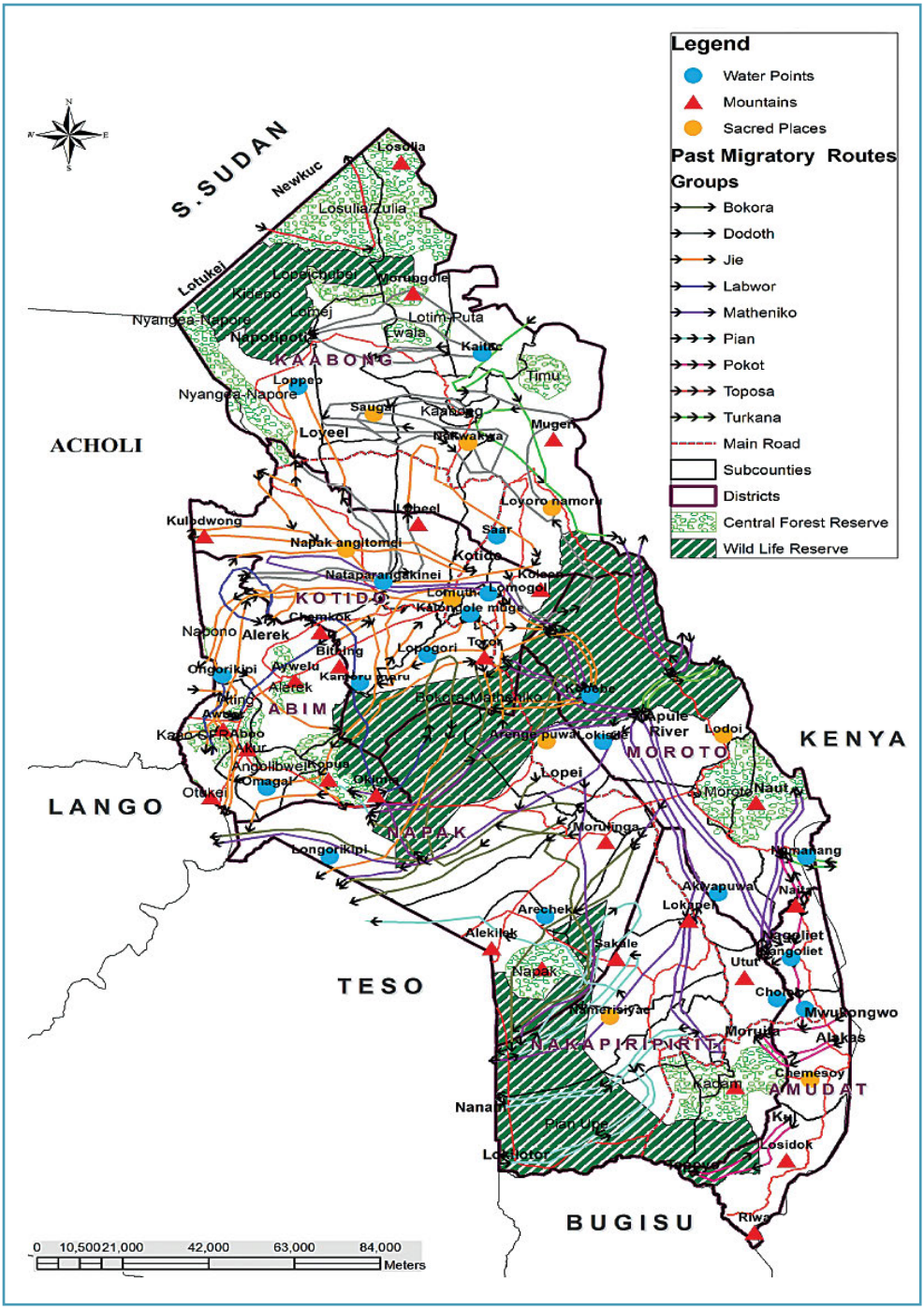

Figure 4.7. Past migratory routes in Karamoja (1950–2004). Source: IG 2017.

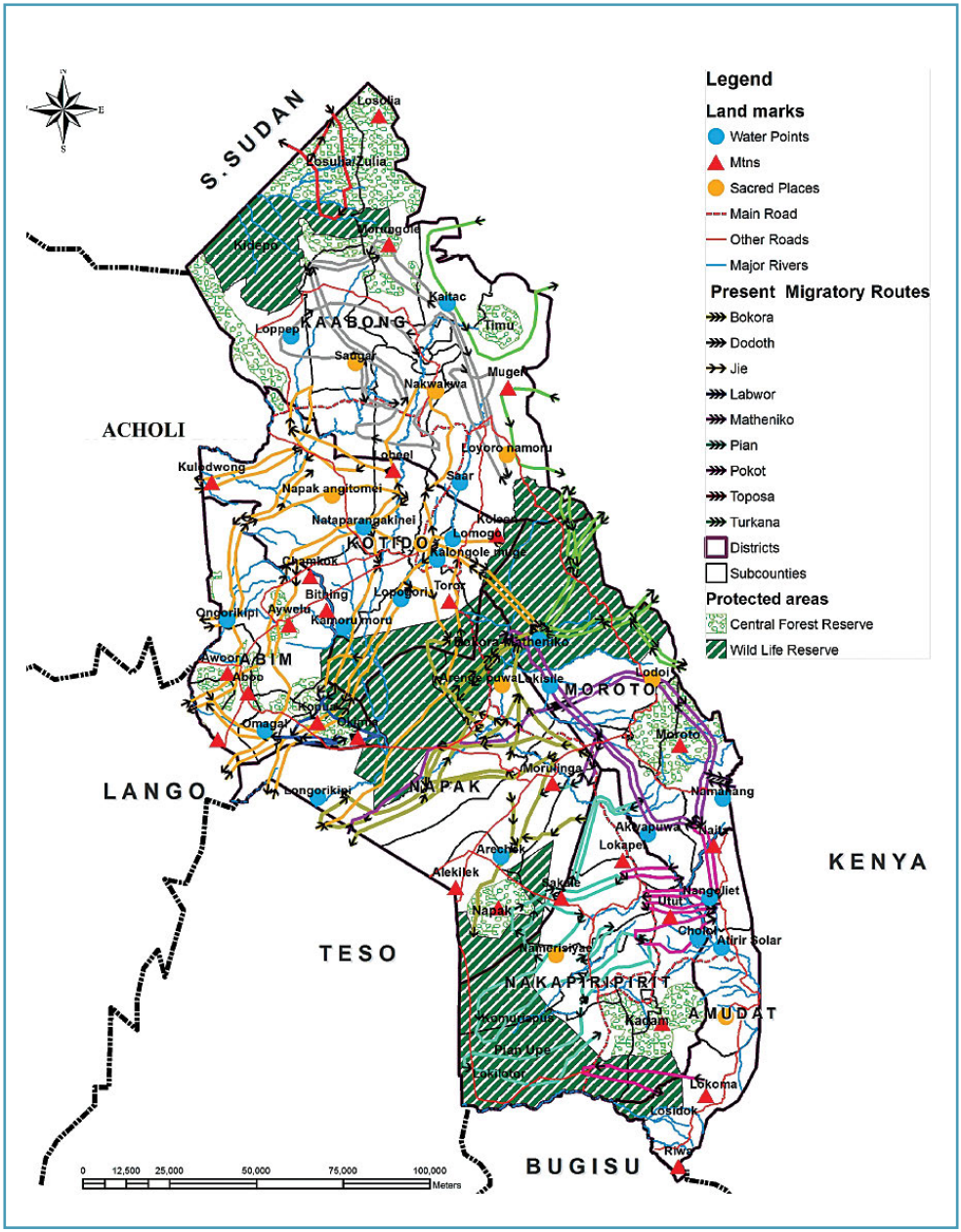

Figure 4.8. Present migratory routes in Karamoja (2000–2016). Source: IG 2017.

A case study comparing the sedentary agro-pastoralists and nomadic pastoralists (the Baggara) in the arid areas of Sudan demonstrates that livestock productivity is better in the latter group because the mobility permits their livestock to benefit from fresh and pastures available in differenr areas at different times (See Box 4.10).

Box 4.10. How does mobility impact the productivity of livestock? (Wilson and Clarke 1976; Behnke 1985a)

In 1973, two animal scientists working for the Minister of Agriculture, Democratic Republic of the Sudan conducted research over 14 months to investigate the impact of mobility on productivity. The researchers studied seven cattle herds, four that were mobile (546 animals), and three that were sedentary (149 animals). At the beginning of the study, all the animals in the 7 herds were tagged, weighed, and their history collected from the owners. Over the year, the adult cattle were weighed four times, while calves were weighed more frequently at six- to eight-week intervals. The results are in the table below.

Productivity of sedentary and mobile livestock in southern Darfur

7 herds: 3 sedentary and 4 mobile	Sedentary (149)	Mobile (546)
Meat production per kg of breeding female	0.023 kg	0.057 kg
Calving rate	45%	65%
Total deaths	35%	15%
Calf deaths	40%	11%

The mobile livestock belonged to a group of pastoralists called the Baggara, while the sedentary livestock belong to a group of agro-pastoralists living near the town of Nyala in the northern part of Darfur.

At the start of the rainy season, the Baggara are in the south in their "home area," which is a swampy area during the rainy season. When the rains come, they and their livestock are driven out by the mud and biting flies, but they also follow the rains that in the Sahel move along a south-north axis. By following the rains, the animals are able to eat fresh green grass that is high in nutrients.

Continued on next page

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The Baggara spend the wet season in the north benefiting from the fresh pastures, but once the rains stop and the northern pastures begin to dry out and lose their quality, they start to move south following seasonal rivers. Here their animals benefit from the fresh growth that is sprouting as the waters recede.

The Baggara slowly follow these riverine pastures until they reach their home areas where they burn the existing vegetation to get more fresh pasture.

In contrast, the agro-pastoral livestock that stay in the north all year long only benefit from nutritious pastures in the rainy season. For the rest of the year, they have to feed on poorer- quality pastures. This explains why they are less productive than the mobile livestock who feed on highly nutritious pasture throughout the year.

4.4.1 Constraints to mobility

Pastoralists are currently facing a number of constraints to their mobility, which are blocking grazing routes and promoting pastoral sedetarization (Fernandez-Gimenez and Le Febre 2006; IIED/SOS Sahel 2009). These include:

- Conversion of rangeland to alternative land uses (Box 4.11).
- Establishment and enforcement of political and administrative boundaries.
- Fencing.
- Insecurity and conflict.
- Increased labor costs.
- Development of stationary goods and services such as waterholes, schools, and medical facilities.
- Social change.

Box 4.11. Changes in land use that reduce livestock mobility

These include:

- For cultivation, including irrigation schemes.
- Conservation uses such as national parks, e.g., Kidepo Valley National Park, Bokora-Matheniko Wildlife Reserve, Pian-Upe Wildlife Reserve.
- Research centers like Nabuin.
- Settlements due to urbanization and creation of districts and other lower-level local administrative units.
- Mining areas.
- Road construction.

These constraints have consequences for pastoralists, the environment and pastoralism, many of which have been introduced in Chapter 3. These include:

- Reduced livestock productivity. In the drylands, mobile livestock are more productive than sedentary livestock (see example the case study in Box 4.10).
- Overgrazing and soil erosion.
- Reduced soil fertility where animals no longer graze on crop residues; salinity in the case of irrigation.
- Increases in the prevalence of both human and livestock diseases, as populations are constrained to settlements, and livestock are unable to leave areas during tick infestations or disease outbreak.
- Increase in conflict due to increased competition for resources.

Box 4.12. Key points: pastoral mobility

- Pastoral mobility has four key objectives:
  - To maximize productivity;
  - To access markets;
  - To avoid danger, threats, and shocks;
  - To participate in social and cultural events.
- Mobility is difficult but carefully planned; it is not haphazard.
- Mobility impacts men, women, and children in different ways.
- Mobile livestock are more productive than sedentary livestock under dryland conditions of variable resources.
- Livestock mobility today is seriously constrained, resulting in:
  - Lower livestock productivity;
  - Increased environmental degradation;
  - Conflict.

4.5 INFLUENCE OF POLICIES ON HERD DYNAMICS

In Uganda, the share of allocation of the national budget to the agriculture, to which the livestock industry belongs, declined from 3.9% in 2017/18 to 3.7% in 2018/19 budget estimates (Owor 2018). A deeper critical analysis of budget provisions for the agriculture sector in African countries reveals that the livestock sector generally receives comparatively less attention than the crop sector, thus reflecting emphasis on the latter (IPST 2004). In addition, there is always poor information on the role that livestock could play in securing livelihoods and its contribution to the overall economy. The paucity of information is compounded when it come to the precise contribution of pastoralism to the national economy of Uganda.

At the policy level in Uganda, pastoralism, and specifically herd dynamics, may be affected by:

- **National Animal Genetic Resources Centre and Databank (NAGRC&DB).** NAGRC&DB is mandated by the government through

the Animal Breeding Act, 2001 to implement the national breeding plan, including the conservation and sustainable utilization of animal genetic resources (AnGR). However, the the national breeding program is skewed toward upgrading the genetic potential of the local/indigenous breeds. These programs usually target a particular attribute like milk production (dairy breeds) or meat production (beef breeds). With intentions to increase productivity, state policies encourage livestock farmers to upgrade local genotypes towards high-yielding exotic dairy/beef cattle. If not appropriately planned, this is likely to result in loss of local genetic diversity, which is well endowed with resilience to local climatic conditions, endemic diseases, and feed resource constraints (Kabi et al. 2015; Ssewannyana 2004).

- Transaction costs. Infrastructure for marketing of livestock and products is lacking at the primary, secondary, and tertiary markets. There is also insufficient market information for traders. In general, primary and secondary markets are in the hands of private individuals who run the markets. All livestock movements to/from markets require movement permits, which are usually free, although a small fee is sometimes charged.

- **National Agricultural Research Systems (NARS).** Most of the research in agriculture is geared towards crop production. Most of the research work done in livestock has been in breeding related to disease, nutrition, and production. Studies regarding AnGR have been biased toward phenotypic characterization and, to a lesser extent, genetic and molecular-genetic characterization. Available funding for livestock breeding research is limited, and this is particularly responsible for the limited progress hitherto achieved in the genetic improvement of AnGR. On the other hand, as a result of better funding for research in the genetic improvement of crops, higher plant yields have been realized in the last decade. Today the need to fund research related to conservation, utilization, and development of AnGR clearly stands out as a priority area. The livestock sector has generally received little research attention, and specific research on pastoral production systems in Uganda is clearly lacking.

- Animal health. Animal disease and low productivity are one of the key problems facing livestock keepers. Of particular note are Newcastle disease in poultry, African swine fever in pigs, and foot and mouth disease in cattle (FAO 2005) Moreover, outbreaks of certain livestock diseases may lead to decimation of the herd and sometimes result in the institution of quarantines, which further affects livestock mobility and marketing.

- Veterinary services. In an analysis done by Abebe (2016) for Karamoja, veterinary services are provided by both the private sector and government. Private sector actors include veterinarians, animal husbandry officers (AHOs), animal health technicians (AHTs), community-based animal health workers (CAHWs) working individually or as associations, traditional healers/medicines, and untrained "backpack" traders. Currently, government, through the Veterinary Act, recognizes only veterinarians as veterinary service providers. However, the latter category was rated as the least accessible and available service provider. The service provided by them was limited to vaccination and tsetse control, but these were viewed as insufficient and inconsistent, explaining their poor accessibility and availability ratings. Government veterinarians were rated high for quality of service due to the advice they offered. However, vaccination was seen as low quality due to repeated disease outbreaks and insufficient coverage. Additionally, under the Decentralisation Act, local governments are responsible for the delivery of services. The system forced most veterinarians into private practice while deploying government veterinarians to local levels. These veterinary service providers found themselves under supervision of the local officials with lower academic qualifications. This hierarchical structure generates conflict (FAO 2005).

- Furthermore, animal health services are generally considered inaccessible and, when available, overly expensive, due to the need to pay both for drugs and transport (FAO 2005).

REFERENCES AND FURTHER READING

Abebe D. 2016. Veterinary services in Karamoja, Uganda. A review. Karamoja Resilience Support Unit. USAID Kampala.

Abebe, D., A. Cullis, A. Catley, Y. Aklilu, G. Mekonnen, and Y. Ghebrechirstos. 2008. Impact of a commercial destocking relief intervention in Moyale District, southern Ethiopia. *Disasters* 32(2): 167–189. **www.disasterriskreduction.net/fileadmin/user_upload/drought/docs/Abebe%20et%20al%20Destocking%20paper.pdf**.

Abegaz, S., D. Tiyo, and L. Gizachew. 1996. Compensatory growth in Horro lambs of Ethiopia. In Proceedings of the Third Biennial Conference of the African Small Ruminant Research Network UICC, Kampala. **www.fao.org/wairdocs/ilri/x5473b/x5473b1p.htm#compensatory growth in horro lambs of ethiopia**.

Angassa, A., and F. Beyene. 2003. Current range condition in southern Ethiopia in relation to traditional management strategies: the perceptions of Borana pastoralists. *Tropical Grasslands* 37 (1): 53–59. **www.tropicalgrasslands.info/public/journals/4/Historic/Tropical%20Grasslands%20Journal%20archive/PDFs/Vol_37_2003/Vol_37_01_03_pp53_59.pdf**.

Behnke, R. H. 1985a. Open-range management and property rights in pastoral Africa: A case of spontaneous range enclosure in South Darfur, Sudan. ODI pastoral development network paper 20f.

Behnke, R. H. 1985b. Measuring the benefits of subsistence versus commercial livestock production in Africa. *Agricultural Systems* 18 (2): 109–135.

Cossins, N. J. 1984. The productivity and potential of pastoral systems. Ethiopian Rangelands Programme, International Livestock Centre for Africa (ILCA), Addis Ababa.

Dahl, G., and A. Hjort. 1976. Having herds: Pastoral herd growth and household economy. Department of Social Anthropology, University of Stockholm.

de Leeuw, P. N., P. P. Semenye, C. P. Peacock, B. E. Grandin. 1991. Productivity of cattle and smallstock. In S. Bekure, P. N. de Leeuw, B. E. Grandin, P. J. H. Neate, eds. Maasai herding: An analysis of the livestock production system of Maasai pastoralists in eastern Kajiado District, Kenya. ILCA Systems Study 4, 83–100. ILCA, Addis Ababa. **www.fao.org/wairdocs/ilri/x5552e/x5552e09.htm#chapter%207:%20productivity%20of%20cattle%20and%20smallstock**.

FAO. 2005. Livestock sector policy brief, Uganda. Food and Agriculture Organization of the United Nations. Livestock Information, Sector Analysis and Policy Branch. **www.fao.org/tepref/AG/RESERVED**

Feinstein International Center, Tufts University (FIC) and International Institute for Environment and Development (IIED). 2013. Pastoralism and pastoral policy in Ethiopia. Facilitators manual Module 1. Feinstein International Center, Friedman School of Nutrition Science and Policy at Tufts University and International Institute for Environment and Development.

Fernandez-Gimenez, M. E., and S. Le Febre. 2006. Mobility in pastoral systems: Dynamic flux or downward trend? *The International Journal of Sustainable Development and World Ecology* 13 (5): 341–362.

Gradé J. T., J. R. S. Tabuti, and P. Van Damme. 2009. Ethno-veterinary knowledge in pastoral Karamoja, Uganda.

Gwaze, F. R., M. Chimonyo, and K. Dzama. 2009. Communal goat production in Southern Africa: A review. *Tropical Animal Health and Production* 41 (7): 1157.

IIED and SOS Sahel. 2009. *Modern and mobile. The future of livestock production in Africa's drylands.* Edited by de Jode, H. **http://pubs.iied.org/12565IIED.html**.

Institutional and Policy Support Team (IPST). 2004. Institutional and policy support to the livestock subsector in Africa: Regional overview of a preliminary consultation in the Greater Horn of Africa. African Union/Interafrican Bureau for Animal Resources., Nairobi. **http://www.cape-ibar.org**.

Kabi F., V. Muwanika, and C. Masembe. 2015. Indigenous cattle breeds and factors enhancing their variation, potential challenges of intensification and threats to genetic diversity in Uganda. Animal genetic resources, 1–12. DOI: 10.1017/S2078633615000326.

Kaufmann, B. A. 2005. Reproductive performance of camels (*Camelus dromedarius*) under pastoral management and its influence on herd development. *Livestock Production Science* 92 (1): 17–29.

Knodel, R. 2018. How to know a cow is ready to be bred? **https://www.wikihow.com/Know-when-a-Heifer-or-Cow-Is-Ready-to-Be-Bred#The_Cow_sub**.

Krätli S. 2007. Cows who choose domestication. Generation and management of domestic animal diversity by WoDaaBe pastoralists (Niger). PhD thesis, Institute of Development Studies, University of Sussex, Brighton, United Kingdom.

Krätli, S. 2015. *Valuing variability: New perspectives on climate resilient drylands development.* IIED: London. Edited by H. de Jode. **http://pubs.iied.org/10128IIED.html**.

Krätli, S., and N. Schareika. 2010. Living off uncertainty. The intelligent animal production of dryland pastoralists. *European Journal of Development Research* 22(5): 605–622.

Kugonza, D. R., H. Jianlin, M. Nabasirye, D. Mpairwe, A. M. Kiwuwa, and O. Hanotte. 2011. Genetic diversity and differentiation of Ankole cattle populations in Uganda inferred from macrosatellite data. *Livestock Science* 135:140–147.

IG. Interest Group on Grazing Areas. 2017. Mapping grazing areas in Karamoja. S. Lwasa, A. Buyinza, and B. Nabaasa, eds.

Letai, J., and J. Lind. 2013. Squeezed from all sides: Changing resource tenure and pastoral innovation on the Laikipia Plateau, Kenya. In A. Catley, J. Lind, and I. Scoones, eds. *Pastoralism and development in Africa: Dynamic change at the margins.* Abingdon and New York: Routledge.

Mace, R. 1990. Pastoralist herd compositions in unpredictable environments: A comparison of model predictions and data from camel-keeping groups. *Agricultural Systems* 33(1): 1–11.

Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) and Uganda Bureau of Statistics (UBOS). 2009. A national summary report of the national livestock census, 2008. Entebbe, Uganda.

Morton, J. 2013. Responsible companies and African livestock-keepers: Helping, teaching but not learning? In A. Catley, J. Lind, and I. Scoones, eds. *Pastoralism and development in Africa: Dynamic change at the margins.* Abingdon and New York: Routledge.

Niamir-Fuller, M. 1999. Managing mobility in African rangelands. pp 102–132. In N. McCarthy, B. Swallow, M. Kirk, and P. Hazell, eds. *Property rights, risk, and livestock development in Africa.* International Food Policy Research Institute and International Livestock Research Institute. Washington, D.C. **www.ilri.org/InfoServ/Webpub/fulldocs/PropertyRights/Chapter7.htm#TopOfPage**.

Njuki, J., and P. C. Sanginga. 2013. *Women, livestock ownership and markets: Bridging the gender gap in Eastern and Southern Africa.* London: Routledge.

Oba, G., and W. J. Lusigi. 1987. An overview of drought strategies and land use in African pastoral systems. Overseas Development Institute Agricultural Administration Unit. **www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/5285.pdf**.

Owori, M. 2018. Pro-poor analysis of the 2018/19 Uganda budget: How are government's spending decisions likely to impact poor people? A Report.

Rahim, S. A. 1997. Studies on the age of puberty of male camels (*Camelus dromedarius*) in Saudi Arabia. *The Veterinary Journal* 154 (1): 79–83.

Rugadya, M. A. 2006. Pastoralism as a conservation strategy. International Union for Conservation of Nature (IUCN) Uganda country paper. IUCN, Kampala.

Ssewannyana, E., 2004. Strategies for management of animal genetic resources in Uganda. *Uganda Journal of Agricultural Science* 9:896–900.

Uganda Investment Authority. 2009. Livestock profile in Uganda. **http://www.ugandainvest.go.ug/uia/images/Download_Center/SECTOR_PROFILE/Livestock_Sector_Profile.pdf**.

Wario, C., T. Hussein, G. Hassan, B. Roba, A. A. Mareike, and B. Kaufmann. 2016. Reproductive performance and herd growth potentials of cattle in the Borana pastoral system, southern Ethiopia. *Animal Production Science* 57 (1): 161–169.

Warui, H., B. A. Kaufmann, C. Hulsebusch, H. Piepho, and V. A. Zárate. 2007. Reproductive performance of local goats in extensive production systems of arid northern Kenya. Conference on International Agricultural Research for Development. University of Kassel-Witzenhausen and University of Göttingen.

Wilson, R. T. 2017. The one-humped camel in Uganda. *Journal of Camel Practice and Research* 24 (1): 1–7.

Wilson, R. T. 1982. Husbandry, nutrition and productivity of goats and sheep in tropical Africa. ILRI collections. ILRI archive 4980.

Wilson, R. T., and S. E. Clarke. 1976. Studies of the livestock of southern Darfur, Sudan II: Production traits in cattle. *Tropical Animal Health and Production* 8:51–57.

5. Pillar Three: social and cultural institutions in pastoral societies

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SUMMARY

The first half of this chapter looks at what makes up a pastoral family, how it relates to the herd, and the socio-economic, cultural, and political issues as they relate to pastoralism:

- The pastoral family, which exists within a broader social, cultural, and political context, consists of those, whether related or not, who are directly involved in the day-to-day management of the herd, on which they depend for the greater part of their livelihood.

- Family members are involved in a number of different activities, depending on their age and gender:
  - **Productive activities** involve looking after the livestock, such as herding, milking, and other economic activities. These are built on knowledge and skill, and are partitioned depending on the nature of the task. These activities usually involve all members of the family, girls and boys, men and women.

  - **Reproductive activities** are those related to the health, growth, and well-being of the family, including cooking, fetching, and child care. Women tend to be responsible for these activities.

  - **Community activities** are those such as participating in cultural meetings, ceremonies, and decision making at community and local government levels, often over access to, or use of, pastoral resources. These involve both men and women, depending on the issues in discussion.

  - Some of these activities are daily, while others are seasonal or occasional.

- Customary pastoral institutions are made up of social bonds of mutual assistance, exchange, obligations, and reciprocity within and between families, and constitute the social and cultural fabric of communities.

- Today, pastoral institutions are a combination of both customary institutions and modern institutions established by government and development agencies such as Local Councils (LCs) and administrative structures under the policy of decentralization.

- Pastoral institutions regulate natural resource use through reciprocated, negotiated access and authority, thereby preventing a "tragedy of the commons."

The second half of the chapter looks specifically at how pastoralism is transformed by the ever- changing external environment that positively and or negatively impacts pastoralism. Many pastoral families and institutions in Uganda are at a "cross-roads" somewhere between the "customary" and the "modern." Although change and evolution is not new in pastoral communities, some of the external forces that they are now dealing with are having very profound impacts on individual family members and their communities such as the changing policy and legal enviroment, and the economic and cultural environment. Other factors include modernity, the economy, armed conflict, migration, gender-based violence, and health issues, including but not limited to HIV/AIDs.

- Pastoral cultures are "modernizing" and adapting to the forces of change around them. Forces of change include: policy and legal frameworks, education, global trade and monetization of the economy, technology such as mobile phones and mobile money, increasing urbanization, and increasing involvement by NGOs and the private sector.

- Pastoral areas are grappling with the increase in population density on cultivated land, ultimately causing resource fragmentation and low productivity.

- Some pastoral areas are characterized by high levels of insecurity due to conflict, especially in border areas, although conflict is not necessarily inherent to pastoral society.

- As traditional institutions break down and lose authority, and government institutions are either absent or ineffective, conflict can result over access to, and control over, important resources. In many pastoral areas, the use of guns and other weaponry is escalating, with violent consequences.

- Conflict has far-reaching impacts and can result in injury and death to people, as well as loss of livestock, reduced mobility, food insecurity, and closure of markets, schools, and health services, all posing a signficant threat to pastoral livelihoods.

- Effective conflict mitigation must be diverse and occur at the local, national, and international levels. Policy and advocacy play an important role in mitigating conflict in pastoral areas, and must address the underlying causes of conflict.

Issues for reflection

1) What are some of the challenges and opportunities that might arise when trying to reconcile customary and modern institutions in governing resource use?

2) What sort of institutions (both customary and modern) might be part of an approach for conflict resolution and management in a pastoral setting? Think of examples of successful conflict management in a real situation.

5.1 THE PASTORAL FAMILY AND INSTITUTIONS

A "family" means different things from one pastoral society to another in Uganda and elsewhere. In some societies, there are extended families with married sons living together with their father, where all the livestock are kept together as one management unit. In other societies, sons leave their father's home as soon as they marry, and take their livestock to set up their own family.

Families are also dynamic. Family members grow and become adult men and women, aunts and uncles, grandparents. Education, employment in towns and cities, and poverty are changing the economic and social roles of men and women within pastoral societies. Members of a family may leave the homestead and seek employment elsewhere, sometimes permanently due to a major crisis such as the loss of the livestock herd, sometimes seasonally to alleviate demands for food during the dry season.

Families also exist within broader social, cultural, and political contexts. Families belong to clans or sub-clans, which may also belong to tribes. These wider social groupings provide the framework within which culture and social identity are expressed and reproduced. They also provide the framework within which certain economic activities are organized and implemented; for example, in managing land and natural resources, resolving conflict, and managing mobility.

