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Karamoja Resilience Support Unit (KRSU)

FOURTH TRAINING OF TRAINERS WORKSHOP FOR ROLL-OUT OF PASTORALISM AND POLICY COURSE

February 4–8, 2019
Jinja, Uganda

Tufts University
FRIEDMAN SCHOOL OF NUTRITION SCIENCE AND POLICY
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ACRONYMS AND ABBREVIATIONS

AT	Adaptation team
AU	African Union
CAHW	Community-based animal health worker
CBR	Center for Basic Research
COI	Co-investigator
CoP	Chief of party
CSO	Civil society organization
ha	Hectare
HH	Household
IFAD	International Fund for Agricultural Development
IIED	International Institute for Environment and Development
KDF	Karamoja Development Forum
KQ	Key question
KRSU	Karamoja Resilience Support Unit
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
M&E	Monitoring and evaluation
MoU	Memorandum of Understanding
NARO	National Agricultural Research Organisation
NDP	National Development Plan
NGO	Non-governmental organization
NPA	National Planning Authority
NRM	Natural resource management
PI	Principal Investigator
TLU	Tropical livestock unit
ToT	Training of trainers
UBOS	Uganda Bureau of Statistics
UG	Uganda
USAID	United States Agency for International Development

SUMMARY

The Karamoja Resilience Support Unit (KRSU), in partnership with the International Institute for Environment and Development (IIED), has completed four of five training of trainers workshop on the roll-out of the Pastoralism and Policy Course in Uganda. The fifth training of trainers (ToT) is scheduled for April 2019. As part of the process of developing a common pastoralism course and a student textbook, representatives from Gulu and Makerere Universities, the Karamoja Development Forum (KDF), and the Center for Basic Research (CBR) attended the fourth ToT and agreed on the content of the textbook and the adaptation manual.

The fourth ToT was held in Jinja from Monday, February 4 to Friday, February 8, 2019. The training agenda consisted of a synopsis of progress since ToT 3, issues arising, the effectiveness of cross-institutional arrangements, adaptation team (AT) presentations on the desk reviews from ToT 3 assignments, process on incorporating new materials and gaps, and a refresher training on key arguments as analyzed by the AT. The workshop covered the integration of material into university curricula and the local adaptation manual, followed by the planning of the next steps of the adaptation process and agreeing on dates for ToT 5.

Each of the four Principal Investigators (PIs) tasked to look at each of the pillars of pastoralism, and the legal and policy framework presented their findings, which were based on gaps identified in the adaptation manual. As reiterated, three of the four topics assigned to the AT aligned to the three pillars of pastoralism: natural resource management (NRM), the herd, and the families and social institutions. Pillar 1 looked at the pastoral community's adaptation and mitigation strategies, spatial and temporal characterization of feed resources, and the profiles of water resources for livestock and domestic use in the pastoral areas of Uganda. Pillar 2 concentrated on the dynamics, typology, and characteristics of livestock species in the pastoral areas in Uganda. Pillar 3 centered its focus on the families and institutions and looked at pastoral families and the wider socio-cultural institutions in pastoral areas of Uganda. A separate team led by CBR focused on the reflections on the merits and demerits of the legal and policy framework for the development of pastoralism in Uganda.

The materials from the desk review will address the gaps identified in the textbook and the training manual. Therefore, a core team of six was identified to participate in a writeshop in March 2019 to draft the textbook and training manual. After completing the training manual, the AT will embark on the textbook.

The AT will explore ways to influence the draft Uganda Pastoralism Policy, and KDF will conduct "targeted dialogue sessions" with institutions and civil society organizations (CSOs) operating in Karamoja.

SESSION 1: SETTING THE SCENE

Table 1. Overview of the introductory section of ToT 4

1.1 Welcome remarks	Mesfin Ayele, Chief of Party (CoP) for KRSU, welcomed the participants to the fourth ToT workshop and emphasized the fact that most of the work will be done by participants and less by the facilitators. He then wished all a fruitful training.
1.2 Introductions and ice breaker	Alais led the participants in introducing themselves and shared personal experiences that transpired since the ToT 2 as a way to break the ice and create a platform for bonding.

SESSION 2: SETTING THE AGENDA

2.1 Overview of the Pastoral Training Adaptation Project

Ced shared with the participants the objectives, tasks, and progress attained in the adaptation process. The Pastoral Training Adaptation Project launched in March 2018 and ends in June 2019. The roll-out of the Pastoralism and Policy Course endeavors to address the knowledge gap around pastoralism with two approaches:

- Help decision makers, academia, planners, and practitioners better understand the scientific rationale underpinning sustainable pastoralism;
- Strengthen the skills of pastoralists and their advocates to articulate the economic, ecological, and social benefits of their livelihood systems and argue for their inclusion in national policy.

Deliverables for the course

- A full training course on pastoralism and policy in Uganda (PPU).
- A common pastoralism university course.
- Short policy-oriented training.
- Local language adaptation.
- A pool of accredited trainers.
- A trainer's manual of the full training course.
- A student textbook on pastoralism and policy in Uganda.
- Short policy and practitioner briefs in support of sustainable pastoral development.

Table 2. Update on the status of the course and planned activities up to 2019

STEPS	COMPLETED	TO BE COMPLETED BY JUNE 2019 (4 MONTHS)
Step 1: Preparation	Establishment of reference group (RG); constitution of adaptation team; Memorandums of Understanding (MoUs)	
Step 2: Adaptation and design phase	Three of five ToTs: introduction of East Africa training course to the AT; review of structure and material for Uganda (UG) Pastoralism and Policy Course (PPC); new material for Pillars 1–3 and policy context (ongoing)	Two ToTs remaining to finalize; UG Pastoralism and Policy Course; structure and content for common university course and textbook; structure and content for short policy-oriented training; local language adaptations; participatory review of how pastoralism is taught, research and develop monitoring and evaluation (M&E) system
Step 3: Delivery	Training reports	Three trainings of Uganda PPC by AT; two short policy-oriented courses and local language modules; integration of pastoralism common course in university curricula
Step 4: Assessment	Course assignments	Complete accreditation process; implementation of the M&E system

Ced indicated that the training would require better integration and adaptation of the material in the current East Africa course. Dr. Waiswa suggested getting local language adaptations for other pastoralist areas in addition to Karamoja. There were concerns on whether Step 3 (delivery) and Step 4 (assessment) would be achievable in the remaining four months.

2.2 Overview on progress since ToT 3 and issues arising
Charles gave an overview of activities and thanked the AT for honoring KRSU's invitation to ToT 4. The participants agreed on the course assignment aligned to each pillar of pastoralism. The course assessment teams had four PIs: Cleave David Waiswa (Pillar 1), Dr. Basil Mugonoola (Pillar 2), Dr. Ronald Kalyango (Pillar 3), and Professor Samson Opolot (legal and policy framework). Each pillar had two to three co-investigators to support the desk research.

AT team experience in executing the task/feedback on cross-institutional arrangements

- Coordination process for signing the contracts was not efficient; getting the co-investigators (COI) to sign took time.
- It was a learning process, and one that required being proactive, participation, and seriousness. Each team under the three pillars worked independently; it would be good to explore the possibility of joint learning.
- Some aspects are cross-cutting within the various pastoralist communities. Desk reviews offer opportunities for more in-depth research in these communities.
- Debates arising from the desk review centered on how urbanization, the increasing demand for meat, and mobility impact the entire pastoralist community.
- Some material could not be accessed through desk reviews and therefore required contacting local communities. The process, therefore, entailed a combination of informant interviews and desk reviews.
- In some instances, accessing literature was an uphill task; however, IIED and KRSU websites were very good resources. Some of the useful information had no references.
- Cross-institutional arrangements: Pillar 1 team members experienced challenges interfacing because of distance. Charles advised the use of the internet to bridge the gaps.
- Contract were issued to individuals without the team leaders knowing the terms of the COIs; therefore, they recommended that in the future there be more transparency.

2.3 Workshop objectives
Workshop objectives

- Review progress since ToT 3 and address issues arising.
- Review new material—Pillars 1, 2, and 3, and legal and policy framework; identify additional work as necessary.
- Agree on a process for integrating new material.
- Agree on Table of Contents for student textbook and process for developing it.
- Agree on content and process for local language adaptation.
- Planning the next steps of the adaptation process.
- Option: refresher training/discussion on crucial arguments.

SESSION 3: AT REPORT BACK ON DESK REVIEWS

Each team reported on progress on the desk reviews and possible inclusion based on the following benchmarks:

- The relevance for the pastoral training and its supporting arguments and key messages;
- Completeness and precision of the material in support of the arguments;
- How to change the material into training steps.

The PIs leading the adaptation work for Pillars 1, 2, 3, and the policy and legal framework presented the desk reviews for the participants to critique and recommend changes or further desk review work on a specific area of need. The section was facilitated by Alais and Ced, supported by Mesfin and Charles. For details of the desk reviews, see Appendix I.

SESSION 4: INTEGRATION OF MATERIAL INTO UNIVERSITY CURRICULA AND LOCAL ADAPTATION

The AT was divided into two groups. One group was composed of AT members from Makerere and Gulu Universities and the Center for Basic Research and worked

on reviewing the Table of Contents for the pastoralism textbook. The second group was composed of AT members from KDF and developed a preliminary plan to adapt and use the pastoral training material for the local context.

Session 4a: Table of Contents for students' textbook and process for integration into university curricula

This session was facilitated by Ced, and he suggested use of the textbook by the Ethiopian universities.

Below are the main points of the discussion that ensued:

- There was general consensus on the structure of the textbook, and therefore the Table of Contents in the Ethiopian textbook was used. It was revised and customized to fit the Ugandan context.
- It was also agreed that it will be a general textbook for providing reference material; every chapter will include a summary and key issues for reflection.
- Aspects of water and key policy issues around it need to be considered.

Table 3 below presents a revised Table of Contents for the Ugandan pastoralism textbook.

Table 3. Suggested Table of Contents for Ugandan pastoralism textbook

Table of Contents

Continued on next page

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Session 4b: Content and process of local adaptation

The work on developing a plan for local adaptation was facilitated by Alais. Table 4 below presents the proposed content and process for local adaptation to be led by KDF.

Table 4. Content and process of local adaptation by KDF

Planned activity	**Personnel/resources**	**Timeline**
Engage KDF management in line with the MoU already signed with KRSU	Teba	By February 15, 2019
Constitute and formalize adaptation team	The team is composed of: 1) Tebanyang Emmanuel 2) Lomuria Vincent 3) Atem Esther 4) Lokol Paul 5) Lomonyang Margaret	By end of February 2019
Conduct three trainings involving key stakeholders	Target: • District local governments • Strategic technical and political leaders • Lower local governments • Subcounty officials • Local communities • *Kraal* leaders, opinion leaders, etc.	
Identify areas of focus and relate to policy: • P1: water, pasture, mobility • P2: livestock species, livestock diseases, livestock markets • P3: Traditional leadership in Karamoja (*Akiriket*) • Policy: national policies on water, land, livestock health, etc. • Topics for action-research identified		Concept for implementation to be ready by first week of March 2019
Participate in developing the textbook material	KDF team	

Support needed in:

- Additional training: focused on ToTs for facilitation, report writing and designing skills, action research skills for KDF team;
- Financial resources: translating key materials in to Karamojong, audiovisual material development, information, education, and communication (IEC) materials, community workshops/trainings, spot messages on local radio;
- Exposure learning: learning practices elsewhere in Western Uganda in ranching and dairy.

SESSION 5: NEXT STEPS

- The training manual; information from the updated desk reviews will be integrated in the training manual. PIs will share dates for writeshop with KRSU before March 2019, and KDF will also support the local adaptation process. After completing the training manual, they will embark on the textbook.

- KRSU to lobby Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) and Office of the Prime Minister (OPM) staff to be part of ToT 5 in order to get more information on progress of the draft rangeland policy and to get buy-in from them regarding the training.

- When KDF is developing the concept, it should be more practical than theoretical and should take into consideration the coordination of water aspects in light of the dynamics of the pastoral system.

- Involve arguments that highlight the importance of traditional leadership and working with Government.

- Explore possibility for some key openings that we can target in the next six months or one year; where to influence policy or in favor of policy.

- Local radio/spot messages should emphasize systemic nature of pastoralism and how it links to sustainable development of community resources.

- KDF and the rest of AT should synchronize activity timelines so the dates allow room to have participatory sessions.

- KDF should consider holding "targeted dialogue sessions" with institutions and CSOs operating in Karamoja with the intention of making them appreciate the concept of pastoralism.

- During preliminary training stages, KDF should consider using various tools such as a seasonal calendar to stir up debates and thus generate a lot of data to feed into the training manual; for example, names of local institutions, mobility in local dialect.

- In order to bridge the gap between the pastoralist community and Government, the AT should come up with credible scientific data in support of pastoralism.

- ToT 5 tentatively scheduled for April 15–19, 2019 at Protea Hotel in Entebbe.

Closing remarks

Alais encouraged the AT to give more time and commitment towards the process and commended them for the great work done thus far. Charles Hopkins thanked the AT for their active participation and for attending the training. Ced Hesse pledged his commitment in helping them to complete the process of designing the manual and textbook.

PASTORALISM PILLAR DESK REVIEW REPORTS

PILLAR 1: NATURAL RESOURCES

Reviewed and compiled by:

1. C. David Waiswa – Principal Investigator
2. Dr. Daniel Aleper Knox – Co-investigator
3. Dr. Geoffrey Kawube – Co-investigator

DESK REVIEW

I. PILLAR I: NATURAL RESOURCES

Objective: To document the pastoral community's adaptation and mitigation strategies, spatial and temporal characterization of feed resources, and the profiles of available water resources for livestock and domestic use in the pastoral areas of Uganda.

Reviewed and compiled by:

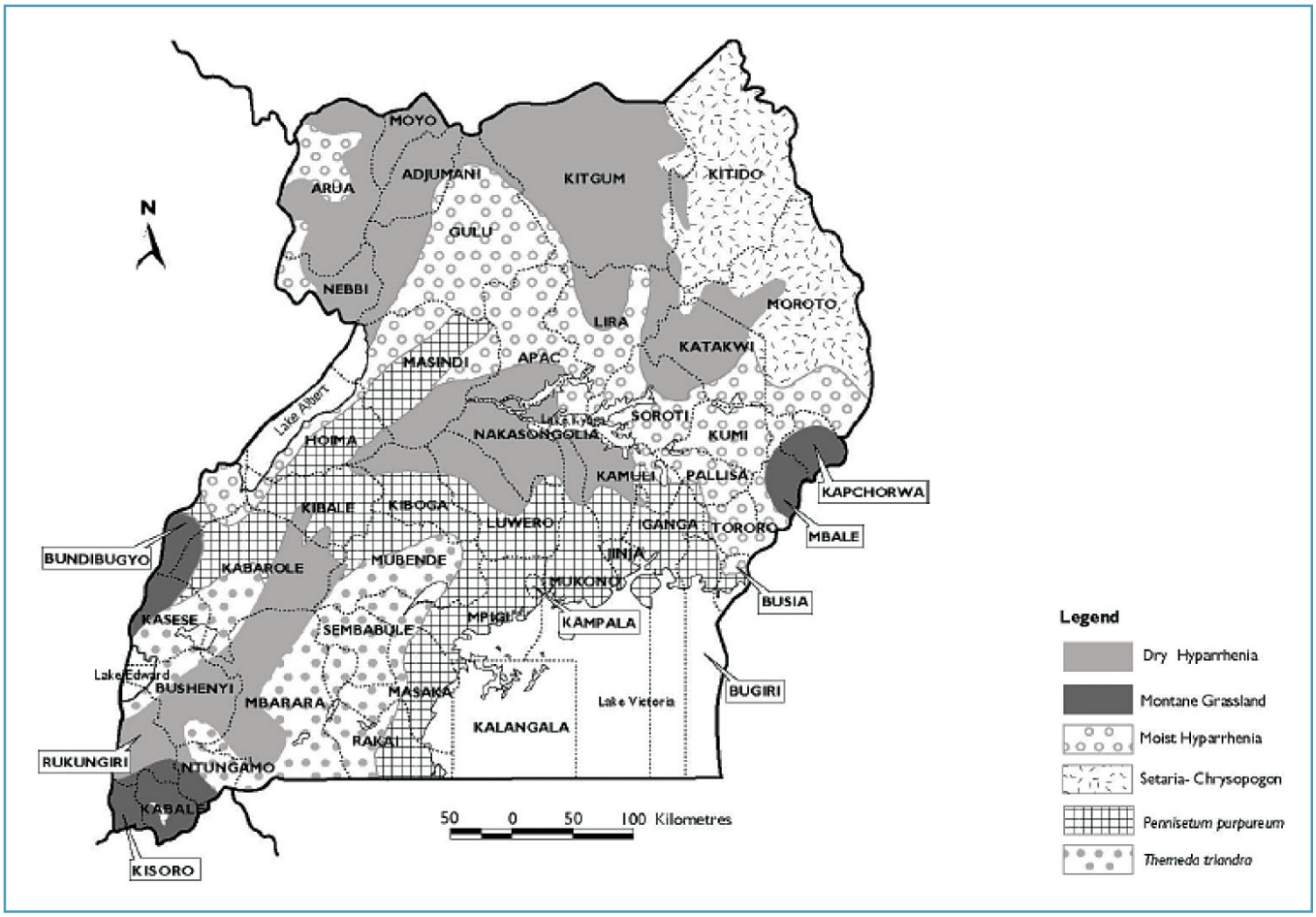
1. C. David Waiswa – Principal Investigator
2. Dr. Daniel Aleper Knox – Co-investigator
3. Dr. Geoffrey Kawube – Co-investigator

A. SPATIAL AND TEMPORAL CHARACTERIZATION OF NATURAL PASTURE RESOURCES IN UGANDA

Case 1: Distribution of rangeland grasslands in Uganda (evidence to fit Pillar 1.KQ1.A1. Training Step 2)

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 (Ntungamo District) of the country, commonly referred to as the "cattle corridor." While different locations are usually associated with dominant type of vegetation in the herb and upper story layers, much of the existing rangeland composition is a result of many factors, including climate, intensity of grazing, and human activities such as burning, cultivation, and cutting of trees/ shrubs.

P1.KQ1.A1/S1: Natural grasslands of Uganda



Adapted from Sabiiti, 2001 and Mwebaze, 2002.

Figure A1. Map of rangeland grassland distribution in Uganda.

Across the rangelands in Uganda, there is a large diversity of herbaceous and browse species that provide forage for grazing animals. 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. Most of the plant species in these environmentally challenged areas have also evolved adaptive traits against herbivory as a survival mechanism.

Table A1. Description of key rangeland grasslands commonly used by pastoralists

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, Setaria sphacelata* **Important weed grasses:** *Cymbopogon afronadus* (lemon grass), *Imperata cylindrical* (speargrass)
Setaria-Chrysopogon	750–1,000 mm, but 350–500 mm farther east	Karamoja	*Setaria incrassata, Themeda triandra, Sorghum* spp., *Eriochloa nubica* (cupgrass)

Adapted from Sabiiti, 2001 and Mwebaze, 2002.

Chloris gayana

Panicum maximum

Continued on next page

Figure A2. Examples of key grass species in rangelands used by pastoralists in Uganda.

Continued from previous page

Hyparrhenia rufa

Cenchrus ciliaris

Brachiaria brizantha

Setaria incrassata

Themeda triandra

Cymbopogon afronadus

Case 2: Spatial and temporal variability in abundance and nutrient composition of common native pastures across seasons in the cattle corridor (contributes to KQ2.A2.Step 7 and links with data on mobility)

Abundance and nutrient composition of different pasture species varies both spatially and temporally. From M1.REF 21 it is seen that even within one region there is great variety of pasture species that are known by pastoral communities across the different districts. This provides evidence that pastoral environments are diverse and complex, characteristics that contribute to the resilience of an ecosystem. Also, different locations in the same region can have different dominant pasture species due to variation in topography, soil type, rainfall, etc. For instance, while *Emaa (Hyparrhenia newtonii), Elet (Brachiaria brizantha)*, and *Erereng (Hyparrhenia rufa)* are dominant in Kaabong District, *Ekode (Chloris pycnothrix)* and *Neymuria (Cynodon dactylon)* flourish most in Kotido District. On the other hand, some species such as *Erereng (Hyparrhenia rufa), Ekatukutachwe (Brachiaria decumbens),* and *Lomurio (Cenchrus ciliaris)* occur in both districts and show hardiness by persisting much longer in greenness with the advancing dry season. Therefore, through mobility pastoralists in areas with species less resilient to drought can find some grazing relief in Kaabong and Kotido as the dry season advances.

Table A2. Karamojong pastoralists' perception on abundance and resilience of commonly occurring pasture species

District	Available pasture species identified		Relative abundance	Resilience to moisture stress
	Botanical name	**Karamojong name**		
Kaabong	*Hyparrhenia newtonii*	*Emaa*	High	Poor
	Brachiaria brizantha	*Elet*		Fair
	Hyparrhenia rufa	*Erereng*		Good
	Chloris pycnothrix	*Ekode*	Medium	Fair
	Setaria sphacelata	*Nyesiloit*		Poor
	Brachiaria decumbens	*Ekutukutachwe*		Good
	Cenchrus ciliaris	*Lomurio*		Good
	Sporobolus pyramidalis	*Ethiloit/Ajanet*		Good
	Cynodon dactylon	*Emuria/Neymuria*	Low	Fair
	Panicum maximum	*Lasaricoo*		Fair
	Hyparrhenia diplandra	*Lojokopolon*		Poor
Kotido	*Chloris pycnothrix*	*Ekode*	High	Fair
	Cynodon dactylon	*Emuria/Neymuria*		Fair
	Brachiaria brizantha	*Elet*		Poor
	Aristida adscensionis	*Lomukur*		Poor
	Cenchrus ciliaris	*Lomurio*		Fair
	Setaria sphacelata	*Nyesiloit*	Medium	Poor
	Sporobolus pyramidalis	*Ajanet*		Good
	Hyparrhenia rufa	*Erereng*		Fair
	Cenchrus ciliaris	*Lomurio*	Low	Fair
	Sporobolus stapfianus	*Nyemirierit*		Poor
	Brachiaria decumbens	*Ekutukutachwe*		Good
	Panicum maximum	*Losaricoo*		Poor

Adapted from Aleper et al., 2017.

References M1.REF 22 and M1.REF 23 demonstrate that pastoralists have a lot of indigenous knowledge about pasture resources with regard to biomass yield, nutritive value, resilience traits, preferred time of use, and effects on livestock when consumed. Knowledge of the nutritional significance of different pasture species at different locations and during different times of the year is a reason for mobility by pastoralists, to take advantage of such sources. The pasture species listed in M1.REF 23 are considered undesirable due to several factors such as their being poisonous to livestock and causing diarrhea, poor biomass yield, and high potential of invasiveness.

Table A3. Qualitative traits based on pastoralist knowledge of different forage species in the pastoral areas of Uganda (fits in KQ1.A1…)

Botanical name	English name	Ecological distribution	Local name	Qualities for which it rated good
Setaria sphacelata	Broadleaf setaria	CU, WU	Not specified (n.s.)	High forage production and very palatable when young, old coarse leaves injurious to grazers
Setaria incrassata	Purple pigeon grass	KJ	*Nyesiloit* (K)	Drought resilient; highly palatable; cows produce concentrated milk
Hyparrhenia rufa	Thatching grass	KJ, WU	*Erengreng* (K) *Orukabara* (R)	Soft, highly-nutritive pasture; increases milk yield and produces concentrated milk; drought resistant; commonly under pressure of selective grazing
Hyparrhenia newtonii		KJ	*Emaa* (K)	Highly palatable; fattens animals; cows produce concentrated and sweet milk
Brachiaria decumbens	Signal grass	KJ, WU	*Ekutukutachwe* (K)	Highly palatable; high herbage yield; drought resilient; increases milk production; promotes fast animal growth; photosensitization associated with low growth rates of young animals
Brachiaria brizantha	Bread grass, Ceylon sheep grass, palisade grass	WU	*Elet* (K) *Ekijubwe* (R)	High herbage yield; promotes fast animal growth (K); remains green longer; highly nutritive but low palatability (R)
B. ruziziensis	Congo signal grass			
Cenchrus ciliaris	Buffel grass	KJ, WU	*Lomurio* (K)	Highly nutritious; fattens animals; increases milk production
Eragrostis pilosa	Soft love grass	KJ	*Ngiletio* (K)	High herbage yield; drought resilient
Cynodon dactylon	Star grass	KJ, WU	*Neymuria* (K) *Oruchwamba* (R)	Palatable; fattens animals; nutritious; sprouts easily but not drought resistant
Chloris pycnothrix	Spiderweb chloris	KJ	*Ekode* (K)	Drought resilient and sprouts very fast after drought; palatable; fattens animals
Chloris gayana	Rhodes grass	WU	*Orunyankokore* (R)	

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Panicum maximum	Guinea grass	KJ, WU	*Losarico* (K) *Obuterante* (R)	High response to moisture availability; palatable; fattens livestock
Themeda triandra	Red oat grass	KJ, WU	*Emburara*, *Eyojwa* (R)	Nutritious; drought resistant; promotes high milk yield
Neonotonia wightii	Glycine	WU	*Ebikamba* (R)	Nutritive; persistent in dry season but low palatability
Desmodium intortum	Desmodium	WU	*Ebikamba* (R)	Nutritive; persistent in pasture but of medium palatability
Acacia aspera	Rough wattle	KJ	*Edomeo* (K)	Drought-resistant nutritious browse
Sporobolus pryamidalis	Sporobolus	KJ, WU	*Ethiloit/Ajanet* (K) *Egashi* (R)	Weed, only eaten when no alternative; drought resistant; difficult to chew; causes detoothing; meat on the neck of animals is hardened

Notes: Ecological distribution: CU = central Uganda; KJ = Karamoja; W = western Uganda
Local Name: K = Ngakarimajong; R = Runyankole/Rukiga
Adapted from Roschinsky, 2009 and Atuhaire et al., 2018.

Table A4. Some of the common undesirable or invasive species in pastoral rangelands

Botanical name	**English name**	**Ecological distribution**	**Local name**	**Traits for which it was valued as undesirable**
Sporobolus pryamidalis	Sporobolus	KJ, WU	*Ethiloit/Ajanet* (K) *Egashi* (R)	Weed, only eaten when no alternative; drought resistant; difficult to chew, causes detoothing; meat on the neck of animals is hardened; outcompetes good species
Lantana camara	Lantana	KJ, WU	*Ekihuki* (R)	Invasive weed; multiplies rapidly and smothers herbaceous species, hides tsetse flies; causes photosynthesis
Ocimum tenuiflorum	Holy basil	WU	*Oumujaja* (R)	Invasive weed, unpalatable, taints milk
Solanum aculeatissimum	Dutch eggplant, love-apple, nightshade	WU	*Entobotobo* (R)	Poisonous invasive weed
Solanum incunum	Sodom apple, thorn apple	WU	*Entengotengo* (R)	Poisonous invasive weed
Cymbopogon afronardus	Lemon grass	KJ, WU	*Ekadele* (K) *Omutete* (R)	Invasive and unpalatable; multiplies rapidly and smothers other grasses;slightly eaten only when young or in absence of alternatives; injures animal's mouth; hideout for ticks, worms, snakes, and tsetse flies
n.s.	n.s.	WU	*Kagyenze'nda* (R)	Causes diarrhea; thorny; spreads over palatable species
Cadaba farinosa		KJ	*Erereng* (K)	Though nutritious and drought resistant, is naturally invasive and causes diarrhea

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Acacia oerfota		KJ	*Epetet* (K)	Though nutritious and drought resistant, is naturally invasive
Triumfetta anua	n.s.	KJ, WU, CU	*Ekwanyaro* (K)	Invasive
Hibiscus micrantha	n.s.	KJ	*Edupamal* (K)	Poisonous, outcompetes good species

Notes: Ecological distribution: CU = central Uganda; KJ = Karamoja; WU = western Uganda
Local Name: K = Ngakarimajong; R = Runyankole/Rukiga
Adapted from Roschinsky, 2009 and Atuhaire et al., 2018.

M1.REF 24 shows how differences in topography in a given location influence relative abundance of different species. Pastoralists can also recognize certain zones to be of higher grazing value than others due to the pasture species and the relative abundance found in them. Growth of some species tends to be favored by high elevation while others by valley bottoms. However, it could also be that grazing, particularly for cattle, tends to concentrate in lower elevations, thus grazing out the most palatable species. This could explain why *Sporobolous* is dominant in the valley bottoms.

Table A5. Influence of topography on relative abundance as a percentage of ground cover of six most common pastures species in one location in the rangelands in western Uganda (adapted from Byenkya, 2004)

Species	**Relative basal cover (%) by ecosite**		
	Hilltop	**Slope**	**Valley**
Brachiaria spp.	40.9	40.4	31.0
Sporobolus pyramidalis	16.5	14.0	41.6
Hyparrhenia spp.	12.3	14.4	15.0
Cymbopogon afronardus	15.4	13.8	4.3
Loudentia kagerensis	7.7	8.0	6.1
Panicum maximum	7.3	9.4	1.9
TOTAL	100.00	100.00	100.00

Nutrient content of rangeland pastures is also highly variable depending on the species, stage of growth, location, and season. The range of crude protein values in Slide P1.KQ1.A1/S3 illustrates this variability.

Table A6. Nutrient content of pastures in rangeland in Karamoja Region

Pasture species		**Crude protein content (% of dry matter (DM))**	
Botanical name	**Ngakarimajong name**	**Mean**	**Range**
Brachiaria decumbens	*Ekutukutachwe*	7.11	5.7–8.5
Cynodon digitaria	*Emuria*	5.03	4.1–5.9
Hyperrhenia rufa	*Erengreng*	5.13	3.7–6.4
Sporobolous pyramidalis	*Ajanet*	4.54	2.9–6.2
Cenchrus ciliaris	*Lomurio*	5.95	5.4–6.5
Panicum maximum	*Losaricoo*	6.21	4.6–7.7

Adapted from Aleper et al., 2017.

B: CIVIC BYLAW OR PRACTICES IN DETERMINING STRUCTURE AND SUSTAINABILITY OF SAVANNAH VEGETATION

Case 3: Socio-cultural institutions and practices regulating rangeland use by Karamojong pastoralists (to fit into P1.KQ1.A1 (strategies to manage variability) or P1.KQ1.A2 (managing mobility)

Karamojong 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 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 Karamoja.

Socio-cultural institutions regulating resource use within Karamoja

When grazing within Karamoja, these institutions focus on local information-sharing about weather patterns, livestock diseases, settling resource use disputes, forecasting weather, and pasture resource conditions. The tiers for power of influence are arranged as follows (see M1. REF 25):

- ***Eree:*** This is a household level of organization mainly to spell out gender-based division related to roles in grazing. For instance, young boys are responsible for grazing calves while men take charge of distant grazing, including out-migration;
- ***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;.
- ***Ekokwa:*** This is a local court at village or *manyatta* (household) 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;
- ***Akiriket or Etem:*** This is higher-level council constituted by different *Ekokwas*. In addition to regulating pasture and water use, it is responsible for harmonizing inter-clan disputes/relationships, proclamations about migration (when, where to go, and what route to follow), and forecasts on weather and security. It is also used to discuss threats and challenges, and to perform rituals/offer sacrifices. This council sits in designated forested areas within the community that are gazetted for traditional functions. These areas are properly mapped out, documented, and integrated in community

Table A7. Organizational structure of Karamojong cultural institutions for managing access and use of local rangeland resources within Karamoja

Eree **(household (HH)** →	***Aperit/Ekeno*** **(HH fireplace)** →	***Ekokwa*** **(village/ *manyatta*-level court)** →	***Akiriket/Etem*** **(Higher-level council)** →	***Akeru*** **(level of AGM for Council of Elders)**
• Gender division of labor related to use of rangeland	• Sharing of common resources • Decision making between close HHs • Information sharing within HH	• Settle village or inter-village disputes • Control local grazing areas • Resource and boundary conflict management	• Harmonize inter-clan relationships • Proclaim about migration (when, where to go, and what route to follow) • Discuss threats and challenges, and perform rituals/ offer sacrifices • Forecasts on weather and security	• Annual General Meeting of *Akiriket/Etem*

Source: Obin, 2018.

environment programs where mobilization and support is accorded to elders to have regular meetings in these areas to deter encroachers;

- ***Akeru:*** This is an Annual General Meeting (AGM) for the Council of Elders that superintends the different *Akirikets*.

Socio-cultural institutions regulating access to resources 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 (M1.REF 26):

- ***Key individuals:*** These make decisions for respective households or group of households regarding their livestock and grazing.
- ***Aperit* (Fireplace at a *kraal*):** These are responsible for guiding decision making within a *kraal* and sharing information critical for managing the stock, especially during times of difficulty.
- ***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.
- ***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 to a higher cultural council level (i.e., *Akiriket*) to match the resistance from other communities from which they are sourcing pasture or water.

Table A8. Socio-cultural institutions guiding access of pasture by Karamojong pastoralists outside their territories

Individuals	***Aperit* (fireplace at *kraals*)**	***Awui (kraal)*—governed by key opinion leader called *Arwonit***	***Alomar* (merged *kraals*)—led by one of many *Arwonit***
• Responsible for HH's or group of HH's livestock and grazing	• Guide decision making within a *kraal* • Information sharing	• Control and guide settlements in areas of migration • Scouting for pastures and water	• Engaging with other communities • Designs strategies for action in cases of conflicts

Source: Obin, 2018.

These civic institutions are reinforced with powerful and deterrent bylaws, sanctions, punishments, or fines, including the slaughtering of a bull for the 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.

Figure A3. Aerial view of a typical Karamojong **manyatta** *(source: Okoth et al., 2013).*

Table A9. Actions taken by Karamojong livestock herders under varying rangeland conditions

Rangeland forage condition					
	When new pastures just emerge	**Overgrown/old pastures exist**	**Surplus of pastures**	**Scarcity of pastures**	**Pastures infested by weeds, parasites, and pests**
Action taken	• Graze immediately as they emerge • Herdsmen compete to graze on new pastures	• Burn for taller pasture grass species above 1 m high • Continue grazing if pasture grasses are shorter than 1 m high	• Increase grazing pressure • When dry, some areas of the range are burnt for regrowth	• Migrate to other areas	• Burn • Migrate • Graze only when pasture is void of dew to control internal parasites

Source: Obin, 2018.

Case 4: Pasture management strategies for sustainable livestock production in Karamoja pastoral system, Uganda (suggested to fit at end of KQ2. A1: Seasonal influence on pasture quantity and quality or KQ4.A1, or combine with Case 4 above]

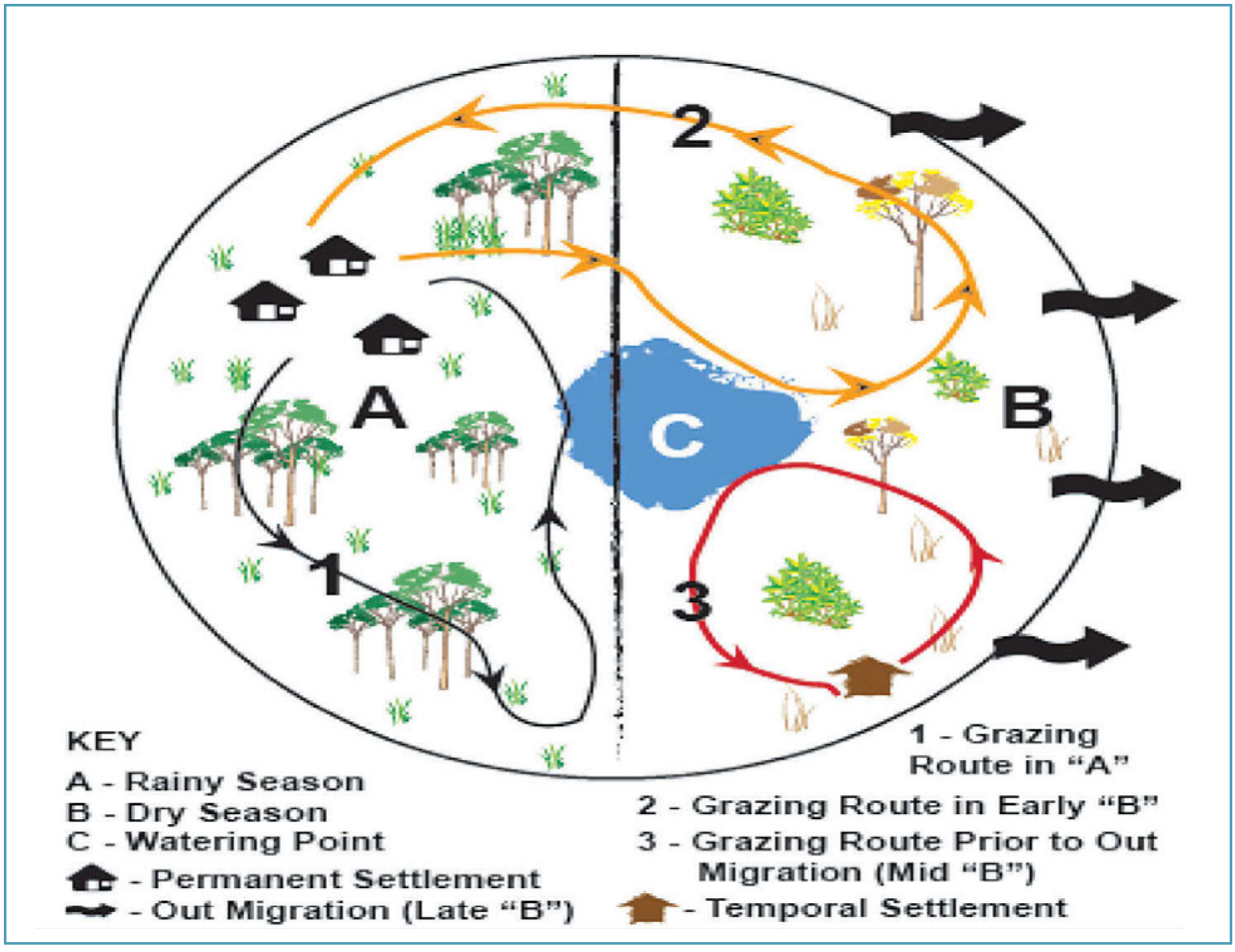
Karamoja Region is a semi-arid region. Pastoralism is a major land use that depends exclusively on natural pastures and mostly on communal land where resources like pastures and water are shared. However, as pointed out by Konlan et al., 2016 the quantity, type, and quality of the pastures and water fluctuate widely in this area due to seasonality of climate. The late dry season is characterized by scanty grazing on mainly very low-quality dry standing biomass. Early in the rainy season, lush pastures are also of low nutritional value due to the high content of water and often cause diarrhea. At the height of the rains, some areas are prone to flooding, limiting access or withering the grasses when water stands in pastures for a long period. Moreover, migration to where water exists will cause overgrazing in those areas due to convergence and congregation of large numbers of stock.

Large stretches of seasonal communal grazing areas also present challenges to range improvement such as manual removal of invasive weedy grass and woody species. According to Obin (2018), traditional strategies of ensuring sustainable use of grazing resources, especially in the dry season, include: limited resident time on a particular location to reduce overgrazing; daily migration of 12–14 km to access other grazing areas; mixed species grazing (cattle, camels, sheep, and goats) adjusted to available grass type in different locations; reducing frequent watering regimes to match available grazing; controlled burning to remove litter and unpalatable herbaceous woody species; switching to tree foliage for stock kept at home while others are taken to distant locations; and taking animals to mineral-rich areas to access salts, which are important in digesting dry grasses.

M1.REF 28: Typical plan, scheduling, and activity in a "grazing circumference" for Karamojong pastoralists (complements and strengthens the training steps on water (KQ3.A2), demonstrating how water is the key to rangeland management, particularly in the dry season. Also cross-links with Case 3.)

M1.REF 28 presents a simplified description of how pastoralists manage the rangelands over the year according to season. Karamojong 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 fields 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 farther into fodder reserves closer to the watering points.

Subsequently as drought progresses with availability of grazing becoming farther away from homesteads, herders migrate out with stock, leaving just a few behind to provide milk and blood for people left at home. As they migrate, temporary makeshift settlements are built in the fodder reserves on migratory routes as well 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



Source: Obin, 2018.

Figure A4. Karamojong "grazing circumference" grazing plan.

stock to survive until adequate resources become available again.

The size of the of the grazing circumference in Karamoja is very variable depending on location but on average is approximately 12 km, 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.

M1.REF 28: Events and significance of the Karamojong pastoralists' calendar (to fit into KQ2. A1.Step 1 of the training manual)

Classically, the rainfall calendar in the semi-arid sub-region of Karamoja is categorized into two main seasons (the wet or rainy season and the dry season). However, from the pastoralist's perspective, the calendar has four segments. The first is the ***Akichereet*** (or scanty, early rains) lasting two to three weeks between January and February. The nature of this first segment translates to the overall annual rainfall pattern and as such is used as a forecasting tool. It is also vital in supporting early pasture sprouts. The second segment, ***Akiporo*** ("bringing up vigor"), is the main rain period expected to span from March to September. In this segment, pastures established during this time and rainfall amount and duration affect the pattern of migration. The third segment, ***Erupe*** ("rains rejuvenating life"), are lighter, late rains between October and November and are important for recovery of pastures after heavy grazing. The last segment, ***Akamu*** ("dry period"), starts late November to early February and mainly features mobility and out-migration with livestock.

In addition to characterization of seasons, Karamojong pastoralists also traditionally identify the months of the year and plan livelihood activities through observing the changes and cascading weather and vegetation manifestation.

Table A10. Distance between the household/kraal and grazing grounds/water sources in selected areas of Karamoja

District	Distance (km) to communal grounds		
	Average	Minimum	Maximum
Moroto	12	3	30
Napak	14.36	3	25
Nakapiripirit	10.78	3	30
Mean	11.94	3	26

Adapted from Aleper et al., 2017.

Table A11. Categorization of seasons and Karamojong pastoralists' activity calendar

Akichereet **(scanty rains)**	***Akiporo*** **(rains bringing up vigor)**	***Erupe*** **(rains rejuvenating life)**	***Akamu*** **(dry)**
Time of the year			
Feb–Mar	**Mar–Sept**	**Oct–Nov**	**Dec–Feb**
Events and significance			
• Short rains lasting 2–3 weeks • Nature of *Akichereet* aids in forecasting outlook of the main rainy season • Helps early pasture sprout for oxen, calves, and milking cows that remained closer to home during out-migration of rest of herd	• Major and longest rainy season • Significant for regeneration of pastures • Signals return of herds from migration	• Lighter, repeated rains • Facilitates rejuvenation of pastures following earlier heavy grazing after drought • Determines when next out-migration occurs • Promotes late overgrowth, which provides combustible material for standing hay or bush burning	• Totally dry segment of the pastoralist calendar • Main activity is to increase mobility and use fodder banks along migratory routes • Conflicts arise from water use

Source: Obin, 2018.

Table A12. Activity calendar of Karamojong as tailored along pastoralists' livelihood lifestyles

Months in English	Month description in Ngakarimojong	Meaning of events that defines the month
January	*Lokwang*	White/dusty/heat
February	*Lodunge*	To drive away/migrate
March	*Lomaruk*	Mushrooms period
April	*Titima*	Vegetative bloom
May	*Yeliyel*	Flowering period
June	*Lomodokogec*	Plenty of food ("food on mingling stick")
July	*Losuban*	Ceremonies
August	*Lotyak*	Blacksmith activities
September	*Lolongu/Lolobai*	Hunting period
October	*Lopoo*	Normal cooking starts
November	*Lorara*	Leaves shedding off
December	*Lomuk*	Tender leaves re-emerge from shrubs

Source: Obin, 2018.

Case 5: Seasonal mobility pattern by pastoralists in Kotido and Napak Districts in response to changes in availability of pastures and water over the year (links with KQ4.A2)

A study conducted in 2013 by Aleper indicates that generally, pastoralists in Napak graze within the district from May to October and migrate outside the district from around November to April. Their counterparts in Kotido carry out local grazing from May to September and migrate into other districts from around October to April. However, these timings can be altered when the expected length and amounts of rain received falls outside of what is regarded as normal.