Figure 5.1. Labor management and gender roles in pastoral societies; children too rear animals. Photo credit: KDF

Box 5.1 illustrates the social relations among the Karimojong pastoralist society. A territorially based hierachy of households, extended families, villages, and neighborhoods is cross-cut with a lineal system of clans. Although the household is the basic unit of production and consumption, lineages and clans help in times of hardship and provide a wider network of mutual assistance. Even more broadly, pastoral people within the family are also members of the modern state, with legal rights and responsibilities. They belong to political parties, civil society organizations, religious organizations, etc.

Box 5.1. Karimojong society structure

The organizational structure of the Karimojong is territorial as well as lineal. Karimojong(s) are grouped by clans and by territorial sub-groups. These are the Bokora, the Pian, and the Matheniko, Dodoth, and Jie. Kin relations are patrilineal. A husband and his wife or wives, their sons, and their wives or a set of brothers inhabit each homestead (*kraal*). The man who owns the largest herd of cattle is the head of the *kraal*. During the dry season, *kraals* may unite into a larger unit called *Alomari*.

Cattle are literally wealth. They are a source of food (milk, blood) and cash. They are used to establish families, acquire political supporters, achieve status, and influence public affairs. Payment of cattle, as bride-wealth, to a girl's kin is an essential step in arranging a marriage. Cattle are also key gifts given on the birth or the first child to a family.

Karamojong adult males are organized into a series of groups based on varying degrees of common age and initation regimes. These initation regimes are an integral part of Karimojong social organization and provide the basis for authority. The highest sources of authority are community elders, based on the time of initation. These channels of authority are provided by relationships organized into clan and age categories. Use of authority is occasioned by public ritual gatherings, council meetings, and public disputes. Decisions and sanctions of the elders are carried out by sub-senior age sets. Elders are considered to have divine authority. The consequence of violating elders' authority is punishment. Households apply customary rules and regulations on a day-to-day basis, so much variation exists. Husbands have the final word in cases where women have little say. Large sales of livestock tend to be controlled by the clan elders.

In this textbook, the family refers to:

> *All those people (men and women, old and young) [who may or may not be related by blood] who are directly involved in the day-to-day management of the herd, on which they are dependent for the greater part of their livelihood.*

What distinguishes a pastoral family from others is its dependency on the herd. Pastoralists extract value from their livestock throughout their lives and postpone slaughtering them so long as they have potential use for the herd of the family—to grow the herd, provide milk, or to provide a bride price or other social value associated with the exchange of live animals. Meat is considered "a residual benefit to be realized only at the end of an animal's productive career" (Behnke 1985b). The herd, in a pastoral context, is thus managed to support the ongoing needs of a pastoral family, providing meat, milk, one-off and regular cash demands, and the social and economic demands of a family today, tomorrow, and into the future.

Pastoral work is hard and difficult. Within the system, there exists a strong division of labor, which consistently challenges the family to find the right balance between the size of the herd and the number of people it has to support. Beyond the management and maintenance of the livestock herd, different members of the family will be involved in alternative income-generating activities: small-scale marketing of tea and sugar, herding, agriculture. Members will also be involved in the day-to-day management of the family and homestead, such as collecting water and firewood.

5.1.2 Gender roles and the gender division of labor

Gender roles and relations are the focal point for the gender division of labor within pastoral communities; that is, who does what in the household. Gender roles here refer to the range of behaviors and attitudes that are generally considered acceptable, appropriate, or desirable for people based on their actual or perceived sex. Gender roles are usually centered on conceptions of femininity and masculinity and vary among cultures, while other characteristics may be common throughout a range of cultures. Gender division of labor on the other hand refers to the socially determined ideas and practices that define what roles and activities are deemed appropriate for women and men. As such, gender relations at a household level have consequences on the lives of women and men such as seen in subordination, marginalization, powerlessness, and dependency. Households are only perceived as unitary structures when a patriarch (man) controls all the decision making.

Figure 5.2. Herding small stock and resident cattle tends to be the responsibility of younger children and women.

For instance, women play a role in the management of livestock and use products such as milk but are not able to dispose of them. Such decisions are mainly made by both husband and wife, with the husband having a greater say than the wife. Although unilateral decisions concerning the use of livestock assets are considered uncustomary, it is common for men to make a final decision on livestock. Women, however, may have a say over livestock controlled by them, such as that received as gifts or through dowry.

Gender roles define access to and utilization of resources. Access to livestock, for instance, is determined by a number of factors, including the status of the man or woman and stage in his/her lifecycle, the wealth of the household, exposure and education, societal norms within different pastoral ethnic groups, and other factors such as the presence of drought. In many pastoral societies, while women may have access to livestock for such products as milk and blood, they often have limited decision making in other aspects such as sale of the animals (Hill 2018). Women in many pastoral societies are generally responsible for small stock such as sheep and goats as well as processing and marketing of milk and milk products. Generally, women, men, boys, and girls provide labor for different livestock-related tasks. Gendered roles, however, are not static and change for different social, economic, environmental, and health-related reasons. Beyond the

management and maintenance of the livestock herd, different members of the family may also be involved in alternative income-generating activities such as small-scale marketing of tea and sugar, herding, agriculture, and the day-to-day management of the family and homestead such as collecting water and firewood. Although both women and men may be keepers of traditional knowledge, this may differ by age and sex. Depending on their primary responsibility (cattle or small ruminants), women and men may have differing knowledge on, for example, breed selection, fodder, and disease prevention than other household members (World Bank, FAO, and IFAD 2009).

When considering different customary roles within pastoral families of men and women, and girls and boys, it is useful to categorize pastoral activities into three types:

a) **Productive activities:** looking after livestock and other economic activities.

b) **Reproductive activities:** cooking, fetching, childcare, health care, etc.

c) **Community activities:** participating in cultural meetings, ceremonies, decision making at community/local government levels, etc.

a) Productive activities

Productive activities are those that relate to the economic well-being of the household. Both women and men are involved in productive activities. In many cases, they do the same type of activity, but are responsible for different aspects: e.g., different species of animals or ages of animals. There are daily activities such as milking and herding the animals, seasonal activities such as digging wells, and occasional activities such as repairing equipment or the family home.

Daily activities may require very different time commitments depending on the season, as well as the status of the family. Seasonal "bottlenecks" occur when labor demands on all members of the family are high. The availability of labor during such bottlenecks can act as a limiting factor in the growth of the herd.

Many productive activities require knowledge and skills, which have built up over time and are passed on from generation to another. For instance, women and men are keepers of traditional knowledge, and this may differ by age and sex. Generally, both have knowledge related to gene flow and domestic animal diversity and hold knowledge useful in the prevention and treatment of livestock illness (FAO 2002; World Bank et al. 2009).

Productive activities are organized and implemented at different levels (individual, family, and sub-clan or clan) depending on the nature of the task, the value of capturing economies of scale, and dealing with such external issues as insecurity.

Figure 5.3. Bahima and Karimojong men tending their cattle. Source: https://www.govisitkenya.com/banyankole-people.html and KRSU 2019

Figure 5.4. The traditional Ankole calabashes where milk and grease are stored. Photo credit: Timothy Sibasi

Gender division of labor among the Bahima

The main occupation for the Bahima is tending cattle. While before they used to travel long distances in search of pasture, today they are adopting ranching or enclosed keeping of animals.

- Men were responsible for building homes for their families and pens for their cattle.
- Young boys were responsible for watering the herd.
- Teenage boys were expected to milk the cows before they were taken to pasture.
- Women cooked food, predominantly.
- Girls helped by gathering firewood, caring for babies, and doing household work.

b) Reproductive activities

Reproductive activities are those that relate to the health, growth, and well-being of the family: cooking, fetching water, childcare, health care, etc. Women alone tend to be responsible for reproductive activities.

- Many reproductive activities tend to be daily activities. Some activities require knowledge and skills such as grinding cereals, collecting and processing bush products for food, knowing where to find such food in the ecosystem, and understanding the dynamics of such products (when they are edible, when they might be poisonous, etc.).
- Activities, workloads, obligations, and rights also vary according to the age of women. For example, girls will work for their mother, young wives will help their mother-in-laws, mothers and mother-in-laws will be helped by their daughters and daughters-in-law.

c) Community activities

Both men and women are involved in and have responsibility for community activities. In some cases, they do the same type of activity (e.g., organizing ceremonies) but have different responsibilities (e.g., men are responsible for men's issues, women are responsible for women's activities).

Figure 5.5. Karimojong women grinding sorghum in Moroto.

Figure 5.6, Cultural Day event, Moroto 2014.

Just as there are different roles in specific activities such as herding and milking, there are different roles in decision making. For example, decisions such as when to move may be the responsibility of men, but once the decision is made, the women are closely involved in how to move.

Participation in community activities and as members of groups has clear benefits for women, in particular in terms of increased assets, income, and gains in control over decision-making processes that affect their lives. Pastoral women form and belong to many types of groups related to livestock and agriculture, including self-help groups, producer associations, savings and credit cooperative organizations (SACCOs), religious organizations, voluntary associations, groups that involve livestock/agriculture, and joint activities initiated around an economic purpose, which includes the production of goods or services or collective management of natural resources important for pastoralism.

Other examples of such groups include self-help groups (including microcredit and rotating savings and credit groups), user groups for natural resource management, agricultural extension and field schools, and farmer research groups.

Furthermore, families also exist within broader social, cultural, and political contexts. Families belong to clans or sub-clans, which may also belong to tribes. These wider social groupings provide the framework within which culture and social identity are expressed and reproduced. They also provide the framework within which certain economic activities are organized and implemented; for example, in managing land and natural resources, resolving conflict, and managing mobility. Families and households in particular grapple with changes in composition as a result of age, HIV/AIDS, and out-migration for labor and trade, which leaves households in the hands of young adults, children, and/or grandparents (Hill 2018).

Figure 5.7. Gender roles in Uganda among the pastoral communties.

Box 5.2. Gender relations among the Karimojong

Karimojong society is a patriarchal and polygamous society. There is a visible gender division of labor, whereby women are concerned with the daily household care, care of fields, and management of daily life. Men on the other hand are responsible for security, herding, and decision making. As wives, women have access and user rights to livestock even though these belong to the husband.

Gender determines power relations in pastoral household. Men and women have access to livestock as owners and/or as users.

Continued on next page

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Women and livestock

Every newly married woman can be allocated land and a cow to enable her to feed herself and her children. Newborn animals are the charge of women, and additional animals may be given as more children are born or more cattle are received in the homestead. Women access livestock but they don't control it. Women and children play a role in the management of livestock and use products such as milk. Decisions about whether to dispose of livestock or not are made by men in consultation with women. In polygamous households, there are different power relations between the wives, and there is favoring by the husband. Elder women are primarily tasked with the duty of fulfilling domestic household chores such as looking after children and sick people in a home. Women are also involved in small-scale agricultural activities like growing food stuffs such as millet. Young girls are usually tasked to stay at home with their mothers to help with household chores.

Girls help their mothers in looking after their siblings and supplying basic necessities such as water, harvesting, and preparing food for their families. At this stage, the girls are being nurtured and ushered into the livelihood of what will be expected of them as adults. Women often manage sheep and goats as they tend to be kept closer to the homestead. Men's and boys' role is to look after their family's most valuable assets (livestock). The young boys are primarily responsible for herding the animals, while elder and youthful boys are tasked with protecting their animals and communities from raids, attacks, and threats such as wild animals. The elder men are the main decision makers. The elder men determine the movement and reproduction of the herds.

Community activities involve more strategic issues, both within pastoral communities, and between them and the wider society, including local and national government, and other groups such as farmers. These activities have a direct impact on both productive and reproductive activities.

Men's responsibilities include dialogue with external actors such as local government, and other user groups, such as farmers, leaders of projects, and NGOs.

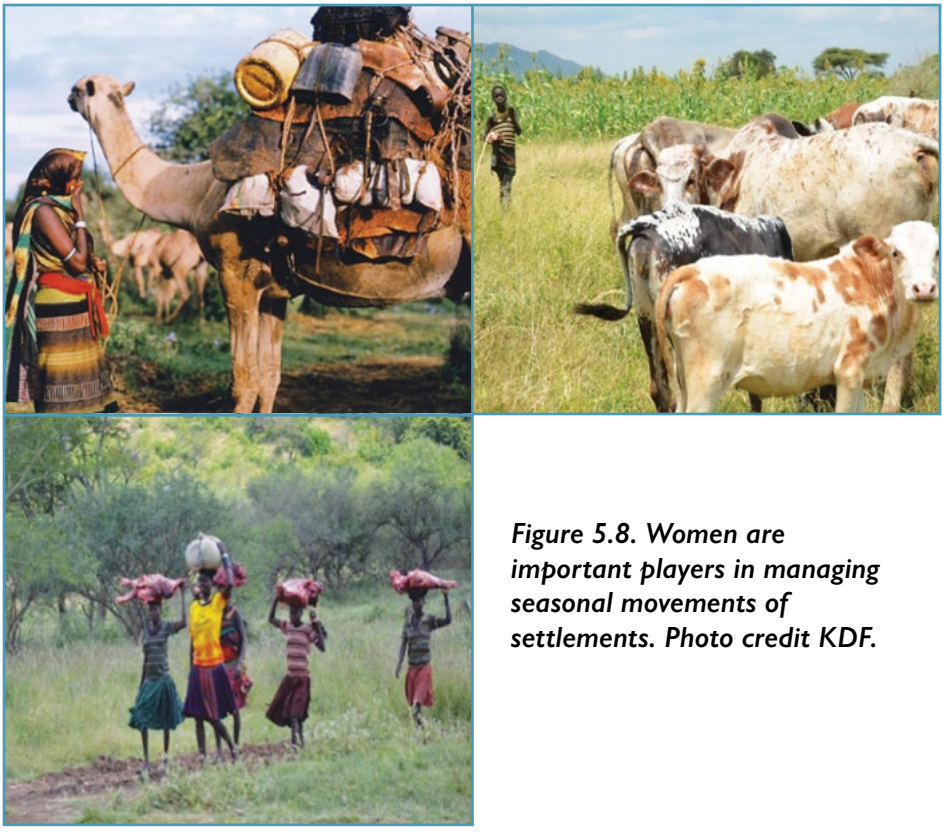

Figure 5.8. Women are important players in managing seasonal movements of settlements. Photo credit KDF.

Some productive activities also require community-level involvement, for example, maintaining a deep well or security when moving from one area to another. Women also work together to coordinate and facilitate marketing activities or in fence construction.

5.1.3 Livelihood and diet diversification

Contrary to what many think, the pastoral family cannot live off milk alone, and diets in pastoral areas are diversifying, just as they are in many other parts of East Africa. Diversification requires additional skills as well as placing additional labor demands on the family. The growing of food crops has always been a part of some pastoral systems in Uganda. Some groups (Karimojong, Bahima, and Basongora) are agro-pastoralists. Farming and pastoralism are integral features of their livelihood systems. Elsewhere in the East African region, in groups such as the Somali or Borana, poor families who have lost their animals to drought, disease, or raiding and can no longer survive off the remaining animals often practice crop cultivation, in some cases abandoning it (for longer or shorter periods) if their herd sizes and compositions enable them to fully support the family.

Table 5.1 below shows the results of a study in Shinile in the Somali Region of Ethiopia that investigated the importance of different food types in the diets of pastoralists and agro-pastoralists. While a common perception of pastoralists is of a people that live off milk, blood, and meat alone, these results tell a different story. For pastoralists, the need for a diverse diet, as well as other cash needs for education, medicine, clothes, mobile phones, and other commodities makes involvement in markets an essential part of life. Evangelou (1984) estimates the rate of livestock offtake from pastoral herds in Kenya at 10% per year, which are sold and exchanged within the informal as well as formal sector.

Table 5.1. The importance of different food types in the diets of pastoralists and agro-pastoralists, Shinile Region, Ethiopia (Devereux 2006)

Foodstuff	**Pastoralists**	**Agro-pastoralists**
Cereals	*%*	*%*
Maize	72	61
Wheat	61	61
Sorghum	49	58
Rice	32	7
Pasta	18	1
Bread	9	1
Barley	0	1
Meat, fish, and dairy		
Milk	93	91
Meat	76	55
Eggs	6	0
Fish	1	0
Vegetables		
Beans	8	9
Vegetables	8	1
Fruits	2	0

Box 5.3. Key points: labor demands in pastoralism

- Pastoral labor is hard, difficult, and often demands a great deal of knowledge and skill.
- Some activities are daily, while others are seasonal or occasional.
- Women tend to play a greater role than men in reproductive activities: water collection, firewood collection, food preparation, etc.
- Activities are carefully organized and divided by age and gender and organized at different levels (individual, family, clan).
- Pastoral men and women work closely together to ensure the health and well-being of both the herd and the family.

5.1.4 Social capital, mutual assistance, and indigenous social institutions

In Chapter 4, we saw that livestock ownership plays an important role in determining livestock management, limiting an individual herder's decisions over which animals may be sold and sometimes where livestock can be grazed. Pastoral societies have long used a complex system of livestock exchange and inheritance to spread risk, create social capital within and between families, and ensure the long-term survival of the herd.

The importance of multiple types of ownership and the rights attributed to individuals over specific animals can be seen in the number of names in local languages attributed to them (see Table 5.2 for an example among the Karimojong). By gifting or loaning livestock, individuals and families create social bonds of obligation towards each other. These obligations extend to all aspects of pastoral life, from grazing and watering rights and responsibilities to providing a safety net during times of extreme stress, drought, or disease.

Social capital and mutual assistance are key elements of customary institutions binding pastoral communities. Customary institutions may be kinship based or geographically based and vary in strength. "Kinship institutions continue to provide the only even partly most reliable safety nets for destitute pastoralists through clan-based livestock redistribution, despite several decades of persistent government and donor attempts to deny them legitimacy" (Swift 1995, 158). Broader customary institutions vary in their strength and capacity from place to place and community to community, and in all cases must coexist with modern institutions established by government and development agencies. Pastoral institutions today are thus a combination of the customary and the modern.

Table 5.2. Karimojong names attributed to livestock according to ownership rights (KRSU/ KDF)

Nga'karimojong	English	Rights of ownership and use
Alepot	Milking cow	The owner of a milk cow gives it to a relative or friend for a specified length of time. The friend/relative has milk rights only.
Akibuton	Cattle payment given to family who lost a person	A clan/family gives cattle as compensation to another clan/family who have lost a person. When they they are responsible for his or her death, cows are used as compensation.
Ameuna	Restocking	A family member/clan with more animals loans/gives animals to a person/family member with fewer or no animals. The recipient has all rights but cannot sell for a specified period.
Ekichul	Herd given at birth	These are animals given to the father-in-law and family to show responsibilty and ownership of the child by his son-in-law. They are used for milking, sales, or as oxen.
Nguna ituntai	Dowry cows	Those animals given to clan of the father-in-law as an appreciation for raising their daughter well and for covering the roles she used to play as their daughter. They are used for milking, oxen, sales, exchanges with another, and to pay the bride price for a son.

A key role of institutions, customary or modern, in pastoral areas is to regulate natural resource use, through reciprocated, negotiated access and authority (see also Chapters 3 and 4). Pastoralists have developed complex mechanisms and institutions that govern mobility, resource use and access, ones that allow

pastoralists to make effective use of their variable environments (WISP 2007). These institutionalized practices include setting aside pastures, preserving water resources, protecting trees, and ensuring pasture self-seeds before it is grazed. Rules and institutions are enforced, and sanctions can be applied to those who break the rules.

5.1.5 Changing nature of social dynamics in pastoral areas

Today, changing societal dynamics are eroding the traditional insitutions in pastoral areas. The roles and responsibilities of men and women, and youth and elders are changing. Some of these changes are negative as a result of families losing their livestock and having to diversify into alternative livehoods, some of which negatively affect pastoralism (e.g., charcoal, crop irrigation in dry season rangelands). The greater monetization of the pastoral economy and formal education are changing relations within families (men, women, and the youth) and between families (greater wealth differentiation). Other changes are more positive, with pastoralists seizing opportunities offered by new technology (e.g., mobile phones, mobile banking) and emerging regional markets for livestock products. Chapter 7 will look further at how policies have impacted pastoralism and Chapter 8 at some of the constraints and opportunities these changes are creating for pastoralism.

5.2 PASTORAL FAMILY AND LIVELIHOOD

Livelihoods have been defined as comprising the capabilities, assets (including both material and social resources) and activities required for a means of living (Chambers and Conway 1992). A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base. Livestock is an important source of food, income, employment, and food security across production systems and along different value chains (such as meat, dairy, live animals, hides, and eggs) (World Bank et al. 2009).

Beyond the management and maintenance of the livestock herd, different members of the family are also involved in alternative income-generating activities—small-scale marketing of tea and sugar, stone quarrying (see Figure 5.9), herding, agriculture, and domestic work, among others.

While governments have been keen on developing pastoral areas, developments have mainly centered on a "top-down" approach, rarely involving pastoral communities or their aspirations.

The result, as Mwaura (2005) outlines, has been poorly-planned new water points negatively affecting seasonal grazing patterns, an increase in the amount of land

Figure 5.9. Stone quarrying in Moroto. Photo credit: KDF

devoted to agriculture at the expense of grazing lands, the gazetting of 36% of the total Karamoja land area for a national park and wildlife and forest reserves where grazing, settlement, and cultivation are prohibited (although this is not widely enforced), inadequate access to services such as primary schools, and the lack of livelihood alternatives to pastoralism. Kakande (2007) also reports that despite specific development programs targeting Karamoja, poverty among pastoralists has actually grown.

Development concerns include but are not limited to:

- Insecurity, water scarcity, illiteracy, economic backwardness, and poor health.

- High levels of migration to Kampala and other urban areas, partly as a result of ever- shrinking livelihoods opportunities. For instance, it is estimated that over 90% of street children under 5 years of age in Kampala are from Karamoja, and Kampala City Council estimates that 80% of all beggars in the city are from the region (Kaduuli 2008).

- Access to clean water for both livestock and humans remains a challenge within the region. The government has attempted to provide several valley water tanks (with a target of two per sub-county) and boreholes to reduce the need to travel long distances to water animals. Challenges remain because: the tanks are often empty; they are not geographically evenly distributed; they have high maintanance costs; many have fallen into a state of disrepair (MoH 2008). Moreover, the drilling of boreholes is "ill-advised" as it fixes grazing on specific locations, and overgrazing becomes more common around boreholes, which leads to soil erosion, loss of biodiversity, increased food insecurity, and finally the destabilization of Karamojong "socio-cultural structures" (Kagan et al. 2008).

Figure 5.10. Example of a valley tank in Karamoja. Maintaining hygiene in these facilities is difficult when there is not restricted access for livestock. Photo credit: KDF

- Government policies on natural resources such as the Land Sector Strategic Plan of 2001 that aim at improving land services, strengthening land rights, and place an emphasis on privatization and sedentary development, rather than on the interests of mobile pastoralists (FEWS NET 2005).

- Forestry policies have been criticized for denying access to the Karimojong, who sell wood for their livelihoods during times of resource scarcity.

5.2.1 Key challenges to livelihoods: stepping in and stepping out of pastoralism

Relations within pastoral families are dynamic and influenced by changes in the external environment. There are rapid changes in agriculture, and pastoral communities in particular, which present both opportunities and challenges for the pastoral family. For instance, changes in markets are creating demands for a regular supply of high-value products in large quantities. Advances in technology increase the demand for new products and create new markets. They also create new choices for producers, altering what is produced and how it is produced (Catley et al. 2016). External factors such as climate change, migration, and armed conflict are also altering agricultural potential throughout the world. In particular, climate change is now affecting water supply and weather conditions and consequently is impacting agricultural production (Catley et al, 2016). Whereas changes affect the age groups differently, they impact the entire pastoral community as a whole both positively and negatively.

According to the World Bank et al. (2009), main challenges for the pastoral families are the increasing demand for natural capital (land, water, fodder, fuel

wood), physical capital (transport, abattoirs, markets, and refrigeration; also see Hill 2018), human capital (labor, knowledge, including traditional knowledge, public/private partnerships in research and extension). The most significant trend redefining pastoralism in East Africa is the fragmentation of rangelands through processes of privatization (often taking the form of enclosures) and commodification of rangeland resources (Lind et al. 2016). Rangeland fragmentation directly threatens adaptive processes in customary pastoralist systems, as it becomes more difficult to move livestock across the land, and key resource areas are fenced off and set aside for non-livestock uses.

Taking an example of the cattle corridor in Uganda, rangelands have been carved up through the establishment of private enclosures, water points and cisterns, "farmlands" excised from large riverine areas for irrigation schemes, ranches, and conservation areas. Other threats include but are not limited to land fragmentation and the uptake of land- and resource-dependent activities such as dryland farming, charcoal burning, and harvesting wood for fuel. Other challenges include but are not limited to:

- Indigenous capital and state investment that encourage more dynamic growth in dryland towns;

- Food insecurity and famine that precipitate large-scale settlement in and around relief distribution centers such as seen in refugee settlements in Southwestern Uganda and central Uganda;

- Sedentarization that has occasioned a greater need for basic services and markets for trade and exchange, helping to fuel the growth of small towns;

- Improvements in roads and transport services (ranging from public buses to lorries and motorbikes) that are making markets and basic services more accessible for dryland populations, while also supporting the penetration of outside capital;

- Infrastructural upgrades and extensions in the drylands that are helping to power further expansion of formal livestock exports, particularly from Ethiopia, which has experienced unprecedented growth in exports over the past decade.

One view is that traditional pastoralist livelihoods should be supported as much as possible, since they are the most viable form of livelihood for arid and semi-arid environments such as Karamoja and have a strong cultural history, without being innately violent. Raiding among the Karimojong is partly a heroic act that

ingrains the belief that the cow and the gun go hand in hand (Agaba 2007). Agaba quickly adds that "mental disarmament" is required so that the gun is no longer seen as a symbol of wealth and power (Agaba 2007, 6). The UNHRHC also believe that the Karimojong's ownership of arms and their raids on their Ugandan neighbors have been largely provoked by the xenophobic and racist attitudes they experience.

Another view is that a more peaceful and prosperous model for the development of Karamoja would support alternative forms of livelihoods, which are not so closely linked to cattle rustling or vulnerable to changes in climate.

Proponents of the first view argue that "pastoralism feeds Africa." For instance, Ugandan pastoralists own 55% of the country's livestock and provide meat, milk, milk products, hides, and skins to local markets and for export (OCHA, 2008). Therefore, support to the pastoralist way of life would have benefits for the whole country.

On the other hand, proponents of the second view argue that moves to reduce dependency on livestock and livestock products could be a way of "lessening the instances of raids" (CEWARN 2007, 3). In addition, the promotion of alternative livelihoods is seen as a means to encourage people not to engage in cattle rustling and to diversify economic activity in the region (GOU 2008). The idea here is that pastoralists should be supported in diversifying livelihoods into ones such as "beekeeping, mushroom growing, stabilised block technology, gum-arabic and aloe development, postharvest technology, metal fabrication, and mineral identification and processing" (GOU 2008, 50).

After it was found that gums grown in the region were of sufficient quality for the American market, the gum-arabic project received support from the country office of the African Growth and Opportunity Act (AGOA) and the Presidential Initiative on Karamoja (GOU 2008, 50).

The aforementioned challenges are not only shaping access to resources (to support herds) and markets (for livestock and their goods), forcing pastoralists to adopt livelihood diversification strategies in ways that reshape access to resources (to support herds) and markets (for livestock and other goods) but have also resulted in increased livelihood diversification. This, in turn, is driving decisions about livelihood choices and creating new livelihood pathways for the pastoral communities that are forcing some to step out of pastoralism in search of alternative livelihoods. See Figure 5.11 below.

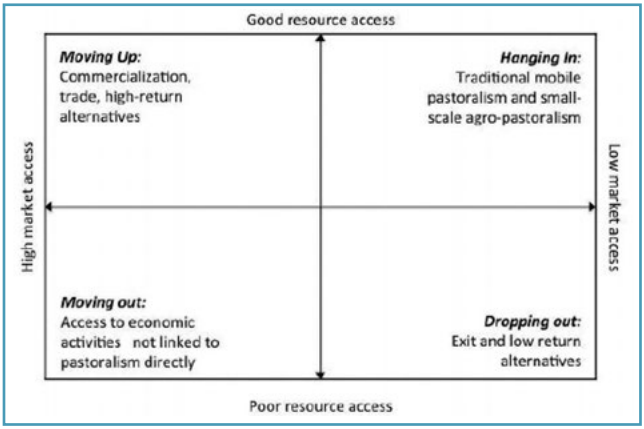

Figure 5.11. Stepping in and stepping out of pastoralism (Source: Catley et al. 2017).

Box 5.4. Stepping in and stepping out of pastoralism. (Adapted from Catley et al. 2017)

Areas and people with good natural resource access and access to markets are moving up, because they are able to maintain and sell livestock as a successful business enterprise, commercializing the milk and livestock trade, selling in high export zones, creating private abattoirs, and finding lucrative opportunities along the livestock value chain.

Areas and people with good access to natural resources, to rangeland and water sources in particular, but who do not have a high level of market access are hanging in, practicing customary forms of pastoralism based on high mobility, extended social ties for trade, and opportunistic use of key resource patches within the wider landscape. But rangeland fragmentation is constraining traditional mobile pastoralism because pastoralists are less able to access the key resources that are needed to manage uncertainty.

When a livestock herd is no longer viable due to lack of good resource access, the household exits pastoralism, or drops out, at which point its members seek productive activities not directly linked to their own herds. Others elect to pursue economic activities that are not linked to pastoralism directly but have good market access, moving out.

The opportunity to step out of pastoralism into "value added diversification" is limited to those able to take advantage of resources that add a high return to their activities. Still, small town expansion, better connections with larger centers, and the younger generation's acceptance of non-traditional livelihoods are enabling those relatively few people to earn a living from activities in the pastoral economy that are not directly linked to pastoralism.