The importance of this mobility is to allow pastoralists to access grazing and water in different ecosystems that offer such opportunities at varying times of the year. Pastoralists may also target livestock markets that are outside their areas of origin. However, the time when pastoralists move in and out of their districts currently has policy implications. Hitherto, there had been culturally designated pastoral migration routes but some have been blocked due to conversion of some areas into private property and the creation of political blocks in the form of new districts. This therefore curtails the mobility used by pastoralists to take advantage of availability of pasture and water in other locations, thus hurting their livelihoods

Table A13. Link between rainfall distribution and mobility patterns of Karamojong within and outside Napak and Kotido Districts

Events / Season	Condition	District	Month J	F	M	A	M	J	J	A	S	O	N	D
Rainy season	Normal	Kotido												
		Napak												
	Bad year	Kotido												
		Napak												
Dry season	Normal	Kotido												
		Napak												
	Bad year	Kotido												
		Napak												
Grazing areas within district	Moru-Kopor, Lobanya, and Longor (*Kotido*)													
	Lochoman, Kocholut Nabelat, Turutuko, Apeitolim, Kodike, Kotiamaluk, and Longorikipi (*Napak*)													
			Toned areas are months when grazing occurs											
Grazing areas outside district	***Out-migration from Kotido:*** Longorikipi (*Napak*), Kirik (*Amuria*); Abwordwong (*Abim*); Odom, Patongo, Kalongo, and Orom (*Agago*); Karenga and Lobalangit (*Kaabong*)													
	Out-migration from Napak: Kirik, Lokok, Alito (*Amuria*); Okepia (*Teso*); Bartanga (*Abim*); Naroo/ Moruariwon (*Matheniko-Bokora game corridor*)													

Source: Obin, 2018.

C: GOVERNMENT REGULATIONS AND POLICIES IN DETERMINING STRUCTURE, USE, AND SUSTAINABILITY OF SAVANNAH VEGETATION WATER RESOURCES IN PASTORAL AREAS IN UGANDA

Case 6: Opportunities and constraints of local and regional political governance on dynamics and resilience of pastoralism

This case study reviews/analyzes how the provisions of the local government acts (and other policies/laws) support or constrain mobility and as a consequence have an impact on pastoral productivity, resilience to climate change, and sustainable rangeland management in the cattle corridor.

A classic case of Karamoja is used. Decentralization and increased creation of new districts by Government has had a constraining effect on pastoralism as it affects freedom of movement across boundaries. Although decentralization offers an opportunity for pastoralists to participate in the governance of their own affairs, especially to push for the issues that affect their livelihoods in their councils, they actually have little influence on their councils due to a low level of civic awareness and the structural problems associated with state politics.

Decentralization and creation of new districts have caused border conflicts among the different districts within Karamoja and with the outside districts as they have awakened the spirit of tribal and ethnic belonging among the "owners" of these districts. The decentralized and autonomous districts are exerting their political and executive control on the land and resources within their new autonomous administrative boundaries, usually at the exclusion of the "outsiders."

Pastoralists within Karamoja have no freedom of movement any more as it used to be before the political fragmentation of their land into autonomous administrative authorities. Kotido District pastoralists must negotiate with Abim District authorities for entry, and Moroto District pastoralists negotiate with Napak authorities. There is no oneness any more with decentralization and districtization.

Crossing into the districts outside Karamoja boundaries is becoming extremely difficult for pastoralists within the region. There is no free land for large livestock grazing in these districts as most of it has been leased out to individuals and companies. Even the wetland areas that used to provide important dry season grazing and watering spaces have become rice-growing fields.

The only land currently free and available for pastoralist within Karamoja is the public protected areas, such as wildlife reserves, game parks, and forest reserves. Most of the communal land in all districts has been taken up by individuals, companies, and land speculators, who are hoarding much of it and looking for a market in which to sell it.

The most affected districts within the region are Moroto, Napak, and Abim. In Moroto and Napak Districts, all the grazing fields, migratory corridors, and water-point access routes have been grabbed up or leased to individuals and companies. In Napak District, agricultural settlements have sprung up around watering points and grazing sites without any restriction. Creation of districts is seen as asserting territorial claims at the exclusion of the neighbors who were one yesterday but now have to come in through protocols.

There is need for policies to support the pastoral livelihoods. We move to Abim but we are like refugees, we have to call for meetings; then we say we are Ugandans, and then they say why don't you go to your district? Local authorities say they have authority over their territory and these small authoritative dominions are creating border sensitivities as each local government wants to be seen to have control over resources within its geographical boundaries and to try to prevent any further squeeze to their land, or even to try to claim more territory to expand their span of control.

District boundaries are proliferating and causing tensions to rise because of Balkanization of the people and districts. For example, the distance from Napak District headquarters to the border point with Moroto District eastwards is just 37 km, and from Katakwii District headquarters to the border point with Napak District on the Soroti-Moroto road is about 40 km.

Before elevation of Bokora County to district status, the cattle keepers from Moroto were one and the same with those from Napak District (except when they were in conflict) because they were under the same district local government. They would migrate together to the rich grazing and water resource areas in the west of Napak District.

This is no more because Napak is a decentralized authority with political and administrative powers bestowed upon them by the Decentralization Act. Moroto District pastoralists can no longer move their livestock freely to other districts within the region because of the creation of autonomous administrative and political units. If any crossing has to happen, leaders must call for a meeting to ask for permission and community consent from the other district. This has happened because of decentralization and emergence of new districts. We shall have problems if we continue creating new districts, because pastoralists will always be the losers.

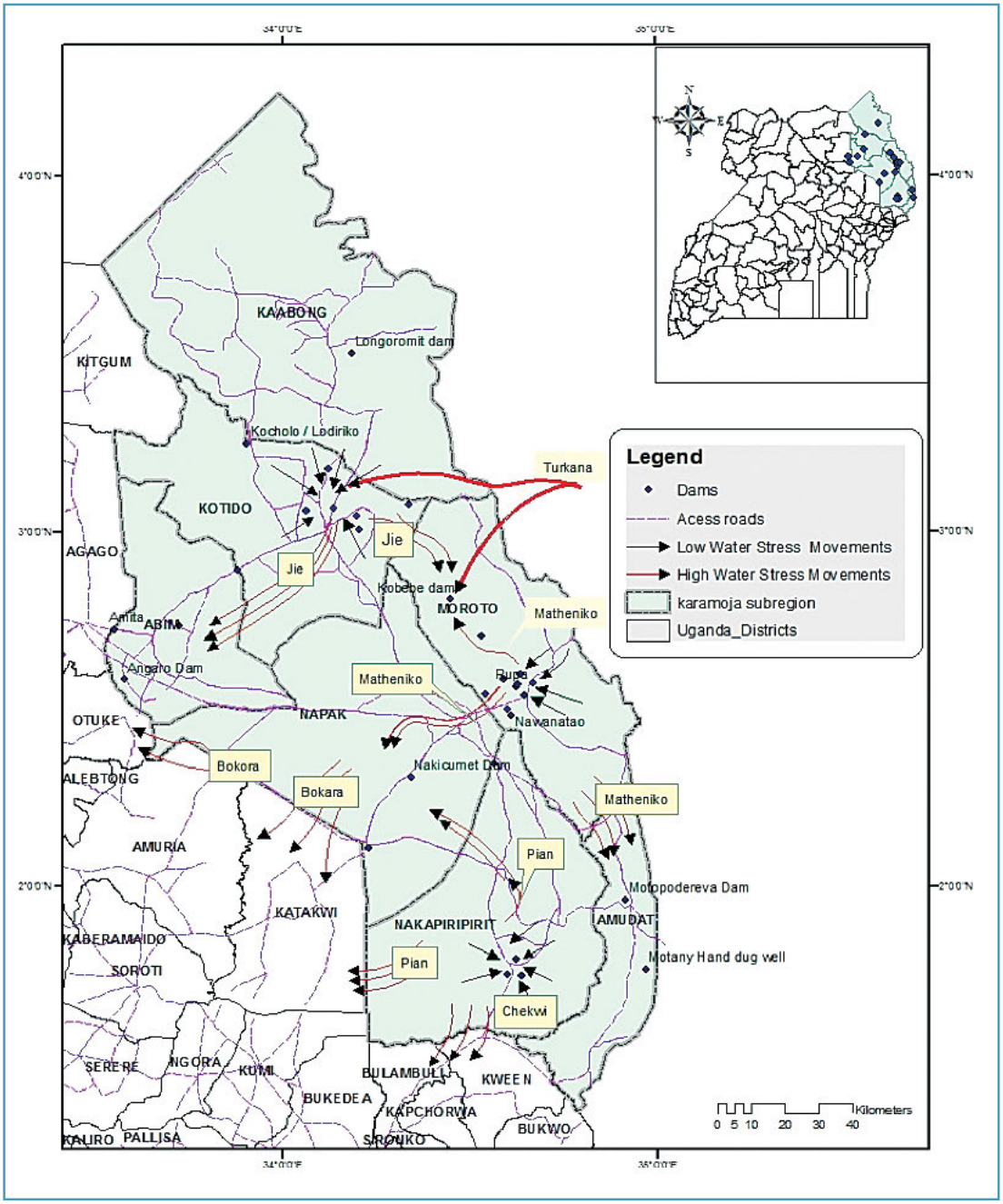


Figure A5. Spatial distributions of dams and tribal movements of herders during periods of varying water stress (source: Mugerwa and Zziwa, 2014).

Case 7: Carrying capacity of major grasslands under pastoral system in Uganda (fits into KQ2.A6)

In practical terms, it is very difficult to determine carrying capacity on natural grasslands with very high variability between seasons and years in terms of biomass yield, species composition, and nutrient composition of grazeable forage. Moreover, rangeland conditions have been reducing over the years. Thus, quoting static figures rarely makes sense. For instance, earlier estimates of the carrying capacity of the Dry *Hyperrhenia* and *Themeda triandra* grasslands by Horrell and Tilney (1970) were 2 hectares (ha)/tropical livestock unit (TLU) and 3–7 ha/TLU, respectively. More recent data by Sabiiti (2001) give overly-reduced carrying capacities of 7 ha/TLU and 8–18 ha/TLU for the same grasslands respectively.

The data below, adapted from Aleper et al. (2017), are used to demonstrate the limitations of applying the concept of carrying capacity on pastoral rangelands.

Table A14. Estimated carrying capacity of grasslands in three districts of Karamoja

Biomass yield/consumption	Nakapiripirit/ Lorengedwat	Moroto/ Nadunget	Napak/ Matany
Estimated grazeable area (ha) = A	18,952	4,327	46,137
Potential grazeable biomass production in a grazing period of 4 months (kg x 1,000) = B	14,431	1,913	58,437
Estimated DM consumption in gazing period of 4 months (kg/TLU) = C	1,092	1,092	1,092
Estimated cattle population = D	8,500	16,000	26,684
Potential carrying capacity (TLU/ha) = E = (B/C)/A	0.7	0.4	1.16
Current stocking rate (TLU/ha) = F = D/A	0.45	3.70	0.58
Implication of status (i.e., E vs. F)	Understocked	Overstocked	Understocked

Adapted from Aleper et al., 2017.

The following are realities:

- Pasture availability is not constant throughout the year in terms of quality, species composition, and quality.
- Under a pastoral system, there is usually variety of livestock species (cattle, shoats, camels, and donkeys) of different ages, thus exerting different demands and effects on the grazing land.
- Estimating actual amount of pasture consumed by grazers is just guesswork based on assumptions that may not be valid across different animals, grazing conditions, and available pasture species.
- The conclusion about whether there is overstocking or understocking based on comparisons between the potential carrying capacity and current stocking rate only applies at that instant when comparisons are made and not over a long period of time due to extreme variability of rangelands, especially in semi-arid areas. Erroneous conclusions can compromise the sustainability of rangelands, sometimes with irreversible effects.

It is suggested that in determining carrying capacity, the level of use of the range by the grazing animal must be considered. Reports based on research findings (e.g., Hanselka et al., 2001) indicate that under normal grazing, livestock will consume only 25% of the above-ground forage biomass produced in a year while the remainder senesces and is turned over into the ecosystem as litter or is left on the site and trampled, ending up in the detritus food chain. Adjustment of stocking rates for distances to water and for slope is important. For instance, non-herded cattle make little use of areas farther than 3.2 km from water. Holechek (1988) suggests percent reductions in cattle grazing capacity of none, 50%, and 100% associated with distance from water of 0–1.6, 1.6–3.2, and over 3.2 km, respectively. In herded grazing systems where cattle movement is directed by the herder, adjustment for water may not be justified. Sheep and goats can use areas that are more than 3.2 km from water and also make better use of rugged terrain. Areas on steep slopes of over 60% receive little or no use by cattle and should therefore not be part of the grazeable area. Holechek (1988) suggests that percent reduction in grazing capacity of none, 30%, 60%, and 100% should be effected for percent slopes of 0–10, 11–30, 31–60, and over 60%, respectively.

D: POSITIVE AND NEGATIVE IMPACT OF LIVESTOCK ON RANGELANDS

Case 8: Impact of grazing on species distribution in rangelands of western Uganda (to be used in KQ2.A4 to demonstrate the importance of livestock on maintaining diversity, hence greater complexity and resilience of pastures, or Case 9 can replace/complement the case study on Nairobi National Park)

Although the vegetation typology in the dry grassland areas in the pastoral system of southwestern Uganda has been described as *Acacia-Cymbopogon/Themeda* complex, the interplay of many factors modify the species distribution and composition. A long history of fire and or its absence in the area, long grazing history of both livestock and wild animals, human disturbance characterized by physical removal of dominant species, species competition as influenced by the presence or

removal of dominant species, topographical differences, and effects of weather may all to varying degrees influence species distribution, composition, and diversity in this system. For instance, a management disturbance is often targeted to eliminate all the woody species and *Cymbopogon afronardus*. Reports of about four decades ago indicate that the most dominant species at the time were *Themeda triandra* (in the valleys), *Cymbopogon afronardus* and *Loudentia kagerensis* on the slopes, *Brachiaria decumbens, Digitaria maitlandii, Hyparrhenia filipendula*, and *Panicum maximum*. Current observations show that *T. triandra* is now among the least prevalent species while *Sporobolus pyramidalis* has become one of the most prevalent species, especially in the valleys. In addition, *Brachiaria decumbens* tends to flourish under heavy grazing or reduced fire regimes.

Figure A6. An example of the effect of overgrazing on grassland in Nakasongola: left (after overgrazing); right (after restoration by excluding livestock for one year). Photo credit: C. D. Waiswa, 2015

Figure A7 illustrates that the degree of disturbance of a grassland (e.g., by fire, grazing, or bush removal) causes its transition into different grass-dominated or woody species-dominated states. In terms of productivity and resilience of a grassland, the greater the herbaceous species diversity, the better (as represented by states I and II in the figure). It is also seen that either domain—grass or woody species—can cascade from a state with more diversity (I and II) into a state dominated by low-productive grass or woody species, respectively (IV and V). Pastoralists are aware of the injurious consequences of grasslands receding into states IV and V.]

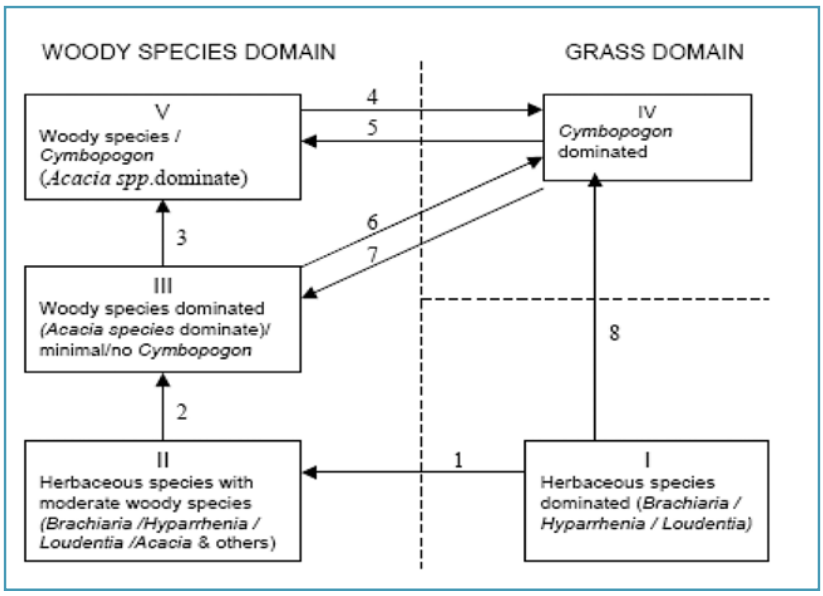


Figure A7. Dynamics of transitions between landscape states following disturbance of a rangeland ecology. I–V represent the different states. Dotted lines represent thresholds. Arrows represent transitions between states. Adapted from Byenkya, 2004.

Figure A8. Rangeland types representing landscape states in Figure A6 below: clockwise starting from bottom right: I, II, IV, and V.

Case 9: Impact of ecological disturbance on stability of rangelands in Karamoja (to be used in KQ2. A2.Step 7 or maybe KQ2.A5 to demonstrate how diversity of pasture species builds rangeland resilience) (source: Aleper et al., 2017)

A study was conducted in Nadunget, **Nakicumet**, and Lorengedwat. Nadunget is located in Nadunget subcounty in Moroto District, originally accommodating protected *kraals* in 2011. This partly lies in a "tree and shrub steppe" vegetation type, which is distinguished by abundant small deciduous trees and shrubs and an open grass layer of emergent trees. **Nakicumet** is located in Matany subcounty, Napak District and is characterized by periodic inundation of tree and grass savannas consisting of perennial grasses, sedges, and mixed deciduous trees, characteristic of dry areas. The area commands high livestock traffic (especially in the dry season) as livestock come to drink water from Arecek Dam, which holds water all year round. The area is expected to experience a spiral grazing gradient reducing outward from the center (the drinking source). **Lorengedwat** is located in Lorengedwat subcounty of Nakapiripirit District and is characterized by bush land vegetation interspaced with *Acacia-Commiphora* thickets.

Of the total number of species present, Nakicumet and Nadunget had more herbs (71.1% and 56.3%, respectively) compared to woody species, whereas Lorengedwat had more woody (53.5%) compared to herbaceous species (see Figure A9). Whereas woody species provide browse, most of the forage is provided by herbs. Of the total number of species present, Nakicumet and Nadunget had more herbs (71.1% and 56.3%, respectively) compared to woody species, whereas Lorengedwat had more woody (53.5%) compared to herbaceous species (see Figure A9). Whereas some woody species are browsed and play other major roles in water and nutrient cycles, most of the forage is provided by herbs as most of the livestock raised are grassers (cattle).

From the results, Lorengedwat seems to be stable as a grazing land, while the grasslands of Nadunget and Nakicumet may be considered to be less stable because they have more (ca. 30%) annual species. This result confirms the observation that there is more human

disturbance at Nadunget and Nakicumet compared to Lorengedwat. A routinely disturbed plant community shows dominance of annual species because they are quick to germinate and they quickly grow to maturity. Such a community can easily be colonized by invasive species and is not resilient to shocks caused by long droughts, floods, overgrazing, etc. Human disturbances such as tree cutting, charcoal burning, clearing for cultivation, and grass cutting were observed at all the sites but the frequency of the observations was highest at Nadunget.

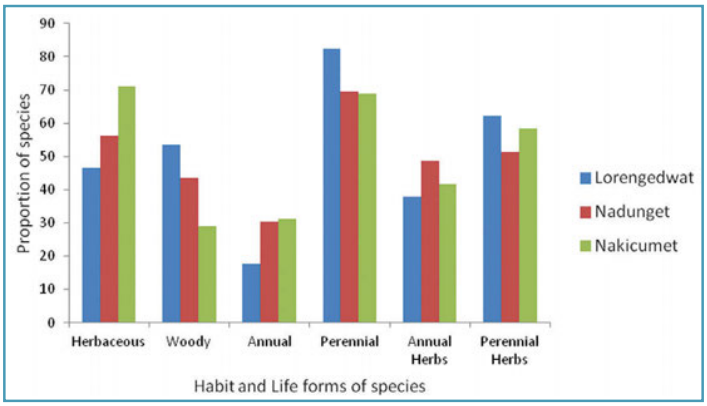


Figure A9. Comparison of habit and life forms of species within and between sites.

Figure A10. Continuous and intermittent bare patches common in Nadunget and Lorengedwat, respectively.

The most dominant grasses at Nakicumet were *Themeda triandra, Bothriochloa insculpta, Setaria sphacelate*, and *Sporobolus pyramidalis*. *Themeda triandra* is known to be a fire climax grass species whose seeds, when buried in soil, survive fires and quickly germinate at the onset of rains. These four species were reported to be liked by cattle, especially *B. insculpta*, which was reported to have some salty taste. Apart from *B. insculpta*, these species were reported to be only palatable when young despite their dominance. *Sporobolus stapfianus* was dominant in areas that were highly disturbed. At Nadunget, the dominant species were *B. insculpta, Ischaemum afrum*, and *Andropogon schirensis*. These were all said to be liked by cattle at all stages of growth. Dominant at Lorengedwat were *Heteropogon contortus, Themeda triandra, Panicum maximum,* and *Cymbopogon caesius*. *Heteropogon contortus* and *Panicum maximum* are palatable at all stages of growth but the pastoralists preferred to graze their animals on *Heteropogon contortus* because it makes the animals fat.

Figure A11. Cattle track with emerging seedlings of* Lannea humilis *at Nakicumet.

Apart from overgrazing, factors like trampling by large herds cause much reduction in the herb layer, thus opening up the ground for establishment of woody species. This was observed at Nakicumet along a cattle track to the watering point, where all the grass died because of trampling but numerous seedlings of the fire-resistant tree, *Lannea humilis*, were well established. See Figure A11.

Most of the trees cut for wood, especially for making charcoal, were *Acacia* species and *Balanites. Balanites aegyptiaca* and *B. rotundifolia* are poor at regeneration and coppicing, especially when cut below knee height. Goats ingest the seed of *Balanites* and *Acacia* but deposit them in the *manyattas*, thus hampering natural reseeding of these trees in the rangelands. In contrast, in protected areas, wildlife serve as dispersers, where seed that has gone through their digestive system appear to germinate better than those not ingested.

Case 10: Ecological and economic consequences of the privatization and sedentarization of land use in pastoral rangelands (to be used in KQ2.A5 or KQ4.A2 on mobility)

As pastoralists gain private rights to their land, they sometimes build fences on their parcels, causing both habitat loss and fragmentation. Many of the first fences to be built are around key resources (swamps, water points) to prevent free access. This loss of access to key resources is particularly important to pastoralists without tenure. As owners continue to build fences, they next fence off areas of open grassland or bush land to limit access of non-owners to valuable livestock forage.

Fencing may be advantageous in that it can allow stock owners to reduce veterinary costs, increase forage and water consumption by their own livestock, and sometimes protect production of food crops where rainfall is sufficient. However, the fences themselves are expensive and require significant long-term commitments for maintenance. When droughts occur and pastures become exhausted, pastoralists must either purchase feed (which is very rare) or move their stock elsewhere. As long as the whole landscape is not fenced and families have reciprocal relationships, individual households can reduce risks by "borrowing" forage from others or by poaching it from communal lands. It is doubtful that many households are able to keep their animals within particular demarcated farms in a dryland ecology without suffering severe shortages of feed or without severely overstocking the land.

Key resources and high-potential, wetter rangelands patches are the first places that agriculturalists convert to cultivation. In western Uganda, agro-pastoralists have fenced and cultivated some of the swamps in the valley bottoms, ramifying hill areas. These swamps are crucial sources of water and forage in the dry season for livestock, people, and wildlife in this dry ecosystem. A few of these areas are left in protected areas or traditional pastoral lands that where tsetse flies are still abundant. Other areas are fenced off for controlled grazing of mainly improved milking herds. However, the economic consequence and trade-offs of changing the production system have not been analyzed. Currently, there is not a great deal of information on the economics of fencing in pastoral lands.

The usual argument for exclusion of human activity from such areas is that it prevents the spread of cultivation, settlement, and livestock grazing in these areas, thus reducing biodiversity. However, documentary evidence shows that when nomadic pastoralists recede from such areas after temporary use, they leave behind nutrient hotspots in old livestock *kraals*. Many wildlife species prefer to graze on the nutrient-rich and productive grasses on old settlement sites rather than on other parts of the surrounding savanna. From an ecological perspective, data from moderate levels of protected resource use suggest that many wildlife and some butterfly species prefer to forage in pastoral areas more than in nearby protected areas. This demonstrates that both highly-protected areas and more highly-used pastoral areas may be "simpler" than traditional pastoral landscapes. Changes in patterns of rangeland can have strong impacts on a range of ecosystem functions, particularly productivity and nutrient cycling.

E: PROFILING OF AVAILABLE WATER RESOURCES FOR LIVESTOCK AND DOMESTIC USE IN THE PASTORAL AREAS OF UGANDA

Case 11: Livestock and domestic water resource in Karamoja (adapted from Aleper et al., 2017; Mugerwa and Zziwa, 2014; International Rescue Committee, 2009)

The major policy issues associated with water dynamics in semi-arid and arid pastoral areas revolve around managing the number of animals that can be watered, particularly in the dry season as this directly affects the rate of consumption of standing biomass before the next rains. Ideally, the more water there is in the dry season, the higher the rate of grazing. In this regard, the type of water infrastructure, their functionality, where they are located, how they are managed, as well as associated conflicts, are all critical issues.

Karamoja sub-region has semi-arid conditions with highly variable climate characterized by sporadic rainfall and high temperatures all year around. The annual rainfall ranges between 350–1,000 mm. This limited amount of rainfall limits the available amount of water for livestock and pasture growth, necessitating movement of livestock from one area to another in search of water. Several water sources have been identified in the districts of Napak,

Moroto, Kotido, and Nakapiripirit. There are six sources of water identified for livestock: boreholes, windmills, ponds (mainly for watering small stock), valley tanks, dams, and rivers. Apart from watering livestock, dam water is used for domestic purposes, including drinking, brewing, cooking, and bathing. Irrigation, fish farming, and development is also slowly being undertaken using dam water in Nakicumet.

Rivers are mainly utilized during rains while during desperate periods, riverbed sand dug-out wells are utilized to water livestock in the major rivers. Dams have proven to be useful sources of water for livestock; in Moroto and Napak, Kobebe and Nakicumet Dams respectively have proven to be the most important dams. Since their construction, these dams have barely dried up. They have thus become convergence points for livestock when the water scarcity problem intensifies in the surrounding districts. Kobebe Dam, for example, hosts the Matheniko and some Tepeth pastoral communities from Rupa subcounty and the slopes of Mount Moroto (both located in Moroto District), the Jie pastoral community from Kotido District, and Turkana pastoralists from Kenya. Nakicumet Dam provides for the Bokora and the Pian pastoral communities from Napak and Nakapiripiriti (particularly those from around Lorengdwat and Nabilatuk subcounties) respectively.

The distribution of dams in the three districts is non-uniform, with the concentration of dams in a few subcounties. In Moroto District, for example, nine out of ten dams in the entire district are located in Rupa subcounty (M1.REF 30). By the time the study was conducted (October–November, 2013), eight dams, including Lokisilei, Kadilanke-Kanakol, Kanakol, Lomario, Kisop, Kidepo, Nawanatao, Pupu, and Rupa had dried up, with only two dams (Kobebe and Kaloe) still holding some water. Observations revealed that the water in Kaloe Dam could barely last up to mid-December 2013, implying that the livestock that were watering in this dam had to either move towards Kobebe Dam or towards Arecke Dam in Napak District. Further, minimal water sources for livestock exist in Katikekile subcounty, yet the subcounty is classified as one of the pastoral livelihood zones in the sub-region. In Nakapiripirit, three of the four dams were located in Namalu, with one dam found in Lorengedwat. No dam was observed in other subcounties such as Lolachat and Nabilatuk. Meanwhile, the dam at Lorengedwat was already dry by the time of the study. Additional information obtained from the herders indicated that the dam usually dries up around late October to early November. Meanwhile in Napak District, Areceke-Nakicumet Dam still had considerable volumes of water that could last through the dry season up to March/April of the following year. It is important to note that the water in Nakicumet Dam is currently serving multiple benefits, including irrigation purposes and fish farming (one fish pond has been set up at Nakicumet). The other two dams (Lomamururak and Nabokat) had water but the supply was considerably lower in volume; they were thus on the verge of drying up.

Ownership and proper management of water facilities is important for sustainability. A study commissioned by International Rescue Committee in 2009 established that the majority of water facilities belong to the community (78.2%) while 17.9% are for institutions and about 4% belong to private people. The most privately owned water facilities are in Abim District while Kotido, Kaabong, and Moroto Districts have the least.

Table A15. Number of water facilities by ownership and district

District	Ownership			
	Community	Institutional	Private	Total water facilities
Abim	124	40	25	189
Kaabong	185	50	6	241
Kotido	218	26	4	248
Moroto	361	67	5	433
Nakapiripirit	236	74	16	326
GRAND TOTAL	1,124	257	56	1,437

Operation and maintenance of a water facility affect its functionality, which in turn affects real safe water coverage. The functionality rate for the whole Karamoja Region as established in 2009 is 65.3%, which is lower than the national average of 75% and the 90% mark that is the national target. Abandoned water facilities stand at about 15.3%. Moroto District has the highest number of abandoned facilities at 23% while Nakapiripirit has the lowest at 9%.

Table A16. Water facility functionality by district

District	Functionality				
	Abandoned[1]	Working	Temporary down[2]	% Functional	Water coverage
Abim	27	127	35	67.2	61.8
Kaabong	51	151	39	62.7	22.7
Kotido	59	151	38	60.9	39.0
Moroto	52	319	62	73.7	45.9
Nakapiripirit	31	191	104	58.6	39.4
GRAND TOTAL	220	939	278	65.3	38.0

[1] Abandoned facilities are defined as those that have complex technical problems that cannot be rectified, or the cost of repair is almost equivalent to a new facility.

[2] Temporary down facilities are those that have simple technical problems lasting at least six months.

Only a few dams in Karamoja, e.g., Arecke-Nakicumet Dam, have a functional water use committee. At other dams, the water quality is poor, precipitated by direct watering of livestock in the dam, a very high grazing intensity, littering, heavy inflow of surface runoff, and destroyed, or lack of, erosion checks. As such, the water is mucky and full of silt and sediment. Some dams were blooming with water weeds. Because of the high grazing intensity due to a poor dam management strategy that restricts grazing around and direct watering in it, average plant height for grasses in the first 100 meters around most dams is often 10 cm and below.

With the exception of Kobebe and Nakicumet-Arecheke Dams, water availability in all other dams was insufficient to cover the drought period before the rainfall onset in March. Some of them are almost dried up, the water having receded towards the dam bed. Water quality is poor, with high silt content. This state is attributed to direct watering of livestock in the dam in total disregard of livestock water facilities provided at the dam periphery. Most of these livestock watering facilities such as troughs, boreholes (for pumping), and photovoltaic energy installations (solar systems) were either vandalized and/or functionally unusable.

Challenges facing management of water dams in Karamoja are several:

- There is a lack of community ownership of most of the water sources. At the time of construction of the dams, the local communities/pastoralists were not adequately consulted except in the case of dams (ponds) constructed near the homesteads. As such, the communities perceive themselves as recipients, and the others as providers.

- Vandalism is a problem. The pipes and metals are removed by the herders and youths for making bangles and spears for hunting and other uses. At Kaloe Dam, for example, the watering troughs had been vandalized and the water pipes leading to the trough from the pumping borehole disconnected and strewn on the ground. Windmills that had been constructed to provide water for livestock were dysfunctional, while some had parts vandalized; for example, at Rupa, Lokali in Moroto District; Nakobekobe and Koboyen in Nakapiripirit District, and the Angaro and Kopua-Lorengchora windmills in Napak District. Similarly, a dam that was commissioned in June 2013 at Lobel in Kotido District fitted with a solar pumping system got vandalized in three months; by the time of this study, the pumping system was dysfunctional.

- There is a lack of initiative to manage the existing facilities. While the community is keen to find out who is visiting and/or is at the dam, the same community barely has a thought of taking the initiative to properly manage the dam for posterity. All the dams that had previously been fenced after construction had their fences vandalized and exposed. In one of the discussions, a participant remarked that "that is GIZ [Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH] dam, and the other is a government dam." Thus, it is the responsibility of GIZ and Government to maintain.

- In all the dams visited, livestock were watered directly in the dam. This destroyed the dam embankments and exposed the dam to siltation and soil erosion. Despite observing a few goats and sheep being watered in Nakicumet-Arechek Dam, it was generally not a common practice. The herders there seemed to observe the set standards in using the watering troughs located across the road, about 2 km from the dam.

- Convergence of various pastoral groups puts pressure on the dams. Kobebe Dam (Moroto District), Nakicumet Dam (Napak District), and Namatata Dam (Nakapiripirit District) are convergence dams. At Kobebe Dam, some Jie from Kotido District, Turkana from Kenya, and Tepeth and Matheniko from Moroto converge with their livestock from around October to March. The pressure on the dam is quite high and is coupled with direct watering; the dam periphery has been rapidly deteriorating since it was constructed.

- There is limited capacity and lack of equipment for managing expansive dams, in particular Nakicumet and Kobebe Dams. Nakicumet and Kobebe Dams are very large dams and are fairly deep. These require specialized equipment for removing water weeds that cover the water in the manner of an algae bloom.

- In some of the dams, it was observed that poaching was taking place. Snares could be observed in some of the dams. At Nakicumet Dam, over ten snares for ostriches were laid on the eastern banks of the dam.

- Where most dams are located, luxuriant *Acacia* and *Balanites* subsist. At present, these trees are being threatened by increased tree felling for charcoal, firewood, and homestead hedging. This further exposes the dams to prevailing winds that increase evaporation from the dams.

Animals drinking directly from a valley water reservoir, Karamoja. Photo credit: Daniel Aleper

Animals drinking directly from a valley water reservoir, Karamoja. Photo credit: Daniel Aleper

Small ruminants being watered from a valley water reservoir, Karamoja. Photo credit: Daniel Aleper

Small ruminants being watered from a valley water reservoir, Karamoja. Photo credit: Daniel Aleper

Figure A12. Different sources of water.

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Domestic water collected from dug-out well, Karamoja. Photo credit: Daniel Aleper

Dug-out wells normally dry out during the height of dry season, Karamoja. Photo credit: Daniel Aleper

Perennial water reservoir, Karamoja. Photo credit: Daniel Aleper

Water pumped from a valley dam into a reservoir tank to facilitate watering animals, Karamoja. Photo credit: Daniel Aleper

Seasonal waterways providing water sources (but turbid and presumably rich in minerals) for livestock during the rainy season, Karamoja. Photo credit: Daniel Aleper

Concrete watering troughs. Photo credit: Daniel Aleper

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Borehole water for domestic use. Photo credit: Daniel Aleper

Concrete watering troughs. Photo credit: Daniel Aleper

Valley dam with earth-molded drinking trough constructed by water committee to prevent animals drinking from reservoir, Karamoja. Photo credit: Daniel Aleper

Unprotected domestic water sources usually shared with livestock, Wanzogi-Nakasongola. Photo credit: David C. Waiswa

Watering troughs molded out of clay to prevent animals drinking directly from water reservoir and also used for domestic water, Kazo-Mabarara. Photo credit: David C. Waiswa

Watering animals from earthen molds, Mbarara. Photo credit: David C. Waiswa

Camels browsing on Acacia *species. Photo credit: Daniel Aleper*

Extremely dry grazing conditions. Photo credit: Daniel Aleper

Cattle grazing Setaria incrassate*-dominated pastures. Photo credit: Daniel Aleper*

Setaria incrassate*-dominated pastures. Photo credit: Daniel Aleper*

Pastures beginning to return to normal at onset of rain (Karamoja). Photo credit: Daniel Aleper

Flooded rangeland in rainy season (Karamoja). Photo credit: Daniel Aleper

Figure A13. Different grazing environments in pastoral areas of Uganda.

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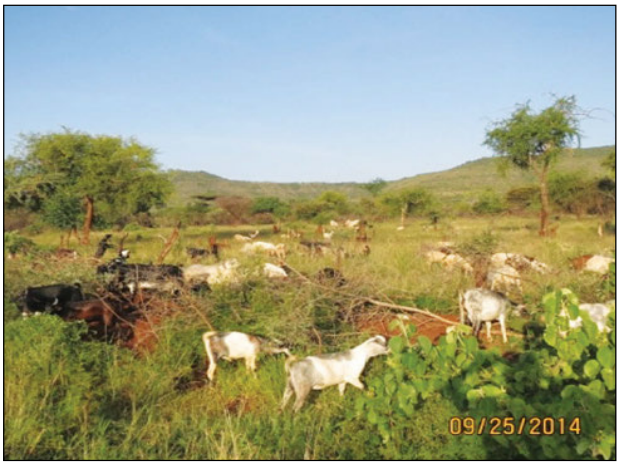
Goats browsing thorny* Acacia *(Karamoja). Photo credit: Daniel Aleper

Standing hay partially burnt (Karamoja). Photo credit: Daniel Aleper

Kiruhura (district in the cattle corridor), scattered vegetation. Photo credit: Gerald Eilu



Grazing environments. Photo credit: Daniel Aleper

Ankole. Photo credit: R. K. Roschinsky, 2009

Ankole. Photo credit: R. K. Roschinsky, 2009

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Ankole. Photo credit: R. K. Roschinsky, 2009

Ankole. Photo credit: R. K. Roschinsky, 2009

Denuded grassland in Nakasongola due to a combined effect of prolonged drought, overstocking, and termites. Photo credit: David C. Waiswa, 2005

Destructive effect of termites on grassland in arid environments—Nakasongola. Photo credit: David C. Waiswa, 2005

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PILLAR 2: THE HERD

Reviewed and compiled by:

1. Basil Mugonola – Principal Investigator
2. Joseph M. Kungu – Co-investigator
3. Elly Kurobuza Ndyomugyenyi – Co-investigator

2. PILLAR 2: THE HERD

Objective: Understanding herd dynamics, typology, and characteristics of livestock species in the pastoral areas of Uganda.

Reviewed and compiled by:

1. Basil Mugonola – Principal Investigator
2. Joseph M. Kungu – Co-investigator
3. Elly Kurobuza Ndyomugyenyi – Co-investigator

Table A17. Key terms

Degradation	A process in which the value of the biophysical environment is affected by a combination of human-induced processes acting upon the land.
Desertification	A relatively dry area of land becomes increasingly arid, typically losing its bodies of water, as well as vegetation and wildlife.
Dryland	A relatively arid area.
Ecosystem	A biological community of interacting organisms and their physical environment.

1. INTRODUCTION

About 35% of the world population lives in drylands where one of the main sources of livelihood is the herd. The herd is one of the three pillars of pastoralism, the others being natural resources and the family. In pastoral areas of Uganda, the herd is comprised of cattle, goats, sheep, camels, and donkeys, among others. This report is a product of the desk review on understanding herd dynamics, typology, and characteristics of livestock species in the pastoral areas of Uganda commissioned by KRSU to collate evidence and specific information on the different types of livestock that pastoralists rear and the overall herd dynamics in selected pastoral areas of Uganda.

The outputs of the desk review will be used to enhance and contextualize the East African training materials, the student textbook, and other tailor-made courses on Pastoralism Policy and Practice (PPP) in Uganda.

1.1 Purpose and scope of the desk review

This desk review constitutes specific responses to the gaps identified by the adaptation team in the course materials on pastoralism policy and practice for Uganda. It provides empirical evidence for the course materials and responds to the recommendations expressed by course facilitators. The desk review generated up-to-date consolidated information on the following:

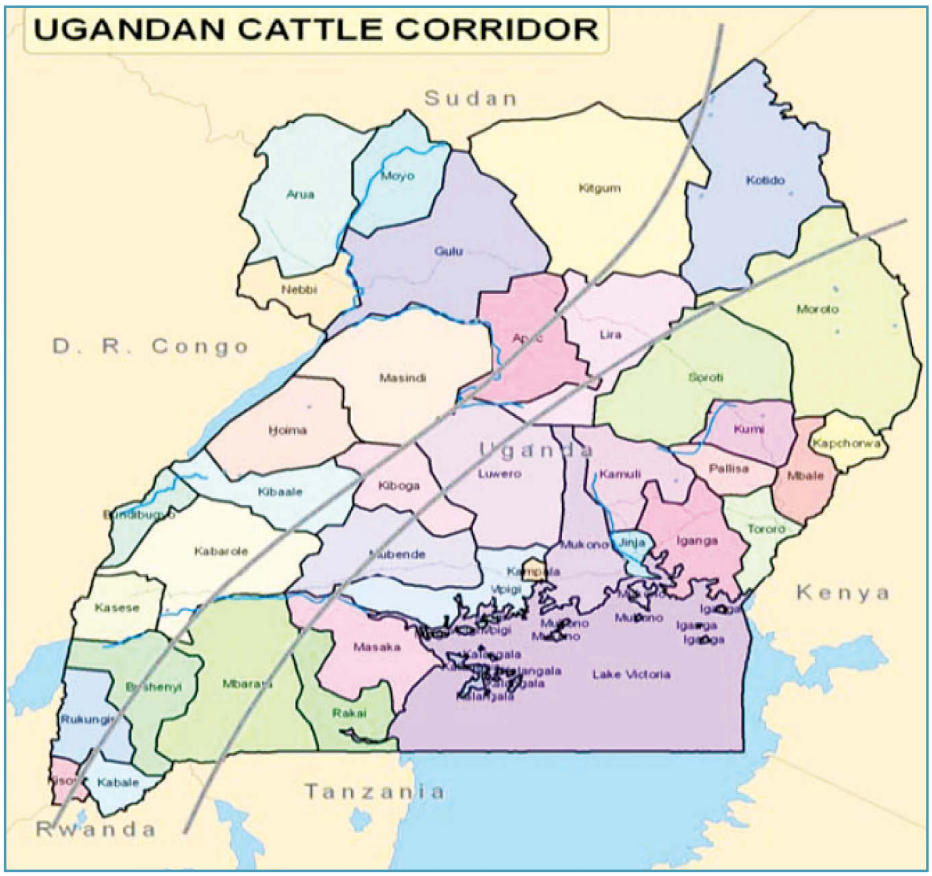
- Herd dynamics in the different pastoral areas of Uganda, with specific focus on: the local names and economic and social values attached to different categories of livestock within the same species and between species, and within and between breeds (e.g., color, purpose, and performance); and information on how men, children, and women value different categories, breeds, and species of livestock (e.g., the gender dimension of livestock production, management, and utilization in pastoral areas of Uganda).
- The herd structure, particularly of cattle, to assess the distribution of male and female animals of different ages, the local names given to the different categories, the economic rationale given by pastoralists for maintaining such a structure, and the management strategy used by pastoralists to structure their herds in the manner they want (e.g., controlled breeding, exchange of livestock within community, and choice of livestock to sell).
- Ownership of livestock at family level, gender dynamics, and other social norms that allow men and women to acquire livestock during their lifetime.
- The dynamics in ownership of livestock and the impacts on the pastoral economy and society, and how changes in ownership affect livestock management strategies and as a consequence the productivity of the rangelands.

1.2 Approach to the desk review

This rapid qualitative study undertook a comprehensive review of existing data, evidence, photos, captions, and any existing research including reports, statistics, journals, articles, and pictures on the typology of livestock and herd dynamics in Uganda. Materials and information were sourced from reports of the Uganda Bureau of Statistics (UBOS), Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), the Uganda National Planning Authority (NPA), key informants, selected publications, and grey literature. The information was synthesized, summarized, and collated to the themes of the investigation.

1.3 Background

The herd plays a vital role in the livelihoods of pastoralists who are predominantly located in the cattle corridor that stretches from southwestern to the northeastern parts of Uganda as shown in Figure A15.



Source: Kisamba-Mugerwa et al., 2006.

Figure A15. Map of Uganda showing expanse of the cattle corridor.

The landscape of the cattle belt (cattle corridor), stretching across the middle of Uganda from the base of the highlands in southwestern Uganda through the area around Lake Kyoga to northeastern Uganda, is characterized by extensive cattle-dominated farming systems. Over the years, other forms of livestock production have been practiced in areas with higher population densities, with dairy cattle ownership being an important characteristic of economically progressive farmers in these zones (MAAIF and UBOS, 2009).

1.4 Forms of pastoralism

Pastoralism is categorized according to the degree of mobility. The Food and Agricultural Organization (FAO)[1] identifies three broad categories of extensive livestock production systems: nomadism, transhumance, and agro-pastoralism. These are described below.

Nomadism

Nomads follow seasonal migratory patterns, which are largely determined by the need for pasture and water for livestock. Nomads do not create permanent settlements but rather live in temporary shelters. This practice has largely died out in Uganda as we shall see later.

Transhumance

Transhumance is the seasonal movement of herds among fixed points in order to exploit the seasonal availability of pastures. In Uganda, transhumance is practiced by the Basongora in Kasese District and Karamojong in the northeast.

Agro-pastoralism

FAO describes agro-pastoralists as settled communities who cultivate sufficient areas to feed their families from their own crop production (**http://www.fao.org**). They hold land rights and keep smaller herds of livestock. Agro-pastoralism is practiced in parts of Karamoja, and most of Teso, Nakaseke, and Nakasongola.

1.5 Pillars of pastoralism

It is broadly accepted that pastoralism is composed of three interdependent pillars: natural resources, the herd, and the family (Byakagaba et al., 2018). In this section, we adopt the Coalition of Pastoralist Civil Society Organisations (COPASCO), 2015 characterization described below.

[1] A. Egeru, O. Wasonga, J. Kyagulanyi, G. J. Mwanjalolo Majaliwa, FAO, Pastoralism in the new millennium (**http://www.fao.org**), cited in COPASCO, 2015.