5.3 CONFLICT IN PASTORAL AREAS

Pastoral areas in Eastern Africa are characterized by high levels of insecurity and conflict. In the Greater Horn of Africa, conflict exists at the intersection of Kenya, Uganda, Sudan, Somalia, and Ethiopia, as well as in areas in Northern Kenya and Northern Tanzania (Box 5.5). In this section, we consider the nature of pastoral conflict—where it is found, why it is so prevalent, and some of the responses to conflict at the local and regional level.

Conflict describes a state of disharmony between two parties arising from opposing or incompatible needs, ideas, or interests often accompanied with perception of threats to either party's interests, needs, or concerns.

Box 5.5. Principal pastoral conflict clusters in the Greater Horn of Africa

Hotspots of pastoral conflict in the Greater Horn of Africa are at the intersection of Kenya, Uganda, Sudan, Somalia, and Ethiopia. There are two principal clusters in addition to occasional flares of conflict in Northern Kenya and Northern Tanzania:

1. **Karamoja cluster (between and within Uganda, Kenya, Sudan, and Ethiopia)**
   - Conflict between Karimojong clans in Uganda; between Karimojong and Turkana; between Karimojong and Pokot; between Pokot and Turkana; between Karimojong and Toposa; between Toposa and Turkana.

2. **Borana and Somali clusters (between and within Kenya, Ethiopia, and Somalia)**
   - Conflict between Somalis and Afars; between the Isas and the Kareyu; between the Oromiya and the Afars.

3. **Other conflicts**
   - Sonjo and Maasai in Ngorongoro, northern Tanzania.
   - Samburu versus Borana in northern Kenya.
   - Borana versus Laikipiak Maasai in northern Kenya.

Figure 5.12. Proliferation of guns among Somali pastoralists, also formerly rampant among Karimojong in Uganda before disarmament. Source: Ureport and Reuters/Goran Tomasevic

5.3.1 Causes and impacts of conflict in pastoral areas

Conflict in pastoral areas may be caused by factors internal to the communities themselves, by external factors that are a function of interactions between pastoralists and other external institutions and agencies, and by both internal and external factors. For instance, conflicts over resources exist between pastoralists and settled farmers (Hussein 1998), the state and private enterprise over land alienation and investments (Cotula et al. 2009), and conservation displacement (Dowie 2011).

There are a number of factors contributing to the escalation of conflict in pastoral areas, including; the lack of appropriate and effective insitutions and policies governing land and resources; the weakening of traditional institutions; and the proliferation of small arms (see Box 5.6).

Conflicts are becoming more frequent, violent, and destructive, sometimes involving the use of modern weaponry (Hendrickson et al. 1998; Schilling et al. 2012). The impact of pastoral conflicts is felt by all members of society, directly and indirectly. Direct impacts on people include physical injury, mental trauma, and death. Women and children are often particularly badly affected; for example, rape and mutilation of women and girls are tactics of war; and through counter-insurgency, with child soldiers in South Sudan and Northern Uganda.

Conflict is not inherent to pastoral society, as is often believed. Conflict exists in all societies as a result of the failure of institutions and frameworks for managing and mediating access to and control over strategic resources (e.g., pastures, oil

fields, dry season grazing, and water points). According to Odhiambo (2003), poverty, livelihood insecurity, underdevelopment, ineffectiveness of modern institutions of governance in maintaining security and enforcing law and order, combined with the collapse of traditional authority and traditional institutions were largely the cause of conflicts in Karamoja in the 1980s and 1990s. Security forces have also been cited in inciting conflict in pastoral areas. A "governance vacuum" created at the local level, together with the wider regional conflicts (e.g., civil wars) has often increased the proliferation of small arms in pastoral areas, further exacerbating conflicts.

Box 5.6. Causes of conflict in pastoral areas

- Absence or ineffective institutional arrangements for managing access to and/or control over variable and unpredictable pastoral resources: water, pasture, salt-licks.
- Absence or inappropriate policies and laws managing competing land uses, especially with regard to conservation, agriculture, settlement, infrastructure.
- Inappropriate development and natural resource management policies: non-recognition of pastoralism, constraining mobility, absence of support to pastoralists after drought (livestock raids to restock).
- Social, political, and cultural isolation of pastoral areas by successive governments (e.g., Karamoja).
- Weakening, marginalization, or collapse of traditional institutions of resource management and conflict resolution.
- Intra-state crises of governance and insecurity in the Horn of Africa, including civil wars: Somalia, Sudan, Ethiopia, Eritrea.
- Proliferation of small arms, leading to banditry and terrorism.
- Inadequate government machinery and infrastructure for law enforcement in pastoral areas.
- Opportunism of political leaders in pastoral areas.
- Failure of the social and economic elite to impact positively on the situation (e.g., in Karamoja).

Direct impacts on infrastructure, such as schools or medical centers, can have long-term indirect impacts on the provision of services, such as education, vaccination programs, and veterinary services.

The effects of conflict can also be felt immediately, such as the direct and violent depletion of livestock or closure of markets. Some effects can also be felt much more broadly and over the longer term in the reduction in investment and trade interest in a region, the ongoing diversion of government resources from service provision to security, and the breakdown of traditional safety nets and social support systems.

Furthermore, many of these impacts are also accumulative. Internal and international displacement of communities leads to the breakdown of traditional leadership and institutions, and restrictions on mobility reduces productivity and increases poverty. Ultimately, conflict can itself lead to more conflict and the emergence of new and violent "social norms" and chronic insecurity. Conflict is undermining pastoralism and posing a significant threat to livelihoods already threatened by drought and disease, and social, political, and economic marginalization (Schilling et al. 2012).

5.3.2 Responses to conflict

Given the complexity of the underlying causes of conflict in pastoral areas, it is not surprising that the responses should also be many and diverse, at different scales geographically and politically. Support at the local level ranges from facilitating dialogue and negotiations between groups for the establishment of community-based conflict early warning systems, e.g., village or district peace committees, supporting the involvement of women, facilitating local dialogue and negotiation, and supporting traditional peace meetings.

More violent and chronic conflicts have seen police or military action/violence, the deployment of peacekeepers, support to militia, and disarmament programs. Policy and advocacy can also play important roles in mitigating conflict in pastoral areas, through addressing the underlying causes of pastoral vulnerability. Measures to help resolve conflict need to promote:

- Recognition of pastoralism and investment in support of pastoral institutions and livelihoods, thereby addressing some of the underlying causes of conflict;
- Political and policy recognition and legal support for traditional institutions to play their part in conflict management;
- Empowerment of women in decision making and in conflict management;

- Research on emerging causes of conflicts and how they can be addressed;
- Mobilization of communities in the spirit of solidarity to promote coexistence and good neighborliness.

Box 5.7. Past and current regional initiatives to address pastoral conflict in East Africa

- Nairobi Protocol on Small Arms and Light Weapons (Regional Centre on Small Arms/United Nations Office for Disarmament Affairs, 2004)
- AU Pastoral Policy Initiative (2010)
- AU-IBAR Cross-Border Livestock Health Programme (2016)
- Intergovernmental Authority on Development (IGAD) Conflict Early Warning and Response Mechanism (CEWARN) (2002)
- USAID's Regional Enhanced Livelihoods for Pastoralist Areas (RELPA)
- COMESA Pastoral Areas Coordination Analysis and Policy Support (PACAPS) **https://fic.tufts.edu/pacaps-project/**
- IGAD/FAO Livestock Policy Initiative (IGAD-LPI) (2008)
- ISS/EAPCCO Mifugo Project
- East African Community Livestock Development Strategy (2012)
- National-level conflict resolution initiatives–Kenya
- Karamoja Disarmament, Development and Pacification Programme (KIDDP) (2007)
- Ministry of State for Development of Northern Kenya and Other Arid Lands
- Arid Lands Resource Management Project (ALRMP)
- Draft National Policy on Conflict Management and Peace Building–Kenya (2015) **http://documents.worldbank.org/curated/en/625681468272714733/pdf/7169**
- Pastoral Community Development Project (PCDP)

5.3.3 Government-led disarmament initiatives in Uganda

Government-led disarmament initiatives took place in 1945, 1953, 1954, 1960, 1964, 1984, 1987, 2001, and 2006–07. According to Bevan (2008), none of these achieved a reduction in armed violence in the region. The 2001 program appeared to gain the support of some Karimojong, with an estimated 44% of Bokora weapons voluntarily surrendered, as well as 27% of the Jie's and 20% of the Dodoth's. However, this program ultimately failed as the Uganda Peoples' Defence Force (UPDF) became increasingly forceful in their methods of disarmament, alienating many communities before finally departing rapidly from the area in 2002 due to renewed Lord's Resistance Army (LRA) attacks. In addition, the 2001 voluntary disarmament did not progress as anticipated due to the lack of parallel programs in Kenya and Sudan and the LRA insurgencies in Teso (Sabala 2004).

Subsequently, those ethnic groups who had disarmed the least, and the Pokot from Kenya, launched raids on the relatively defenseless groups who had given up their arms. The Pokot's involvement demonstrates the problems of a lack of cross-border coordination on disarmament.

The Kotido Peace Initiative (KOPEIN) was heavily involved with the 2001–02 voluntary disarmament process, working in close collaboration with the members of the Kotido District Security Committee and running sensitization sessions in *kraals* (Longole 2007). Following the withdrawal of the UPDF and the subsequent security vacuum, KOPEIN became a target for attacks as local communities deemed them to have collaborated with the UPDF (Longole 2007). A study of Bokora County provides a further example of the negative effects of uneven disarmament (Stites et al. 2007). The Bokora gave up large numbers of weapons in the 2001–02 disarmament program and were subsequently subjected to intensified raids from the Matheniko and Jie. As a result, the study called for a more uniform approach to disarmament, to be carried out in a transparent manner with detained weapons catalogued and destroyed (Stites et al. 2007), and with clear links to development programs.

The most comprehensive government development plan for the region is the Karamoja Integrated Disarmament and Development Programme (KIDDP). The KIDDP has broad aims, including establishing law and order; supporting the provision and delivery of basic social services; supporting the development of alternative means of livelihoods; undertaking stakeholder mobilization, sensitization, and education; and enhancing coordination, monitoring, and evaluation of interventions (GOU 2008).

The KIDDP is intended to enhance security for the Karimojong and create the conditions for development, through a disarmament strategy whereby the

"removal of illegal weapons is seen not as an end in itself but as a means to an end" (GOU 2008, 55). The program is based on a set of principles, including community ownership and participation; gender and generational integration; a rights-based approach; peaceful disarmament; labor-based approaches (using local residents in development interventions); transparency and accountability; and sustainability.

5.4 THE SOCIAL PERSPECTIVE OF MOBILITY IN PASTORAL COMMUNITIES

While mobility is at the core of pastoral livelihoods, traditional patterns of pastoral migration are increasingly under threat, especially in the face of the ever-changing external environment and the policy and legal frameworks. For families managing small stock, cattle, and camels, each situation requires different patterns of mobility; the choices reflect different livestock nutritional requirements (Oba and Kaitira 2006; Roba and Oba 2009). Whereas mobility is associated with environmental variability, traditional herd mobility is also a result of different socio-economic status (Bassett and Turner 2007; Turner 2011). Pastoral herd migration takes into consideration labor scarcity and the distances moved in space and time (Robbins 1998), with migration being an important way of reducing herd losses (Catley et al. 2013) and diversifying livelihoods.

As noted in the previous chapters, mobility is a very important strategy used by pastoralists to respond to the variability, unpredictability, and the dispersed nature of pastoral resources (IIED/SOS Sahel 2009; Niamir-Fuller 1999). It is thus important to understand why families use mobility as a livelihood strategy and the impact this has on different members of the family.

Figure 5.13. Improved road networks in pastoral areas are contributing to mobility. Photo credit: KDF

There are **three forms of human mobility**: migration, displacement, and planned relocation. Broadly, **migration/mobility** refers to people moving within or outside their country for a variety of reasons, for example in search of employment or education, or to reunite with family members. The second type of movement is **displacement**, understood as forced movement due to a disaster, including drought. **Planned relocation** concerns communities that had to be moved to a safer place in light of irreversible changes to their environment or hazards such as seen in the pastoral areas of Uganda.

Whereas pastoralists responded in the past to drought and famine with mobility or temporary migration to hunting and gathering or farming societies, today pastoralists have new options, including migration to towns for wage labor, migration to famine relief centers, and wholesale adoption of agriculture. However, urban or farming alternatives do not provide pastoral emigrants with the same levels of food and well-being as pastoral lifestyles do. Increasingly, pastoralists are shifting to new trades such as commercial production of milk and dairy products for both the local in international markets. Vibrancy of markets such as in southwestern Uganda and Karamoja coupled with the demand for dairy products in urban centers, including secondary cities, is pushing pastoralists to new livelihood sources.

5.5 GOVERNANCE STRUCTURES AND EXISTING LEGAL AND POLICY FRAMEWORKS IN THE PASTORAL AREAS OF UGANDA

This section explores how national and international policies, including those that govern land tenure and access, trade, health, veterinary services, and education, play a crucial role in determining whether pastoral systems can provide viable livelihoods. The detailed definitions and provisions for attendant policies and laws in Uganda impacting pastoralism are however, covered in Chapter 7.

Since colonial times, government policy has tended to undermine pastoralism in favor of ranching and plantation farming on the argument that pastoralism is a backward practice, less productive, environmentally destructive, and promotes laziness. States within the East Africa and Greater Horn of Africa regions until now regarded pastoralism as an anachronistic way of life, harboring little economic value, and threatening environmental ruin and disaster. Colonial and national policies that restrict access to rangelands are widely blamed for the increase in pastoralist mobility. There has been an increase of movement into areas close to populations with whom they have no historic relationship or access agreement, thus making raids and conflicts more likely (Bevan 2008).

Today, pastoralism is at the cross-roads because of ongoing debates about the economic viability (and desirability) of pastoralism as a livelihood option, tensions between traditional and state security and justice processes, and sometimes heavy-handed approaches to disarmament, provoking resentment among communities towards the army and government more generally (Powell 2010).

In the past and often up until now, states in the region have often regarded pastoralism as an anachronistic way of life, harboring little economic value, and threatening environmental ruin and disaster. In the agrarian-dominated political systems of Ethiopia, Kenya, and Uganda, successive governments sought unsuccessfully to push pastoralists into becoming full-time farmers, ranchers, or petty traders. The perception that pastoralism contributed little to wider economic output and that drylands were of "low potential" justified a glaring bias in the allocation of public resources in favor of "high-potential" agrarian highlands, which in Kenya were acquired by white settlers with access to large amounts of capital (Lind et al. 2016).

In East Africa, many policy orientations tend to give recognition to pastoralism and the communities involved. However, clear frameworks for supporting a necessity for pastoralism—mobility—are often lacking. For instance, a policy on pastoralism and rangeland management for Uganda has been in a draft form for over a decade now. This could be a result of a failure by policymakers to appreciate that pastoralism is the most sustainable mode of production for the climatic conditions that characterize the rangeland areas where pastoralism is mostly practiced. Development interventions tend to view pastoralism as a form of "livestock ownership" (and not a system) plus its auxiliary activities like livestock marketing, veterinary services, pasture management, animal feeds, water supply, and rangeland management (Catley and Ayele 2018). Emphasis has been towards individualization of land as a means to promote investment incentives among agricultural producers and pave the way for ease of access to development financing through bank loans. Whereas pastoral areas are widely regarded as idle and unproductive (Kisamba-Mugerwa 2001), livestock development within the cattle corridor depends on access to productive rangeland. Therefore, securing land rights is critical for pastoral communities.

The cattle corridor is threatened by the expansion of cultivation, large-scale infrastructure constructions, awarding of mining exploration licences in rangelands, and allocation of tenure rights to individuals, among others. There has been a wide adoption of land-use and conservation strategies that alienate pastoral communities from grazing lands. Development projects on rangelands such as refugee settlements, prison farms, and army barracks have tended to shrink the size of rangelands. This is not helped by immigrants who not only encroach on grazing land but also introduce new ways of life, including

cultivation, such as the Bairu of Ankole, the Bakiga of Kabale, the Baganda from Masaka and Rakai, and the Bahororo. As noted above, this form of alienation from rangelands leads to low productivity as pastoralists are forced to adopt alternative means of livelihood survival.

Box 5.8. Case study of traditional institutional framework among the Karimojong

Among the Karimojong, authority to manage resources is not centralized in one single organ, but instead operates through the elders in their different localities, though always according to the same procedures. To appropriate powers, all Karimojong males go through a series of age and generation sets. These age sets function as bonding mechanisms between the different territorial groups that comprise the Karamojong, but also between the Karimojong and neighboring peoples with similar age set structures. There are five age sets, the interval between them being about five to six years, that comprise one of the two generation sets: *the elders and the juniors*.

A man's first initiation is called *asapan*, whereby a young man is admitted to the organization and earns voice in assemblies, the *akriket. Akiriket* Assembly is where men participate in formal political, social, and religious discussions.

When a man has been initiated into the junior generation set, he passes to the following age set every five to six years. He will remain in the fifth age group of the junior generation until the generation sets turn over. This happens when the members of the ruling generation set have been reduced in number and have become very old. Power is transmitted to the junior generation set at a ceremony called *akidung amuro*. The elders' generation, *ngikathikou*, bears the connotation of already "retired" leaders. Although they are still consulted, they cannot be up to date on all affairs going on in the cattle-camps, let alone take the lead in decision making.

Figure 5.14. Karimojong in elders' meeting (Akriket) to discuss pastoralism-related issues and challenges. Photo credit: KDF

In the cattle camps, the last two age groups of the junior generation set have operational authority and are referred to as the *kraal* leaders. Among these are the *arwonitare*, highly respected *kraal* leaders. Their power and prestige is determined by the amount of cows they possess, indicating their personal skills and rightful interceding with the ancestral spirits. Therefore, *Akiriket*;

- Decides on when and where to shift next (for grazing) and in what formations;
- Negotiates communal grazing access with other sections or tribes;

- Is closely associated with *Akujů*, who is God;
- Represents the active political, social, and religious organization of Karimojong people;
- Are highly formal and ritualized meetings that cover a range of ritual activities of communities in relation with *Akujů*;
- Is held in particular shrines set aside for this purpose, and only certain elders are qualified to handle matters of the *Akiriket*.
- In the *Akiriket*, power is invested in groups of peoples depending on their age class and never in an individual. Decisions are collectively made.

Local versus statutory institutions

The introduction of a decentralized system of government with emphasis on devolving administrative powers to lower government for improved service delivery greatly disrupted traditional governance mechanisms. According to FEWS NET (2005), the customary traditional system has "no faith" in modern public administration systems. Tensions between the local governments and the customary systems center on the reduced decision-making power and control for customary leaders. In essence, the customary leaders are considered of a lower status than the district local government leaders (Stites et al. 2007), creating a "fragmented and inefficient system of power" (Stites et al. 2007, 19).

Loss of influence of customary power is taking place at a time when traditional governance systems are themselves weakening as the power of the elders is diminished. This is exacerbated by an increasing number of educated young Karimojong who are entering local government service or occupying posts in Kampala, providing important "intermediary links" between "the modern" and the "traditional" (Mirzeler and Young 2000, 425).

REFERENCES AND FURTHER READING

Agaba, M. B. 2007. Is the Karamoja disarmament a failure? The UPDF perspective. Your rights. Uganda Human Rights Commission, Kampala.

Bassett, T. J., and M. D. Turner. 2007. Sudden shift or migratory drift? Fulbe herd movements to the Sudano-Guinean region of West Africa. *Human Ecology* 35 (1): 33–49.

Bevan, J. 2008. Crisis in Karamoja: Armed violence and the failure of disarmament in Uganda's most deprived region. Small Arms Survey, Geneva.

Catley, A., and M. Ayele. 2018. Livestock and poverty in Karamoja: An analysis of livestock ownership, thresholds, and policy implications. Karamoja Resilience Support Unit (KRSU).

Catley, A., J. Lind, and I Scoones, eds. 2013. *Pastoralism and development in Africa: Dynamic change at the margins.* Routledge.

Catley, A., J. Lind, and I. Scoones. 2016. The futures of pastoralism in the Horn of Africa: Pathways of growth and change. *Office international des epizooties revue scientifique et technique* 35 (2): 389–403.

Catley, A., J. Lind, and I. Scoones. 2017. Development at the margins: Pathways of change in the Horn of Africa.

CEWARN. 2007. The Conflict Early Warning and Response Mechanism. 9th Regional Report on the Karamoja Cluster (Ethiopia, Kenya and Uganda), January–April 2007. IGAD, Addis Ababa.

Chambers, R., and G. Conway. 1992. Sustainable rural livelihoods: Practical concepts for the 21st century. IDS discussion paper 296. **www.livelihoods.org/info/guidancesheets_pdfs/section1.pdf**.

Cotula, L., S. Vermeulen, R. Leonard, and J. Keeley. 2009. Land grab or development opportunity? Agricultural investment and international land deals in Africa. IIED/FAO/IFAD, London and Rome. **https://dlc.dlib.indiana.edu/dlc/bitstream/handle/10535/6178/land%20grab%20or%20dev%20opportunity.pdf?sequence=1**.

Devereux, S. 2006. Vulnerable livelihoods in Somali Region. IDS research report 57. Institute of Development Studies, UK. **www.ids.ac.uk/files/Rr57.pdf**.

Dowie, M. 2011. *Conservation refugees: The hundred-year conflict between global conservation and native peoples.* MIT Press.

Evangelou, P. 1984. *Livestock development in Kenya's Maasailand: Pastoralists' transition to a market economy.* Colorado: Westview Press.

FAO. 2006. The state of food insecurity in the world: Eradicating hunnger—taking stock ten years after the World Food Summit.

FEWS NET. 2005. Conflict baseline study report: Conducted in the Karamojong Cluster of Kenya and Uganda. USAID, Kampala.

Fratkin, E. 2001. East African pastoralism in transition: Maasai, Boran, and Rendille. *African Studies Review* 44 (3): 1–25.

GOU. 2008. Karamoja Integrated Disarmament and Development Programme: Creating conditions for promoting human security and development in Karamoja 2007–10. Government of Uganda, Office of the Prime Minister.

Hardin, G. 1968. The tragedy of the commons. Science 162:1243–1248.

Hendrickson, D., J. Armon, and R. Mearns. 1998. The changing nature of conflict and famine vulnerability: The case of livestock raiding in Turkana District, Kenya. Disasters 22(3): 185–199.

Hill, L. M. C. 2018. Module 14. Gender and livestock - world environmental, and health- instance, in a case from Tanzania andthe pastoralist groups of Indonesia. Retrieved from Site resources.

Hodgson, D. L. 2001. Once intrepid warriors: Gender, ethnicity, and the cultural politics of Maasai development. Indiana University Press.

Hundie, B. 2010. Conflicts between Afar pastoralists and their neighbors: Triggers and motivations. International Journal of Conflict and Violence 4 (1): 134–148. **http://ijcv.org/index.php/ijcv/article/viewArticle/56**.

Hussein, K. 1998. Conflicts between farmers and herders in the semi-arid Sahel and East Africa: A review. IIED pastoral land tenure series no. 10. IIED,London. **http://pubs.iied.org/7386IIED.html**.

Kaduuli, S. 2008. Forced migration' in Karamoja, Uganda. Africa Leadership Institute, Kampala.

Kagan, S., L. Pedersen, S. Ollech and D. Knaute. 2008. The Karamoja syndrome: Transdisciplinary systems research informing policy and advocacy. ACTED, Paris.

Kakande, M. M. 2007. Understanding and addressing spatial poverty traps: Karamoja in Uganda. Paper presented at "Understanding and addressing spatial poverty traps." Overseas Development Institute, Cape Town, March 29.

Kisamba-Mugerwa, W. 2001. Social background. In Agriculture in Uganda, Volume 1: General Information, ed. J. K. Mukiibi, 186–199. Fountain Publishers, Kampala.

Krätli, S., and J. Swift. 2003. Understanding and managing pastoral conflict in Kenya. University of Sussex, UK. **www.eldis.org/fulltext/pastconf.pdf**.

Lind, J., R. Sabates-Wheeler, and S. Kohnstamm. 2016. Changes in the drylands of Eastern Africa: Understanding and mapping livelihood dynamics and resilience within pastoralist systems.

Longole, R. 2007. The history of disarmament in Karamoja. Paper presented at "The disarmament of pastoral communities workshop." Kotido Peace Initiative, Entebbe, May 28–30.

Mirzeler, M., and C. Young. 2000. Pastoral politics in the northeast periphery in Uganda: AK-47 as change agent. The Journal of Modern African Studies 38 (3): 407–429.

MoH. 2008. Summary of the Nutrition and Health Assessment in Karamoja Region. Government of Uganda Ministry of Health, Kampala.

Mwaura, C. 2005. Kenya and Uganda pastoral conflict case study. United Nations Development Programme, Human development report office occasional paper 2005/20.

Oba, G., and L. M. Kaitira. 2006. Herder knowledge of landscape assessments in arid rangelands in northern Tanzania. *Journal of Arid Environments* 66 (1): 168–186.

OCHA. 2008. *Pastoral Voices*, vol. 1 no. 12.

Odhiambo, M. O. 2003. The Karamoja conflict: Origins, impacts and solutions. Oxfam GB.

Ostrom, E. 1990. Governing the commons: The evolution of institutions for collective action. Cambridge: Cambridge University Press.

Powell, J. 2010. Karamoja: A literature review. Safer World.

Roba, H. G., and G. Oba. 2009. Community participatory landscape classification and biodiversity assessment and monitoring of grazing lands in northern Kenya. *Journal of Environmental Management* 90 (2): 673–682.

Robbins, P. 1998. Nomadization in Rajasthan, India: Migration, institutions, and economy. *Human Ecology* 26 (1): 87–112.

Sabala, K. 2004. African commitments to controlling small arms and light weapons: A review of eight NEPAD countries. African Human Security Initiative.

Schilling, J., F. E. Opiyo, and J. Scheffran. 2012. Raiding pastoral livelihoods: Motives and effects of violent conflict in north-western Kenya. Pastoralism 2 (1): 1–16. **http://link.springer.com/article/10.1186/2041-7136-2-25/fulltext.html**.

Stites, E., D. Mazurana, and D. Akabwai. 2007. Out-migration, return and resettlement in Karamoja, Uganda: The case of Kobulin, Bokora County. Feinstein International Center, Friedman School of Nutrition Science and Policy at Tufts University, Boston.

Swift, J. 1995. Dynamic ecological systems and the administration of pastoral development. In Living with uncertainty. New directions in pastoral development in Africa, ed. I. Scoones, 152–173. London: IT Publications.

Tache, B., and B. Irwin. 2003. Traditional institutions, multiple stakeholders and modern perspectives in common property. Accompanying change within Borana pastoral systems. Securing the commons no. 4. IIED/SOS Sahel. **http://pubs.iied.org/9238IIED.html**.

Turner, M. D. 2011. The new pastoral development paradigm: Engaging the realities of property institutions and livestock mobility in dryland Africa. *Society and Natural Resources*, 24 (5): 469–484.

UNHCHR. 2007. Update report on the situation of human rights in Karamoja, from 1 April to 12 August 2007. UNHCHR, Kampala.

WISP. 2007. Pastoral institutions for managing natural resources and landscapes. World initiative for sustainable pastoralism policy brief no. 6. **https://cmsdata.iucn.org/downloads/pastoralist_institutions_for_managing_natural_resources_and_landscapes.pdf**.

World Bank, FAO, and IFAD. 2009. Gender in Agriculture Sourcebook Update #2.

6. The role of pastoralism

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SUMMARY

This chapter considers the role of pastoralism at the household level, as well as at national and regional levels:

- Livestock contribute to sustainable livelihoods through a number of different types of capital they provide: human, natural, physical, social, financial, and political.
- Within the pastoral system, a number of "vulnerabilities"—social, economic, and environmental—exist that impact people's livelihoods and their assets and can increase their vulnerability.
- Although livestock are the central pillar of the pastoral system, pastoral families move in and out of pastoralism when the herd becomes too small to support the family and supplement their livelihoods with alternative income-generating activities, including rainfed agriculture, petty trade, and wage labor.
- The value of pastoralism to national economies in the Horn of Africa has been commonly underestimated and misrepresented, justifying underinvestment and poor policy outcomes. Many of these estimates have been based on poor or outdated data and calculations.
- In Uganda, the livestock sector contributes 7.5% to the total gross domestic product (GDP) and 17% to agricultural GDP.
- These figures do not account for the secondary income that livestock production can generate, for example, through the barbeque meat (*muchomo*) trade.
- Pastoralists own up to 90% of the national herd, providing meat, hides, skins, and milk for domestic and international markets.
- As well as these monetary contributions, pastoralism also provides a number of non-monetary benefits, such as being a source of savings and insurance and social capital.
- Pastoralism also brings a number of indirect benefits to national economies, such as making productive use of arid lands, conserving rangeland biodiversity, and supporting wildlife conservation and the associated tourism industry.

- Total economic valuation (TEV) is one way to understand the full value of pastoralism, taking account of the full range of direct and indirect goods and services from pastoralism, and is being increasingly used in valuation studies.

Issues for reflection

1) What are strategies by which pastoralists cope up with variability, vulnerability, and risk in their livelihoods?

2) Why is it important to understand the full range of values of pastoralism in national economic policy and planning?

3) How might use of TEV be better suited and go beyond conventional economic criteria when evaluating the contribution of pastoral systems to national economies?

6.1 PASTORALISM AS A SUSTAINABLE LIVELIHOOD

A livelihood can be defined as "the means of securing the necessities of life." Sustainable livelihoods (Box 6.1) share three common features:

- They are based on resources or "assets" that can be social or economic and provide a living (food security, reduced vulnerability, health, and well-being, etc.).

- Sustainable livelihoods are able to cope and recover from shocks (economic or environmental).

- Sustainable livelihoods do not undermine the resource base on which they depend.

Box 6.1. What is a sustainable livelihood?

A livelihood comprises the **capabilities, assets** (including both material and social resources), and **activities** required for a means of living. A livelihood is sustainable when it can **cope with and recover from stresses and shocks**, and maintain or enhance its capabilities and assets, while **not undermining the natural resource base** (Scoones 1998).

It is possible to categorize the resources, or "assets" on which sustainable livelihoods depend into six types:

- **Human capital:** skills and knowledge of family/people, the ability to work, good health, strength, etc. Quantity and quality of labor.
- **Social capital:** the networks and relationships that people develop and use to build trust and enable them to work together effectively and efficiently; relationships of reciprocity and exchange; working in cooperation; providing safety nets and support. Ensuring the reproduction of society.
- **Natural capital:** natural resources on which a livelihood depends; pastures, water, soil, trees and tree products, genetic resources, etc.
- **Physical capital:** infrastructure and producer goods that support a livelihood and allow people to be more productive: shelter, transport, tools, etc.
- **Financial capital:** both inflows of cash from income, gifts, etc. as well as stocks and savings held by a family.
- **Political capital:** political representation and ability to engage with political and policy issues external to pastoral system at regional, national, and local levels.

Figure 6.1. Livestock marketing. The skills associated with marketing livestock represent human capital, and the importance of livestock marketing to the national economy is a form of financial and political capital.

Many of the assets involved in pastoralism have been addressed in Chapters 3, 4, and 5. The following types of capital are identified:

- **Human capital:**
  - Knowledge and skills of animal breeding and management, including diseases
  - Knowledge of the natural environment (plants, wildlife)
  - Livestock used to fund education
- **Social capital:**
  - Family/clan networks, eg., inheritance, marriage, initiation, peace-making, water management committees
  - Sharing, loaning, and gifting of livestock between families and neighbors
  - Social protection systems
- **Natural capital:**
  - Pastures (grasses, tree products), salt, water, minerals
  - Highly-variable resources in time and space
  - Livestock and a diverse variety of breeds
- **Physical capital:**
  - Pack animals, shelter, tools
  - Mobile phones, vehicles, weapons, wells, animal corrals, etc.
  - Livestock markets, roads
- **Political capital:**
  - Pastoral parliamentary groups, pastoralist coalitions, traders associations, advocacy NGOs, etc.
- **Financial capital:**
  - Livestock as a major asset: income from sales; savings for insurance; means of production and reproduction
  - Remittances, salaried work, sales from non-livestock products.

It is clear from the above list that livestock contribute to sustainable livelihoods as many different forms of capital. Livestock are a form of natural capital from which resources are derived (e.g., milk, meat, hides), and a form of financial capital as savings, an investment, and a readily available source of cash. Livestock are also an important form of social capital that cement social relationships, networks, and obligations, but are also a source of identity and cultural belonging. The skills and rich knowledge pastoralists possess on livestock health, production, and the natural environment is a form of human capital. Livestock can be used as a form of physical capital, through traction and transport capacities. Finally, the importance of livestock marketing to the national economy is a form of economic and political capital (Figure 6.1).

These livelihood assets can be destroyed or created by what has been called the **vulnerability context** within the Sustainable Livelihoods Framework (DFID 1999). The vulnerability context specifically describes the economic, social, and environmental context that directly impacts people's livelihoods, and identifies **hazards** that increase the vulnerability of people to deepening poverty. In the case of pastoral livelihoods, the vulnerability context includes:

- **Trends** (such as increasing or decreasing population growth, improving or worsening economic situation, etc.) that impact livelihoods slowly, over a period of time;

- **Shocks** (conflict, disease) that often occur with little or no warning and have sudden impact;

- **Seasonality** and **inter-annual variability** (in availability and quality of natural resources as well as prevalence of disease, incidence of drought and/or floods, the balance of trade in markets, milk production, etc.) that are expected and "part of the system" but are not necessarily predictable (i.e., we do not know when or what exactly will happen) and will have variable outcomes from one season and year to the next;

- The **convergence of hazards** that individually may have long been present but are all now occurring at the same time (e.g., increasing population, changing frequency of drought, loss of mobility and access to key resources) and together can have a proportionately bigger impact on the vulnerability of livelihoods than when they occur in isolation;

- Likewise, **policies and institutions** can either build of reduce assets. For example, a good education policy can build human capital, or a bad land law can reduce access to natural capital.

The quality and quantity of a family's assets impact the strategies that a family can follow to proactively manage environmental variability and unpredictability, and adapt to changing policy or institutional environments. For example, families or households with larger herds and more people can reduce risk by splitting their herds. They can build more social capital through making loans and gifts to others.

6.2 ECONOMIC CONTRIBUTION OF PASTORALISM TO THE FAMILY

Livestock lie at the heart of the pastoral livelihood system. They are the central pillar. However, pastoralism has long been supplemented by additional income generation and livelihood strategies. These have included relatively small-scale rainfed or flood-retreat agriculture, the use of non-timber forest products, sale of artisanal crafts (e.g., beads, jewelry, leather goods), and wage labor (e.g., herding, security). Although livestock sales and livestock products contribute the greatest to household income, these other activites can also make important contributions (Figure 6.2).

Families or individuals from within pastoral families may also move in and out of pastoralism over time and to differing degrees, finding alternative employment when the herd becomes too small to support the family and then moving back into pastoralism when it has been possible to invest in and grow the livestock herd.

Unlike other livestock production systems (e.g., ranching), income from livestock sales represents only a small proportion of the value of livestock to the pastoralist family (see Chapter 1 and Chapter 4 for the differences between pastoralism and other livestock production systems). The majority of pastoralists, particularly those with smaller herds, gain far more value from the non-monetary services of their herds as a source of food (meat and milk), manure, draught power and hauling services, savings, insurance, social capital, and women's empowerment.

Figure 6.2. For many poorer pastoralists, additional income sources allow them to protect and invest in the (re)growth of their herd. Mining in Karamoja is a particularly important source of income for women.

Box 6.2. Cows support our family

My name is **Aleper Peter Naangorlup**. The way I am (staying) in this *kraal*, I see the cow is good to me. It helps me in so many ways. During planting season (March/April), when it gives birth, it helps me with a balanced diet. I look after it well by protecting it from ticks and other diseases. When it has given birth and someone visits me, I give him/her fresh milk as food to eat. Also, I can send for my children and grandchildren in the village to come in turns to drink the milk here in the *kraal*. That is how the cow is good to me, especially now that there is drought. And if it was those days when the cows were many and the civil conflicts had not ended, we would survive in this drought.

From the cow, I can get milk, blood, and other things. When you have a cow, you can drink some milk, and store some in the gourd and extract ghee from it, which can be melted to form butter on another day. The milk from which ghee is extracted is turned into yogurt, which can be consumed immediately or kept for a week or longer in its sour form. Other milk can be boiled or drank as it is. It is ghee and butter and sour milk that can stay for a long time.

During times of hunger like this, it's rare to keep milk because people finish it immediately, especially the sour milk. We can extract fresh blood and mix it with milk, drink it fresh, boil or roast it. Most of the challenges we encounter while looking after animals have to do with diseases, and looking for pasture and water. The most common animal diseases affect the liver and the lungs. There's also one that makes the animal develop spots on the skin. Our animals are no longer as healthy as they used to be, so we constantly need medicine to help us take care of them. Medicine is what has kept/is keeping the cow. If you don't have medicine, you don't have the cow. Even with goats—if medicine is over, you eat the meat because the animal will die.

Generally, the cattle are fair, save for the ticks that keep "disturbing" them, but those we simply pick and throw on the fire. We don't get much help in fighting animal diseases. When herders realize that the animal is sick we go buy medicine if it is available. They (the government or NGOs) call us for vaccination once in a while. So, we rarely get help save for these vaccination services they bring to us occasionally. In the past, they used to

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bring a lot of things including different drugs, as well as vaccines and cattle troughs for dipping cows to prevent ticks. We also have marketing problems. The livestock markets for us are quite far. If you come out here in the bush to buy animals, people might think you are a thief. So, all of us are encouraged to take our animals to the common market—even the nearest one that we can access.

Aleper Naangorlup is a kraal leader from Moruadakai near Kobebe Dam. The interview was conducted by Martha Angella (former Communications Officer for KDF) and transcribed by Sam Luomo (Research and Advocacy Assistant, KDF).

As shown in Chapter 5, many pastoralists, particularly the poorest, do not rely on meat and milk exclusively in their diet and will tend to sell livestock to purchase cheaper sources of calories, typically staple grains. However, research shows that it is primarily the wealthiest pastoralists who are most engaged in the marketing of livestock at a regional level and make the most gains from policies that support trade (Catley et al. 2013).

Figure 6.3. Contrary to popular opinion, pastoralists sell livestock to supplement their diets and also support basic family needs.

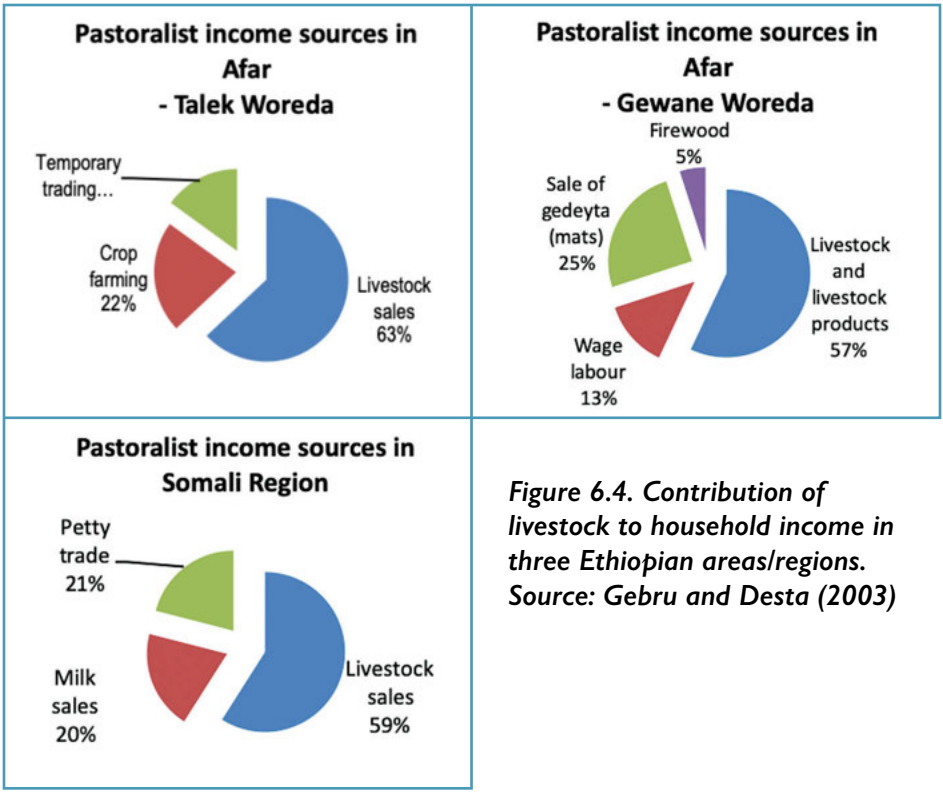

Figure 6.4. Contribution of livestock to household income in three Ethiopian areas/regions. Source: Gebru and Desta (2003)

6.3 EVALUATING THE NATIONAL ECONOMIC CONTRIBUTION OF PASTORALISM

It was estimated that the value of the pastoral livestock and meat trade in the Greater Horn of Africa was US$1 billion in 2010 (Catley et al. 2013). However, within countries such as Ethiopia, Uganda, and Kenya, the value of this trade continues to be underestimated, misrepresenting the value of pastoralism to the national economy and justifying underinvestment at best or poor policy outcomes at worst for pastoral production systems.

In Uganda, aside from work done since the 1990s on dairying, little recent field research has been conducted on the performance of Ugandan livestock production systems, probably as a result of decades of insecurity and civil war. The analysis of the national economic importance of livestock is heavily dependent on data produced by government monitoring and statistical services, which underestimate the value of livestock. For instance, the results of an assessment by IGAD Center for Pastoral Areas and Livestock Development (IGAD/ICPALD 2013) indicated that livestock were about 3.2% (or about US$ 526 million at 2009 exchange rates) of the national GDP in 2009, compared to only 1.7% (roughly US$ 282 million)

accruing from official government data. To put the revised livestock contribution into perspective, it is larger than the GDP derived from either cash crops or fishing, marginally smaller than the contribution from forestry, but still only about a quarter of the value of food crop production. Thus, a broader, total economic valuation approach looking at both direct and indirect benefits/values gives evidence as to how livestock in effect contributes far more than previously thought. This therefore raises serious questions of what Uganda would lose economically if it failed to support pastoralism.

In Uganda, 85% of the livestock is concentrated in the cattle corridor largely occupied by pastoralists. For this purpose, in order to estimate the contribution of pastoralism to Uganda`s economy, extrapolation of this percentage (85%) in the livestock sector will be used to extract economic contribution as a value of all livestock kept in the cattle corridor. National computations for livestock contributions to the national GDP are merely based on estimates of livestock populations and a series of estimates of market prices and offtake rates (for sale, milk production, and dung for fuel).

Other indirect values such as the value of animal traction and the secondary income sources that livestock production, particularly livestock from pastoral areas can generate (e.g., nyama choma. See Box 6.3) are often omitted.

Figure 6.5. A significant part of the total gross value of livestock output is represented by the value of animal draught power as an input into crop cultivation. Shepherd returns oxen from ploughing in Kadilakeny, Moroto. Photo credit: KDF, 2018

Box 6.3. The* nyama choma *economy in Arusha, Tanzania (Source: Letara et al. 2006)

A study carried out in November 2005 sought to quantify the scale and extent of the *nyama choma* (NC) business in Arusha City so as to provide proxy data to further understand the contribution of pastoral society to the national economy of Tanzania.

Historically, *nyama choma or muchomo* (roast meat or barbeque) was a traditional pastoral economic activity where pastoral men served roasted meat on market days. It has since expanded to all urban and trading centers of Tanzania. It has a short supply chain, with usually only one middleman who arranges slaughter at the abattoir. The abattoir sells the meat to the town butchers, who then sell it to *nyama choma* businesses. These are located within pubs and bars selling alcohol and are thus integrated within the market fabric of localities and are an important element found in all trading centers. In Arusha City, 94% of the meat slaughtered at the abattoir comes from pastoral areas. Interviews with several NC businesses confirmed that the meat they sell is exclusively from pastoral areas as customers prefer its taste.

Nyama choma businesses are largely in the informal sector but have formal commitments at a local level. This includes paying medical examination fees for each employee, land and property taxes, business licences, and refuse collection. The supply chain also contributes to meat examination fees at three levels—pre-harvest, at the abattoir, and in the market—which accrue to the municipality for paying employees involved in veterinary services. Plus, the supply chain includes businesses in the formal sector, such as the abattoir, that pay taxes.

Since 1991, slaughter has been centralized and its cost subsidized to some extent by donor funding. Centralization enables grading of meat for sale (four grades) and hence higher returns, and higher hygiene standards. In general, meat produced in pastoral systems is the lowest two grades. Other economic characteristics include:

- The NC sector is very competitive.
- NC businesses are an efficient system for using all possible parts of a slaughtered animal.

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- NC was traditionally seasonal, but now is part of daily life and as such, demand for slaughter is year-round, potentially freeing pastoralists from seasonal sale constraints. In 2005, over 31,000 cattle were slaughtered in Arusha, mostly for NC.

In Arusha, there are 601 NC businesses (in 2005), employing 5,600 people with an estimated 25,000 dependents. Plus, an estimated 2.4 jobs are supported along this supply chain for each NC worker—involved with ancillary services in butchery, middlemen, and of course primary beef production. It is estimated 6.6% of the population of Arusha receives crucial livelihood support through the meat supply chain for NC from pastoralist cows. If we assume these data are applicable to the entire country, 2.2 million people obtain some of their income from the pastoral meat trade and supply chain through 15,600 NC businesses with an annual turnover of US$ 22 million.

Further evidence from this research provides an added glimpse of the economic significance of pastoralism, indicating that each pastoral cow slaughtered supports the following outside of the pastoral economy: 0.24 full-time jobs in the Tanzanian economy; 1.07 dependents; and US$ 172 worth of economic value-added in the economy.

Figure 6.6. Livestock access to pastoral areas can represent a win-win for agricultural and pastoral systems, providing manure for crops and dry season grazing on crop residues. While conflict between farmers and herders over crop damage/lost access to pastoral areas is a significant problem, where communities have been able to reestablish positive relations, as occurred in Kenya during the droughts of 2009, both communities have benefited (Letai and Lind 2013).

Livestock benefit pastoral (and agro-pastoral) families directly as a source of savings and insurance, social capital, and manure for small-scale agricultural production. Pastoralism also supports significant industry supply chains involving raw materials found on the rangeland or forests such as gums, resins, fruits and foods, and medicines. Many of these resources and supply chains provide employment to pastoral women and/or poorer members of the community.

In addition to the direct benefits that pastoralist families derive from their livestock and rangelands, pastoralism as a system brings indirect benefits to the national economy, making productive use of arid lands, conserving rangeland biodiversity, and supporting wildlife conservation (CBD 2010).

For example, pastoralism contributes indirectly to local and national economies in a number of ways:

- Drylands constitute nearly half the land area in sub-Saharan Africa, and pastoralism makes productive and efficient use of the scarce resources that exist across these areas that would otherwise be unused or poorly used.

- Biodiversity conservation and tourism. In northern Tanzania, the annual pastoral land uses to the wildlife-based tourism industry is estimated at approximately US$ 83.5 million (Nelson 2012). Many protected areas in East Africa's drylands were originally pastoral dry season grazing areas populated by relatively abundant wildlife coexisting alongside domestic stock. The preservation of wildlife and dramatic scenery in these areas is largely due to the practice of pastoralism over other forms of land use such as agriculture or mining. Following their often forceful expropriation, few benefits have been returned to the displaced pastoral communities.

- In addition to tangible benefit generation through handicraft sales, traditional village installations, and cultural performances that directly bring some revenue to pastoral communities, the material culture of pastoralists benefits artisans and merchants, and indirectly intensifies tourist interest in the culture and lives of pastoral and other rural communities.

- For many tourists, pastoral societies evoke feelings that attract initial and repeat visits to East Africa. Northern tour operators and their East African affiliates regularly use pastoral imagery to sell their products.

- Improved agricultural returns (e.g., traction and manure). Many pastoral systems in East Africa are agro-pastoral systems, and as such there are a number of synergies between agriculture and pastoralism that enhance the value of one another through complementary land use.

Box 6.4. Pastoralism and tourism in Karamoja

According to the Uganda Investment Authority profile of Karamoja 2016, the region is a unique tourist area in Uganda in terms of the variety and distribution of its tourist assets. As a region, the variety of its combined wildlife, forestry, landscape, paleontological, and cultural tourism assets are second to none in Uganda.

The profile indicates that the region is endowed with tourism assets found in forest reserves and wildlife conservation areas, which cover 12% and 41% of the land, respectively. These assets offer an untapped and potentially lucrative comparative advantage. Landscape aesthetic values in protected areas and on communal land are also high.

Karamoja hosts one national park, Kidepo National Park, and two wildlife reserves, Bokora-Matheniko and Pian-Upe Reserves. According to the Wildlife Act, local communities around the protected areas get 20% of the revenue generated by that particular protected area. The local communities around these protected areas are the Karamoja pastoralists who have protected these rangelands for centuries and shared resources with wildlife.

Pastoralism lies in the heart of Karamoja culture as every aspect of Karimojong culture resonates around livestock. With 20% of Uganda's cows kept on the rangelands, with beautiful scenery and landscapes, tourists have frequented Karamoja for these reasons.

According to Kara Tunga Tours and Travel, a Karamoja Nomadic Warriors Experience visit, which involves an experience of Karamoja pastoral life by sleeping a night with warriors in the *kraal* costs about US$ 35 per day per tourist. Tourists have contributed to projects run in pastoralists communities of Karamoja such as Discover Karamoja, Tour of Karamoja, Cultural Heritage Education, Tourism Development, and Karamoja Tourism, among others.

Figure 6.7. Tourists in Karamoja visiting a kraal *in Kautakou. Photo credit: Teba Emma 2017*

Figure 6.8. Tourists visit rangelands and kraals *in Karamoja. Photo credit: Kara Tunga Tours and Travel*

- Employment. A minimum of 9 million (and as high as 20 million) pastoralists live in East Africa, of which an estimated 60% are adults of working age gainfully employed in raising livestock and other subsidiary activities (e.g., livestock trade). In arid and semi-arid rural areas, pastoralism and agro-pastoralism are often the only form of employment. Displacement of pastoralists will result in unemployment, urban drift, migration, and a host of issues that have very direct and tangible costs for the national economy (e.g., conflict).

One means to evaluate the contribution of pastoralism is called total economic value (TEV) (Hatfield and Davies 2006; Hesse and MacGregor 2006; Rodriguez 2008). TEV was initially developed in the field of civil engineering in the late nineteenth century to calculate the value obtained from investments in infrastructure. The approach was adapted in the 1980s by the conservation sector

to value both the market and non-market values of biodiversity. The TEV framework is now increasingly being used by researchers, NGOs, and regional bodies to help map out the many values pastoral systems contribute to national and regional economies (Krätli 2014).

Identifying goods and services from an informal sector such as pastoralism, and determining who values them and how best to measure them, is not a straightforward process. However, until the full value of pastoralism can be expressed in monetary and non-monetary terms, it is unlikely that the system as a whole will receive the political support that reflects its true value to the national economy.

The value of pastoralism against alternative land uses

Misconceptions regarding pastoralism have resulted in pastoralism being undermined by the appropriation of land in favor of alternative and often more intensive land uses. However, a number of recent studies show that pastoralism matches or outcompetes other land uses. For example:

1) In the Awash Valley, Ethiopia, Behnke and Kerven (2013) find that pastoral livestock production yields greater returns per hectare than large-scale, irrigated cotton or sugar production.

2) In Loliondo District, northern Tanzania, per hectare revenues from livestock are greater than revenues from wildlife hunting concessions, photographic safaris, and revenues from Serengeti National Park (Galaty 2013).

3) In five sites in Maasailand in northern Tanzania and southern Kenya, livestock contribute more than half of pastoralists' total household income, ahead of cropping or off-farm work (Homewood et al. 2012).

These studies highlight the importance of livestock and how the conversion of pastoral land to other land uses is not justified economically. Rather, governments seek to replace pastoralism with alternative land uses, because they are able to exert greater control over these activities (e.g., cash crops or hunting revenues), often through greater taxes and contributions to the state. Pastoralism escapes some of these contributions, as much pastoral trade is informal and invisible, and thus undervalued, so governments seek to gain more from alternative land uses (Behnke and Kerven 2013).

Taking land out of pastoral use would also reduce the long-established networks of exchange and trade between herders and farmers, and the many direct contributions pastoralism makes to farming and thus the wider economy.

Box 6.5. Misconceptions surrounding pastoralism (Source: UNDP 2003)

1. "Nomadic pastoralism is an archaic form of production, whose time has passed."
2. "Mobility is inherently backward, unnecessary, chaotic, and disruptive."
3. "Most rangelands are degraded as a result of pastoral overgrazing."
4. "Pastoralists do not take care of the land because of the tragedy of the commons."
5. "African pastoralists do not sell their animals; they prefer to hoard them, admire them, and compose poems to them."
6. "Pastoralists contribute little to national economic activity."
7. "Pastoralism has very low productivity. Sedentary cattle raising is more productive than mobile systems."
8. "Pastoral techniques are archaic: modern scientific methods need to be introduced."
9. "Pastoralists need to settle to benefit from services."
10. "All pastoralists are rich; alternatively, all pastoralists are poor and food insecure."

Box 6.6. Key points: valuing pastoralism (Hesse and MacGregor 2006)

Globally, livestock is growing faster than any other agricultural sub-sector, and it is predicted that by 2020 it will produce about 30% of the value of global agricultural output.

A significant but unknown proportion of the national livestock herd in East Africa is raised in pastoral areas.

Pastoralism is estimated to be worth US$ 800 million in Kenya alone, and its value will increase as demand for meat and related products rise with a growing urban population.

Pastoralism has other benefits. Livestock raised under pastoral systems are very cost effective, pastoralism supports an estimated 20 million people who otherwise would require alternative livelihoods, pastoralism makes optimal use of scarce resources with minimal environmental costs, and it represents an important reservoir of knowledge and experience of good environmental management under conditions of increasing climate change.

Through common property resource tenure regimes, pastoralism greatly contributes to social capital and nourishing collaborative and peaceful relations between different groups.

It is also important for the success of key sectors of the East African economy (e.g., tourism, conservation, agriculture) as well as informal (e.g., *nyama choma/muchomo*).

Existing national statistics fail to capture these benefits. Data are inaccurate and inadequate, failing to disaggregate pastoralism from other forms of livestock keeping and focusing on a very limited set of direct outputs, which do not reflect the full contribution of pastoralism to local and national economies.

REFERENCES AND FURTHER READING

Behnke, R. 2010. The contribution of livestock to GDP in the IGAD member states. Study findings, application of the methodology in Ethiopia and recommendations for extension of the programme. IGAD-LPI working paper 02-10, IGAD-LPI, Addis Ababa. **https://igadlpi.files.wordpress.com/2011/07/igad-lpi-wp-02-10-the-contribution-of-livestock-to-the-ethiopian-economy-part-i_oct10_ad.pdf**.

Behnke, R. H., and C. Kerven. 2013. Counting the costs: Replacing pastoralism with irrigated agriculture in the Awash Valley, north-eastern Ethiopia. IIED climate change working paper no. 4. **http://pubs.iied.org/10035IIED.html**.

Behnke, R. H., and D. Muthami. 2011. The contribution of livestock to the Kenyan economy. FAO *IGAD* livestock policy initiative working paper no. 3. FAO, Rome. **www.odessacentre.co.uk/uploads/3/9/1/2/39125553/igad_kenya.pdf**.

Catley, A., J. Lind, and I. Scoones. 2013. Development at the margins: Pastoralism in the Horn of Africa. In. *Pastoralism and Development in Africa: Dynamic change at the margins*, A. Catley, J. Lind, and I. Scoones, eds., 1–26. Abingdon and New York: Routledge.

CBD. 2010. Pastoralism, nature conservation and development: A good practice guide. Convention of biological diversity. Montreal. **www.cbd.int/development/doc/cbd-good-practice-guide-pastoralism-booklet-web-en.pdf**.

CELEP POLICY BRIEF. 2017. Value of pastoralism to economies. May. **http://www.celep.info/wp-content/uploads/2017/05/Policybrief-CELEP-May-2017-Value-of-pastoralism.pdf**.

DFID. 1999. Sustainable livelihoods guidance sheets: Introduction. Department for International Development. **www.eldis.org/vfile/upload/1/document/0901/section2.pdf**.

FAC CAADP. 2012. Pastoralism in the Horn of Africa: Diverse livelihood pathways. Future agricultures. FAC CAADP policy brief 06. March. **www.future-agricultures.org/policy-engagement/policy-briefs/1531-pastoralism-in-the-horn-of-africa-diverse-livelihood-pathways/file**.

Gebru, G., and S. Desta. 2003. The state of pastoral production and food security: The case of Borana pastoralists of Southern Ethiopia. Presentation at the EDRI/IFPRI workshop on "Towards sustainable food security in Ethiopia: Integrating the agri-food chain," Ghion Hotel, Addis Ababa, May 15–16, 2003.

Galaty, J. G. 2013. Land grabbing in the Eastern African rangelands. In *Pastoralism and development in Africa: Dynamic change at the margins*, A. Catley, J. Lind, and I. Scoones, eds., 143–153. Abingdon and New York: Routledge.

Hatfield, R., and J. Davies. 2006. Global review of the economics of pastoralism. World Initiative for Sustainable Pastoralism/IUCN, Nairobi. **https://cmsdata.iucn.org/downloads/global_review_ofthe_economicsof_pastoralism_en.pdf**.

Hesse, C., and J. MacGregor. 2006. Pastoralism: Drylands' invisible asset. Drylands issue paper no. 142. Drylands Programme, International Institute for Environment and Development, London. **http://pubs.iied.org/12534IIED.html**.

Homewood, K., P. C. Trench, and D. Brockington. 2012. Pastoralist livelihoods and wildlife revenues in East Africa: A case for coexistence? *Pastoralism* 2:19.

IGAD LPI. 2011. **https://igadlpi.wordpress.com/2011/07/05/further-igad-lpi-studies-indicate-the-economic-contribution-of-ethiopia%E2%80%99s-livestock-is-3-5-times-higher-than-current-estimates/**.

IGAD/ICPALD. 2013. Policy brief no: ICPALD7/CLE/8/2013. **https://igad.int/attachments/714_The%20Contribution%20of%20Livestock%20to%20the%20Ugandan%20Economy.pdf**.

IUCN. 2011. Supporting sustainable pastoral livelihoods: A global perspective on minimum standards and good practices. Second Edition, March 2012. Published for review and consultation through global learning fora. IUCN ESARO Office, Nairobi. **https://cmsdata.iucn.org/downloads/manual_for_min_standards_low_resoultion_may_2012.pdf**.