Pillar 1: Natural resources
Pastoralists are dependent on natural resources for their livelihoods. These resources include:

- Pastures (grasses, trees) for livestock;
- Certain herbs and tree products (pods, leaves, bark) for human diets and medicine for both people and livestock;
- Water for people and livestock;
- Natural salt pans and crop residues for livestock diets.

Pillar 2: The livestock herd
A livestock herd refers to those animals upon which a pastoral family depends and which they look after. Pastoralists keep several species of livestock, including cattle, goats, sheep, camels, horses, reindeer, and donkeys; pastoralist communities in Uganda primarily keep cattle and to some extent goats and sheep.

Pillar 3: The family
A pastoralist family are all those people 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. Pastoralists depend upon their animals for food and their other needs.

1.6 The relationship between the three pillars: natural resources, livestock herd, and the family
The COPASCO report observes that pastoralists constantly try to maintain a delicate balance between the size and composition of the herd and the number of people who depend on it. They try to keep the size of livestock herd that can support the family and guarantee the social status of the owner, as well as avoid degradation of natural resources. The family size, age structure, and sex ratio must also be appropriate to ensure proper management of the livestock herd. For instance, if most family members are young or very old, livestock may not be properly managed (COPASCO, 2015).

1.7 Centrality of mobility: Why pastoralists move from place to place
Contrary to popular belief, the mobility of pastoralists is strategic and good for managing the scarce resources. It is carefully planned to make the best use of seasonally available natural resources. There are many reasons for pastoralist mobility, including: resource tracking, i.e., within and between seasons in search of pasture and water; resource management, i.e., to preserve dry season pastures and water; movements at the start of the rains in search of fresh pasture; periodic movements to avoid drought and insecurity; mobility to avoid wildlife and diseases; and movement for social interactions, e.g., marriage (COPASCO, 2015).

2. KEY FINDINGS
In this section, the findings of the desk review are organized along the major themes of the herd dynamics, namely: diversity, feeding, grazing and water requirements, typology, ownership and utilization, gender roles and responsibilities, common diseases in livestock, and livestock production and productivity indicators. Each of these themes is presented as a case study.

2.1 Case study 1: Diversity of livestock species in Uganda

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 product (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 (Government of Uganda, 2008). See Table A18.

Table A18. Livestock numbers by region in Uganda as per the 2008 livestock census

Livestock type	Central	Eastern	Northern	Karamoja	Western	Uganda	2009	2010
Cattle	2,475,860	2,488,470	1,641,840	2,253,960	2,548,620	11,408,750	11.8	12.1
Goats	1,676,050	2,599,980	2,696,100	2,025,300	3,452,240	12,449,670	12.8	13.7
Sheep	269,600	319,370	568,510	1,685,500	567,390	3,410,370	3.5	3.6
Poultry	10,788,370	11,301,030	8,128,280	1,442,070	7,532,630	39,192,380	38.6	39.7
Donkeys				960				
Camels				32,030		32,870		

Source: MAAIF and UBOS, 2009.

In 2008, the Karamoja sub-region in northeastern Uganda had the highest number of camels at 32,030 (97.4%) of all Uganda's camels. 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 and UBOS, 2009). The following photos captioned (I–V) show the diversity of livestock upon which pastoralist families in Uganda depend.

I: Boys herding goats in Karamoja. Courtesy: Mesfin, KRSU

II: Ankole cattle in Kashumba subcounty, Isingiro District. Photo credit: Joseph Kungu

Continued on next page

Figure A16. Diversity of livestock in Uganda.

Continued from previous page

III: Karamojong cattle in Nakapiripirit. Photo credit: Joseph Kungu

IV: A herd of camels in Amudat District. Photo credit: Paul Boma

V: Grazing sheep and goats in Karamoja. Photo credit: Paul Boma

Keeping a diverse herd is a risk-mitigation strategy. Different species have differing susceptibilities to disease and environmental stressors (e.g., extreme cold, heat, or drought), increasing the probability that some part of the herd will survive any given disaster or change in the environment (Rugadya, 2006). Pastoralists also distribute their herds among relatives and family members to avert loss of entire herd in case of any calamity (Loupa, 2017). Keeping a variety of different animals provides the pastoralist with more, different livestock products and services, and in some cases, extends the season for harvesting products such as milk, which can be obtained from several different species that differ in gestation and duration of lactation. Keeping a diverse herd also provides labor opportunities for a larger cross-section of the pastoral population. Small stock can be herded by small children, while cattle and camels are generally under the keeping of older boys or young men (and occasionally, women as well). When a herd owner has a mixed herd, all members of his family can contribute labor to the pastoral enterprise (Rugadya, 2006).

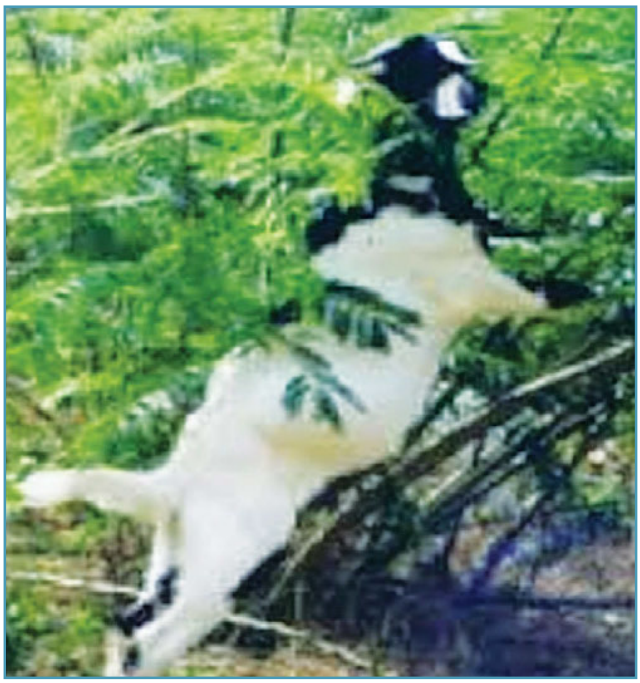


Figure A17. East African goat browsing at Nabuin ZARDI farm, Nabilatuk District, Karamoja, 2018. Photo credit: Paul Boma

2.2 Case study 2: Feeding/grazing habits and water requirements

Different livestock have different forage and habitat preferences, and water requirements, allowing for efficient and optimal utilization of the available vegetation resources (Rugadya, 2006). The varied habitat and diet preferences of different livestock species also may minimize competition among species, allowing for a greater number of livestock units to inhabit the same range than if only one species were used. A study by Jonsson (2010) was conducted in Shompole in southern Kenya on standing, lying, social behavior, moving, and ruminating by observing herds of cattle, sheep, and goats on pasture. In this study, goats and sheep mostly browsed, while cattle grazed. The morphological features of goats that contribute to their browsing include their mobile upper lip and their ability to assume a bipedal stance (Jonsson, 2010).

The study by Jonsson (2010) further revealed that goats browsed more than cattle and sheep but grazed less than cattle and sheep. In addition, fruits and seeds were more consumed by goats compared to cattle and sheep. There were no differences between species regarding the frequencies of standing, lying, social behavior, moving, and ruminating.

Water requirements

Drinking water for livestock in pastoral areas is often poorly distributed, especially during the dry season. The differential watering requirements of the different species of livestock and the differences in mobility among them determine how far from water the animals can be taken to graze (Rugadya, 2006). For instance, cattle exploit forage resources at great distances from water, while smaller livestock such as sheep and goats (shoats) have a more restricted grazing radius around a water source because of their inability to trek longer distances.

2.3 Case study 3A: Livestock typology, ownership, utilization, and management among the Bahima of southwestern Uganda

Among the Bahima in southwestern Uganda, cattle are given individual names, which precisely describe them to ease management of herds (Tables A19, A20, and A21). These descriptions are based on phenotypic characteristics (coat color and patterns; sex; shape, size, and orientation of the horns; hump size; navel size; ear form; head size; tail shape; and body length of Ankole cattle), behavior, and other characteristics, including ancestry, association with a special event, and mode of acquisition (e.g., a gift).

A name's prefix indicates whether an animal is a heifer, a cow, or a bull. For heifers, names start with "*Ka*;" for bulls, whether young or old, with an "R;" and for cows any other letter, except for the brown-white colored cow called *Ruhuzumu*. It is noted that being able to distinguish between the light brown (*siina*) and the dark brown (*mbindi*), makes it possible for breeders to select the right cows and bulls to produce animals of the favored dark reddish-brown color (*Bihogo*). This fine description of an individual animal makes it possible for the Bahima to trace the genealogical relationships of their cattle as far back as ten generations.

The most popular names among the *Bahima* pastoral communities include: *Bihogo, Gaaju*, and *Siina*, which are different shades of brown; white body coat patches, i.e., *Ngabo, Mayenje, Kyasha*, and *Mpuuga*; *Kakondo*, the most preferred horn orientation; polled cattle or *Nkungu*; cattle with loose horns or *Nshara*.

Table A19. Local naming of livestock by the Bahima of southwestern Uganda

Cattle **Local name**	**Description**
Kinyena kitatera Mugyere/Kifeera	Well behaved/humble cow/cattle
Rutaara omwagaagi	Bad-behaved cow/cattle
Rwamururu/Kashuma	Greedy cattle
Kipampara	Low milk-yield cow
Rwiira	A cow that shows bad temperament, refuses its calves, and has no mercy for them
Nyinabarongo	A cow that calves twins
Kamanga	A cow that walks quickly and with energy
Njagu	Cattle notched at the ear
Ruhambwa	A cow that refuses to be milked

Source: Personal communication, Kyasiimire, Justine, January 28, 2019, Kiruhuma District, Uganda.

Table A20. Naming of cattle according to hide color and pattern (Bahima)

Local name	**Description of color and pattern**
Kyozi	Black
Bihogo	Brown/maroon
Siina	Faint brown
Gaju	Light brown
Mpuunga	White patch on the udder side
Ngabo	Has a patch at the back
Mayenje	Has white patches on the sides
Kiroko	White patches on the cheeks and chin
Ihinda	Has a white patch on the forehead
Ngabo eyiragura	Black and white patches
Ruhuzimu	Grey
Ibamba	Has very many patches on the body

Source: Personal communication, Kyasiimire, Justine, January 28, 2019, Kiruhuma District, Uganda.

Table A21. Local names of livestock and associated production characteristics by pastoralists in southwestern Uganda (Bahima)

English name/description	Local name/meaning
Herd	*Egana*
Calf	*Enyana*
Herding	*Okuriisa*
Cattle	*Ente*
Cow	*Enzigiza*
Bull	*Ennumi*
Kraal	*Ekiraaro*
Pasture	*Obunyaansi*
Milk	*Amate*
Souring milk	*Okucunda amamate*
Sour milk	*Amate amacunde*
Container used to sour milk	*Ekyanzi*

Source: Personal communication, Elly Ndyomugyenyi, Gulu University, February 8, 2019.

2.4 Case study 3B: Livestock typology, ownership utilization, and management among the among the Karamojong in northwestern Uganda

The Karamojong appreciate animals of reasonable size and body weight, with good milk yield, high calf production, certain colors, and disease resistance. The different breeds within the herds are recognized, although they do not give them specific names.

The Karamojong cattle are of the same type, zebu, with upward-pointing humps, large body size and weight, blunt snouts, resistance to heat, some tolerance to cold, and well-developed dewlaps very prominent in bulls. Their colors include white/cream, grey, roan, and dark/dirty brown. The black color is a recent development from interbreeding. Some Karamojong groups call their animals "*Ngibaren*" while for cattle they call them "Ngatuk," though most describe them as "Karamojong cattle."

The Karamojong try to maintain their breeds by some controlled breeding. Undesirable males are castrated, sold off, or even used to pay a debt. It is common for one herder to borrow a desirable bull from his neighbor for breeding purposes for a few weeks (Table A22).

Table A22. Local names of livestock by the Karamojong pastoral groups in Uganda

Local name in Karamojong	Description in English
Aate	Productive cow
Emong	Adult bull
Itayok	Heifer
Etayok	Young bull
Echugat	Oxen
Ngichugai	Ox
Aate-Nalepot	Milking cow
Akine	Female goat
Ekoroi	Male goat
Ikale	Young of a goat (kid)
Akale	Female kid
Ekale	Male kid

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Emesek	Male sheep (ram)
Amesek	Female sheep (ewe)
Ikale	Young of sheep
Akale	Young female sheep (ewe lamb)
Ekale	Young male sheep (ram lamb)
Esigiria	Male donkey (jack)
Asigiria	Female donkey (jenny or Jennet)

Source: Personal communication, Judith Chale, January 20, 2019, Moroto District, Uganda.

Figure A18. Karamoja cattle assembled for marketing. Photograph courtesy of Mesfin, KRSU.

2.5 Case study 4: Gender roles and responsibilities in the pastoral production system

Livestock is mostly controlled by men in all pastoral communities in Uganda. It's a man who decides whether to sell an animal or not; after selling is when a women is given some money for household items (Table A23). But women play a critical role in household pastoral production. They bear the primary responsibility for household agricultural production. For example, women bear the primary responsibility for milking animals kept within the homestead that are assigned to them, and sometimes also the ones in the livestock *kraals* in the grazing areas in case the animals have migrated in search of water and pasture. Women are also responsible for processing milk products such as *ngakibuk* (churned milk), butter, and ghee. Women help men in construction of fences and watering animals at the *kraals*. Women play an important role in livestock management, and do have the right to acquire and own livestock, either completely or temporarily. Women acquire livestock in the following ways:

- Fathers may give their daughters animals for their well-being and survival during marriage. They are given at the end of the marriage ceremony and usually when most of the bride-wealth demanded by the bride's family is paid.
- A woman can buy an animal if she has money, especially women who do small business.
- A woman's new husband, relatives, or husband's friend may give her one or several animals known as *aate ngina nyaraet aberu* (the cow for calling the woman). This animal, usually a cow, belongs completely to the woman. She is the only one who has the right to milk it. Her husband may not sell or exchange this cow except with the explicit permission of the woman. Besides ceremonial

animals and those assigned to her (for milking) from the central herd upon entering the husband's house, a women can also acquire animals when a friend or a sister is getting married as part of their vast kinship and friendship networks.

2.6 Case study 6: Management of livestock herds

Pastures and access to water during dry season

Pastoralists make decisions to manage their herd sizes, basing them on existing challenges and examples, including livestock lending and reciprocal pasture access. Livestock lending is a common practice in pastoral communities in Uganda. A household with surplus milking stock may lend a milk cow to a poorer household on a temporary basis, for example. In exchange, the receiving family provides herding labor out of proportion to the number of stock in their own herd. Typically, the livestock belonging to all the households in the camp are pooled into one herd, and each household takes the animals to pasture in turn. Access is seldom, if ever, denied, with the expectation that reciprocal privileges will be provided when the circumstances are reversed. Using the norm of reciprocity, flexibility in movement is easily implemented. Granting access to the grazing territories to a neighboring community will in return provide similar opportunity to the hosting communities whenever they run short of water and pasture resources.

In pastoral areas, livestock are dependent on the availability of natural pastures on the rangelands, where the natural resources are managed through a mix of common property and private regimes. Access to pastures and water are negotiated and dependent on reciprocal arrangements (Rugadya, 2006). As a coping mechanism, communities have adapted and evolved to cope with constraints of climate, economic change, and opportunities facing them. Some of the key livestock management strategies include herd mobility, herd diversification, raising several species of animals in one herd, and maintenance of a high proportion of female stock (Hesse and MacGregor, 2006).

Breeding

Another strategy used to manage the herd is the great care taken in selecting the bull of the herd (*engundu*), whereby eating of male calves enables preserving only the best males for breeding purposes. It also minimizes the competition for resources during adverse conditions.

Marketing of livestock by pastoralists

Pastoralists may sell their animals, but the decision as to which animal is to be marketed depends on a number of factors including: the magnitude of the need to be satisfied; and the size, the species composition, age, sex, and structure of the herd. For small, recurrent expenses, the sale of shoats usually takes precedence, but large expense needs like medication or school fees often necessitate the sale of cattle (Ayele et al., 2003). When pastoralists are confronted with the necessity to sell their cattle, off-take is restricted to the non-productive elements

Table A23. Gender roles and responsibilities among the selected pastoral groups in Uganda

Activity	Karamojong	Bahima	Basongora
Construction of *kraal*	Men	Men	Men
Milking	Women	Men	
Watering	Women	Men/boys	
Milk processing/sale	Women	Women	
Herding	Young boys	Girls/boys	Men
Security/protection	Men/youthful boys	Men/youthful boys	
Managing milking cows and calves	Women	Women	
Selling cattle	Men	Men	
Selling small stock	Men	Men	
Decision making	Men	Men	Elderly men
Domestic chores	Women/girls	Women/girls	Women/girls
Livestock movement and reproduction	Men	Men	Men
Managing small stock	Women	Men	
Feeding and watering young and sick animals	Women		
Souring/churning milk	Women	Women	Women

Figure A19. Livestock marketing in Karamoja. Photographs courtesy of Mesfin of KRSU.

of the herd such as cull cows, sterile heifers, non-breeding bulls, and bull yearlings (Semenye, 1980). Marketing preference is often balanced with fundamental pastoral considerations like securing the future reproduction of the herd and maximizing milk flows.

The pastoralists' decision to sell a specific animal is guided by judging the usefulness of that animal on the criteria of fertility, physical resistance, and milk production (John, 1987).

Livestock mobility in pastoral areas

In the pastoral areas, the strategic movement of livestock (livestock mobility) is a rational and productive response to the uncertain availability of pasture and water, and may include substantial cross-border movements of people and their animals (AU, 2010). Observed changes in pastoralism may be attributed to long-term economic, environmental, and demographic trends, as well as crises such as drought, which collectively determine how pastoralism and pastoralist areas change over time (Catley et al., 2016). Further, Catley et al. (2016) posit an analytical framework for understanding how the futures of different pastoralist households will vary according to two critical factors, i.e., market access and access to natural resources.

2.7 Case study 5: Common diseases of livestock and control strategies

Livestock diseases have major impacts on livelihoods in Karamoja Region and other predominant livestock production regions of Uganda (Table A24). 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 relied 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 the different plant parts are used, including the 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 method of administration is primarily oral, followed by topical applications. Almost all plants are collected from the wild (Abebe, 2016; Gradé et al., 2009).

Table A24. Livestock diseases and ethno-veterinary extracts used to control them

Local name of disease	Scientific name	Plant	Local 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 extract
Ewonokori	Blackleg	*Capparis spp.*	*Lokecumani*	Water extract
Ngikur	Intestinal parasites	*Cissus quadrangularis*	*Egigith*	Water extract, stem
Emadang/singor	Tick infestation	*Euphorbiaceae*	*Jeriman*	Water extract, whole plant
Ediit	Trypanosomiasis	*Aeollanthus* spp.	*Lotuko*	Water extract
Lokou/chemuloi	Heartwater	*Euphorbiaceae*	*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.

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 Government of Uganda and several non-governmental organizations (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). The research by Abebe (2016) compared the animal health service providers in Karamoja in terms of accessibility, availability, affordability, quality, and acceptability (Table A25). The CAHWs were found to be more accessible, available, and acceptable compared to other service providers (Abebe, 2016).

Table A25. Ranking of animal health services providers in the Karamoja Region

Indicators	Median score (range)						
	Govt. vet	Private					
		Private vet. pharmacy	CAHW drug shop	Animal health officer (AHO)	CAHWs	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)

Source: Abebe, 2016.

2.8 Case study 6: Livestock production and productivity indicators

The commonly used livestock production systems in pastoral areas are nomadism, transhumance, agro-pastoralism, and newly introduced commercial dairying (based on open grazing with supplementary feeding). 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, 2004; Warui et al., 2007; 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 A26a and b; Figure A20).

Table A26a. Age at maturity and period of productivity of livestock species

Livestock species	Maturity period+	Productivity period+
Cattle	10–22 months	10–12 years
Sheep	5–12 months	6–7 years
Goats	4–12 months	6–7 years
Camel	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 A26b. Age at maturity and period of productivity of livestock species

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

Sources: Kaufmann, 2004 (camels); Warui et al., 2007 (goats); Wario et al., 2016 (cattle); Wilson, 1982 (sheep).

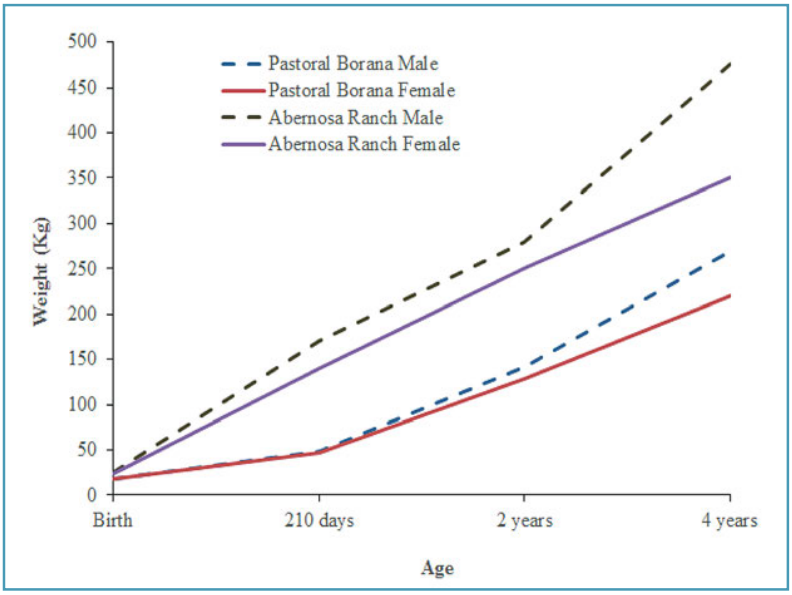

Figure A20. Cattle weights under different grazing conditions.

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PILLAR 3: THE FAMILY

Reviewed and compiled by:

1. Kalyango Ronald Sebba – Principal Investigator
2. Amayo Flavia – Co-investigator
3. Asiimwe Henry – Co-investigator

3. PILLAR 3: THE FAMILY

Objective: Understanding pastoral families and the wider socio-cultural institutions in pastoral areas of Uganda.