Krätli, S. 2014. If not counted do not count? A programmatic reflection on methodology options and gaps in total economic valuation studies of pastoral systems. Issue paper, International Institute for Environment and Development, London. **http://pubs.iied.org/10082IIED.html**.

Letai, J., and J. Lind. 2013. Squeezed from all sides: Changing resource tenure and pastoralist innovation on the Laikipia Plateau, Kenya. In *Pastoralism and development in Africa: Dynamic change at the margins*, A. Catley, J. Lind, and I. Scoones, eds. Abingdon and New York: Routledge.

Letara, J., J. MacGregor, and C. Hesse. 2006. Estimating the economic significance of pastoralism. The example of the *nyama choma* sector in Tanzania. RECONCILE/IIED. **http://pubs.iied.org/G00242.html**.

Mahmoud, H. A. 2013. Pastoral innovative responses to new camel export market opportunities on the Kenya/Ethiopia borderlands. In *Pastoralism and development in Africa: Dynamic change at the margins*, A. Catley, J. Lind, and I. Scoones, eds., 98–107. Abingdon and New York: Routledge.

Nelson, F. 2012. Natural conservationists? Evaluating the impact of pastoralist land use practices on Tanzania's wildlife economy. *Pastoralism: Research, Policy and Practice* 2 (15): 2–19. **www.pastoralismjournal.com/content/2/1/15**.

Pica-Ciamarra, U., S. Nouala, and S. Kim. 2011. Livestock and livelihoods in the IGAD region: A policy and institutional analysis. IGAD-LPI working paper no. 01-11. **https://igadlpi.files.wordpress.com/2011/07/igad-lpi-wp-01_11_livestock-livelihoods-in-the-igad-region_a-policy-and-institutional-analysis_ad.pdf**.

Rodriguez, L. 2008. A global perspective on the total economic value of pastoralism: Global synthesis report based on six country valuations. WISP, Nairobi. **http://cmsdata.iucn.org/downloads/tev_report.pdf**.

Scoones, I. 1998. Sustainable rural livelihoods: A framework for analysis. IDS working paper 72. IDS, Brighton, UK. **www.staff.ncl.ac.uk/david.harvey/AEF806/Sconnes1998.pdf**.

SOS Sahel. 2006. Pastoralism in Ethiopia: Its total economic values and development challenges. **www.labatafantalle.org/downloads/Value_Pastoralism_Ethiopia.pdf**.

UNDP. 2003: Pastoralism and mobility in the drylands. The global drylands imperative. **https://www.iucn.org/es/node/2903**.

Watson, D. J., and J. van Binsbergen. 2008. Livestock market access and opportunities in Turkana, Kenya. Research report 3. International Livestock Research Institute, Veterinaires Sans Frontieres, Belgium and Department for International Development, UK.

7. Pastoralism and policy directives

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SUMMARY

The chapters so far have described how pastoralism as a production system makes productive and rational use of a natural environment that is inherently variable and unpredictable. However, the three pillars of pastoralism—natural resources, the herd, and the family—do not exist in isolation. Policy and legislative directives, regimes or frameworks, depending on choice of words, affect the ways pastoralism is appreciated and governed in different contexts of Uganda and beyond. The laws, policies, and regulations originate and get implemented both in informal or traditional settings and formal or modern settings. Thus, they are developed and used across a continuum starting at grassroots level and extending to national, regional, and international levels as laws, regulations, and policies. Whether directly or indirectly associated with pastoralism, understanding these policy directives is crucial because of the central role they play in determining whether pastoralism struggles or thrives and develops in the future.

This chapter focuses on the legal and policy regimes that impact pastoralism in Uganda, Eastern Africa, and the Horn of Africa. It presents key laws and policies on pastoralism, and where applicable associated regulations, and makes arguments on how each of these impact on the three pillars of pastoralism—natural resources, the herd, and the social and cultural institutions or the pastoral family. In summary, some of the main issues that emerge are:

- Since colonial times, government policies have viewed pastoralism as uneconomic and environmentally destructive and have focused on trying to modernize pastoral systems and sedentarize pastoral populations. Probably as a result, some countries like Uganda have yet to roll out a national policy on pastoralism. In addition, Uganda's pastoral areas have lacked specific land use and administration policies. A rangelands management policy is still in draft form.

- In recent times there has been a rise in pro-pastoralist policies, partly inspired by a growing international, continental, and regional lobby that reiterates that pastoralism is a viable agroecological conservation livelihood system best suited for rangelands. Increasingly, Ugandan legal and policy frameworks are providing pastoralism significant mention, and significant resources are underway, especially for Karamoja Region, which provides hope for the growth of our pastoralist economy.

- There is also a growing civic consciousness and institutional lobby for pastoralists in Uganda and beyond that is playing a critical role in advocating for reformulation of laws and policies in ways that seek to incorporate pastoralism gainfully into national development. In Uganda,

we take note of the Coalition of Pastoralist Civil Society Organizations (COPASCO), among others, that have upped their collective voice to sensitize and lobby for pro-pastoralist development approaches in areas such as promoting export of livestock, investment in increased livestock productivity, and marketing and physical infrastructure, while protecting pastoralist institutional, natural, and herd interests.

- The 1995 Constitution has given birth to specific affirmative laws that guide respect for women and children, those with disabilities, and the elderly, and aim for improved gender relations in pastoral families and societies.

- Government, development partners, the private sector, and civil society have formed collaborations to address policy gaps that hinder access, use, control, and ownership of social services like education, water, hygiene, and sanitation, shelter and health, among others, within pastoralist areas.

- Ultimately, some of the remote pastoralist areas are witnessing growing advancements in information, communication, and technology (ICT), which, combined with growing transport networks, are linking pastoralists nationally, regionally, and internationally.

Issues for reflection

1. Why is it not one policy or ministry that will determine the success of pastoralism in the future?

2. What are the implications of specific national policies and laws on natural resources for pastoralism?

3. Do you think there is need to integrate all pastoralist policies or a national policy?

Box 7.1 Definitions

A **policy** is a statement by the government or other public institution setting out the ideals, aspirations, guiding principles, goals, approaches, and procedures for addressing a public issue.

A **law** is a written statement of rules enacted by a duly constituted lawmaking organ of a political collective specifying rights and duties binding on the subjects, as well as remedies and penalties for failure to comply with those rules. An enactment of law will also specify procedures and institutions for its enforcement.

7.1 UNDERSTANDING LEGAL AND POLICY FRAMEWORKS ON PASTORALISM

It is important to understand what meanings we attached to the key words legal framework or laws and regulations and policies.

Policy and law are closely linked, but different (see Box 7.1 for definitions). A policy spells out the values and aspirations of a society on a specific public issue and commits the government to promote those values. A law, on the other hand, translates policy stipulations into actionable commitments which citizens can enforce by court action.

Policies and laws have played, and continue to play, a critical role in defining and regulating how current pastoral production systems function across Africa. The Berlin Conference of 1884 is widely considered to be the start of the systematic invasion, occupation, colonization, and annexation of African territory by European powers between 1881 and 1914 (the period of new imperialism). In 1870, only 10% of Africa was under European control; by 1914 it was 90% of the continent, with only Abyssinia (now Ethiopia) and Liberia retaining their independence.

The definition of nation-states in Africa under the period of new imperialism and then colonization divided many pastoral people and their lands between two or more countries. Pastoralists found themselves in border regions far from the capital cities, the seats of economic and political power. Colonial and independent governments have consistently tried to sedentarize pastoral populations in order to make it easier to provide social services as well as to govern (tax and police) them, paying little attention to the critical importance of mobility to make efficient use of the environment and natural resources.

Box 7.2. The roles of policy and law. (Adapted from: Textbook for common course. 2015)

ROLE OF POLICY

- Creates criteria for decision making and action by government and a basis for accountability.
- Articulates consensus on a critical issue, reconciling competing interests among different citizen groups.
- Fosters predictability in government decision making and action, ensuring decisions are not based on the whims of public officials.

ROLE OF LAW

- Embodies the collective values of a society and establishes what can and cannot be done.
- Defines rights and obligations of individuals and groups.
- Establishes institutions of governance and defines their roles.
- Allocates responsibility to individuals and institutions and specifies sanctions for breach.
- Provides a framework for implementation of policy to realize agreed objectives.

Box 7.3. Government biases against pastoralism

There has been a long history of political and economic marginalization of pastoralists by governments with pastoralist communities all over the world. Governments have tended to view pastoral lands as "empty" and "idle" wastelands in need of investment and conversion.

In Uganda, as in other countries in the Horn and Eastern Africa, development policies have majorly favored sedentary farming over pastoralism.

Many government policies have not recognized pastoral livestock production as an important part of the national economy and rural livelihoods.

Pastoral lands have been lost to large-scale agricultural development, leading to the loss of pastoral rangelands, the sedentarization of pastoralists, and declining livestock numbers.

The policies are often driven by unfounded perceptions that pastoralism is economically inefficient and environmentally destructive. As we have seen in Chapter 6, this is not the case.

The introduction of centrally defined policies and laws for the management of land and land-based resources largely ignored local customary institutions that had managed the rangelands and their resources over hundreds of years. However, in recent times, some pro-pastoralist lobbies have started challenging this dominant negative discourse. Most of these base their arguments on rights-based approaches embedded in global resonances with human rights frameworks for development that argue for mainstreaming equity in development. Most of these are inspired by the 1948 UN Declaration on Fundamental Human Rights and associated conventions thereof, to advocate respect of rights and need to protect interests and spaces for minorities, which includes pastoralist populations.

7.1.1 Why have governments been biased against pastoralism?

While the idea that pastoralists make inefficient use of rangelands has been proposed from the early days of colonial occupation of East Africa, this perception of the pastoralist as an irrational and irresponsible manager of the commons was reinforced in 1968 by an American researcher called Garett Hardin. Hardin (an American ecologist who warned of the dangers of over-population) wrote an article for *Science* (a very prestigious, peer-reviewed journal) called the *Tragedy of the commons*. Hardin wrote this article to highlight the potential dangers a rapidly rising population posed to the finite resources of the planet. In his thesis, Hardin concluded that human beings have a natural disposition to seek immediate profits for themselves as individuals and that this was a major obstacle for ensuring the sustainable management of the Earth's natural resources. His conclusion was that global population growth would have to be controlled. Hardin used the example of an African herdsman to illustrate his theory, the "tragedy of the commons," describing a scenario of a fictional pasture, "open to all:"

> *As a rational being, each herdsman seeks to maximize his gain…The rational outcome is for an individual herdsman to add to his herd as many livestock as he is able to, and for each and every other herdsman to do the same. Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit.*

In practice, however, Hardin's theory cannot be applied easily to actual pastoral systems for several reasons summed up in Box 7.4 below.

Box 7.4. Counter-arguments to the "tragedy of the commons"

No account is taken of herd dynamics	• In Chapter 4, we learned that herd size is limited by many factors, including: seasonal variability in pasture, affecting herd productivity and calf mortality; and the impacts of occasional shocks (disease, cattle raiding) slowing the natural rate of herd growth.
No account is taken of mobility	• In Hardin's example, it seems that the pastoral system is closed, and livestock can't leave. When the quality and quantity of pastures decline, pastoralists move their animals to other areas. Mobility allows livestock to disperse over a wide area, using pastures when and where they exist.
No account is taken of the dynamics of natural pastures	• In Hardin's example, one gets the impression pastures are a fixed stock of biomass, which disappears forever once eaten. There is no indication in the article that pastures change from one season to the next, just as herd size can fluctuate from one season to the next. • In practice, grasses have an annual growth cycle and have complex growth and reproduction dynamics. The situation that Hardin describes is similar to pastoralists' experience in the dry season, when there is a fixed stock of biomass until the next rains. Livestock, however, cannot destroy this stock, as it is already dead or dormant. In addition, it is important that this biomass is consumed before the next rains to allow new growth to sprout.

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No account is taken of rules of access and management.	• In Hardin's example, pastoralists can enter the rangeland without asking permission from anyone. The text mentions that pastures are "open to all." • In practice, customary pastoral systems have complex rules of access to and management of natural resources based on a number of principles: reciprocity, priority but not exclusive rights, negotiation.
The pastoralist is alone and isolated in his decision.	• In Hardin's example, the pastoralist appears to be completely isolated, having no contact with the other pastoralists or the broader community, herding livestock with only his family. There does not appear to be any social or cultural relations. • In practice, pastoralists have families and live in broader communities (clans, etc.) with complex social, cultural, political, and economic rules regulating their lives. A herder is, thus, not an isolated individual without any social contacts. Yet Hardin's article argues that herders are selfish and do not communicate with anyone. This vision contradicts the beginning of the article where he says that after many years of war, peace had returned to the region, which presupposes that the community did in effect communicate with each other.

There is no doubt, that "open access" to natural resources could result in a "tragedy of the commons," e.g., the over-fishing of the oceans and the global rise in temperature due to carbon emissions. However, pastoral lands have traditionally not been open access, but "common property resources" (See policies on land below), land that belongs to a defined group with rules governing access and resource use, and institutions responsible for the management of the land.

Many colonial and independent governments, believing pastoral lands to be open access with no limits to resource exploitation, pursued policies of nationalization or privatization, and at times both, of pastoral lands and land-based resources. These policies significantly undermined existing pastoral institutions that were

regulating access to land and land-based resources. Government inability subsequently to enforce their own policies in the pastoral rangelands, often for lack of resources, has resulted in a governance vacuum, thereby creating the very tragedy they were trying to prevent.

In the coming sections of the chapter, we turn attention to a discussion of specific policy and legal frameworks that facilitate the debates on development of pastoralism in Uganda and highlight some relevant regional and international frameworks.

7.2. LEGAL AND POLICY FRAMEWORKS ON PASTORALISM

7.2.1 Global and regional instruments (policies and laws)

The Universal Declaration of Human Rights of 1948

The Declaration provides for rights to move across borders, nationality, own property; participate in government, social security, employment, health, and in one's culture. Since 1948, this Declaration has given birth to many other United Nations policies, laws, and regulations that facilitate pastoralism. One of these is the one on Economic, Social and Cultural Rights (ECOSOCs); it pronounces on rights to respect for cultures and quality education, among others. Among others, by providing for movement across border, this Declaration is of central significance to mobility needs for pastoralists and of pastoralism; it enables them to avoid degrading natural resources like pastures, water, and others by practicing transhumance; it gives access to internal and cross-border livestock markets; it also enables family to socialize and reproduce their social networks and could also provide pastoralists with alternative livelihood opportunities, which are necessary during periods of adverse drought and famine. **http://www.un.org/en/documents/udhr/**

International Covenant on Economic, Social and Cultural Rights (ICESCR) of 1966

Similarly, the Covenant on ICESCR is clear on rights accruing to pastoralists under the convention to just and favorable conditions of work and the right to take part in the cultural life of their communities. **http://www.ohchr.org/EN/ProfessionalInterest/Pages/CESCR.aspx**

The United Nations Summit (2015) Agenda 2030

Another significant contribution of the UN was the 2015 Summit that produced the UN Sustainable Development Goals that have specific relevance to pastoralism, especially:

Goal 6: Ensure availability and sustainable management of water and sanitation for all;

Goal 13: Take urgent action to combat climate change and its impacts;

Goal 15: Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss.

The Coalition of Pastoralist Civil Society report (COPASCO 2015) praises this UN 2030 Agenda for Sustainable Development because it underscored the fact that socio-economic development will depend on the sustainable management of our planet's natural resources. The document highlights the UN's determination to conserve and sustainably use natural resources such as fresh water, 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. **http://www.ohchr.org/EN/ProfessionalInterest/Pages/CESCR.aspx**

International Covenant on Civil and Political Rights (ICCPR) 1966

Article 27 of the ICCPR guarantees members of ethnic, religious, or linguistic minorities the right to community with other members of the group to enjoy their own culture, to profess and practice their own religion, and to use their own language. **http://www.ohchr.org/en/professionalinterest/pages/ccpr.aspx**

Convention No.169 of 1989 Concerning Indigenous and Tribal Peoples in Independent Countries

The convention requires states to ensure that indigenous and tribal peoples are consulted and freely participate in decision making like other persons of society and recognize the rights of possession and ownership over the lands that the indigenous and tribal peoples traditionally occupy. **http://www.ilo.org/indigenous/Conventions/no169/lang--en/index.htm**

United Nations Declaration on the Rights of Persons belonging to National, Ethnic, Religious and Linguistic Minorities, 1992

The Declaration guarantees rights to protection and for minorities to participate in decisions that affect them at regional and international levels. **http://www.ohchr.org/EN/ProfessionalInterest/Pages/Minorities.aspx**

The Akwé: Kon Voluntary Guidelines

In May 2000, the Convention on Biological Diversity (CBD) issued the Akwé: Kon ("everything in creation") Voluntary Guidelines for the conduct of cultural, environmental, and social impact assessments regarding developments proposed.

The guidelines provide for effective community participation in all phases of impact assessment and mechanisms to mitigate possible adverse effects. **http://www.cbd.int/doc/publications/akwe-brochure-en.pdf**

In sum, the UN and associated conventions, and CBD above bind states to adhere to and respect internationally ratified positions on the need to respect rights of ethnic groups, especially minorities. States are tasked to be inclusive in designing and implementing policies and laws concerning minority interests in order to guarantee equitable access, use and ownership of their resources, and mobility and respect for their cultural identity both within and across borders.

7.2.2. The African Union (AU)

The African Charter on Human and People's Rights, 1986

The Charter provides for the participation of everyone in the cultural life of his/her community and requires states to protect and promote the morals and traditional values recognized by the community. **http://www.achpr.org/instruments/achpr/**

Policy Framework for Pastoralism in Africa, 2010

In 2010, the African Union published its Pan African Policy Framework for Pastoralism in Africa (Securing, Protecting, and Improving the Lives, Livelihoods and Rights of Pastoralist Communities) (AU 2010). The Policy Framework for Pastoralism in Africa 2010 was approved by the African Union Heads of State and Government in 2012 and has two objectives:

- Secure and protect the lives, livelihoods, and rights of pastoral peoples and ensure continent-wide commitment to political, social, and economic development of pastoralist communities and pastoralist areas.

- Reinforce the contribution of pastoral livestock to national, regional, and continent-wide economies.

The first objective emphasizes the need for policies that recognize the rights and economic contributions of pastoralists within national economies. The second objective focuses on strengthening the governance of the natural resources on which the system depends. The AU Policy Framework provides a vision of development pathways in pastoral areas.

The AU 2010 policy recognizes the economic, cultural, and social importance of pastoralism across Africa, as well as its significant contribution in conserving plant and animal genetic diversity across the continent. The policy framework explicitly aims to mobilize and coordinate political commitment to pastoral systems and

places emphasis on the need for pastoralist women and men to be involved in development processes that are intended to benefit them. Crucially, the AU pastoral policy framework explicitly recognizes livestock mobility as fundamental to the success and productivity of the system in recognition of the high variability and unpredictability of the environment in Africa's arid and semi-arid rangelands, as well as the economic significance of pastoralism as a production system for the continent.

Above all, the framework explicitly supports pastoral strategic mobility as the basis for efficient use and protection of rangelands. This framework needs to be translated into national policies and resources need to be allocated for implementation. **http://rea.au.int/en/sites/default/files/Pastoral%20Policy%20Framework%20-%20Low%20res.pdf**.

7.2.3. East African Community (EAC)

The Protocol on the Establishment of the East African Community Common Market

The Protocol provides for freedom of movement of goods, services, labor, and capital as well as the right of establishment. In addition, it requires states to take steps to align policy, legislation, regulations, and practices on land and land-based resources with the AU as well as the East African and the Great Lakes regions. **http://www.unhcr.org/4d5259759.pdf**

Other regional institutions such as the Common Market for Eastern and Southern Africa (COMESA) and the Inter-Governmental Authority on Development (IGAD) are also recognizing the important benefits from livestock mobility. COMESA has a livestock trade initiative aimed at addressing the constraint to development in the livestock sector and improving livestock trade in its region.

7.2.4. Common Market for Eastern and Southern Africa (COMESA)

The COMESA Policy Framework for Food Security in Pastoralist Areas of 2009

The Common Market for East and Southern Africa (COMESA) Policy Framework for Food Security in Pastoralist Areas recognizes that pastoralist communities are among the most food insecure and vulnerable groups. It emphasizes the cross-border and regional aspects of pastoral livelihoods. COMESA member states where pastoralism is practiced include Djibouti, Egypt, Eritrea, Uganda, Kenya, Libya, Sudan, and Uganda. **http://www.comesa.int** and **http://pdf. usaid.gov/pdf_docs/Pnadt675.pdf**.

7.2.5. IGAD/CEWARN

IGAD's Livestock Policy Initiative addresses the policy and institutional changes needed for the poor to benefit from enhanced livestock production. It has established in-country "policy hubs" to coordinate national-level processes. IGAD's CEWARN addresses issues of early warning and response mechanisms for conflict resolution and management in pastoralist areas of Eastern Africa and the Horn of Africa.

Reports by BRACED and The African Union Policy Framework for Pastoralists underline principles that are of great significance for pastoral land management (BRACED 2018, AU 2010). These include freedom of mobility, inclusion of pastoralists in the process of policy and legislative reform, recognition of the economic contribution of pastoralists to development, and acknowledgment of the importance of indigenous institutions to land management. The principles for the policy framework related to land management and land tenure are equally pro-pastoralist in nature, and most of these positive elements of the continental policies are asserted in the regional policies.

Similarly, they mention that COMESA, the East African Community (EAC), and The Southern African Development Community (SADC) all have provided entry points for engaging governments on development planning and action in pastoral areas and can be used to engage governments on food sovereignty. According to BRACED (2018), it is clear that substantial progress has been made in regional policy development for the support of pastoralism. Policy frameworks adopted by the AU and the Regional Economic Communities (RECs) (COMESA, EAC, SADC) bring conceptual clarity and present convincing arguments on the logic behind investing more into this mode of production in the drylands of Africa. They propose policy options that permit the development of pastoralism in all its complexity.

It is important to note that these continental and regional policies are merely meant to catalyze the formulation and implementation of pro-pastoralist policies and laws in member countries. A major challenge of policy making at continental and regional level is that AU, COMESA, EAC, and IGAD have no political institutional framework for implementing policies directly. At best, the policies they formulate constitute "soft law," articulating general consensus among states on what needs to be done, while leaving it to the member states themselves to take steps to operationalize them as binding national policies, laws, strategies, and plans. Moreover, AU, IGAD, and EAC do not develop policies in any systematic manner. Policy priorities are informed by political consensus and in some cases by what donors are funding at any given moment (BRACED 2018).

Ultimately however, it is the extent to which pastoralists are organized and able to mobilize among themselves within national and cross-border networks that will ensure that they are able to influence policy processes in their favor. This particularly calls for an informed, effective, and accountable pastoral civil society that is well grounded in the communities. In this regard, in Uganda we celebrate efforts by the Coalition for Pastoralist Civil Society Organizations (COPASCO) for initiating this process and would encourage civil society, governments, and development partners to support them to grow synergies with other networks across EAC, the Horn of Africa, the continent, and beyond. See Box 7.5 for a list of COPASCO members.

Box 7.5. Members of COPASCO in Uganda (Source: COPASCO 2015)

As of 2014, COPACSO had the following members:

1. Basongora Group for Justice and Human Rights
2. Dodoth Agro Pastoral Development Organization Dodoth Community Animal Health Workers Association
3. Cattle Corridor Development and Management Initiative
4. Greater North Parliamentary Forum
5. Karamoja Agro Pastoral Development Association
6. Jie Community Animal Health Workers Association
7. Kotido Peace Initiative
8. Mathenico Development Agency
9. Matheniko Development Forum
10. Nakasongola Pastoralists Association
11. North Rwenzori Rural Community Agriculture Conservations Links
12. Pastoral and Environmental Network in the Horn of Africa
13. Pastoralism and Poverty Frontiers
14. Pastoralist Women Alliance to Break Cultural Chains
15. Riamiriam Civil Society Networks
16. Uganda Land Alliance
17. Warrior Squad Foundation

Associate Members:

1. Minority Rights Group International
2. Oxfam

7.3. POLICIES AND LAWS ON PASTORALISM IN UGANDA

Many national policies specifically impact the three pillars of pastoralism. While there are many policies relevant to natural resources, policies relating either directly or indirectly to land are the most contentious for pastoralism in the current political and economic climate of Uganda, because of the primacy of land for other livelihoods and for national economic development.

Policies that relate to marketing and veterinary care impact directly on the herd. Many countries have progressive veterinary policies that include the promotion of community-based animal health; the problems lie more in the implementation of policy than its design. The more contentious policies relating to the herd are around marketing, cross-border trade, and livestock health issues relating to export.

Policies that impact on the family and customary institutions include policies relating to governance such as decentralization, and health and education policies. Challenges of tailoring social services to accommodate pastoral livelihood strategies such as mobility should, in theory, be addressed in the context of decentralization (e.g., elected local governments with the authority to design and implement plans designed specifically to address problems in their local areas).

7.3.1. Overarching policies

Before focusing on specific law and policies on the three pillars of pastoralism, there are overarching policies that address broader national goals and therefore set the context for specific laws for programs and projects on pastoralism in Uganda.

1. The 1995 Constitution of Uganda

The Constitution of the Republic of Uganda 1995 (revised 2005) has been acclaimed for being inclusive, paving the way for arguments that there is legal provision for a favorable policy environment for all minorities, pastoralists inclusive, to benefit from wide-ranging affirmative programs and projects. The Constitution 1995 asserts that:

> *The State is required to adopt an integrated and coordinated approach, to ensure balanced development between different areas of Uganda and between the rural and urban areas, to protect important natural resources including land, water, wetlands, minerals, oil, fauna, and flora and endeavor to fulfill the fundamental rights of all Ugandans to social justice and economic development (Republic of Uganda 2017, 30–31).*

We therefore classify the 1995 Constitution as a cross-cutting legislation as discussed hereunder across various areas of natural resources management and herd (mostly water and veterinary services), and social services for family like water and education, among others. An HPG report (2019) argues that the 1995 Constitution, under National Objective 6, provides that the State shall *ensure gender balance and fair representation of marginalized groups on all constitutional and other bodies*. Some specific articles are highlighted for specific mention on some of the pillars of pastoralism hereunder.

Constitutional provisions for the family and social institutions:

a) Article 32 provides that the State shall take affirmative action in favor of groups marginalized on the basis of gender, age, disability, or any other reason created by history, tradition, or custom, for the purpose of redressing imbalances that exist against them.

b) Article 26 provides for the right of persons to own property, either individually or in association with others, and the conditions for forfeiture of land where it is the property so owned. By implications this also defines rights to use and therefore protection of lands in one's custody; on family and common rights over minerals and alternative income from other extractive resources.

Given the above pronouncements, the BRACED (2018) report acknowledges that the 1995 Constitution has wide-ranging provisions for development in pastoralist areas by also mainstreaming revenue sharing from minerals and petroleum with Government and private investors in the extractive industry. It provides that minerals and petroleum shall be exploited mindful of interest of individual landowners, local governments, and the national government to protect local interests. A major concern for communities is compensation for land that is used for mining and exploration of mineral resources (BRACED, 2018).

2. National Gender Policy 1997

The aim of this policy is to guide and direct at all levels the planning, resource allocation, and implementation of development programs with a gender perspective. The emphasis on gender is based on the recognition of "gender" as a development concept in identifying and understanding the social roles and relations of women and men of all ages, and how these impact development. Sustainable development necessitates maximum and equal participation of both genders in economic, political, civil, and social-cultural development.

Uganda is a patriarchal society where men are the dominant players in decision making, although women shoulder most reproductive, productive, and community management responsibilities, many of which are not remunerated or reflected in national statistics. The lower status of women in comparison to men is due to gender imbalances that arise from the unequal opportunities and access to and control over productive resources and benefits.

Statistics show that although women in Uganda constitute 70% to 80% of the agricultural labor force, only 7% own land and only 30% have access to and control over proceeds. Women's productivity is further hampered by inadequate access to credit and general lack of skills and appropriate technology due to high levels of illiteracy, poverty, and inadequate flow of and access to information. Few women get loans from the traditional financial institutions because they do not have collateral. A survey on women's participation in the Rural Farmers Scheme of Uganda Commercial Bank (1992) revealed that of the 27,233 women who applied for assistance as individuals, only 5,117 were assisted; of the women who applied in groups totaling 1,616, only 335 women groups were assisted; and of mixed groups consisting of 50% women, the bank assisted only 727 groups out of the 2,116 that applied.

Measures have been taken to promote the participation of women in decision-making positions. The mandatory position for women in the local governance structure has improved women's participation in the Local Councils. The 1995 Constitution provides for a third of these positions to be filled by women. In addition, women have been empowered to contest for other posts at this level.

The National Gender Policy forms a legal framework and mandate for every stakeholder to address the gender imbalances within their respective sectors. This is to improve the social, legal/civic, political, economic, and cultural conditions of the people in Uganda, particularly women.

The Policy is premised on four basic principles:

i) The Gender Policy is an integral part of the national development process and reinforces the overall development objectives in the country. It emphasizes Government's commitment to gender-responsive development.

ii) The policy complements all sectoral policies and programs and defines structures and key target areas for ensuring that gender concerns are routinely addressed in all planning activities as well as in the implementation, monitoring, and evaluation of program activities.

iii) The policy emphasizes the cross-cutting nature of gender and seeks to integrate it into development efforts at national, sectoral, district, and local levels.

iv) The policy further seeks to strengthen and to provide a legal basis for the already existing gender-oriented sectoral policies and to ensure that National Development Policy Objectives are made explicitly gender responsive.