Reviewed and compiled by:

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2. Amayo Flavia – Co-investigator
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1. Background

The USAID Uganda/Karamoja Resilience Support Unit (KRSU), implemented by Feinstein International Center, Friedman School of Nutrition Science and Policy at Tufts University, has been operational in the Karamoja Region since 2016. The unit provides strategic, programmatic, and technical support to the USAID/Karamoja Development Partners Group (KDPG) and Office of Prime Minister/ Government of Uganda with the aim to provide evidence for strengthening resilience, policy, and coordination through learning events. Since 2017, KRSU, in partnership with the International Institute of Environment and Development (IIED), has been working with four institutions—Gulu and Makerere Universities, Center for Basic Research (CBR), and Karamoja Development Forum (KDF)—to adapt the Pastoralism and Policy Course to the Ugandan context. This includes adapting the training materials already developed for East Africa and the textbook already in use in Ethiopian universities to the Ugandan context. This will further enable development of a taught course at the universities and tailor-made programs targeting policy makers and development workers. In the process of implementing the Pastoralism and Policy Course for the Ugandan partners, the need for adapting evidence to the Ugandan context was identified. This would involve a literature review to gather existing Ugandan evidence as well as case studies to update evidence.

It is envisaged that the outputs of the desk review will be used to enhance and contextualize the East African training materials, the student textbook, and other tailor-made courses on pastoralism and policy in Uganda. Overall, the desk review focuses on what makes up a pastoral family and how the family relates to the herd, and the labor demands of pastoralism. Specifically, the review addresses gaps identified by the adaptation team in the course materials. It also provides empirical evidence for the course materials and recommendations expressed by course facilitators. The literature review is divided into two sections:

- Characterization of a typical pastoral family within the cattle corridor of Uganda;
- Understanding the traditional and formal governance structures in the pastoral areas of Uganda and existing legal and policy frameworks.

1.1 The pastoral family and wider social institutions

The pastoral family is part of the wider pastoral system that also includes the herd and natural resources. A pastoral system here refers to a production system centered on the rearing, marketing, and trade of livestock and animal products (Lind et al., 2016). Pastoralist systems encapsulate a far wider range of non-livestock livelihoods and productive activities in dryland areas, which are also associated with pastoralism through a variety of social and economic relationships (Lind et al., 2016). Moreover, the three pillars of pastoralism do not exist in isolation from each other; they interact so that the sum is more than the whole. For instance, 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. As this desk review shows, how the three pillars of pastoralism interact is also influenced by the wider social institutions and policy frameworks within which pastoralism and pastoral families are embedded.

Notable is that 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 on their needs and spread any risks. 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 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 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.

1.2 Conceptual issues

1.2.1 Production systems—pastoralism

Pastoralism is defined as an extensive production system that depends mainly on livestock.

Pastoralism is categorized according to the degree of mobility, that is: nomadism, transhumance, agro-pastoralism:

- **Nomadism** is a highly mobile production system that does not undertake any cultivation and does not have any base on the rangeland.

- **Transhumance** is a production system that is highly mobile yet that moves between definite seasonal bases in a year. Notable here, some pastoralists practice a form of semi-transhumance, whereby part of the family and or livestock seasonally move and part remain sedentary and involved in cultivation.

- **Agro-pastoralism** is a production system whereby crops are grown in a particular season but the same parcel of land is grazed during the dry season when the crops have been harvested.

In addition, pastoralism differs from other livestock production systems such as:

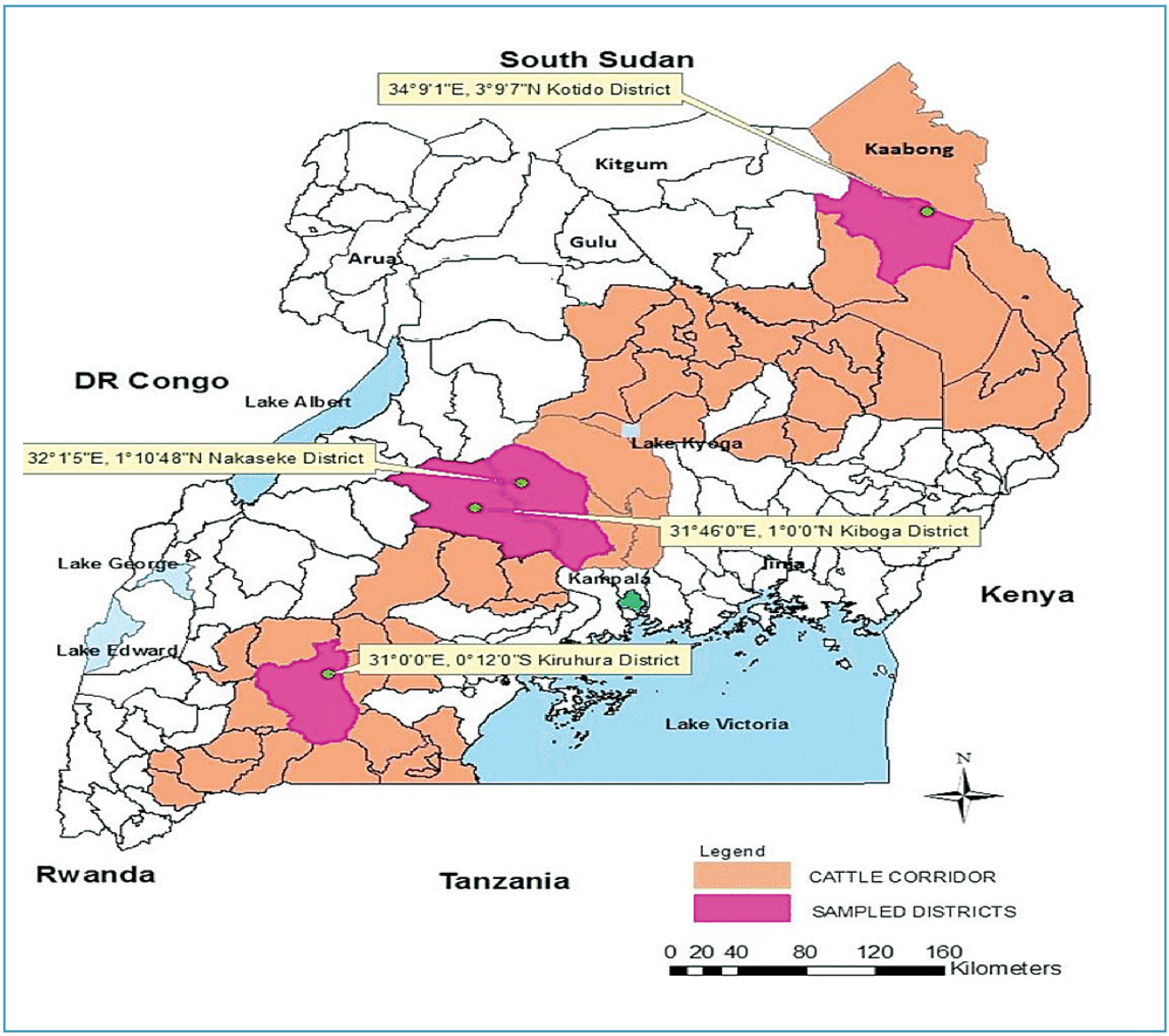
- Ranching/enclosed livestock production: an extensive livestock production system under which land is individually owned and usually fenced. Ranching is common in Ankole area in western Uganda.

- Sedentarization: This involves keeping livestock near farms and villages all year round without moving to distant locations. In Uganda, it is practiced by the Itesot and the Baruli.

In Uganda, pastoral communities are to be found in what is mainly referred to as the cattle corridor. See Figure A21 next page.

Table A27. General characteristics of different livestock production systems

Production system	Characteristics
Landless industrialized systems	• Industrial, market-driven production systems • Detached from their original land base, commercially oriented, and specialize in specific products • Generally associated with large-scale enterprises • Small-scale urban-based production units also important in developing countries *Potential areas for gender concern:* labor conditions, mobility, control over production, decision-making power
Small-scale landless systems	• Small-scale landless livestock keepers typically not owning croplands or with access to large communal grazing areas • Typically found in urban and periurban areas and in rural areas of high population density *Potential areas for gender concern:* access to water, fodder, decision-making control, control over benefits, access to information on disease prevention, control
Grassland-based or grazing systems	• Typical of areas unsuitable or marginal for growing crops • Most often found in arid and semiarid areas • Adaptive management practices needed for challenging environmental conditions *Potential areas for gender concern* (depends on scale): *large-scale* ranches: labor conditions, living conditions such as accommodation, control over decision making; *small-scale:* intrahousehold decision making, control over benefits, decision making, local knowledge, and gendered roles in animal husbandry, disease prevention, and control
Mixed farming systems	• Most of the world's ruminants kept within crop-livestock systems • Characterized by relatively low levels of external inputs • Products of one part of the system used as inputs for the other *Potential areas for gender concern:* access to and control of inputs (land, water, credit); intrahousehold decision making; access to extension, veterinary services; capacities for scaling up



Source: Kisaalita and Sempiira, 2017.

Figure A21. Map of Uganda showing pastoral areas.

Table A18. Types of pastoralists and their geographical spread in Uganda

Pastoralists	Geographical location	Type of pastoralism
Bahima	Mbarara District, western Uganda	Ranching
Basongora	Kasese District, near Rwenzori Mountain	Transhumance
Karamojong	Northeastern Uganda	Transhumance
Itesot	Eastern Uganda	Sedentarization
Baruli	Nakasongola District	Sedentarization

Source: Kisamba Mugerwa, 2001.

1.2.2 Property regimes in pastoral areas

Property here refers to any object or right that can be owned. Ownership involves possession; in simple societies, to possess something is to own it. Beyond possession, ownership in modern societies implies the right to use and prevent others from using. Property regimes spell out how family members relate to the land within each of the production regimes as well as the structure of rights that characterizes the relationship of individuals to one another. Property regimes here refer to the land tenure system characteristic of pastoral areas. Rangelands cover 44% of Uganda's total land area, sustaining 80% of the national livestock herd and 90% of the cattle. The literature on pastoralism spells out four types of rangeland property regimes: state property, private property, open access (non-property rangeland tenure), and common property:

- **State property regime:** The state or some state organization has legal title to the income generated by the resource. The state has the ability to exercise control over use of the resource and income generated by the resource. Common forms of state property are forest reserves, game reserves, national parks, departmental farms, and government-sponsored ranches.

- **Private property regime:** Individual legal entities have exclusive rights to some income generated by the resource. Individual owners have secure expectations that they can gain from future income generated by the resource. Individual pastoralists or a group of herders under a corporate body have exclusive rights to specifically defined areas of grazing land. Any decision taken on land use is implemented with no need for consultation.

- **Open access and common property:** This is where each livestock owner achieves access to the water and forage available in an area by the physical presence of their animals. Each livestock owner who achieves access ignores the consequences of his/her behavior for other rangeland uses (tragedy of the commons). Land is used freely, with no restrictions on grazing. Ideally, no individual has exclusive rights to the income generated from the resource. Group members have secure expectations that they can gain access to future income generated by the resource, and there is an enforcement mechanism to punish deviant behavior. Under a common property regime, the rangeland is utilized collectively, with regulations on how to gain access to the grazing land. Qualification may be based on ethnic affiliation, residence, and/or clan lines. In much of sub-Saharan Africa, pastoralists move with herds at intervals and in varying patterns and have a combination of semi-permanent residence or encampments, maximizing the availability of pasture in a drought (Bennett et al., 1986, 5). Access to the resource depends on users' cooperation in respecting community norms.

What distinguishes common property from open access is the set of restrictions limiting access and use. To put it differently, it is the conscious governance of the grazing resources through self-enforcing or internally enforced social contracts.

1.2.3 Rangeland management and carrying capacity

Carrying capacity here refers to the number of animals any piece of land can sustain while maintaining biologically optimal levels of forage production. Sustainable land management requires that livestock numbers be maintained at (or below) carrying capacity. If livestock numbers exceed carrying capacity, the result may be land degradation due to overgrazing and soil erosion. Proper management, therefore, requires livestock holders to make short-term stocking decisions consistent with long-term maximization criteria. Who makes the decision and what priorities are taken into consideration at the household level is largely determined by the structure of the intrahousehold relations.

From the literature, it was established that the relationship between land use and rangeland management depends on the management regime under consideration. Open access

rangeland tenure, for instance, causes concern among analysts partly because of the theory of the "tragedy of the commons" (Hardin, 1968). This theory asserts that over-exploitation of common resources will occur because each herdsman, as a rational decision maker, seeks to maximize his private gain. The individual herdsman weighing costs and benefits in a personal perspective finds gain in adding another animal to the herd. Though beneficial, it may be catastrophic for the community. The hypothesis that comes from the tragedy of the commons directly links resource degradation to a common system and suggests that a sustainable environmental policy will only come about through the promotion of private property and or through coercive measures (Lane and Morehead, 1995, 122).

Unfortunately, the tragedy of the commons argument informs Government policy and practice and is legitimized for government management of pastoral resources in many parts of the continent (Lane and Morehead, 1995, 122). In Uganda, this is evident in how Government policy towards pastoral communities is focused on adoption of alternative livelihoods such as agriculture and abandonment of the "non-profitable pastoral practices" considered backward, less productive, and environmentally destructive.

2. What is a pastoral family?
Characterization of a typical pastoral family within the cattle corridor of Uganda

Pastoralists are people whose livelihood depends mainly on the raising of domestic animals including cattle, camels, goats, sheep, and donkeys, which are used for milk, meat, transport, trade, and their leather (used for industrial products). Pastoralists typically occupy large tracts of communally shared land and utilize kinship ties for mutual herding and defence. Their herds are often large and in poor condition, but hardy enough to survive periodic drought and sparse vegetation (Fratkin, 2001). Unlike commercial ranchers who raise a limited number of animals solely for market off-take in confined areas, pastoralists rely on their herds for daily subsistence.

What constitutes a family varies from one pastoral society to another. A family refers to "all people 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." Pastoral families may consist of extended family members with married sons living together with their father and all livestock kept together in one management unit. Family members—women, men, boys, and girls—have different roles and provide different labor for livestock-related tasks. These roles and tasks are dynamic, as family members change over time as they grow up, attend formal education, and interface with the external environment.

In pastoral families, lineages and clans play an important role in the stability of the household. 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, and religious organizations, among others.

What distinguishes a pastoral family from others is its dependency on the herd. In a pastoral system, the livestock herd refers to the animals on which a pastoralist family depends and for which they care. Pastoralism is therefore different from other forms of livestock production, such as ranching, in that 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 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 realised only at the end of an animal's productive career. 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.

Furthermore, pastoral families inhabit those environments that are supportive of their livestock. How these are managed form an important part of decision making within the household, such as how many animals to keep, when to move, and which livestock to keep where. Variability of the natural environment (highland areas, lowland areas, wetlands, and riverine forests) determine the quality and quantity of natural pasture available to livestock, and how this varies between wet and dry seasons.

In Uganda, pastoralists occupy savannah, semi-arid, or arid areas commonly referred to as the cattle corridor. The cattle corridor stretches from the Uganda-Tanzania border in the south to the Karamoja area in the northeast that borders Kenya and South Sudan. In southwestern Uganda, it includes Isingiro, Mbarara, Rakai, Masaka, Kasese, and Kabarole Districts; in central Uganda, it includes parts of Kibale, Masindi Mubende, Nakaseke, Nakasongola, and Mukono Districts; in northern Uganda, it includes Apac and Lira Districts; and in eastern and northeastern Uganda, it includes Kamuli and Soroti Districts, and the Karamoja sub-region (Nakapiripirit, Kotido, Abim, Kaabong, Moroto, Napak).

Figure A22. Longhorn cattle common in southwestern Uganda.

Case study 1: Karamojong family

Karamojong are eastern Nilotic pastoral people of northeastern Uganda. The Karamojong are the largest of a cluster of culturally and historically related peoples, including the Jie, Tepeth, Dodoth (or Dodos), and Labwor of Uganda, and the Turkana of neighboring Kenya. They speak an Eastern Nilotic language of the Nilo-Saharan language family. Cattle are the most valuable and valued assets among the Karamojong, and the possession of cattle is regarded as necessary for both social esteem and personal satisfaction. The Karamojong share common cultural aspirations to own livestock and accumulate more livestock, with a strong emphasis on cattle. The Karamojong talk about their livestock with great interest and understanding, and talk about their cattle with great affection (USAID, 2016). This behavior is distinct from that of sedentary agricultural households, who tend to manage livestock more as a source of household income and a savings account to be tapped when needed to meet cash needs (USAID, 2016). This attachment to their herds to a great extent informs their disposal habits, such as through trade. For instance, it has been observed that the amount of money needed, not the price, determines when animals are sold to meet cash needs. Moreover, sale of livestock is a man's duty, and men take pride in their negotiation skills.

Herds are divided so that some animals are kept around permanent homesteads for milking while most are sent off to distant pastures, where young men tend them and live off their milk, sometimes supplementing a meager and monotonous diet with blood obtained by bleeding the cattle. Their kinship and clan structure is described below:

- Karamojong are grouped by clans and by territorial sub-groups, which are the Bokora, the Pian, and the Matheniko.
- 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*.
- Clans are reckoned by patrilineal descent, wives join their husbands' clans, and cattle are given distinctive clan brands.
- A named generation of 25 to 30 years has a recognized leader.
- Wives and daughters join the age sets of their husbands and fathers.
- Cattle are literally wealth; 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.

The family and clan of the Karamojong extend only three generations and are the primary social units. Two other

Figure A23. Livestock of pastoralist in Uganda[2] (add appropriate captions to the photos in tandem with the text: include name and time of photographer).

units of central importance in Karamojong society that provide the basis for political action are: territorial groups, which create units of common interest, allegiance, and action; and age groups by which authority is allocated and roles are determined for individual members of territorial groups.

Social organization of the Karamojong

Karamojong adult males are organized into a series of groups based on varying degrees of common age. These age sets are an integral part of Karamojong social organization and provide the basis for authority. The highest sources of authority are community elders. 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 and to be closely linked to 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.

Case study 2: The Basongora

The Basongora, also considered a minority group in Uganda, are traditionally a pastoralist cattle-herding cultural community located primarily—but not exclusively—in western Uganda and eastern Democratic Republic of the Congo. They reside in the foothills and plains at the floor of the western arm of the Great Rift Valley and the hills of the Rwenzori mountain range. Basongora have distinctive pastoral customs that include the breeding, bleeding, and milking of African longhorn cattle. Several noted, but endangered, breeds of longhorn cattle—including the enGondo, eNyambo and enGombe—were bred by Busongora. Young men and women travel with cows. Some milk cows and a cohort of warriors and able-bodied caretakers are left to guard homesteads and to take care of the elderly and the very young relatives. Travelling herders always return after a while to re-join their families. Age determines seniority in social relations, and men and women are considered equal.

2.1 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, power dynamics, and dependency. Households are only perceived as unitary structures where a patriarch (man) controls all the decision making. For instance, women play a role in the management of livestock and 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 woman. Although unilateral decisions concerning the use of livestock assets are considered uncustomary, it is common for men to make a

[2] Downloaded from **https://www.theguardian.com/world/gallery/2011/nov/27/life-of-uganda-nomads-pictures** (photo credit: Sven Torfinn).

final decision on livestock. Women, however, may have a say over livestock controlled by them such as those 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; and other factors such as the presence of drought. Access to resources also depends on the type of livestock production system; that is, nomadism, transhumance, and or agro-pastoralism. While women may have access to livestock, they do not control it.

Within the pastoral 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. 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, and agriculture, not to mention the day-to-day management of the family and homestead such as collecting water and firewood.

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

- Productive activities: looking after livestock and other economic activities;
- Reproductive activities: cooking, fetching, childcare, healthcare, etc.;
- Community activities: participating in cultural meetings, ceremonies, decision making at community/local government levels, etc.

Productive activities

Productive activities are those which 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. Daily activities include milking and herding the animals, seasonal activities include digging wells or occasional tasks 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 that have built up over time and are passed on from one 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 (World Bank, FAO, and IFAD, 2009). Depending on their primary responsibility—cattle or small ruminants—women and men may have differing knowledge on, for example, breed selection, fodder, disease prevention, the selection of which animals from which to breed, veterinary care, and harvesting and processing wild foods and medicines.

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. Women in particular are responsible for poultry, small ruminants, and microlivestock production as well as dairying, including the processing and marketing of milk and milk products. Despite this, women are often not key decision makers in relation to the disposal of animals and animal products.

Figure A25. Bahima men tending their cattle.[3]

Figure A26. The traditional Ankole calabashes where milk and grease are stored. Photo credit: Timothy Sibasi

Box 1. 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.

[3] Source: **https://www.govisitkenya.com/banyankole-people.html**.

Reproductive activities

Reproductive activities are those that relate to the health, growth, and well-being of the family: cooking, fetching water, childcare, healthcare, 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 collecting and processing bush products for food, knowing where to find such food in the ecosystem, understanding the dynamics of such products (when they are edible, when they might be poisonous, etc.).

Activities, workloads, obligations, and rights vary according to the age of women. For example, girls will work for their mother, young wives will help their mother-in-law, mothers and mothers-in-law will be helped by their daughters and daughters-in-law.

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).

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.

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, 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.

Case study 3: Gender relations among the Karamojong

Karamojong society is patriarchal and polygamous. 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 a pastoral household. Men and women have access to livestock as owners and/or users.

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 fulfilling domestic household chores such as looking after children and sick people in the home. Women are also involved in small-scale agricultural activities like growing food stuffs such as millet. Young girls are usually tasked with staying 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 the 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.

Gender power relations in pastoral societies

2.2 Changing patterns in pastoral families

Female-headed households are on the rise. These households find it particularly challenging to manage livestock, especially if they cannot afford to hire a herder. In such households, women have to provide protection for the household and assets. The presence of sons in a female-headed household gives greater reason for a woman to maintain control over livestock and other assets if her husband dies (though livestock may be divided between the sons when they reach maturity). Increasingly, pastoralists are supplementing livestock-based activities through livelihood diversification such as employment, trading of goods,

Figure A27. Gender roles in Uganda among the pastoral communities.

charcoal burning, making of local brew, craft making, and tourism. Women play a key role in this diversification, sometimes becoming primary household providers.

Worsening climatic conditions resulting in drought and famine have affected livestock and continue to do so.

Formal education has replaced traditional and practical pastoralist knowledge and way of life.

Increasing private ownership of land limits pastoralist access to pastures for their livestock.

Modern religion has affected/continues to affect pastoralist norms, values, traditions, and customs.

Urbanization has opened up pastoralist communities to modern cultures, which is gradually changing pastoralist culture.

Figure A28. Livelihood diversification.