What the policy offers in the context of pastoralism is that pastoralists should simply organize to have a constructive strategy to lobby their rightful demands for equitable legislative and policy inclusion in designing and benefitting from holistic development as citizens of Uganda and the EAC.

3. The National Land Use Policy and legal frameworks (2007, 2013/15/18)

As observed above, land is perhaps the most contentious resource within but not limited to pastoralist systems. Most of the land laws sufficiently acknowledge the suitability of rangelands for pastoralism but are not necessarily coherent or consistent about protecting such land for pastoralism. Neither do we see any specific or deliberate steps on the part of government to utilize rangelands for the vitality of pastoralism in Uganda; some are positive, others benign or barely supportive, and yet others are outrightly negative or repressive of pastoralism.

The COPASCO report (2015) observes that different land regimes have had different impacts on pastoralism in Uganda. We refer their analysis below.

The 2007 Land Policy

a) On rangelands use and conservation for Pillar Three (natural resources): In their view, the National Land Use Policy 2007 was not direct on pastoralism rights over land, but it does mention that pastoralism could be the best land management system for rangeland areas.

b) The 2007 Land Policy commends pastoralism for the open savannah areas where soil and rainfall are not conducive to arable farming and form what is popularly known as the cattle corridor. However, this is followed up with negative pronouncements on pastoralism by stating that rangelands are severely degraded due to overgrazing and other poor animal husbandry practices and provides for strategies to discourage socio-cultural, economic and other practices that degrade the quality of rangelands.

The 2007 land law also lays down strategies to reverse the degradation, including enforcing optimum stocking rates, providing water, pasture, and fodder, promoting communal land management schemes, controlling bush burning, promoting use of energy-saving technologies, and encouraging diversification of farming activities (COPASCO 2015).

In the Land Act, 1998 as amended by the Land (Amendment) Act, 2004 and 2010:

- Section 24 provides for common land management schemes which could benefit communal grazing and watering of livestock.

- Section 25 provides for utilization of the common land in regard to numbers and type of livestock each user may graze on it, location that may be used for grazing and when, as well as designated stock routes to and from the common land (BRACED 2018).

The National Land Policy 2013

The BRACED Report (2018) points out that this policy acknowledges that pastoral land rights are under threat, particularly from privatization, which constrains the mobility that is a critical coping strategy for pastoral livelihoods:

- It commits the state to guarantee and protect land rights of pastoral communities.

- The policy is also credited for boldly enumerating measures that Government shall take in order to secure pastoral land rights and promote pastoral development.

- Government commits itself to establish mechanisms for flexible and negotiated cross-border access to pastoralist resources and efficient mechanisms for the speedy resolution of conflict over pastoralist resources (COPASCO 2015).

The National Land Policy Implementation Action Plan 2015/16–2018/19

In order to coordinate the implementation of the land policy and legal reforms, Government established that National Land Policy Implementation Unit (NLPIU) under the Ministry of Lands, Housing and Urban Development (MLHUD). The NLPIU published the National Land Policy Implementation Action Plan (NLPIAP) for the period 2015 to 2019 in March 2015. BRACED

(2018) outlines the elements of NLIPIAP that are specifically beneficial for pastoralism:

- Assistance to customary tenure institutions to fulfill their responsibilities (Pillar One: natural resources);
- Review and regulation of implementation of customary rules to ensure that women's rights to family land are protected (Pillar Three: family);
- Developing, and providing training and resources to traditional dispute-resolution mechanisms (peace);
- Establishment and operationalization of customary land rights registry (Pillar One);
- Designing of formalization schemes appropriate to different customary rights situations and needs of rights holders (Pillars One and Two);
- Roll-out and scale-up of systematic land demarcation and titling of customary land rights;
- Review and amendment of laws governing land and resource access and tenure rights of pastoralist communities:
- Policy reforms in respect of rights and responsibilities relating to pastoralist communities (BRACED 2018, 11).

4. The Draft Uganda Rangeland Management and Pastoralism Policy

The draft Uganda Rangelands Management and Pastoralist Policy 2015/17/18 aims at providing for sustainable rangeland resource use and environmental protection aimed to sustain soil fertility, increase crop and livestock productivity, and protect the ecosystem (Byakagaba et al. 2018; COPASCO 2015; MAAIF 2017; BRACED 2018). Key points include:

- The specific objectives of the draft Rangelands Management Policy include securing effective participation of all stakeholders, promoting user understanding of the need for environmental protection, facilitating even distribution of water, and improving the quality of pasture.
- Other objectives include enhancing harmonious coexistence among the various users of rangelands, attracting public and private investment in

the rangelands that is consistent with the primary users, and strengthening service delivery (COPASCO 2015).

- The Rangelands Management Policy also mentions the management of minerals and forests, and broadly it informs specific multilateral policy programs on the management of natural resources in Uganda.

The Rangelands Management Policy for Uganda was first drafted in 2015 and revised in 2017 to include pastoralism. The current 2018 version is said to be under Cabinet review. However, the draft Rangelands Management and Pastoralism Policy in its current form has stimulated the following concerns that:

a. The draft policy restricts mobility and advocates for a model farm of four acres per household. This setting may be relevant in a crop-farming context but is inappropriate in contexts of high rainfall and resource variailty where mobility is central to maintaining high productivity of livestock.

b. MAAIF should consider zoning agro-ecological zones according to potential. For instance, areas in the cattle corridor, especially Karamoja, that must practice mobility in order to thrive have be dedicated to such a production system.

c. Challenges in treatment of livestock in Karamoja: The concern is that there are no cattle dips in Karamoja lately. Where is Government intervention? Private efforts to construct and maintain cattle dips are very expensive ventures for most pastoralists to afford.

d. Lack of security for tenure of pastoralist rangelands: This policy could help support customary/communal land tenure because it is the most secure for pastoralism. However, the draft policy does not specifically recognize the traditional authority that oversees communal land ownership in rangelands.

e. Preservation and protection of indigenous knowledge: MAAIF, for example, overlooks community preferences for livestock breeds and most times promotes hybrids like the Boer goats and Sahiwal cows instead of local livestock and local genetic resources. In addition, the level of investment in livestock research is still low in Uganda, something that has not played into benefitting facts-based adoption of genetic sciences for local benefit, among others to pastoralists.

f. MAAIF is silent on the sharing of benefits from the extraction industry in pastoralist areas. The policy would be strengthened by specifying how proceeds from mining will be used to better the livelihoods of communities in rangelands.

Notwithstanding the above, MAAIF recognizes pastoralism. Government of Uganda recognizes the necessity for mobility in some seasons and some areas of Karamoja. For example, MAAIF is even having discussions on an East African protocol on transhumance for herds to move from Turkana in Kenya to Karamoja in Uganda and vice versa but with some conditions. There is a requirement for vaccinating herds, acceptance by the host community, and regulations that will prevent depletion of resources in the host community, among others. However, most times such discussions take place in communities without Government intervention.

In addition, MAAIF was initially providing free veterinary services, e.g., vaccinations and tick control, by providing cattle dips in the rangelands. The acaricides were provided by Government, and dip assistants were employed by Government to do this work. This was effective but very costly. Currently, MAAIF is no longer in a position to provide services to pastoralists directly. This is because communal dips became expensive to maintain and when the livestock keepers were asked to cost-share, they were non-responsive thus prompting Government to abandon the strategy. Instead, MAAIF is investing in 72 communal crashes where pastoralists can access vaccination and spraying services in Karamoja. Finally, Government plans to build a big institute to support prospects on vaccine manufacturing to manage shortages of acaricides in Karamoja and Uganda as a whole.

5. Uganda Vision 2040, National Development Plan (NDP), Karamoja Integrated Development Programme (KIDP) 2 (NDP II 2015/40; KIDP 2 2017/8)

These emanate from the draft Rangelands Laws for formulation and implementation of land and ecological development policies in the country. Uganda Vision 2040 articulates the country's vision of transforming from a peasant to a modern and prosperous country by 2040 and outlines strategies to that end, while NDP II defines the actions for realizing the Vision. Drawing from Byakagaba et al. (2018), we sum up key programs areas articulated by the Rangelands management policy in ways that benefit pastoralism in Uganda:

- Uganda Vision 2040 looks to mining as one of the key drivers of the economy. Its implementation has a direct bearing on Karimojong benefitting from mineral and other resources extracted therefrom.

However, in the long term, this may restrict access to common range resources.

- NDP II looks to embark on nationwide systematic land demarcation and survey with a view to titling the remaining 80% of the land, mostly under customary tenure system by 2040; and also prioritizes land reform as articulated in the 1995 Constitution, Uganda Vision 2040, EAC Regional Integration Protocols, Africa Agenda 2063, and the Sustainable Development Goals (SDGs).

- KIDP II looks to strengthen security of land tenure and alleviate land disputes by training and capacity building to local land administration and management, including traditional leaders, surveying of land and issuance of Certificate of Customary Ownership (CCO), and establishing a land registry in Moroto (Byakagaba et al. 2018,. 8–16).

The laws sound progressive at generic levels. However, if specifically reviewed from the perspective of developing pastoralism, one can argue that there are loopholes that counteract the interests of pastoralism. Notable, among others, is that most of these are intended to modernize agriculture for a sedentarized model as opposed to pastoralism. Once implemented, these policies, laws, and regulations could restrict access and use of rangeland resources, mobility, and other traditional herd management practices, as well as undermining rights of the pastoral family and wider society.

6. Water Laws and Policies (IWRM)

Water plays a key role in the entire three-pillar cycle of pastoralist livelihoods, reproduction, and sustainability. Therefore, the centrality of water for domestic use, herd use, and for the regeneration of pastures cannot be over-amplified. However, like other rangelands resources, access to enough water for livestock, more so safe water for human needs, is often in short supply. In dire situations like droughts and famines, this lack of access to water could escalate into a trigger and driver for protracted conflicts. For that reason, we need to understand the policy regimes on water in pastoralist systems.

It is against this background that the Ministry of Water and Environment (MoWE) has come up with a model for Integrated Water Resource Management (IWRM) approach for Uganda (Republic of Uganda (2017). We discuss the policy innovations the IWRM has fronted over the years and assess their merits and demerits for pastoralism. According to MoWE 2017 the legal context under which IWRM is implemented and managed is provided by:

A) Constitution of the Republic of Uganda, 1995: Mandated to deliver water for different users because as a government parastatal, the State is required to adopt an integrated and coordinated approach, to ensure balanced development between different areas of Uganda and between the rural and urban areas, to protect important natural resources including land, water, wetlands, minerals, oil, fauna, and flora, and endeavor to fulfill the fundamental rights of all Ugandans to social justice and economic development (Republic of Uganda 2017).

B) The State is required to promote sustainable development and public awareness of the need to manage land, air, water resources, and the use of natural resources in a balanced and sustainable manner for the present and future generations. Through the above, the Constitution sets the scene for IWRM.

Broadly speaking, the water policies and laws (RoU 2017) are inclusive and therefore broadly favorable to pastoralists in Uganda. However, subtle elements show some important gaps that ought to be highlighted as they disfavor pastoralism. Notable are the following:

- To start with, a key challenge for delivering sustainable water services in rangelands is the heavy costs imposed by the unique ecological conditions. Across the cattle corridor, surface water is generally seasonal, and groundwater potential is often limited. In many cases, dams and valley tanks have insufficient inflow or have too small storage capacity to prevent them from silting and drying out. Broadly speaking, therefore, water for both domestic and agricultural uses remains of limited supply. This has tended to encourage the communities in the cattle corridor in Uganda to practice transhumance, which is often castigated for degrading the environment and being inimical for IWRM principles.

- The policy suggestions for service delivery include direct benefits for promoting appropriate technologies for water use in irrigation for agriculture, for example irrigation schemes. Hence there is no mention of how this integrated water resource delivery policy directly benefits pastoral water needs for mobile human and livestock uses such as all-season dams and gravity schemes just to mention but a few.

- The implementation strategies suggest that the IWRMS shall be primarily delivered by the private sector, which inevitably implies there has to be “market driven” levying of fees, dues, and fines for water access and usage services. While this sounds fine in planned urban and middle- to high-income locations, it is the reverse for rural areas. A major problem

of levying charges for water for livestock in pastoral areas is that it doesn't allow water managers to easily control numbers of livestock at the water point in relation to availability of pasture. So long as herders pay, they can access water regardless of whether there is sufficient pasture for the animals to eat. This can lead to degradation as well as the rapid depletion of dry season pasture (biomass), thereby undermining livestock productivity. It will become complicated or impossible to manage the levies on water services, which is a disincentive for the private sector to implement IRWM in pastoralist areas. Under private sector delivery, this new national water delivery framework becomes anti-pastoralist from its inception.

- Unless government agrees to subsidize the costs involved in private-sector owned and delivered water services, there are other challenges that come with non-affordability of levies or user charges for access and use. In typical pastoralist communities, most of the households may not be able to afford levies and charges. Even if they could, they would probably be discouraged by the practicalities surrounding ensuring sustainable access in the context of transhumant lifestyles.

- Even when facilities like dams, valley tanks, and gravity schemes have been constructed by the government, there is need for them to be owned and maintained by the end users. This could again become complicated for private sector-driven schemes. The mobility tendencies of pastoralists would be a disincentive to abide by market-driven private water delivery requirements as they tend to favor settlers and not mobile populations.

As in the past, IRWM (2017) seems relevant to the water needs of citizens across the country. However, as mentioned above, unless some specific adjustments to the generic framework are made to cater to the unique natural and human demands of pastoralism settings, this water delivery framework is unlikely to facilitate, let alone promote, the growth of pastoralism. Unfortunately, left as it is, it will replicate scenarios of the past in which several water projects constructed using Government and donor funds are poorly managed and maintained in ways that undermine the Government's efforts to supply water resources to pastoralist populations (KIDDP 2007; KIDP 2017). However, rather than blaming the limited access to sustainable water supply on challenges from the "supply side," mostly the Government and partners, such blame has been showered on the unreached would-be beneficiaries, most of whom are in pastoralist societies.

According to RoU (2017), besides the IRWM itself, there are other auxiliary policies associated with the implementation of this policy framework alongside the MoWE that need to be understood. These include the following:

1. ***The National Gender Policy of 1999:*** recognizes all women and children as key stakeholders of water;

2. ***The Local Government Act, 1997:*** underscores the devolution and roles of local governments in provision and management of water and sanitation, especially in view of local needs;

3. ***The 1998–2015 Land Act:*** conjoins central and local governments with responsibility in protecting environmentally sensitive areas such as natural lakes, rivers, groundwater, natural ponds, natural streams, wetlands, forest reserves;

4. ***The 1998 Water Abstraction and Waste Water Discharge Regulations:*** this spells out sustainable and environmentally friendly waste discharge for best practices in water use and management;

5. ***The National Environment Act (1995):*** mainly for sustainable management, coordination, and protection roles in the environment. It is this Act that makes specific pronouncements against encroachment and use of protected areas;

6. ***Prohibition of the Burning of Grass Act (1974)***, The ***Forest Act (1974)*** and the ***Cattle Grazing Act 1945*** that are all designed to protect the management of vegetation cover in hilly and mountainous areas (RoU 2017, 30–35).

We briefly discuss some of these salient policies and laws below.

The Renewable Energy Policy 2007 and the Forestry Policy 2001

These tend to promote the afforestation programs of the Government of Uganda through promoting large-scale tree planting, both as sources of farm income and to promote environmental conservation. Most of these ideas tie in with global renewable energy plans and programs seeking to mitigate the adverse effects of climate change. According to Byakagaba et al. (2018), through Ministries Departments and Agencies (MDAs) and partners Government has encouraged wide-scale adoption of commercial tree-planting schemes, even in areas previously designated as rangeland areas for purposes of pastoralism, especially in Karamoja. Similarly, the Forestry Policy 2001 provides for the development of commercial forest plantations for bio-energy and timber (Government of Uganda 2001).

However, as Byakagaba et al. (2018) have noted through these seemingly benign environment- friendly policies, the Government of Uganda has been subsidizing

the encroachment onto rangelands to frustrate and ultimately block the vitality of pastoralism in Uganda. There is no doubt that in the long run, the encroachment and exploitation of these rangelands in favor of tree planting or other farming practices has tended to limit the available land for pastoralist grazing needs.

Uganda National Gender Policy (UGP) 1997–2007

The Government of Uganda's first National Gender Policy (UGP) was approved in 1997. The policy provided a legitimate point of reference for addressing gender inequalities at all levels of Government and by all stakeholders. The major achievements of this policy include, among others, increased awareness on gender as a development concern among policy makers and implementers at all levels; influencing national, sectoral, and local government programs to address gender issues; strengthened partnerships for the advancement of gender equality and women's empowerment and increased impetus in gender activism (UGP 1997). However, it was revised in 2007 owing to emerging developments that include, among others, Government's emphasis on accelerating economic growth; poverty eradication; a sector-wide approach to planning; effective service delivery through decentralization; privatization; public-private partnership, and civil service reforms. These emerging developments present new opportunities and challenges in pursuit of gender equality and women's empowerment (UGP 1997).

The policy was designed to guide and direct at all levels of planning, resource allocation, and implementation of development programs with a gender perspective. The priority areas of focus are: improved livelihoods; promotion and protection of rights; participation in decision making and governance; recognition and promotion of gender in macro-economic management (UGP 2007).

Legal and policy context of UGP

As mentioned above, this policy is in conformity with regional and global obligations on gender equality and women's empowerment that Uganda is party to. At the regional level they include: the East African Community Treaty (2000), the Common Market for Eastern and Southern Africa Gender Policy (May 2002), the Protocol on the Rights of Women in Africa (July 2003), the Intergovernmental Authority on Development (IGAD) Gender Policy and Strategy (July 2004), and the New Partnerships for African Development (NEPAD) through its programs, which are expected to enhance women's human rights through the application of social development indicators, and the AU Heads of State Solemn Declaration on Gender Equality (July 2004). The global level instruments include: the Convention on Elimination of All Forms of Discrimination Against Women (CEDAW, 1979) and its Optional Protocol (adopted October 1999, entered into force December 2000), the Beijing

Declaration and Platform for Action (1995), the Commonwealth Plan of Action on Gender and Development; Advancing the Commonwealth Agenda into the New millennium (2005–2010), the International Conference on Population and Development (1994), the United Nations Declaration on Violence Against Women (DEVAW, 1993), the Millennium Declaration (2000), and the Convention on the Rights of the Child (CRC, 1990).[1]

With regards to pastoralism, one can argue that it clearly articulates and obligates the government, communities, and citizens within respective households in Uganda to respect and uphold the rights of girl children and women; within the women in development (WID) framework, but also the women and men, the girl and boy children within the gender and development (GAD) framework. The rights apply to the need to specifically ensure equitable access, control, and ownership of critical community resources for production and reproduction, most especially land, that are critical for sustainable individual, household, and community livelihoods in pastoralist areas.

However, just like other broad affirmative action policies and laws, there is no specific commitment directed at the pastoralist family per se, and as such it may be difficult for a victim of violence or exclusion in a pastoralist setting to effectively enforce litigations arising from abuses using this law. Most of this is caused by limited knowledge of these grand laws and more so how to claim redress through them, mostly among rural settings and within them by the poor illiterate or semi-literate women and girls therein. It ought to be noted that pastoralist areas in Uganda have historically been among those starved of judicial services. This and other factors therefore create vacuums that explain persistent higher levels of gender-based violence (GBV), poor enrollments in and high rates of girl children drop-out levels at Universal Primary Education (UPE) and Universal Secondary Education (USE) levels of schooling, and other inequitable gender indicators in the country.

The Prohibition of the Burning of Grass Act 1974

The burning of grass is widely practiced among pastoralists in the rangelands of the cattle corridor in Uganda for different reasons but mostly to control of tick-borne animal diseases and to encourage the regeneration of new tender pastures over time (Mapiye et al. 2008). Historically, colonial laws prohibited grass burning, ostensibly because of the risks of damage to human property and above all, because of the likelihood of causing the development of fire-resistant pasture species (Aleper et al. 2017) this law was designed to curb the practice of bush burning in Uganda. This policy and legal acts enforcing it stand out among

[1] **www.mglsd.go.ug/policies/uganda-gender-policy.pdf** (downloaded on 13/3/19 at 12:56 p.m.).

those directly contradicting age-old "best practice" traditional practices by pastoralists that favored sustainable rangelands management in Uganda, East Africa, and the Horn of Africa. Thus, it is not surprising that the implementation of this policy has always been ignored or contradictory depending on the timing and the powers-that-be at any given context and time. This of course is driven by the perceived pros and cons of this practice as seen from the perspective of the implementor being either sympathetic or hostile to pastoralism. However, some analysts have also pointed to contradictions within the policy and attendant laws. For example (argued by Byakagaba et al. 2018):

> *Section 2 of the Act prohibits the burning of grass by any person in Uganda and thus making it an offense with penalties for anyone who violates the law. However, Section 5 provides an exception, if it is performed for good outcomes, and thus provides a window that farmers/ pastoralists can burn vegetation mostly if, among others it is done for clearing a compound; clearing land for farming; cleaning a town or city; or making a fire break for protecting life or property.*

Still, in other instances, the same law provides that burning can only be condoned with express permission from formal governmental authority, such as the Sub-county Chief after consultation with an officer from the Veterinary or Agricultural Departments not below the position of Veterinary or Agricultural Assistant. Furthermore, it is stipulated that once permission is granted, the burning of grass should be done under the supervision of a Parish or Sub-parish chief (Byakagaba et al. 2018).

Given the above, there is no clarity to the applicability of this policy and the legalities of its implementation. One cannot argue for or against burning grass because of the challenges involved in determining "right or wrong" reasons behind specific instances and actors taking part and the rationale behind their actions. Nonetheless, there is a need to exercise some restraint on the side of the law enforcers to avoid making blanket prohibitions against bush burning without sensitivities to the local actors and their contexts. There is a need for intensive consultations involving elders and both modern and traditional leaders in such areas before taking actions for or against this practice, especially in areas occupied by most of the pastoralist communities in Uganda.

The Local Governments Act 1997 and Decentralization Policy

This is another flagship policy that has had overarching implications for development across regions and the legal and policy landscape in Uganda. The Local Governments Act 1997 is the major law that stipulates the structure and

functions of the local governments and administrative agencies that came up as result of the processes of implementing decentralization in Uganda.

Simply defined, decentralization is the process by which a central government or higher governance authority passes or shares some powers for delivering services, making laws, and managing budgets with local governments or any other sub-national tiers of government. In effect, therefore, it has been argued that there are different forms or levels of decentralization that have been in existence in Uganda since independence in 1962. Among others being: de-concentration (said to be the least extensive form); delegation (more extensive); devolution (intensive and most empowering), and privatization (which, if effected, entails central government merely providing an enabling environment for implementation of services) (Nsibambi 1999). One can say Uganda today mostly uses elements of devolution, mainly for governance purposes, and, in some instances, privatization, mainly in some sectors of service delivery, for example in the water and veterinary medicine sectors, where government has encouraged the private sector and non-state actors to take the lead in service delivery.

Like the case for other policies and laws above, even decentralization has been a mixed blessing for pastoralism in Uganda. On one hand, it can benefit pastoralists by bringing governmental social services, veterinary services, human health services, and education closer to the citizens in such areas. It enhances citizen participation in decision-making processes in ways that can enhance transparency and accountability of technical and political leaders in managing resources intended for development purposes, among others. Consequently, when practiced well, particularly through democratic processes, respective local government and subnational leaders are more accountable to local interests, which can also benefit pastoralism better than the more centralized systems in existence before 1987. Devolution has ensured more efficient utilization and delivery of quality services, since payment of public servants and local contractors are timely, as is delivery of sensitive materials and substances such as animal and human medicines and some key agricultural inputs (Nsibambi 1999).

The challenge is that over time, decentralization has been negatively "over-politicized" into becoming a tool for "distrification," or as others prefer, "districtivization," all of which refers to the subdivision of areas formally occupied by homogeneous communities (ethnic groups or tribes) into different districts of local governments, resulting in unnecessary boundaries that block grazing routes or block overall access of former allies to communal rangeland resources, among others. This has led some critics of this ongoing process to refer to it as "Balkanization" or outright election gerrymandering (Opolot and Businge 2019 (forthcoming)). Several disadvantages or demerits of this tendency to manipulate decentralization for political gain arise for pastoralists:

- The subdivision of formerly communal rangeland areas into many administrative units may not be favorable for the traditional or communal grazing routes by undermining the inherent benefits of transhumance for ecological sustainability. For example, it has been argued that pastoralism thrived best in the past when the Karimojong where occupying one district. Albeit belonging to different ethnicities, they shared a common pastoralist livelihood and coexisted together as one and shared better their common resources like land and water such that herds and humans seemed healthier than today.

- However, the creation of several districts in Karamoja sub-region alone (eight or more today) has curtailed access to traditional grazing routes and exacerbated divisions and disunity, and precipitated unnecessary tensions and conflicts, which in turn has tended to cost the environment by causing overgrazing and degradation of the affected rangelands. Over time, the family, clan, and tribal systems that used to hold pastoralists together are getting compromised (Muhereza 2001; KRSU 2017).

7. Education policy and pastoralists (Pre-primary, Universal Primary Education and Universal Secondary Education 1997–2017)

We can argue that by providing for affirmative actions for all and therefore ensuring commitments to extend services across the country, the National Resistance Movement (NRM) government has been able to broadly meet some basic needs for even minority sections of the population such as pastoralists. For example, after promulgating and rolling out Universal Primary Education (UPE) in 1997, it was followed with Universal Secondary Education, which was needed to contend with the swelling needs of primary graduates. This was followed up with several steps to fast track the decentralization of public tertiary and university education and Government encouragement of privatization for investors to contribute towards expanding the secondary, tertiary, and university education sectors.

There is little doubt that these developments caused admirable swells in enrollments across educational levels in schools and institutions, even in remote regions and within communities in the cattle corridor such as Karamoja. To today the challenges of access, retention, and completion in education persist. In 2014, UBOS pointed out the poor enrollment in UPE and USE schools in Karamoja and pastoral areas. The report blamed it on the failure of educational expanse or increased access to education opportunity to specifically address the “unique” needs for pro-pastoralists mobile education and specific “pastoralist curriculum” interests or relevance (UBOS 2014).

UBOS and UN agencies report that interventions by both Government and other stakeholders could have significantly paid off in the health and water sectors. However, there are negative trends in attendance, school enrollment, and literacy; this requires attention (KIDP 2017). The Government of Uganda is being lobbied on this issue, because a *"lot of effort is required under education, and we need to recommend in the reports, both a national and a regional action plan to address the challenges under this sector"* (KIDP 2017, 14).

In Karamoja and elsewhere in East Africa and the Horn of Africa, there is a rising demand for pastoralists' education and innovative education in pastoralist areas (Krätli and Dyer 2009). There are demands for mobile-based education systems or schools that allow children directly involved in pastoral livestock production to also receive schooling. Pastoralists' access to education is low relative to non-pastoral populations, partly because conventional school-based systems are not compatible with pastoralist lifestyles (Siele et al. 2013). Experiences in Kenya show that distance learning through the use of radio is a potentially flexible and worthwhile option (Siele et al. 2013).

Other examples include mobile community-based teachers and community boarding schools. Many of these initiatives are currently based through NGOs, with limited support from governments. This can result in overall quality problems and high costs for parents and communities to bear. Government policies on education need to recognize mobile pastoral societies and cater to their educational needs, in addition to catering to those under more conventional school-based systems.

Education provides a long-term investment for improved pastoral representation, better integration of pastoralists in national policy making, being able to seize business opportunities. The Government of Uganda experimented with some educational innovations, such as the Alternative Education for Karamoja (ABEK), but these did not last after their pilot years for several reasons. One reason was the fact that they were externally conceived by NGOs and assumptions that they could become integrated into mainstream Ministry of Education and Sports (MoES) delivery of education did not actually take root. Subsequently, the limited governmental investment caused the failure of local government in the regions to effectively generate local ownership of these programs, which remained largely seen as NGO projects.

8. Livestock policies (Animal Breeding 2001 and others)

Historically the Constitutions of Uganda (1966, 1967, and 2005) have contained acts, regulations, and policies on livestock husbandry. Notable among these include: Animals Prevention of Cruelty Act, CAP 39; ii) Annual Diseases Act,

CAP 38; iii) Annual Breeding Act 2001; vi) Branding of Stock Act, CAP 41; v) Cattle Traders Act, CAP 43; vi) Cattle Grazing Act, CAP 42; vii) Dairy Industry Act, CAP 85; and viii) Food and Drugs Act, CAP 278, among others.

The challenge is that most of these laws and policies have not been effectively enforced for the benefit of pastoralism. This is mainly because of a limited number of veterinary doctors and the absence of community animal health workers (CAHWs) in the country. As Rugadya (undated) argues, the prerogative of the Government has been to encourage private and no-state actors to provide these services.

Policies on CAHWs and livestock health policies

A 2001 report from Makerere University made a similar revelation. The then Faculty of Veterinary Medicine went ahead and developed a curriculum for training CAHWs in 2001. These provided some relief in areas of Karamoja and other parts of the cattle corridor, but their services could only last as and when donor funding for community-wide schemes was available. Otherwise, it favored the wealthy pastoralists who could afford to pay, since the services were privatized.

For that matter, whereas there are several relevant veterinary laws that could grow pastoralism by ensuring the health of the herd, we have the persistent challenge of poor access as a result of non-affordability and poor quality assurance, as the majority poor become susceptible to cheaper alternatives who are often no more than interns or outright quack animal health providers. This is supported by findings from some Government-funded studies among pastoralists (UPPAP, 2002) that highlighted complaints about poor access and quality of veterinary experts, animal drugs, feeds, and associated livestock inputs and services. The limited reach and benefits from veterinary and related social services persists to today, as evidenced in more recent studies conducted under the banner of "Citizens perceptions on achievements of Uganda at 50 years of independence" (Ahikire et al. 2013; Opolot et al. 2014).

In 2018, MAAIF followed on earlier efforts of Makerere University (2001) by coming up with a "Draft Community Animal Health Workers Curriculum 2018." It is said that this curriculum is being implemented for training CAHWs in the country. While these are commendable efforts, it further shows the lag between policy formulation and practice, as most policy responses appear to operate in a circular motion without tangible benefit to society in time and spaces of need. Broadly speaking, therefore, the gap between policy and practice has not changed much in Uganda, which has negatively affected the development of a vibrant pastoralism. A study by Abebe (2016) reviewed veterinary services in Karamoja and found several factors undermining both access and quality in

delivery of this critical service, particularly issues regarding the role of CAHWs. In spite of early concerns about the ability of CAHWs to properly administer veterinary drugs and diagnose livestock diseases, surveys show they have the confidence of livestock keepers and are providing much-needed services at an affordable cost. The advantages of CAHWs for pastoralist areas are fourfold:

- Accessibility: The problem of physical access to livestock is particularly challenging during the rainy season or in areas affected by conflict. CAHWs live in the same community as their clients and are usually readily accessible when needed. Treating sick livestock in place rather than having to transport them to centers reduces the risk of disease spread and increases effectiveness, as treatment can be provided so much more quickly.

- Technical appropriateness: CAHWs can handle basic healthcare problems; CAHWs can offer preventive or curative services for problems such as internal and external parasitism, other infectious diseases, and various other ailments. These workers can also vaccinate animals against anthrax, pasteurellosis, and Black Quarter, and offer castration, dehorning, and similar services.

- Affordability: CAHWs are usually part-time workers who also make a living from rearing livestock.

- Accountability: pastoralists feel a greater sense of control and accountability with CAHWs, whom they have had a say in selecting, as compared to most Government personnel.

The value of CAHWs has been particularly well demonstrated in the vaccination campaign to eradicate rinderpest, where CAHWs were able to vaccinate more than 85% of livestock using a heat-stable vaccination that did not require refrigeration (Abebe 2016).

A study by Ilukor et al. (2012) pointed out that another challenge to provision of veterinary services identified is the limited number of active veterinary professionals and the difficulty in attracting and retaining veterinary staff ,especially by local governments in marginal areas. Concerns remain, however, with respect to the shift towards a more decentralized animal health care system working through community members.

Ilukor et al. (2012) proposed the need for centralizing the administration of veterinary staff. According to them, administrative decentralization aimed at empowering farmers and local leaders to supervise and monitor extension staff is

not appropriate for veterinary services, because veterinary services require an efficient chain of command to ensure quality. Others suggest that decentralized administration of veterinary staff fragments the chain of command and reduces the responsiveness of the veterinary system (Petitclerc 2012 cited in Ilukor et al. 2012). Furthermore, the same studies observed that in addition, the local leaders or politicians have captured decentralization power and have used it to interfere with provision of preventive veterinary services (Ilukor et al. 2012). In other words, this demonstrates that the issue at hand is a poorly administered decentralization framework; such frameworks, once well implemented, can yield better veterinary services in other contexts. In summary, a number of specific observations are drawn from Abebe (2016) and Ilukor et al. (2012):

- Governance of CAHW system: veterinary services need to develop objective and transparent systems for the accreditation, certification, monitoring, and supervision of CAHWs.
- A need to review legislation: the policy gap is lack of definition, roles, regulation, and supervision of CAHWs. These need to be defined in veterinary legislation.
- There is a need for coherence in the existing public and private veterinary service delivery system.
- Continuing support to subsidized systems for veterinary drugs is necessary.
- There is a lack of a proper and regular supervision and monitoring system.
- Absence of certification is an issue.
- Regular review of national guidelines, curriculum, licensing, and monitoring procedures is neede.
- There is an inadequatenumber of private practitioners in remote areas.

The low education level of CAHWs and language differences limit the interaction between the veterinarian and CAHWs. As a result, CAHWs often overuse and administer the wrong drugs based on a wrong diagnosis. When the animal fails to respond, farmers refuse to pay for the service and lose the incentive to seek services of CAHWs (Abebe 2016). There are many drug shops opened by businessmen without animal health qualification. Their objective is to sell drugs;

they do not advise farmers adequately on the use and administration of the drugs, and sometimes they sell expired drugs (Byarugaba 2004).

Limited qualified CAHW staff

In pastoral areas, veterinarians or veterinary-trained staff are very few in number. Citing Ilukor et al. (2012), a scenario is given that, in "District A" for example, there was only one veterinarian, who is taken up with administrative work and not easily reached. In fact, all the pastoralists who participated in Net-Map study undertaken by Ilukor et al. (2012). stated that they had never met or heard about a veterinary officer. One of the CAHWs remarked:

> *"Our problem is that we have only one veterinarian in the district and he is busy with administrative work, attending workshops and is always out of station. At times some of us have to consult him on phone."* (Ilukor 2012, 12)

Findings from the study further demonstrated that the district veterinary officer admitted that he does not get to villages communities because he is the only veterinarian in the district. The veterinarian also cited poor accommodation and transport, and security problems. Most areas are not easily accessible, and his department does not have a car. Sometimes, they spend one week to reach is work station either because roads are cut off by water during the rainy season, or it is insecure. Frequently, he delegates the Government duties to CAHWs. Occasionally, he conducts consultations on phone, but since he does not know the local language, only CAHWs and pastoralists who are comfortable with English and have phones can consult him over the phone (Ilukor et al. 2012).

Problems and possible solutions in the treatment of endemic disease in the pastoral areas

The study by Ilukor et al. (2012) asserts that results from process influence mapping reveal that the key problems that are encountered in treatment and control of endemic diseases pastoral communities in Uganda are:

- Delays in reporting: Three reasons explain the delays in the treatment of the animals. First, livestock keepers prefer of local medicine to modern medicine, and by the time an animal is attended to, the disease is already out of hand. Second, even if the pastoralist wants to buy modern medicine, they have to sell another the animal to buy drugs. Worse still, the distance to the market to sell an animal and buy drugs is very long. The main means of transport used are walking and riding a bicycle. Farmers noted that sometimes it takes some farmers two to three days to

reach the drug shop. Third, as observed by one of respondents the pastoralists' culture is such that, unless the animal falls down or fails to walk, a livestock farmer will not seek a service of service provider (Petitclerc 2012 cited in Ilukor et al. 2012).

- Drug misuse: Drug misuse occurs because pastoralists tend to self-treat their animals, yet most of them have no education. Pastoralists are not able to read the labels on drug and thus are not able to know how to apply and use the drug (Petitclerc 2012 cited in Ilukor et al. 2012).

7.4 POLICY OPTIONS AND CONCLUSION

The Uganda policy context has not been favorable for pastoralists in many ways. This has largely been blamed on the pre-colonial period when the administration of the day was reluctant to venture into hostile areas that were also deemed to be non-economically viable, as Karamoja was deemed to be at the time. Post-colonial governments have not necessarily changed this anti-pastoralist stance toward Karamoja. Instead, there is evidence of considerable investments to promote crop agriculture, mineral exploitation, and security in order to strengthen state government presence, reach, and depth in Karamoja Region. We still see a cross-cutting bias towards crop agriculture driving the developmental agenda at the expense of pastoralists, who continue to be considered a less-viable section of the national economy today.

For that reason, the livestock sector has remained only marginally integrated in national development processes and outcomes. If the pastoralist economy were better appreciated in Uganda, Government would have become more accountable and responsive and approach mainstream pastoralism in a more significant and progressive manner than what we see today. Nonetheless, we appreciate that as pastoralists become more organized and their civic lobby stronger both locally and internationally, we will begin to see more pronouncements of a pro-pastoralist development agenda forming in Uganda, the East African region, and beyond.

The emerging picture is that government needs to refocus veterinary service delivery and ensure rangeland management practices that encourage the effectiveness of the pastoralist economy symbiotically relevant for the ecology of Karamoja and the rangelands in the cattle corridor of Uganda. Consequently, given the existing fiscal challenges, the key to improving animal service delivery in Uganda rests on getting priorities, policies, and institutions right. Creating an independent ministry responsible for livestock may be advantageous in advocating for veterinary policy, legislation, and education. Countries like Kenya and Tanzania that have independent ministries of livestock have put in place

veterinary legislation that guides the provision of veterinary services. For example, Tanzania passed a Veterinary Act in 2003 and Kenya in 2010, but Uganda still depends on the Veterinary Surgeons Act of 1958 (Petitclerc 2012). Uganda, too, used to have an independent ministry of livestock industry and fisheries before 1992, but it was merged with ministry of agriculture with the objective of enhancing the efficiency and effectiveness of public expenditures and rationalizing the use of resources (Kuteesa et al. 2006). However, this turned out to be counterproductive and has negatively affected delivery of agricultural services, including veterinary services (Semana 2002).

Other autonomous institutions such as National Agricultural Research Organization (NARO), established in 2005, National Agriculture Advisory Services (NAADS), established in 2001, and Dairy Development Authority (DDA), established in 1998, were created to improve delivery of agricultural services, including livestock (Lukwago 2010). However, the creation of these autonomous institutions has instead increased public expenditure, while service delivery has stagnated or continued to decline. Programs under some of these institutions like NAADS could be implemented by the public extension system instead of running parallel systems that are performing the same functions (Rwamigisa 2013). This could reduce the financial and budgetary problems, and the rivalry that exists between MAAIF and some of these institutions.

Another key challenge which has been persistent in the marginal pastoral areas is the limited number of active veterinary professionals and difficulty by local governments to attract and retain veterinary staff, (Ilukor et al. 2012). Three strategies are considered to avert such a scenario in Uganda:

(i) First, is to centralize the administration of veterinary staff. Previous administrative decentralization, which was aimed at empowering pastoralists and local leaders to supervise and monitor extension staff, is not appropriate for veterinary services. This is because veterinary services requires an efficient chain of command to ensure quality. Decentralized administration of veterinary staff fragments the chain of command and reduces the responsiveness of the veterinary system (Petitclerc 2012). In addition, the local leaders or politicians have captured decentralization power and have used it to interfere with provision of preventive veterinary services.

(ii) Second, is to recruit holders of diplomas in veterinary science at sub-county level rather than restricting recruitment to only degree holders. Veterinarians are difficult to retain and motivate. They require higher wages than paraprofessional holders of diplomas in veterinary medicine (Leonard et al. 1999).

(iii) Third, is to support veterinary training and education. It is impossible to have enough qualified veterinary staff, both diploma and degree holders, to offer veterinary services in Uganda without appropriate funding. Funding of veterinary education needs to target students from pastoral or marginal areas (Petitclerc 2012 cited in Ilukor et al. 2012).

REFERENCES

Abebe, D. 2016. Veterinary services in Karamoja, Uganda: A review. KRSU, USAID/Uganda, Kampala.

Ahikire, J., Madanda Aramanzan, and S. J. Opolot. 2013. "It all begins with me: Citizen's voices on Uganda at 50 years of independence and beyond." CBR/OSIEA working paper no. 102. Kampala.

Aleper, D., M. Nyeko, and M. Namaganda. 2017. Status and trends of rangelands in central Karamoja, recommendations for enhancement of livestock production. Technical report submitted to Welt Hunger Hilfe, Moroto

AU. 2010. Policy framework for pastoralism in Africa: Securing, protecting and improving the lives, livelihoods and rights of pastoralist communities. Department of Rural Economy and Agriculture, African Union Commission. Addis Ababa. **http://rea.au.int/en/sites/default/files/Policy%20Framework%20for%20Pastoralism.pdf**.

Beyaraza, E. 2004. Evolution of property rights in Uganda: A legal and philosophical analysis of past, present, and future trends. Makerere University Printery.

BRACED. Building Resilience to Climate Extremes and Disasters. 2018. Policy and legal framework for securing communal land Rights in Karamoja. *Challenges, opportunities and entry points for Interventions. USAID/Mercy Corps*

Byakagaba et al. 2018. Pastoralism: Research, policy and practice. *Pastoralism: Research, Policy and Practice* 8:7.

Byarugaba, D., 2004. A view on antimicrobial resistance in developing countries and responsible risk factors. *International journal of antimicrobial agents*, 24, pp.105–110.

COPASCO. 2015. Media handbook: Coalition of Pastoralist Civil Society Organizations. CODAID, Kampala.

Department of Veterinary Medicine Makerere University. 2001. "Animal health service delivery in pastoralist areas." Workshop held in Eneku Training Village, Soroti, Uganda, September 4–6. Sponsored by Cape, Pace, Oau-Ibar.

Doornbos, M. R., and M. F. Lofchie. 1970. Ranching and scheming: A case study of the Ankole ranching scheme. Institute of Social Studies, The Hague.

Egeru, A., O. Wasonga, Kyagulanyi Joseph, G. J. Mwanjalolo Majaliwa. Undated. Pastoralism in the new millennium. FAO. **http://www.fao.org**.

Government of Uganda. 2008. The national livestock census report 2008. MAAIF, Entebbe.

Government of Uganda. 2010. The First National Development Plan. National Planning Authority, Kampala.

Government of Uganda. 2012. Renewable energy investment guide. Ministry of Energy and Mineral Development, Kampala.

Government of Uganda. 2014. Draft Rangeland Management and Pastoralism Policy. Animal Industry and Fisheries Ministry of Agriculture, Kampala.

Government of Uganda. 2015. The Second National Development Plan. National Planning Authority, Kampala.

Government of Uganda. 2016. Draft Biomass Report. National Forestry Authority, Kampala.

Hardin, G. 1968. The tragedy of the commons. Science 162, 1243–1248.

HPG. 2009. Pastoralism, policies and practice in the Horn and East Africa: A review of current trends. Humanitarian Policy Group synthesis paper. April. **https://doi.org/10.1186/s13570-017-0111-3**.

Hatfield, R., and J. Davies. 2006, Global review of the economics of pastoralism. World Initiative for Sustainable Pastoralism, IUCN, Nairobi. The Journal of Development Studies 12 (1): 54–74.

Ilukor, J., R. Birner, P. B. Rwamigisa, and N. Nantima. 2012. Analysis of veterinary service delivery in Uganda: An application of the Process NetMap Tool. Conference paper. **http://www. Researchgate.net/publication/27202150**.

Joughin, J., and A. M. Kjær. 2010. The politics of agricultural policy reform: The case of Uganda. Forum for Development Studies.

Kalabamu, F. T. 2000. Land tenure and management reforms in East and Southern Africa - the case of Botswana. *Land Use Policy* 17 (4): 305–319.

Karamoja Resilience Support Unit (KRSU). 2017. Pastoralist and livestock development in Karamoja, Uganda: A rapid review of African regional policy and programming initiatives. October.

KIDP. 2017. Karamoja Intergrated Development Programme Annual Review. USAID/Office of the Prime Minister, Uganda.

Kisamba-Mugerwa, W. 1992. Rangeland tenure and resource management: An overview of pastoralism in Uganda. Makerere Institute of Social Research.

Kisamba-Mugerwa, W. 1995. The impact of individualisation on common grazing land resources in Uganda. PhD, Makerere Institute of Social Research, Makerere University.

Krätli, S., and C. Dyer. 2009. Mobile pastoralists and education: Strategic options. Education for nomads working paper 1. IIED, London. **http://pubs.iied.org/ 10021IIED.html**.

Kuteesa, F. et al. 2006. Uganda: A decade of budget reform by OECD. Journal on Budgeting 6 (2): 1–25.

Kyagaba, E.. 2004. Range resource assessment and monitoring techniques among the pastoral Bahima in Uganda. *Nomadic Peoples* 8 (1): 81–97.

Lastarria-Cornhiel, S. 2003. Uganda country brief: Property rights and land.

Leonard, D K et al., 1999. The new institutional economics of privatizing veterinary services in Africa. *Revue scientifique et technique (International Office of Epizootics)*, 18(2), pp.544–561.

Lesorogol, C. K. 2010. Creating common grazing rights on private parcels: How new rules produce incentives for cooperative land management. In *Cooperation in economy and society*, ed. R Marshall, 239–258. Lanham, MD:Alta Mira Press.

Lukwago, D. 2010. Increasing agricultural sector financing: Why it matters for Uganda's socio-economic transformation. Advocates Coalition for Development and Environment (ACODE).

Mabikke, S. B. 2011. Escalating land grabbing in post-conflict regions of Northern Uganda: A need for strengthening good land governance in Acholi Region. International conference on global land grabbing.

MAAIF 2016. Draft Rangeland Management and Pastoralism Policy. Mininistry of Agriculture Animal Industries and Fisheries. Uganda

Mamdani, M. 1982. Karamoja: Colonial roots of famine in North-East Uganda. *Review of African Political Economy* 9 (25): 66–73.

Mapiye, C., M. Mwale, N. Chikumba, and M. Chimonyo. 2008. Fire as a rangeland management tool in the savannas of southern Africa: A review. *Tropical and Subtropical Agroecosystems* 8 (2): 115–124.

Minami, K., and T. Kimura. 1993. The significance of grasslands in absorption of atmospheric methane and emission of nitrous oxide. *Journal of Agricultural Meteorology* 48 (5): 719–722.

MoFED. 2010. Growth and Transformation Plan (GTP)2010/11–2014/15. Vol 1. Ministry of Finance and Economic Development, Addis Ababa. **www.ethiopians.com/Ethiopia_GTP_2015.pdf**.

Msuya, D. G. 2015. Pastoralism beyond ranching: A farming system in severe stress in semi-arid tropics especially in Africa. *Journal of Agriculture and Ecology Research International* 4 (3): 128–139.

Mugasi, S. K., E. N. Sabiiti, and B. M. Tayebwa. 2000. The economic implications of bush encroachment on livestock farming in rangelands of Uganda. *African Journal of Range and Forage Science* 17 (1–3): 64–69.

Mugerwa, S., and E. Zziwa. 2014. Drivers of grassland ecosystems' deterioration in Uganda. *Applied Science Reports* 2 (3): 103–111.

Muhereza, F. E. 2001. Ranchers and pastoralists: Restructuring of government ranching, Uganda, 100–133. In African pastoralism: Conflict, institutions and government. Pluto Press, London.

Nantima, N. 2012. Analysis of veterinary service delivery in Uganda: An application of the Process Net-Map Tool. MAAIF. Conference paper. December (Originally co-authored with J. Illukor, R. Birner, and P. B. Rwamigisa).

Nsibambi, A. 1999. Decentralisation and civil society in Uganda: The quest for good governance, Fountain Publishers, Kampala Uganda.

Ocan, C. E., and C. Ocan. 1994. Pastoral resources and conflicts in north-eastern Uganda: The Karimojong case. *Nomadic Peoples* 34 (35): 123–135.

Okuku, J. A. 2006. The Land Act (1998) and land tenure reform in Uganda. *Africa Development* 31 (1): 1–26.

Opolot, S. J. 2015. Policy inertia and conflict in the Karamoja Cluster of Horn and East Africa. IGAD/CEWARN News. Newsletter for the Conflict Early Warning and Early Response Mechanism; CEWARN, IGAD, Addis Ababa.

Opolot, S. J., and C. Businge. 2019. Evaluation of the Rwenzori Forum for Justice and Peace 2018 Annual Survey Data. Draft RFPJ working paper (forthcoming).

Opolot, S. J., and Muhumuza Joseph. 2014. "It all begins with me: Citizen's voices on Uganda at 50 years of independence and beyond: NgiKarimojong speak out." CBR/OSIEA working paper no. 103.

Ostrom, E. 1990. Governing the commons: the evolution of institutions for collective action. Cambridge: Cambridge University Press.

Otim, P. 2004. Baseline study for the Ugandan side of the Karamoja cluster. Center for Basic Research, Addis Ababa.

Pastoral Civil Society in East Africa. 2012. Dynamics of pastoral systems and policy options in East Africa. Participant training folder.

Petitclerc, M., 2012. Governance , veterinary legislation and quality. *Revue scientifique et technique (International Office of Epizootics)*, 31(2), pp.465–477.

Policy Framework for Pastoralism in Africa. 2010. October. Addis Ababa.

Regional Pastoral Livelihoods Resilience Project (RPLRP). 2016. Policies and proclamations relevant to pastoral areas land management for Ethiopia, Kenya and Uganda. IGAD Centre for Pastoral Areas and Livestock Development (ICPALD) review report. December.

Republic of Uganda. 2007. Karamoja Integrated Disarmament and Development Programme, "Creating conditions for promoting human security and recovery in Karamoja, 2007/2008-2009/2010." January. Office of the Prime Minister, Kampala.

Republic of Uganda. 2014. Statistical Abstract 2014.

Republic of Uganda. 2015. Second National Development Plan (NDP II) 2015/16–2019/20.

Republic of Uganda. 2017. Proceedings of the 9th Karamoja Policy Committee Meeting and Annual Review of KIDP2. Moroto District Council Hall. December.

Rugadya A. Margaret. Undated. Pastoralism as conservation strategy. Uganda country paper, IUCN (draft).

Rwamigisa, P. B. 2013. The role of policy beliefs and discourses. A case study of NAADS in Uganda. In Political economy of agricultural policy in Africa. Future Agricultures Consortium.

Semana, A. 2002. Agricultural extension services at crossroads: Present dilemma and possible solutions for future in Uganda. Proceedings of CODESRIA-IFS Sustainable Agriculture Initiative Workshop, Kampala.

Shanahan, M. 2013. Following the herd: Why pastoralism needs better media coverage, The International Institute for Environment and Development.

Textbook for common course. 2015. Pastoralism and pastoral policy in Ehiopia. FIC/IIED

Toulmin, C. and Quan, J., eds. 2000. Evolving land rights, policy and tenure in Africa. DFID/IIED/NRI, London.

Turner, M. D., J. G. McPeak, K. Gillin, E. Kitchell, and N. Kimambo. 2016. Reconciling flexibility and tenure security for pastoral resources: The geography of transhumance networks in eastern Senegal. *Human Ecology* 44 (2): 199–215.

Turyahabwe, N., and A. Y. Banana. 2008. An overview of history and development of forest policy and legislation in Uganda. *International Forestry Review* 10 (4): 641–656.

UBOS. 2014. National Housing Survey. Uganda Bureau of Statistics. *Statistical Abstracts* 2014.

Uganda Participatory Poverty Assessment Process (UPPAP), 2002. *Second Participatory Poverty Assessment Report*, Deepening the Understanding of Poverty, MFPED, December.

Uganda Veterinary Association, FAO, and MAAIF. 2018. Draft community animal health workers curriculum, Government of Uganda (unpublished).

UGP. 1997. National Gender Policy. Government of the Republic of Uganda

UWA. 2013. Strategic plan 2013–2018. Uganda Wildlife Authority.

Wellard-Dyer, K. 2012. Pastoralism in the Horn of Africa: Diverse livelihood pathways. CAADP policy brief 06. Future Agricultures Consortium. **www.future-agricultures.org/policy-engagement/policy-briefs/1531-pastoralism-in-the-horn-of-africa-diverse-livelihood-pathways/file**.

8. Challenges and prospects of pastoralism

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SUMMARY

This chapter looks at the constraints and opportunities currently facing pastoralism and what these might mean for the sustainability and future of pastoral systems:

- There are a number of constraints facing pastoral systems, including national population growth, policy and market challenges, changing land uses, increasing inequalities, insecurity and land conflicts, and animal diseases.

- Despite these constraints, there are a number of opportunities for pastoralism to remain a viable livelihood and land use system. These include: more supportive frameworks and policies towards pastoralism; a growing pastoral political presence and civil society movement; greater use of technology; enhanced diversification and innovative livelihood strategies; increasing education; and more demand and market opportunities for livestock.

- Climate change is both a constraint and opportunity for pastoralism. It is argued that pastoralists are well positioned to adapt to climate change and already utilize a number of strategies to respond to climate variability.

- There are a number of gaps to address to ensure pastoralism as a viable livelihood. These include: securing mobility and equitable access to land; increased animal health facilities; supportive development and national policies; capacity building; expansion of trade; and the empowerment of women.

- The possible futures of pastoralism in Uganda and Eastern Africa are diverse and will depend on the particular physical, economic, political, and social context and demands placed on pastoralists. Some will continue to maintain a livelihood based on mobile livestock keeping, while others will drop out of pastoralism and seek alternative livelihoods. Others might tap into opportunities for commercialization and trade, and engage in value-added activities. It is likely a combination of activities will emerge that allow diverse livestock- and non-livestock-based activities to support and complement one another, and strengthen livelihoods in pastoral areas.

Issues for reflection

1) What is the role of investment and business in the future of pastoralism?

2) What are some of the ways to improve the representation of pastoralists at state and regional levels?

3) What are some of pastoralist adaptation strategies to climate change?

4) How do you better foster women in community leadership in pastoral areas?

5) What is the role of education in the future of pastoralism?

6) What is the future of patoralism 20 years from now?

8.1 OVERVIEW

This book has shown how pastoralism as a production system makes productive and rational use of a natural environment that is inherently variable and unpredictable.

We have learned how extensive pastoral production contributes significant amounts to the national economy of Uganda, as well as other countries in East Africa. The livestock and meat trade was valued at US$ 1 billion for The Horn of Africa in 2010. From the evidence adduced, it is not difficult to realize how many livelihooods in Uganda are supported by pastoralism, both directly and indirectly, through economic, cultural, social, and nutritional benefits. The textbook also showcases how mobile livestock production makes efficient and productive use of scarce rangeland resources in the arid and semi-arid lands, and how livestock are able to make use of the resources, feeding burgeoning human populations and conserving rangeland biodiversity in the process.

Despite the considerable benefits, governments still consider pastoralism an environmentally destructive and irrational land use. Pastoralists are considered archaic, traditional, and irrational in their desire to keep many livestock. Many of the headlines and much of the media portrayal of pastoral land is that of poverty, food insecurity, and land grabs (IIED 2013).

Yet pastoralism is showing remarkable vitality, and in the last decade research has shown a much more nuanced picture of pastoral systems. This portrait shows pastoralists as fluid and dynamic, and continually adapting to constraints and opportunities in their political, economic, and climatic environments. Pastoralists

are responding to market demands and opportunities, and pastoralists are innovating and finding new ways to harness the variability and uncertainty in their environments (Krätli 2015).

Here we outline some of the main constraints and opportunities currently facing pastoralism.

8.2 CONSTRAINTS

Pastoral systems currently face a number of challenges, including population growth, urbanization, changing land uses, globalization, and increasing insecurity and conflict. These are discussed, although not exhaustively, in the list below:

- **Growing populations.** Pastoral towns and settlements are expanding, but while human populations are growing, livestock population numbers are remaining relatively stable. This is resulting in fewer livestock per capita. The increasing need to grow crops to feed the growing numbers of people makes it difficult to keep rangelands open for livestock. This is restricting mobility. It is also causing pastoral economies to be less self-sufficient.

- **Gender inequality.** Women's voices are excluded in decision making at various levels of a pastoral society.

- **Market constraints.** These include high transaction costs, high market taxes and transit fees, and poor access to high–value export markets. Pastoralists are vulnerable to low prices, especially if livestock lose condition on the way to market.

- **Policy challenges.** Policy promotes cropping over pastoralism, turning rangelands to crop farms and herders to farmers. It is assumed that crop farming is a better way to develop pastoral lands. However, keeping land under common property tenure regimes so livestock can be mobile, especially in the context of climate change, can improve the success and sustainability of production. There is also the continual assumption that to develop is to intensify production to western-style ranching or diary systems. However, constraints such as low and irregular rainfall, recurrent drought, poor soils, and limited veterinary and agricultural inputs limit this. Government policies continue to encourage pastoralists to sedentarize—for administration and taxation purposes and provision of services, such as health and education.

- **Rangeland conversion into other land.** Economic empowerment, improvement of household income through crop cultivation, ensuring food and energy security, and timber production have been the underlying factors driving rangeland conversion in Uganda (Nakalembe et al. 2017, Zziwa et al. 2012). Rangelands in Uganda have been converted to other land uses partly because of Government policies emphasizing improved agricultural production. The most recent policy intervention is the Plan for Modernization of Agriculture, which evolved into Prosperity for All and is currently known as Operation Wealth Creation (Joughin and Kjær 2010). This intervention has led to a phenomenon described by Egeru et al. (2014) as "a chlorophyll syndrome" where politicians, technocrats, and some non-state actors regard crop cultivation as a panacea to achieving household food security in marginalized areas. Grassland cover decreased by 9.2% between 1990 and 2015, mainly due to agricultural expansion (Government of Uganda 2016).

- **Increasing inequalities.** There is an increasing gap between those who own livestock and those who herd livestock, resulting in an increasing concentration of livestock with wealthy absentee owners and fewer with rural poor herders. Those left behind are marginalized and not well represented. Similarly, there is a growing gap between those who are able to access and profit from increasing market opportunities and those who are not. Those who are not may have to drop out of pastoralism, find new livelihoods, or rely on aid. The more wealthy pastoralists are buying fodder and supplementary feed, buying and trucking in water, and fencing off private areas for their personal use to make up for reduced pastures, especially in Ankole.

- **Animal theft.** Pastoralists' reliance on mobility makes them more vulnerable to theft. This can cut off access to key resources and block them from routes to markets. Insecurity and conflict is creating fear and loss of life and livestock, made worse by the spread of small arms and other weaponry into the region.

- **Poor governance and corruption.** Traditional institutions are less and less effective. Pastoralists suffer from poor representation. Distributional issues such as those caused by elite misappropriating funds negatively impact pastoral populations.