3. Pastoral families and livelihoods

Pastoral families derive their livelihoods mainly from livestock. Pastoralism is generally a challenging form of livelihood. The family and the herd are thus caught up in an intricate relationship as women and men negotiate sustainable livelihoods. Livelihoods have been defined as comprising "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 both now and in the future, while not undermining the natural resource base" (Chambers and Conway, 1992). 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, FAO, and IFAD, 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, herding, agriculture, and domestic work, among others. The way pastoral families negotiate livelihoods is underpinned by the gender division of labor—that is, activities carried out differently by women and men. See section 2.1 for a discussion of gender roles and gender division of labor.

3.1 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 that 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 as well as create new markets, and new choices are created for producers, altering what is produced and how it is produced (Catley et al., 2017). 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., 2017). 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, FAO, and IFAD (2009), the main challenges for pastoral families are the increasing demand for natural capital (land, water, fodder, fuel wood), physical capital (transport, abattoirs, markets, and refrigeration, and human capital (labor, knowledge including traditional knowledge, public/private partnerships in research and extension). The most significant trend redefining pastoralism in eastern Africa is the fragmentation of rangelands through processes of excision, privatization (often taking the form of enclosures), and the 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" have been excised from large riverine areas for irrigation schemes; and ranches and conservation areas have been established. 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, which encourage more dynamic growth in dryland towns;
- Food insecurity and famine, which precipitate large-scale settlement in and around relief distribution centers such as seen in refugee settlements in southwestern Uganda and central Uganda;
- Sedentarization 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) 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 are helping to power further expansion of formal livestock exports, particularly from Ethiopia, which has experienced unprecedented growth in exports over the past decade.

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 A29 below).

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 some 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, called 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.

3.2 Changing economy and roles of family members

Livelihood challenges experienced by pastoral communities saw the growing importance of other forms of livelihood among pastoral communities. Households seek to substitute their incomes through non-agricultural jobs and income opportunities such as: wage work; casual labor such as working as domestic servants; infrastructure construction; gold mining; trade in charcoal/firewood; transport, including boda (motorbike); arts and crafts; small-scale mining; and eco-tourism, as well as a wide range of menial tasks such as fetching water for brewing businesses. Within pastoral families, changes can be observed in their economies, traditional ways of life, and how they interact with the external environment, including the state. Some of the factors driving change in pastoral communities include:

- Changing economies and livelihoods due to education, technological advancements, improvements in transport, and introduction of alternative livelihoods, including agriculture, trade, and mining. Karamoja in particular is known for artisanal mining of gold;
- External forces such as expanding farming populations, growth of private ranches, expansion of game parks, forest reserves, and infrastructural development projects;
- Migration such as of refugees and displaced persons, who in most cases end up in grazing lands;
- Disasters, both natural and man-made, also influence pastoral families: drought such as that seen in southwestern Uganda 2016/2017; and armed conflict such as in the Luweero Triangle; and population growth;

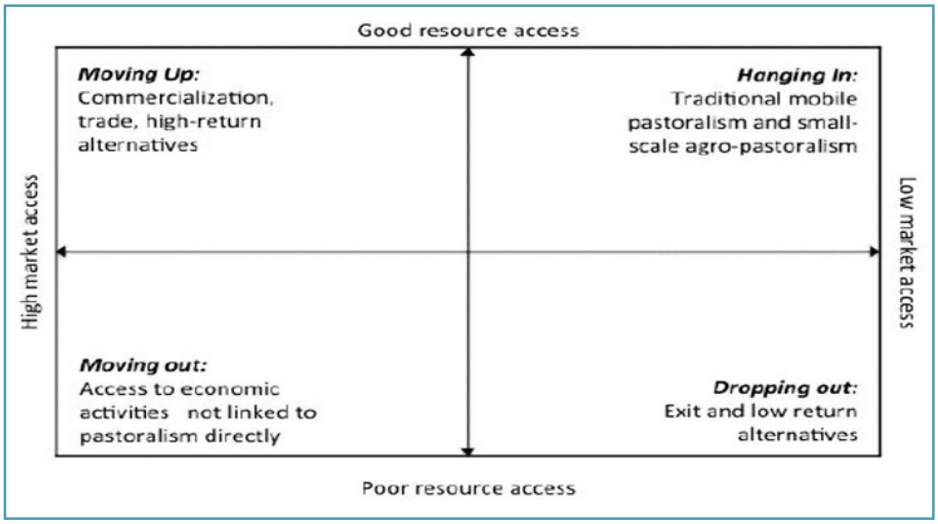


Figure A29. Stepping in and stepping out of pastoralism.

- State policies and programs that favor and promote private ownership of land, control use of rangeland, land policies, water policies, and movement of animals, among others.

All these factors put together increase not only competition for rangelands and its water sources but also the shrinking of rangelands, making the adoption of alternative means of livelihoods inevitable.

Alternative livelihoods

Seeking alternative livelihoods is common to all pastoral communities, particularly in times of drought and conflict (Johnson and Anderson, 1988). What is of concern, however, is that there is an increasing settling down of pastoralists into a sedentary life brought about by some of the factors mentioned above but more especially driven by loss of animals (stock loss) and impoverishment due to drought, resource competition, and population pressure, as well as war and drought (see also see Scoones, 1995). Pastoralists are being pushed out into urban centers to seek new livelihood options, including but not limited to trade, wage labor, craft production (McPeak et al., 2011), prostitution, alcohol production and sale, or simply city beggars (Iyer et al., 2018).

Sedentary life outside pastoralism

Exogenous factors have also pulled pastoralists into a sedentary life. For instance, agriculture, land ownership, physical safety, formal education and employment, access to health care, and new economic opportunities have also pulled pastoralists into adoption of alternative livelihoods. Both women and men have taken up these alternative livelihoods, with men taking on menial tasks such as construction and transportation while women earn a living though selling milk, food stuffs, and vegetables, brewing alcohol, and prostitution. Alcohol and prostitution have exacerbated the incidence of gender-based violence as well as exposure to HIV/AIDS and other sexually transmitted infections (Iyer et al., 2018). Early marriages in particular, such as those seen among the pastoral communities in southwestern Uganda, have denied many girls the chance to realize their full potential.

Wage labor is mainly informal and found within agriculture-related work. Here common tasks include land preparation, ploughing, planting, weeding, harvesting, and post-harvest handling. This form of wage labor tends to be season specific, with peak season starting in February and reaching up to August, with a number of seasonal variations in between. The most labor-intensive times are weeding (often done twice per year, May–July) and harvesting around August. Besides agriculture, other job opportunities available in the informal sector include domestic work, infrastructure construction, service and sales work, and casual labor, among others. Generally, these are mainly available in the urban centers and have limited security, labor rights, or associated benefits. Moreover, wage labor is characterized by heavy competition, with a negative impact on women, who also have to fulfil their care responsibilities (childcare and household responsibilities).

Labor migration

Out-migration to urban areas is one of the consequences of changes in livelihood activities within pastoral areas. A USAID report (2017) notes that there is a rapid change as individuals seek out non-pastoral wage labor and employment as more people look for work in urban and peri-urban centers within the region and beyond, including in neighboring countries.

3.3 Changing pastoral diets

A pastoral family cannot live off milk alone, and diets in pastoral areas are diversifying in the face of changing external environments. Pastoralist diets consist of milk, meat, blood obtained from their animals, and cereals either grown or obtained from trading their animals. Besides milk and meat, cereals are an alternative food. Notable

Box 2. Decreasing importance of cattle raiding among the Karamojong

Historically, cattle raiding has been one of the ways by which the Karamojong built their herds. Raiding was partly facilitated by the Karamojong acquisition of automatic weapons prior to the 1990s. This increased the violent nature of cattle rustling among neighboring tribes, leading to a call for disarmament of the Karamojong. Government, through the Karamoja Integrated Disarmament and Development Programme (KIDDP), which ended in 2011, embarked on a slow but steady pace of disarmament. The disarmament program greatly reduced the size of the herd and disrupted the Karamojong way of life, forcing many to adopt alternative means of livelihood, including wage labor, alcohol brewing, and/or migration to new areas. By 2016, livestock production was said to be recovering, along with very active livestock markets. Despite this recovery, there are still multiple constraints to livestock development in Karamoja as well as marked disparities in livestock ownership.

here is the fact that the growing of food crops has always been a part of some pastoral systems in Uganda. Some groups (Karamojong, Dassenech, Afambo Afar) are agro-pastoralists; farming and pastoralism are integral features of their livelihood systems. Families that have lost their animals to drought, disease, or raiding and can no longer survive off the remaining animals often practice crop cultivation or adopt alternative means of livelihood survival, including migration to urban areas for trade and wage work.

Case study 4: The Bahima: family support and socio-networks as a survival/adaptive strategy

The Bahima live in the districts of Mbarara, Bushenyi, Ntugam, Kashari, Itojo, Buhweju, Ibanda, Isingiro, Kiruhura, Mitooma, Ntugam, Rubiriizi, Rukungiri, and Sheema. Southwestern Uganda is a region well known for the Ankore longhorn cattle, largely reared for beef and dairy products. Milk is the main product, and thus the number of cows is deliberately kept high to ensure a regular supply. Pasture land is traditionally the communal property of the tribe, with no restrictions on grazing rights. Generally, the Bahima are proud of their herds. There has been a noticeable shift from keeping longhorn cattle only to more exotic breeds, especially in the districts of Kashaari and Nyabusozi. Livestock remains the property of the family and is used in cultural rituals, including kuhingira, and as an inheritance for children. While the Bahima are well known for living and migrating together to escape disease and conform to a custom of abandoning a place where one has died and been buried, today this has changed. Like other pastoral communities, increasing difficulties of depending only on livestock, policy changes, and changes in land use (with a preference for individual ownership of land, gazetting of rangelands, among others) have transformed the way of life of the pastoral communities.

Box 3. Definitions of policy and law

A policy is a statement by the government or other public institution that sets 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 law-making 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.

In the past and often up until now, states in the region have often regarded pastoralism as an anachronistic way of life, harbouring 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 favour of "high potential" agrarian highlands, which in Kenya were acquired by white settlers with access to large amounts of capital.

4. 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, all play a crucial role in determining whether pastoral systems can provide viable livelihoods. Policy and law are closely linked but different (see Box 3 for definitions). A policy spells out the values and aspirations of a society on a specific public issue and commits the government to promoting those values.

A law, on the other hand, translates policy stipulations into actionable commitments that citizens can enforce by court action.

Since colonial times, government policy has tended to undermine pastoralism in favor of ranching and plantation farming, using the argument that pastoralism is a backward practice, is less productive, is environmentally destructive, and promotes laziness. States within the East African and Greater Horn of Africa regions until now have 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). Moreover, pastoralism has always been at a policy crossroads, as noted in the excerpt below (Lind et al., 2016).

One of the key issues that policymakers have failed to appreciate is that pastoralism is the most sustainable mode of farming that is suitable for the climatic conditions that characterize rangeland areas, where pastoralism is mostly practiced. However, of recent some policies have tended to

give recognition to pastoralism and the communities involved, although most of these supportive policy interventions tend to remain on paper, with few attempts at execution. 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. 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 construction, award 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, to pastoral communities. As noted above, this form of alienation from rangelands leads to low productivity as pastoralists are forced to adopt alternative means of livelihood survival.

Policies and laws have played, and continue to play, a critical role in defining and regulating how current pastoral production systems function across Africa. Uganda has enacted laws and passed policies that are cognizant of pastoralism. Good policies provide an enabling environment for pastoralism to flourish. When pastoralism is supported by appropriate policies, biodiversity and ecosystem integrity are usually enhanced (Hatfield and Davies, 2006).

Case study 5: Traditional institutional framework among the Karamojong

Among the Karamojong, authority to manage resources is not centralized in one single organ but operates through the elders in their different localities, though always according to the same procedures. To appropriate powers, all Karamojong 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 Karamojong and neighboring peoples with similar age set structures. There are five age sets, with the interval 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 *Akiriket*. The *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.

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 number 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 with other sections or tribes;
- Is closely associated with *Akujû*, who is God;
- Represents the active political, social, and religious organization of Karamojong people;
- Are highly formal and ritualized meetings that cover a range of ritual activities of communities in relation to *Akujû*;
- 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.

*Figure A.30. Elders meeting (***Akiriket***).*

Box 4. Laws and policies relating to pastoralism in Uganda

a) The Constitution of the Republic of Uganda, 1995
b) The Land Act, 1998 as amended (Land (Amendment) Act, 2004 and 2010)
c) The National Land Policy, 2013
d) The Draft Uganda Rangeland Management and Pastoralism Policy
e) The National Land Policy, 2013 and the Land Act Cap. 227 24
f) Pastoral land rights in the colonial and post-colonial legislations
g) Current Land Policy and Land Rights of Pastoral Communities
h) The Renewable Energy Policy, 2007 and the Forestry Policy, 2001
i) The National Water Policy, 1999
j) Water for Agriculture
k) Water Financing
l) Water resources management structures
m) The Prohibition of the Burning of Grass Act, 1974
n) Plan for Modernisation of Agriculture (PMA)
o) The National Agricultural Advisory Services (NAADS) Act, 2001
p) Operation Wealth Creation (OWC)
q) The Karamoja Disarmament Programme
r) The Decentralisation Policy and the Local Governments Act, 1997
s) The Education (Pre-Primary, Primary, and Post-Primary) Act 2008, Policy, Universal Primary Education and Universal Secondary Education

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4. PASTORALISM AND POLICY DIRECTIVES

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ACRONYMS AND ABBREVIATIONS

AU	African Union
BRACED	Building Resilience and Adaptation to Climate Extremes and Disasters
CAHW	Community animal health worker
CBD	Convention on Biological Diversity
CEWARN	Conflict Early Warning and Response Mechanism
COMESA	Common Market for East and Southern Africa
COPACSO	Coalition of Pastoralist Civil Society Organisations
DM	Dry matter
EAC	East African Community
FAO	Food and Agricultural Organization of the United Nations
ICCPR	International Covenant on Civil and Political Rights
ICESCR	International Covenant on Economic, Social and Cultural Rights
IGAD	Intergovernmental Authority on Development
IWRM	Integrated Water Resource Management
KDF	Karamoja Development Forum
KIDP	Karamoja Integrated Development Plan
KRSU	Karamoja Resilience Support Unit
NDP	National Development Plan
NGO	Non-governmental organization
NLPIU	National Land Policy Implementation Unit

1. Summary

The sections 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, and 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, from the grassroots, to national, regional, and international levels as laws, regulations, and/or 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 future.

This section 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 for how each of these impact 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. 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 an institutional lobby for pastoralists in Uganda and beyond that are playing a critical role in advocating for reformulation of laws and policies in ways that seek to integrate pastoralism gainfully into national development. In Uganda we take note of Coalition of Pastoralist Civil Society Organisations (COPASCO) and others, who have upped their collective voice to sensitize and lobby for pro-pastoralist development approaches in areas such as promoting export of livestock and investment in increased livestock productivity, 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 have improved gender relations in pastoral families and societies;

- Government, development partners, 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 technologies (ICT), which, combined with growing transport networks, are linking pastoralists nationally, regionally, and internationally.

Box 5. Brainstorming questions

1. Why is it not one policy or ministry that will determine the success of pastoralism in the future?
2. Do you think there is a need to integrate all pastoralist policies or a national policy?
2. Would you agree that pastoralism faces a policy crisis or is at a crossroads in Uganda?

2. Background: understanding legal and policy frameworks on pastoralism

It is important to understand what meanings we attach to the key words: legal framework or laws and regulations and policies. Policy and law are closely linked, but different (see Box 6 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. In the Ethiopian textbook, it is explained that 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. 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.

Box 6. Definitions of policy and law

ROLE OF POLICY	ROLE OF LAW
Creates criteria for decision making and action by government, and a basis for accountability.	Embodies the collective values of a society and establishes what can and cannot be done.
Articulates consensus on a critical issue, reconciling competing interests among different citizen groups.	Defines rights and obligations of individuals and groups.
Fosters predictability in government decision making and action, ensuring decisions are not based on the whims of public officials.	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.

Source: Pastoralism and Pastoral Policy Course, 2015.

Box 7. 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 of the Pastoralism and Pastoral Policy in Ethiopia (2015) this is not the case.

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 the need to protect interests and spaces for minorities, including pastoralist populations.

2.1 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 named 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 that are summed up in Box 8.

Box 8. Counterarguments to the "tragedy of the commons"

No account is taken of herd dynamics.	• In Chapter 4 of the Pastoralism and Pastoral Policy textbook (2015) we learned that herd size is limited by many factors, including: seasonal variability in pasture that affects herd productivity and calf mortality; 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 that 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.
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.

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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, herding livestock with his family or the broader community. There do 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 supposes that the community did in effect communicate with each other.

Source: Pastoralism and Pastoral Policy Common Course, 2015.

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" (Box 8)—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, we turn attention to a discussion of specific policy and legal frameworks that facilitate the debates on development of pastoralism in Uganda and some relevant regional and international frameworks.

5. LEGAL AND POLICY FRAMEWORKS ON PASTORALISM

5.1 GLOBAL AND REGIONAL INSTRUMENTS (POLICIES AND LAWS)

The Universal Declaration of Human Rights, 1948
The Declaration provides for rights to move across borders, nationality, own property, and participate in government, social security, employment, health, and one's culture. (**http://www.un.org/en/documents/udhr/**). 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 itself on rights to respect for cultures and quality education, among others. By providing for movement across borders, 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.

International Covenant on Economic, Social and Cultural Rights (ICESCR), 1966
Similarly, 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, such as:

- *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 COPASCO report (2015) praises this UN Agenda 2030 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, protect biodiversity, ecosystems, and wildlife, tackle water scarcity, strengthen cooperation against desertification, reduce land degradation and drought, and 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 Concerning Indigenous and Tribal Peoples in Independent Countries, 1989
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 recognizes 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**).

Declaration on the Rights of Persons Belonging to National or 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, 2000
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 proposed developments. 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 the 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, mobility, and respect for their cultural identity both within and across borders.

5.2 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/**).

Moving forward, in 2010, the AU 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 governance of 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 (**https://au.int/sites/default/files/documents/30240-doc-policy_framework_for_pastoralism.pdf**).

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 allocated for implementation.

5.3 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 Intergovernmental Authority on Development (IGAD) also recognize the important benefits from livestock mobility. COMESA has a livestock trade initiative aimed at addressing the constraints to development in the livestock sector and improving livestock trade in its region.

5.4 COMMON MARKET FOR EASTERN AND SOUTHERN AFRICA (COMESA)

The COMESA Policy Framework for Food Security in Pastoralist Areas, 2009
The 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**).

5.5 IGAD/CONFLICT EARLY WARNING AND RESPONSE MECHANISM (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 and Horn of Africa.

Summing up this section, we refer to a report by Building Resilience and Adaptation to Climate Extremes and Disasters (BRACED) (Leavy et al., 2018), which asserts that the African Union (AU) Policy Framework (2010) for Pastoralists underlines principles that are of great significance for pastoral land management. 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 of 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, the BRACED report (Ibid) mentions that Common Market for Eastern and Southern Africa (COMESA), East African Community (EAC), and South 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 the BRACED report, 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), which are the COMESA, EAC and SADC bring conceptual clarity to 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 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, and beyond.

Box 9. Members of Coalition of Pastoralist Civil Society Organisations (COPASCO) in Uganda

As of 2014, COPACSO had the following members:

1. Basongora Group for Justice and Human Rights
2. Dodoth Agro Pastoral Development Organization
3. Dodoth Community Animal Health Workers Association
4. Cattle Corridor Development and Management Initiative
5. Greater North Parliamentary Forum
6. Karamoja Agro Pastoral Development Association
7. Jie Community Animal Health Workers Association
8. Kotido Peace Initiative
9. Matheniko Development Agency
10. Matheniko Development Forum
11. Nakasongola Pastoralists Association
12. North Rwenzori Rural Community Agriculture Conservations Links
13. Pastoral and Environmental Network in the Horn of Africa
14. Pastoralism and Poverty Frontiers
15. Pastoralist Women Alliance to Break Cultural Chains
16. Riamiriam Civil Society Networks
17. Uganda Land Alliance
18. Warrior Squad Foundation

Associate Members:

1. Minority Rights Group International
2. Oxfam

Source: COPASCO, 2015.

6. POLICIES AND LAWS ON PASTORALISM IN UGANDA

Many national policies impact specifically on 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 related to export.

Policies that impact on the family and customary institutions include those related 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).

6.1 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.

The 1995 Constitution of Uganda

The Constitution of the Republic of Uganda (RoU) 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 included, 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 (paraphrased from Constitution of Uganda 2005 in HPG, 2018).

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. The Humanitarian Policy Group (HPG) report (2018) 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:

- 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.

  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 implication, this also defines rights to use and therefore protection of lands in one's custody, as well as 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).

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 on 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.

According to the National Gender Policy (NGP) 1997 reformulated in 2007, 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 of 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 2,116 that applied (NGP, 2017).

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 shall form a legal framework and mandate for every stakeholder to address the gender imbalances within their respective sectors.

Principles

- 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.
- 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.
- The policy emphasizes the cross-cutting nature of gender and seeks to integrate it into development efforts at national, sectoral, district, and local levels.
- 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.

Aim and objectives

The overall goal of this policy is to mainstream gender concerns in the national development process in order to improve the social, legal/civic, political, economic, and cultural conditions of the people in Uganda, particularly women.

Specific objectives

- To provide policy makers and other key actors in the development field reference guidelines for identifying and addressing gender concerns when taking development policy decisions.
- To identify and establish an institutional framework with the mandate to initiate, co-ordinate, implement, monitor, and evaluate national gender-responsive development plans.
- To redress imbalances that arise from existing gender inequalities.
- To ensure the participation of both women and men in all stages of the development process.
- To promote equal access to and control over economically significant resources and benefits.
- To promote recognition and value of women's roles and contributions as agents of change and beneficiaries of the development process.

Strategies

The policy objectives shall be achieved through the following strategies:

- Sensitization on gender issues at all levels;
- Promoting a gender and development (GAD) approach that is based on the understanding of gender roles and social relations of women and

men, as well as the women in development (WID) approach that focuses on women specifically;

- Ensuring that the gender policy shall be disseminated, translated, understood, and implemented by all sections of Ugandan society;
- Promoting appropriate education, sensitization, and creation of awareness on the responsibility of all concerned parties in each sector to address the specific gender concerns within the sector. This should entail consultation with both women and men in specific areas of relevance to identify gender concerns;
- Ensuring gender-responsive development planning at all levels: community, district, and national;
- Promoting a holistic and integrated approach to development planning to ensure that gender issues common to different sectors are adequately identified, analyzed, and addressed;
- Promoting and carrying out gender-oriented research in order to identify gender concerns;
- Establishing gender-responsive monitoring and evaluation mechanisms for development;
- Promoting a gender-sensitive approach to technical cooperation among the various actors in the development arena;
- Advocate for gender equity at all levels.