- **Land individualization and pastoral sedentarization:**
  - The interventions to promote individualization of land and sedentarization of pastoralists in Uganda were "system blind" and did not acknowledge the strength of pastoralism as a "working model" that is intricately connected to the ecological functioning of the rangelands (Krätli and Schareika 2010). This resulted in the displacement of pastoral communities (Kisamba-Mugerwa et al. 2006; Muhereza 2001). For example, in southwestern Uganda, a total of 248,400 ha of pastoral land that was owned by Bahima pastoralists was allocated to 207 individual ranchers in the 1960s, partly because most of the Bahima could not fulfill government criteria necessary for the selection of beneficiaries, including literacy and experience in business management (Pulkol 1994). This left thousands of pastoralists landless, and many of them up to today are still moving into areas that were traditionally not part of their "territory." This has been a source of conflicts with host communities (Mabikke 2011).

  - All the land in Karamoja (northeastern Uganda) was communally owned at the time the British colonial administration was established in Uganda, but communal land currently occupies only 50% of the total land available to pastoralists due to increased individualization of land (Rugadya and Kamusiime 2013). In other parts of the country, especially in central, western, and southern Uganda, communal land that pastoralists can use opportunistically following their traditional practices of rearing livestock is becoming nonexistent. Pastoralists have been pushed to small marginal parcels of land that have not been leased to private individual ranchers (Muhereza 2001).

  - Individualization of land has increased pastoralists' exposure to risks by depriving them of realizing benefits that are derived from landscape heterogeneity in consolidated landscapes, such as access to common grazing land, water, and dry season resources (Kisamba-Mugerwa et al. 2006, Rugadya 1999).

8.3 OPPORTUNITIES

Despite these constraints, pastoralism is continuing to thrive, and there are a number of opportunities for pastoralism to remain a viable livelihood and land use system in Uganda and beyond.

- **Livestock has a significant contribution to Uganda's economy.** Recent statistics show that Uganda's livestock sector contributes 4.3% to agricultural gross domestic product (GDP), which is estimated at 23% of the national GDP (UBOS 2015). The sector, boosted by high demand for animal protein-based products, was growing fast at 3% per year by then. This demand is likely to double in the next 20 years because of urbanization and economic growth (Mugerwa et al. 2013a; CIWF 2009).

- **The African Union** (AU) has a pastoral policy framework that is supportive of pastoralism, including livestock mobility within and between countries. It recognizes pastoralists' economic, social, and cultural contributions historically and for the future. National governments need to design policy and pass legislation to enact the AU's policy framework.

- **The IGAD Framework** for livestock development and livelihoods in the IGAD region recognizes that increased livestock productivity and access to market are essential elements of all policy and institutional reforms that aim at increasing livestock for household livelihoods. It also calls for the coordination of the national governments in the IGAD region in order to bring inclusiveness and bring livelihood, enhancing livestock sector growth.

- **COMESA Policy Framework for Food Security in Pastoralist Areas** recommends that:
  - Studies be conducted to improve our understanding of the economic value and potential of pastoralism nationally and regionally;
  - Policies/legislation that support pastoral mobility, including cross-border movements and pastoral land tenure, be designed and implemented;
  - Support be provided to pastoralists to fruitfully participate in intra-regional trade, through developing regional strategies to control transboundary animal diseases and through participation of COMESA member countries in the international standard-setting policy debate.

- The **overall policy environment in Eastern Africa is becoming more positive to pastoralism**. The different national constitutions implicitly include the protection of pastoralists' land rights. Development policies recognize pastoralism as a livelihood system and have provisions to improve pastoral development. As such, regional states are beginning to

formulate their own land use and administration policies that are more in favor of pastoralism. However, there are still gaps to addresss if these are to become effective.

- There is greater prominence of pastoralism within formal government institutions and a **growing pastoral political presence**. For example, the Karamoja Parliamentary Group plays an important role in raising the awareness of pastoral issues and challenges for development. The existence of draft proposals for the Rangeland Management Policy and initiating land consolidation in rangelands in Uganda's pastoral areas shows government's commitment towards those areas.

- There is a strong and emerging **pastoral civil society movement** in the region raising pastoralist issues at the national level. For example, the annual National Pastoralist Day in Ethiopia helps to raise aware about pastoralist issues, brings a collective voice in favor of pastoralism, and encourages advocacy. Also, the proliferation of pastoral NGOs is helping build capacity of pastoralists and makes an important contribution to employment in pastoral areas.

- Pastoralists are constantly innovating, **modernizing, and working with technology**. Mobile phones are commonly used by pastoralists across Africa to check on pasture and water conditons, to compare market prices, to monitor livestock health, to avoid wildlife areas, and to recover stolen or raided cattle (Butt 2015, KDF 2016). Moreover, additional features such as mobile banking, e.g., Centemobile, allow pastoralists to easily exchange and transfer money in rural areas where traditonal banking infrastructure can be absent. Development and private sector innovations are offering drought insurance schemes, pastoral credit provision, and loans. Pastoralists use motorbikes to follow their herds, connect to markets, and ride people around as a source of income.

- Pastoralist are **diversifying their herds to cope with restricted mobility** and increasing droughts. They are doing so by keeping indigenous breeds best adapted to drought, and by keeping increasing goats and camels that browse trees and bushes.

- Pastoralists are **diversifying their incomes and engaging in new activities**. This is helping to supplement livestock-based incomes and reduce risk. Wealthier households are likely to diversify out of choice to engage in new business and investment opportunities. However, poorer households are more likey to diversify out of necessity to manage risk and seek alternative work in order to survive (Little et al. 2001). Some

pastoralists are migrating out of pastoral areas for wage labor in towns and cities and sending back remittances. These are helping to support the pastoral family to buy food, livestock, etc.

- Pastoralists are **innovating and responding to new market opportunities** in dynamic ways. Livestock markets in Eastern Africa are huge, with significant national, regional, and export trade going on. Pastoralists are responding to new market demands and changing consumer preferences, e.g., they are responding to the growing demand for beef, milk, and hides/skin from pastoral areas (Abdullahi et al. 2013).

- Pastoralists are **increasingly becoming educated**, going to university, and getting more skilled jobs. This is increasing opportunities for new employment and diversification, and for getting involved in national political processes. Also, more girls are going to school, becoming educated, and getting jobs. Education systems are being developed for nomadic pastoralists to allow children directly involved in pastoral production to simultaneously acquire a formal education (Siele et al. 2013). However, access to education is low relative to non-pastoral populations and worst for women.

- The livestock revolution is ongoing and **fuelling an increased demand for livestock** and livestock products in Africa, Asia, and South America. It is mainly pastoralists who will meet this demand.

- Many NGOs and donors are increasingly supporting development activities in pastoral areas of Uganda such as in basic service provision, policy and advocacy, research, and community empowerment.

8.4 CLIMATE CHANGE: A CONSTRAINT AND AN OPPORTUNITY

Climate is becoming more variable and less predictable. Climate change is expected to increase the frequency and severity of droughts and floods in the region. Recurrent droughts, increased floods events, and highly variable rainy seasons are currently being observed.

Climate change can be considered both a constraint and an opportunity to pastoralism. If pastures and water sources dry up, pastoralists can lose their livelihoods, or severe floods can wipe out entire herds that are already suffering from a previous drought. However, pastoralists are better able to adapt to climate change than those tied to sedentary land uses. Pastoralists already have strategies that allow them respond to variable climatic conditions, using mobility and

reciprocity to access variable resources. Thus, pastoralists who are mobile are well positioned to adapt to climate change.

For sound policy, it will be important to have a good understanding of these strategies in the context of increasing climate variability, land use changes, and growing populations.

Pastoralists' capacity to adapt to climate change will thus depend on policies that are supportive of mobility and that secure pastoralist land rights. If pastoral strategies of adaptation are supported, productive use of the lowlands can continue. However, if pastoral strategies of adaption are not supported, climate change could result in increased poverty, environmental degradation, and conflict. Climate change thus offers both opportunities and threats to pastoralists.

Furthermore, grasslands' large capacity to store carbon means that pastoralism has an important value in mitigating the impact of climate change (FAO 2010). The carbon sequestration capability of grasslands can be as great as or greater than that of cropland, offering great potential for pastoral rangelands to mitigate climate change (Scurlock and Hall, 1998; Schuman et al. 2002). However, the anticipated increase in livestock production by 6% per annum by 2035 is likely to be accompanied with increased emission of greenhouse gases, land degradation, and possibly erosion of indigenous livestock genetic resources. Therefore, adequate planning for the sector in light of expected pressures and impacts is necessary to mitigate negative impacts and enhance the socio-economic development of the country (Mugerwa et al. 2013b, MAAIF 2016).

8.5 GAPS

To ensure pastoralism as a viable livelihood, the following gaps need to be addressed:

- **Securing mobility.** Pastoralist need secure access to resources of pasture and water, and access to salt licks, traditional medicines, and sacred sites. Mobility is not only essential for livestock production, but also to access markets to sell and purchase livestock, thus generating incomes. Mobility is essential to escape risks, such as those due to drought, flood, or conflict.

- **Equitable access to land.** Weak recognition of pastoralists' customary rules and practices regarding access and use means that pastoralists' use is often invisible, and land is perceived by outsiders to be "idle" and thus ripe for conversion. Pastoralists need equitable access to land and secure land-use systems to prevent encroachment of pastures. Stronger local and

customary systems will enable pastoralists to negotiate access to key resources, particularly in the dry season.

- **Development and national policy must be supportive of pastoral land use.** There is a need for policies that are inclusive of the needs and constraints of pastoralists. Progressive pastoral policies, such as the AU Policy Framework, are those that recognize and support innovation and entrepreneurialism in pastoral areas. Complementary policies need to be developed, and governments must provide pastoralists with space and authority for decision making.

- **Recognizing and working with variability.** Pastoral rangelands are variable systems with climatic variability and uncertainty, which is predicted to increase in the future. Pastoralists engage with variability and are best able to cope with it. This variability should be embraced rather than controlled, with policies supporting pastoralists to develop a number of risk-management strategies, keep a portfolio of livelihood options, and strengthen their capacity for adaptation (Krätli 2015).

- **Capacity building of pastoralists.** Building the capacity of pastoralists through education and training programs can enhance pastoralists' skills and help them diversify their enterprises, take up new employment opportunities, improve their resource management techniques, and have greater participation in policy making.

- **Empowerment of women.** Women play a significant role in pastoral societies and are responsible for a number of activities, including milking, domestic chores, caring for sick and small livestock, and house building. However, pastoral societies continue to be dominated by men who hold the greater decision-making power. However, women are increasingly involved in new economic opportunities and should be supported to do so. Supporting women's income-generating activities can empower women to take a great role in the community and enhance their socio-economic position. Women need to be supported to access productive resources and gain control of productive assets to strengthen their decision-making power.

- **Pastoralists as partners.** In any new investments in the rangelands, pastoralists need to be at least informed and consulted but ideally made partners. Investments need to take account of local circumstances and priorities, and pastoralists should be involved in all stages of a project development.

- **Expansion of trade.** Pastoralists need better integration into markets and the development of domestic markets. This will help to meet the growing demand for animal products worldwide.

8.6 THE FUTURE OF PASTORALISM IN UGANDA AND EASTERN AFRICA

This book has shown how pastoralists are responding to the opportunities and demands that are placed upon them in their physical, economic, political, and social environments. These play out differently in different areas for different pastoralists, and are dependent on a varied and dynamic set of particular influencing factors. As diverse as pastoralism is itself, where pastoralists may keep different numbers and species of livestock, engage with markets at differing levels, and hold varying livelihood diversification strategies, there is no one future of pastoralism. Instead, there are diverse and different pathways that pastoralists may take, depending on their circumstances and the changes going on around them (Catley et al. 2013).

Uganda can borrow a leaf from the deliberations of Ethiopian pastoral leaders, policy makers, and development practitioners who came together in 2006 to consider the future of pastoralism in Ethiopia. They considered some of the choices pastoralists may make over the next years to adapt to changing circumstances, taking account of key factors such as climate, natural resources, markets, conflict, and governance that will shape the future (UN OCHA-PCI 2007). They envisaged four possible hypothetical futures (Figure 8.1):

1) **Sustaining pastoralism.** Where the natural environment is productive and pastoralists have access to good pasture but market access is poor, many will maintain a livelihood primarily based on the raising and selling livestock.

2) **Added-value diversification.** Where pastoralists are under natural resource pressure but there is strong demand for pastoral products on national and international markets, pastoralists may expand into milk and meat processing, and the export of quality skins and hides.

3) **Expanding export trade.** Where natural resources are more abundant and pastoralists gain increasing access to international markets, they may move quickly to scale up the quality of production to take advantage of high prices for animals and animal products abroad.

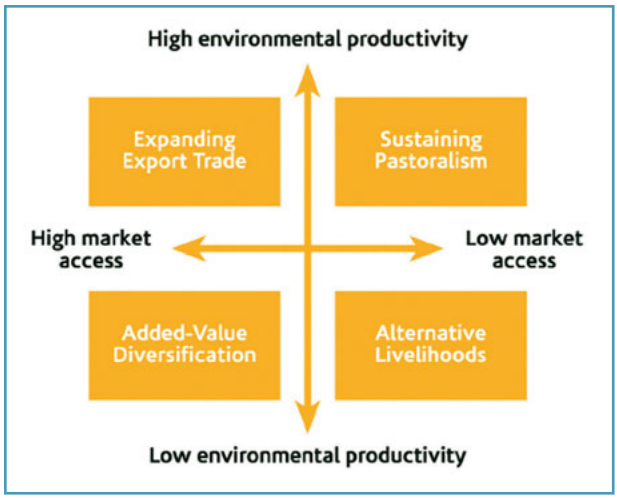

Figure 8.1. Four possible scenarios depicting the future of pastoralism. (Adapted from UN OCHA-PCI 2007)

4) **Alternative livelihoods.** Where resources are scare and livestock markets inaccessible, some pastoralists will need to find alternative livelihoods, shifting away from pastoralism towards complementary activities such as tourism, education, and financial services.

All of these scenarios are currently being played out in Uganda. Even historically, pastoral societies have shifted between more traditional livestock production systems and diverse, alternative forms of livelihood, and have long been tied into networks of exchange and trade. Today, there is an even greater spread of diverse livelihood pathways that pastoralists are taking, which is resulting in increasing differentiation (Catley et al. 2013). Those who are unable to tap into the growing opportunities for trade and commercialization, and are unable to stay in traditional pastoralism, may move out of pastoralism altogether. Those who are able to profit from commercialization can do well and form the economic and political pastoral elite.

In the absence of equitable policies specifically adapted to promote pastoralism in Uganda, it likely some of the next generation of pastoral young people will need to look beyond pastoralism if they are to be able to secure viable livelihoods. They will need to be supported to find complementary or possibly alternative livelihoods and new jobs. If encouraged to get involved in small-scale trading and urban-based market and input services that serve the livestock sector, such as meat-processing plants and fattening operations for export animals, this can help to find the balance to support and assist ex-pastoralists without constraining those

who still rely on livestock production. This will also require good rural-urban linkages and good provision of local markets and services. Non-pastoral and more sedentary activities can supplement pastoralists and allow mobile pastoralism to continue. Having a household member in wage employment outside of pastoralism elsewhere is an increasingly important livelihood strategy that can enhance food security and provide capital to reinvest in livestock (McPeak et al. 2011).

Also, as rural populations increase, there is a growing need for rural enterprise and associated service industries—for example in house construction, trade and transport, brewing, and hotels and restaurant businesses. There are thus opportunities for more households and individuals in pastoral areas to acquire the skills to respond to these needs.

Others will continue to keep livestock and combine this with other land-use and livelihood options. As the growing demand for livestock and livestock products increases, and new markets emerge for export trade and value addition, pastoralists will respond, innovate, and adapt to these demands. Indigenous livestock practices are likely to mix with more modern practices, and new, innovative, and entrepreneurial practices and diversification strategies will emerge.

It is likely that all four scenarios depicted above will continue to be found in pastoral areas, and a diversity of possible pathways will reflect the diversity of strategies and outcomes currently observed in pastoral systems. This diversity needs to be recognized and built upon by policymakers and development organizations. Critical is the need for governments and policies to support and recognize the value of pastoralism as a rational production system. This will require an overall change in the perception and dominant discourse of pastoralism (Catley et al. 2013), away from being seen as irrational, uneconomic, and fragile to being recognized as a system that is flexible, innovative, responsive, adaptable, and able to work with the variability inherent in rangeland areas where other land uses cannot. Although there are ongoing improvements to the integration of pastoralism into policy and national development priorities, there is still much more to be done. This must be facilitated through the continued improvements in the education of pastoralists and better representation of pastoral priorities in decision making.

REFERENCES AND FURTHER READING

Abdullahi, A., S. Mohammed, and A. Eid. 2013. Town camels and milk villages: The growth of camel milk marketing in the Somali Region of Ethiopia. In *Pastoralism and development in Africa: Dynamic change at the margins*,. A. Catley, J. Lind, and I.Scoones, eds.

Behnke, R. H., and C. Kerven. 2013. Counting the costs: Replacing pastoralism with irrigated agriculture in the Awash Valley, north-eastern Ethiopia. IIED climate change working paper no. 4. **http://pubs.iied.org/10035IIED.html**.

Byakagaba, P., A. Egeru, B. Barasa, and D. D. Briske. 2018. Pastoralism: Research, policy and practice. **https://doi.org/10.1186/s13570-017-0111-3s**.

Butt, B. 2015. Herding by mobile phone: Technology, social networks and the "transformation" of pastoral herding in East Africa. *Human Ecology* 43 (1): 1–14.

Catley, A., J. Lind, and I. Scoones. 2013. *Pastoralism and development in Africa: Dynamic change at the margins*. Abingdon: Earthscan/Routledge.

CIWF. 2009. Global warning: Climate change and farm animal welfare, a report by Compassion in World Farming. Compassion in World Farming (CIWF), Surrey, UK. Retrieved from **https://webcache.googleusercontent.com/search?q=cache:k1stSPB Vv2UJ:https://www.ciwf.org.uk/research/environment/global-warning/+&cd=3&**.

Egeru, A., O. Wasonga, K. Joseph, G. J. Mwanjalolo Majaliwa, L. MacOpiyo, and J. Mburu. 2014. Spatio-temporal dynamics of forage and land cover changes in Karamoja sub-region, Uganda. *Pastoralism* 4 (1): 6.

FAC CAADP. 2012. *Pastoralism in the Horn of Africa: Diverse livelihood pathways*. Future agricultures. FAC CAADP policy brief 06. March. **www.future-agricultures.org/policy-engagement/policy-briefs/1531-pastoralism-in-the-horn-of-africa-diverse-livelihood-pathways/file**.

FAO. 2010. *Challenges and opportunities for carbon sequestration in grassland systems.* A technical report on grassland management and climate change mitigation. Integrated crop management vol. 9. **www.fao.org/fileadmin/templates/agphome/documents/climate/AGPC_grassland_webversion_19.pdf**.

Homewood, K. 2008. *Ecology of African pastoralist societies*. Oxford: James Currey.

IIED. 2013. Following the herd: Why pastoralism needs better media coverage. Briefing paper. IIED, London. **http://pubs.iied.org/10039IIED.html**.

Joughin, J., and A. M. Kjær. 2010. The politics of agricultural policy reform: The case of Uganda. In Forum for development studies.

Kalabamu, F. T. 2000. Land tenure and management reforms in East and Southern Africa - the case of Botswana. *Land Use Policy* 17 (4): 305–319.

Karamoja Development Foundation (KDF). 2016. The pastoralist magazine. **www.kdfug.org**.

Kisamba-Mugerwa, W., J. Pender, and E. Kato. 2006. Impacts of individualization of land tenure on livestock and rangeland management in Southwestern Uganda. In 11th biennial conference of the International Association for the Study of Common Property. IFPR Institute.

Krätli, S. 2015. *Valuing variability: New perspectives on climate resilient drylands development.* IIED. Edited by H. de Jode. **http://pubs.iied.org/10128IIED.html**.

Little, P. D., K. Smith, B. A. Cellarius, D. L. Coppock, and C. Barrett, C. 2001. Avoiding disaster: Diversification and risk management among East African herders. *Development and Change* 32 (3): 401–433. **http://crsps.net/wp-content/downloads/Global%20Livestock/Inventoried%207.11/2-2001-4-91.pdf**.

MAAIF. 2016. Draft Agriculture Sector Strategic Plan for Uganda 2015/16-2019/20. Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), Kampala.

McPeak, J. G., P. D. Little, and C. R. Doss. 2011. *Risk and social change in an African rural economy: Livelihoods in pastoralist communities.* London: Taylor and Francis.

Morton, J., J. K. Livingstone, and M. Mussa. 2007. Legislators and livestock: Pastoralist parliamentary groups in Ethiopia, Kenya and Uganda. Gatekeeper series no. 131. IIED, London. **http://pubs.iied.org/14552IIED.html**.

Nakalembe: "Mugerwa, S., J. M. Kabirizi, W. Nanyenya, M. Matovu, E. Komutunga, D. N. Mubiru, and E. Zziwa. 2013a. Simulation of methane emissions from stall fed dairyanimals under different dietary strategies in Uganda. *Frontiers in Science* 3:1–5.

Mugerwa, S., E. Zziwa, J. M. Kabirizi, and J. Ndikumana. 2013b. Environmental assessment of climate smart agricultural interventions in smallholder crop-livestock production systems. *Resources and Environment* 3:91–99.

Nakalembe, C., J. Dempewolf, and C. Justice. 2017. Agricultural land use change in Karamoja Region, Uganda. *Land Use Policy* 62:2–12.

Pulkol, D. 1994. Resettlement and integration of pastoralists in the national economy: Ranch restructuring in Uganda. In Conference on environment and settlement issues in Africa.

Rugadya, M. 1999. Land reform: The Ugandan experience. Land use and villagisation workshop, Kigali.

Rugadya, M. A., and H. Kamusiime. 2013. Tenure in mystery: The status of land under wildlife, forestry and mining concessions in Karamoja region, Uganda. *Nomadic Peoples* 17 (1): 33–65.

Schuman, G. E., H. H. Janzen, and J. E. Herrick. 2002. Soil carbon dynamics and potential carbon sequestration by rangelands. *Environmental Pollution* 116 (3): 391–396.

Scurlock, J. M. O., and D. O. Hall. 1998. The global carbon sink: A grassland perspective. *Global Change Biology* 4 (2): 229–233.

Scoones, I. 1992. Wetlands in drylands: Key resources for agricultural and pastoral production in Africa. IIED drylands issue paper no. 38. **http://pubs.iied.org/7287IIED.html**.

Siele, D., J. Swift, and S. Krätli. 2013. Reaching pastoralists with formal education: A distance-learning strategy for Kenya. In *Pastoralism and development in Africa: Dynamic change at the margins*, A. Catley, J. Lind, and I. Scoones, eds. Abingdon: Earthscan/Routledge.

UBOS. 2015. Statistical abstract. Uganda Bureau of Statistics (UBOS), Kampala. Retrieved from **www.ubos.org/onlinefiles/ uploads/ubos/statistical_abstracts/Statistical per cent20Abstract per cent202015.pdf**.

UN OCHA-PCI. 2007. The future of pastoralism in Ethiopia. United Nations Office for the Coordination of Humanitarian Affairs. Pastoralist Communication Initiative, Addis Ababa. **www.pastoralists.org/policy-and-government/**.

Zziwa, E., G. Kironchi, C. Gachene, S. Mugerwa, and D. Mpairwe. 2012. The dynamics of land use and land cover change in Nakasongola district. *Journal of Biodiversity and Environmental Sciences* 2 (5): 61–73.

9. POSTSCRIPT

Pastoralism and associated livestock mobility need to be perceived as a practice that is legitimate and will benefit rangeland ecology, livestock productivity, and pastoral risk management. Its adoption should be based on a comprehensive understanding of how patterns of livestock movement affect the spatio-temporal pressures on rangeland resources (Turner 2011). The starting point should be the mapping of transhumance corridors to determine ways through which mobility can increase herds' access to forage and water between and within years.

The policy deficiencies that have been highlighted in this book can be addressed if Uganda carries out comprehensive policy, legal, and administrative reforms on rangelands and pastoralists. This requires raising the status of rangelands and pastoralists on the national policy agenda for action. The following steps will need to be undertaken to raise momentum for the proposed reforms:

1. A national dialogue in which various actors can freely engage and deliberate on issues that require policy, legal, and administrative reforms on rangelands and pastoralists will be an important first step in raising the issues onto the national policy agenda. The dialogue should prioritize effective engagement and inclusion of the traditional users of rangelands through community dialogues to ensure that they are part and parcel of the processes determining policy direction on rangelands.

2. The dialogue should not only generate consensus and unity of purpose but also identify "change champions" from state and non-state actors who can create alliances and utilize these alliances to initiate reforms on rangelands and pastoralists in Uganda.

3. Pastoralists ought to be supported by the responsible agency (MAAIF) in developing site-specific guidelines for herd movement to ensure socio-ecological balance. The guidelines formulated should characterize drought reserves, transhumance corridors, and water points, and include socio-ecologically appropriate principles for their management.

4. Setting up of working groups at national and regional level to pursue reforms on rangelands and pastoralists will be critical in engaging government agencies and development partners in Uganda.

5. A well-thought-through communication and advocacy strategy for the working groups to formally engage Uganda's parliament, relevant ministries, departments, agencies, and development partners will need to be formulated.

6. MAAIF, and state and non-state actors (including pastoralists' coalitions) involved in the use and management of rangelands would be the most appropriate to steer the processes of making reforms.

7. It will be important to formulate a road map that will guide implementation of the reforms.

REFERENCES AND FURTHER READING

Turner, M. D. 2011. The new pastoral development paradigm: Engaging the realities of property institutions and livestock mobility in dryland Africa. *Society and Natural Resources* 24 (5): 469–484

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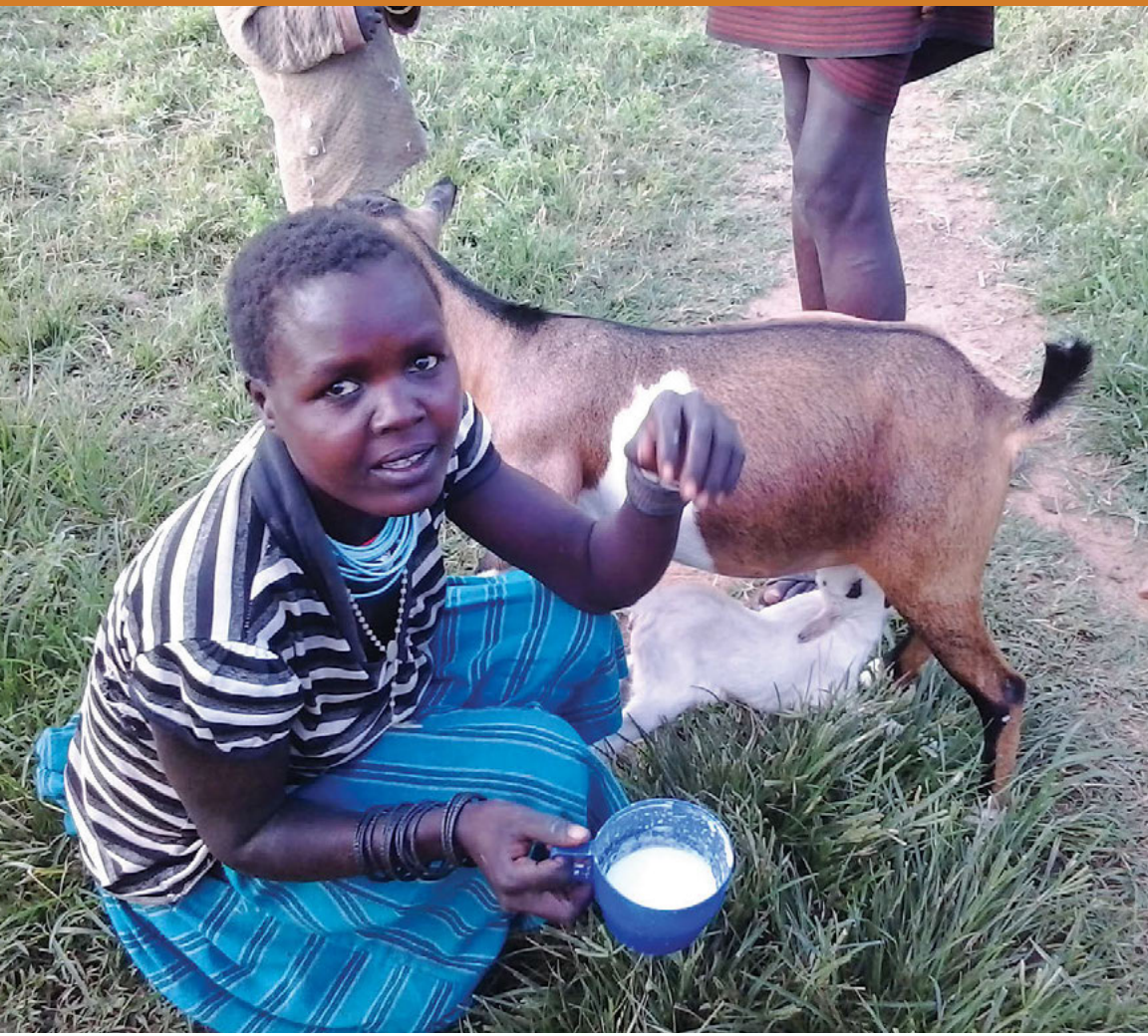

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