The National Gender Policy, 1997 and reformulated in 2007 says it all, as it broadly provides the affirmative clauses suitable for gender-sensitive development for all societies and communities of Uganda, pastoralists included. Challenges come with enforcement of these grand and overarching policies in the daily lives of rural communities where some of the worst incidences of gender-based violence is found. Nonetheless, with such affirmative laws in place, even in the pastoralist sections of society located in very rural settings, some proactive communities and individuals have a basis for lobbying and advocating for more equitable opportunities and outcomes for their female populations.

In fact, as a result of this policy so many legal platforms have arisen within workplaces, schools, and institutions of learning at tertiary and university levels, across the country from local to national executive circles, advocating equitable rights of access, use, and ownership of productive and reproductive resources for men and women, girls and boys, people with disabilities, the elderly, refugees, and other minorities. 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.

The National Land Use Policy and Legal Frameworks (2007, 2013/15/18)

As observed above, land is perhaps the most contentious resource within, but is 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 on 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 legal and policy pronouncements are positive, others benign or barely supportive, and yet others are outrightly negative or repressive of pastoralism.

Exercise: Students will be encouraged to discuss the implications of specific national policies and laws on land and their varied implications for pastoralism using Appendix II and the same Policy Matrix in the Pastoralism Policy and Practice Course Manual.

The COPASCO report (2015) observes that different land regimes have impacted differently on pastoralism in Uganda. We refer to their analysis below.

The 2007 Land Policy

On rangelands use and conservation for Pillar 1: Natural resources: In their view, the National Land Use Policy, 2007 was not direct on pastoralist rights over land, but it does mention that pastoralism could be the best land management system for rangeland areas.

- The 2007 Land Policy commends pastoralism for utilizing 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 Policy 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.

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. The National Land Policy 2013:

- Commits the state to guarantee and protect land rights of pastoral communities;
- Is credited for boldly enumerating measures that government shall take in order to secure pastoral land rights and promote pastoral development;
- Commits Government to establishing 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 (natural resources);
- Review and regulation of implementation of customary rules to ensure that women's rights to family land are protected (Pillar 3: The family);
- Developing and providing training and resources to traditional dispute resolution mechanisms (peace);
- Establishment and operationalization of customary land rights registry (natural resources);
- Designing of formalization schemes appropriate to different customary rights situations and needs of rights holders (natural resources and herd);
- 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).

The Draft Uganda Rangeland Management and Pastoralism Policy

The draft Uganda Rangelands Management and Pastoralist Policy 2015/17/18 (Government of Uganda, 2014) aims to provide for sustainable rangeland resource use and environmental protection in order to sustain soil fertility, increase crop and livestock productivity, and protect the ecosystem (Byakagaba et al., 2018; COPASCO, 2015; Republic of Uganda, 2013; BRACED, 2018).

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 co-existence 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. Broadly, it informs specific multilateral policy programs on the management of natural resources in Uganda.

Uganda Vision 2040, National Development Plan (NDP), Karamoja Integrated Development Plan (KIDP) (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. NDP II (Government of Uganda, 2015) defines the actions for realizing Vision 2040. 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 Karamojong benefitting from mineral and other resources extracted therefrom. However, in the long term this may restrict access to common range resources.

- NDP II is to embark on nationwide systematic land demarcation and survey with a view to titling the remaining 80% of the land, mostly under the customary tenure system, by 2040. It 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 2 is 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 Certificates of Customary Ownership (CCOs); 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 interests of pastoralism. Notable, among others, is that most of these are intended to modernize agriculture for a sedentarized model as opposed to a pastoralist model. Once implemented, these policies, laws, and regulations could restrict access and use of range resources, mobility, and other traditional herd management practices, as well as undermine rights of pastoral families and wider society.

Water laws and policies (Integrated Water Resource Management Development Project (IWRMDP)

Water plays a key role in the entire three pillar cycle of pastoralist livelihoods, reproduction, and sustainability. Therefore, the centrality of water for domestic, herd, and regeneration of pastures cannot be overamplified. However, like other rangelands resources, access to enough water for livestock, more so safe water for human needs, is often in short supply, making it a major cause for pastoral mobility and, in dire situations like droughts and famines, could escalate into a trigger and driver for protracted conflicts. For those reasons, 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 an integrated water resource management development project (IWRMDP) approach for Uganda (IWRMDP, 2017).

The discussion in this section is referenced as The Republic of Uganda (2018), Integrated Water Resources Management Development Project, Ministry of Water and Environment – Resettlement Policy Framework – RPF.

The IWRMDP is currently the model under which Government of Uganda manages water resources in the country to benefit a wide range of citizenry including pastoralists. For example, it is stated that there shall be:

> Compensation for loss of access to pastoralists (on shared or communal rangelands) for alternate grazing routes (consultations to define such access routes was done with pastoralist communities already), (RoU, 2018, XIX).
>
> In addition, it is stated that the Ministry of Water and Environment under IWRMDP shall:
>
> > Undertake to train farmers, pastoralists, fishing communities and other PAPs as a mitigation measure for capacity building on the IWRMDP (RoU, 2018: Pp. XX)

Below we discuss the policy innovations fronted under the IWRMDP in order to assess their merits and demerits for pastoralism. According to RoU (2018), the legal context under which IWRMDP is implemented and managed, the broader policy and legal framework for this project is provided for by the following:

- 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 to endeavor to fulfill the fundamental rights of all Ugandans to social justice and economic development (Republic of Uganda, 2018);

- The State is required to promote sustainable development and public awareness of the need to manage land, air, and water resources as well as 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 integrated water resource management.

Broadly speaking, the water policies and laws under the Integrated Water Resources Management Development Project (IWRMDP) 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 a 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 IWRMDP principles.

- The policy suggestions for service delivery are inclined to direct benefits towards promoting appropriate technologies for water use towards 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 IWRMDP 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, especially in the case of pastoralist settings that are also mobile or transhumant in nature. It will become complicated or impossible to manage the levies on water services, which is a disincentive for the private sector to implement IWRMDP in pastoralist areas. Therefore, under private sector delivery, this new national water delivery framework becomes anti-pastoralist from its inception.

- Unless Government comes out 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. Even if they could, they would probably be discouraged by the practicalities surrounding ensuring sustainable access in the context of their transhumant lifestyles.

- Even when facilities like dams, valley tanks, and gravity schemes have been constructed by the Government, there is a 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 among pastoralists would be a disincentive to abide by market-driven private water delivery requirements as they tend to favor settlers and not mobile populations.

Integrated Water Resource Management Development Project (2018) seems relevant for 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 or promote the growth of pastoralism. Unfortunately, left as it is, it will replicate scenarios of the past by which several water projects constructed using Government and donor funds are poorly managed and maintained in ways that undermine the Government's efforts in supplying water resources to the pastoralist populations (Karamoja Policy Committee Annual Report, 2017). However, rather than blame 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 IWRMDP report (2018), besides the IWRMDP project itself, there are other auxiliary policies associated with the implementation of this policy framework alongside the Ministry of Water and Environment that need to be understood. These include the following:

- ***The National Gender Policy***, 1999 recognizes all women and children as key stakeholders of water;

- ***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;

- ***The 1998–2015 Land Act*** conjoins central and local governments, giving them responsibility for protecting environmentally sensitive areas such as natural lakes, rivers, groundwater, natural ponds, natural streams, wetlands, forest reserves;

- ***The 1998 Water Abstraction and Waste Water Discharge Regulations*** spell out sustainable and environmentally friendly waste discharge for best practices in water use and management;

- ***The National Environment Act, 1995*** is mainly aimed at sustainable management, coordination, and protection roles on the environment. It is in this Act that specific pronouncements are made against encroachment and use of protected areas;

- ***Prohibition of the Burning of Grass Act, 1974, The Forest Act, 1974***, and ***The Cattle Grazing Act, 1945*** are all designed to protect the management of vegetation cover in hilly and mountainous areas (RoU, 2018).

We briefly discuss some of these associated IWRMDP policies and laws below.

The Renewable Energy Policy, 2007 and the Forestry Policy, 2001

These tend to promote the afforestation programs of the Government through promoting large-scale tree planting, both as sources of farm income and promoting 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 (Republic of Uganda, 2001).

However, as Byakagaba et al. (2018) have noted, through these seemingly benign environment-friendly policies, the Government 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 have tended to limit the available land for pastoralist grazing needs.

Uganda National Gender Policy (NGP), 1997–2007

The Government of Uganda's first National Gender Policy (NGP) 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 of 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 (NGP, 1997). However, it was revised in 2007 owing to emerging developments that include, among others: government's emphasis on accelerating economic growth and 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 (Reformulated NGP, 2007, 3).

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 (NGP, 2007 Ibid, 30).

Legal and policy context of NGP

As mentioned above, this National Gender Policy (NGP) 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 EAC Treaty (2000); the COMESA Gender Policy (May 2002); the Protocol on the Rights of Women in Africa (July 2003); the IGAD Gender Policy and Strategy (July 2004); 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).[4]

With regards to pastoralism, one can argue that as a system, 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 women and men, the girl and boy

[4] **www.mglsd.go.ug/policies/uganda-gender-policy.pdf** (downloaded on 3/13/19 at 12:56 pm).

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 litigation 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 in 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 most starved of judicial services. This and other factors therefore create vacuums that explain persistent higher levels of gender-based violence (GBV), poor enrollment and high rates of girl child 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 differing reasons but mostly to control tick-borne animal diseases and to encourage the regeneration of new, tender pastures over time (Mapiye et al., 2008). However, historically by colonial laws, ostensibly because of the risks involved, including damage to human property but above all 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 the legal acts enforcing it stand out among 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 contradicted, 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, thus making it an offense with penalties to do so. However, Section 5 provides an exception if burning is performed for good outcomes. Section 5 thus provides a window, allowing farmers/pastoralists to burn vegetation if, among others, it is done to: clear a compound; clear land for farming; clean a town or city; or make 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 a formal governmental authority such as the subcounty chief, after consultation with an officer from the veterinary or agricultural departments of a rank not below 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 in the applicability of this policy or 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 sensitivity 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 tier 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, these are: de-concentration (said to be the least common form); delegation (more extensive); devolution (intensive and most empowering); and privatization, (which if effected entails central government merely providing enabling environment for implementation of services) (Rwamigisa, 2013. 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. Examples of the latter are the water and veterinary medicine sectors, where government has

encouraged the private sector and non-state actors to take the lead in delivery.

As is the case with other policies and laws above, even decentralization is a mixed blessing for pastoralism in Uganda. On one hand, it could 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 could 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 would also benefit pastoralism better than under the more centralized systems that existed 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 (Rwamigisa, 2013).

The challenge is that over time, decentralization has been negatively "over-politicized" into becoming a tool for "distrification" or as others prefer "districtivization," both of which refer 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 Muhumuza, 2014; 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 Karamojong occupied one district. Albeit belonging to different ethnicities, they shared a common pastoralist livelihood and co-existed as one and shared better their common resources like land and water, such that herds and humans seemed healthier than they are 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. These in turn have 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 (Iyer et al., 2018).

Education policy and pastoralists (pre-primary, universal primary education (UPE), and universal secondary education (USE)), 1997–2017

We can argue that by providing for affirmative action 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 (USE), 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 enrollment 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-pastoralist mobile education and specific "pastoralist curriculum" interests or relevance (Uganda Bureau of Statistics National Housing Survey, 2014 cited in Karamoja Policy Committee Annual Report 2017).

As mentioned in the Karamoja Policy Committee Annual Review Report, Uganda Bureau of Statistics (UBOS, 2014) and some United Nations (UN) agency reports, observed that interventions by both Government and other stakeholders could have significantly paid off in the health and water sectors in Karamoja. However, there are negative trends in attendance, school enrollment, and literacy; this requires attention (Karamoja Policy Committee Annual Review of KIDP 2 2017, 14). The Government of Uganda is being lobbied on this issue, because "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" (Karamoja Policy Committee Annual Review, 2017, 15).

In Karamoja and elsewhere in Eastern Africa and Horn of Arica, 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 non-governmental organizations (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, as well as 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, and improved ability to seize business opportunities. Government of Uganda experimented with some programs, such as the Alternative Education for Karamoja (ABEK) program, but these did not last after their pilot years for several reasons, two notable ones being that they were externally conceived by NGOs and the assumption that they could become integrated into mainstream Ministry of Education and Sports (MoES) education delivery did not actually take root. Subsequently, there was limited governmental investment that caused the failure of local government in the regions to effectively generate local ownership of these programs, which remained largely seen as NGO projects.

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); Annual Diseases Act (CAP 38); Annual Breeding Act 2001; Branding of Stock Act (CAP 41); Cattle Traders Act (CAP 43); Cattle Grazing Act (CAP 42); Dairy Industry Act (CAP 85); and 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 the limited number of veterinary doctors and the absence of community animal health workers (CAHWs) in the country. As Rugadya (undated) argued 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 (Department of Veterinary Medicine, Makerere University, 2001). The Department 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 the system favored the wealthy pastoralists who could afford the services, 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 of the poor become susceptible to cheaper alternatives that are often provided by interns or outright quack animal health providers. This is supported by findings from some government-funded studies among pastoralists (UPPAP, 2000; 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 and Muhumuza, 2014).

In 2018, the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) followed on earlier efforts of Makerere University in 2001 by coming up with a Draft Community Animal Health Workers Curriculum, 2018 (Uganda Veterinary Association, FAO, and MAAIF, 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, negatively affecting the development of a vibrant pastoralism. 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; and 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, among others 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.

Still, concerns remain with respect to the shift towards a more decentralized animal healthcare system, working through community members, specifically:

- 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;

- Need for coherence with existing public and private veterinary service delivery system;

- Continuing support to subsidized systems for veterinary drugs;

- Lack of proper and regular supervision and monitoring system;

- Absence of certification;

Source: Pastoralism and Policy Common Course, 2015.

Figure A31. Picture of CAHWs vaccinating a cow in Ethiopia.

- Regular review of national guidelines, curriculum, licensing, and monitoring procedures;

- Inadequate private practitioners in remote areas.

The 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 the services of CAHWs. There are many drug shops opened by businessmen without animal health qualification. Their objective is to sell drugs; they do not advise farmers on the use and administration of the drugs, and sometimes they sell expired drugs (Rwamigsa, 2013). The Happy Cow Drug NGO shop of the Catholic Church, which often gives advice, asks farmers why they are buying drugs, and what disease the animal is suffering from is always closed.

Limited qualified CAHW staff

In pastoral areas, veterinarians or veterinary-trained staff are very few. 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 farmers who participated in net map analysis stated that they had never met or heard about 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.

The district veterinary officer admitted that it is true that he does not get to village communities because he is the only veterinarian in the district. The veterinarian also cited poor accommodations, 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 a work station, either because roads are cut off by water during the rainy season or there is insecurity. Frequently, he delegates the Government duties to CAHWs. Occasionally he conducts consultations on the phone, but since he does not know the local language, only CAHWs and farmers who are comfortable with English and have phones can consult him over the phone.

Problems and possible solutions in the treatment of endemic disease in the pastoral areas

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 the following:

- Delays in reporting. Three reasons explain the delays in the treatment of the animals. First, livestock keepers prefer 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 must sell another 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 Rwamigisa, 2013).

- Drug misuse. Drug misuse occurs because of the following reasons: farmers tend to self-treat their animals, yet most of them have no education; and farmers 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, Ibid).

Policy options and conclusion

The Uganda policy context has not been favorable for pastoralists in many ways. This has largely been blamed on the colonial period when the administration of the day was reluctant to venture into hostile areas, which were also deemed 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 that there are 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 are still considered a less-viable section of the national economy up to today. For that matter, the livestock sector has remained only marginally integrated in our national development processes and outcomes. If the pastoralist economy was better appreciated in Uganda, Government would have become more accountable and responsive to mainstream pastoralism in a more significant and progressive manner than 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 become more realistic in order to focus veterinary service delivery and ensure rangeland management practices that encourage the effectiveness of the pastoralist economy

that is symbiotically relevant for the ecology of Karamoja and 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 did so 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 to enhance efficiency and effectiveness of public expenditures and rationalize the use of resource (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) in 2005, National Agricultural Advisory Services (NAADS) in 2001, and Dairy Development Authority (DDA) in 1998 were created to improve delivery of agricultural service, 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 or budget problems and rivalry that exists between MAAIF and some of these institutions.

Rwamigisa (2013) cites a study by Petitclerc (2012) on challenges to provision of veterinary services identified a key reason being the limited number of active veterinary professionals and difficulty in attracting and retaining veterinary staff, especially by local governments in marginal areas. Petitclerc proposes three strategies to ensure availability of enough qualified veterinary staff in Uganda.

The first is centralizing the administration of veterinary staff. he argument for centralizing is that administrative decentralization, which was 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. Decentralized administration of veterinary staff fragments the chain of command and reduces the responsiveness of the veterinary system (Petitclerc, 2012 cited in Rwamigisa, 2013). In addition, the local leaders or politicians have captured decentralized power and have used it to interfere with provision of preventive veterinary services.

The second option is recruitment of holders of a diploma in veterinary science at subcounty level rather than restricting recruitment to only degree holders. Veterinarians are difficult to retain and motivate and will require higher wages compared with paraprofessional holders of diplomas in veterinary medicine (Petiticlerc 2012 cited in Rwamigisa 2013).

The third strategy 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 Rwamigisa 2013).

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APPENDIX II. MATRIX OF POLICIES AND IMPLICATIONS FOR PILLARS

Exercise: students will be encouraged to assess how the policies, regulations, and laws listed in the matrix below facilitate or hinder the effectiveness of pastoralism in Karamoja and other rangelands in Uganda.

	POLICIES/REGULATIONS/LAWS	PILLAR: NATURAL RESOURCES	PILLAR: HERD	PILLAR: FAMILY
		Level of legal and policy relevance for pastoralism in Uganda: (G) Good; (F) Fair; (P) Poor		
1	The Constitution of the Republic of Uganda, 1995: provides basic inclusive provisions that task government and other actors to respect and assure the rights of all citizens, and above all minorities. Hence, pastoralists are catered for as described below.			
	National Objective 6 of State Policy: provides that the State shall ensure gender balance and fair representation of marginalized groups in all constitutional and other bodies.			
	Article 32 provides that the State shall take affirmative action in favor of groups marginalized based on gender, age, disability, or any other reason created by history, tradition, or custom, for the purpose of redressing imbalances that exist against them.			
	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.			
2	The National Land Use Policy, 2007 Pronouncements on Rangelands			
3	The Land Act, 1998 as amended by the Land (Amendment) Act, 2004 and 2010			
	Section 24 provides for a common land management scheme.			
	Section 25 provides for utilization of the common land in regard to numbers and type of livestock each user may graze on it.			
4	The National Land Policy, 2013 The policy acknowledges that pastoral land rights are under threat.			
5	The National Land Policy Implementation Action Plan, 2015/16–2018/19			
	Assistance to customary tenure institutions to fulfill their responsibilities.			
	Review and regulation of implementation of customary rules to ensure that women's rights to family land are protected.			

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	Developing and providing training and resources to traditional dispute resolution mechanisms.			
	Establishment and operationalization of customary land rights registry.			
	Designing of formalization schemes appropriate to different customary rights situations and needs of rights holders.			
	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.			
6	Draft Uganda Rangeland Management and Pastoralism Policy			
7	The Renewable Energy Policy, 2007 and the Forestry Policy, 2001			
8	The National Water Policy, 1999			
9	The Prohibition of the Burning of Grass Act, 1974			
10	Plan for Modernisation of Agriculture (PMA), 2001, 2005			
11	The National Agricultural Advisory Services (NAADS) Act, 2001			
12	Operation Wealth Creation (OWC), 2015/6			
13	The Karamoja Disarmament Programme, 1998–2015			
14	Peace Recovery and Development Plan (PRDP)			
15	Northern Uganda Social Action Fund (NUSAF)			
16	Northern Uganda Rehabilitation Programme (NURP)			
17	The Decentralization Policy and the Local Governments Act, 1997			
18	Education (Pre-Primary, Primary, and Post Primary) Act, 2008, Policy, Universal Primary Education and Universal Secondary Education			
19	Animal and veterinary laws and regulations			
20	Agriculture and Livestock Development Fund Act			
21	Animal Breeding Act, 2001			
22	Animal Disease Act			

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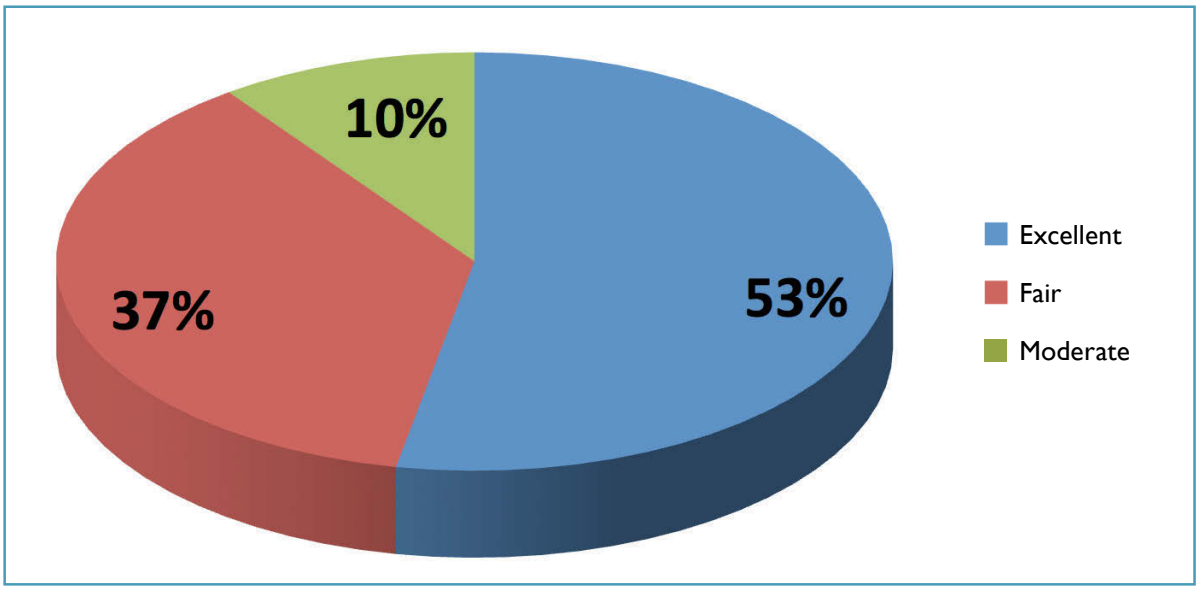
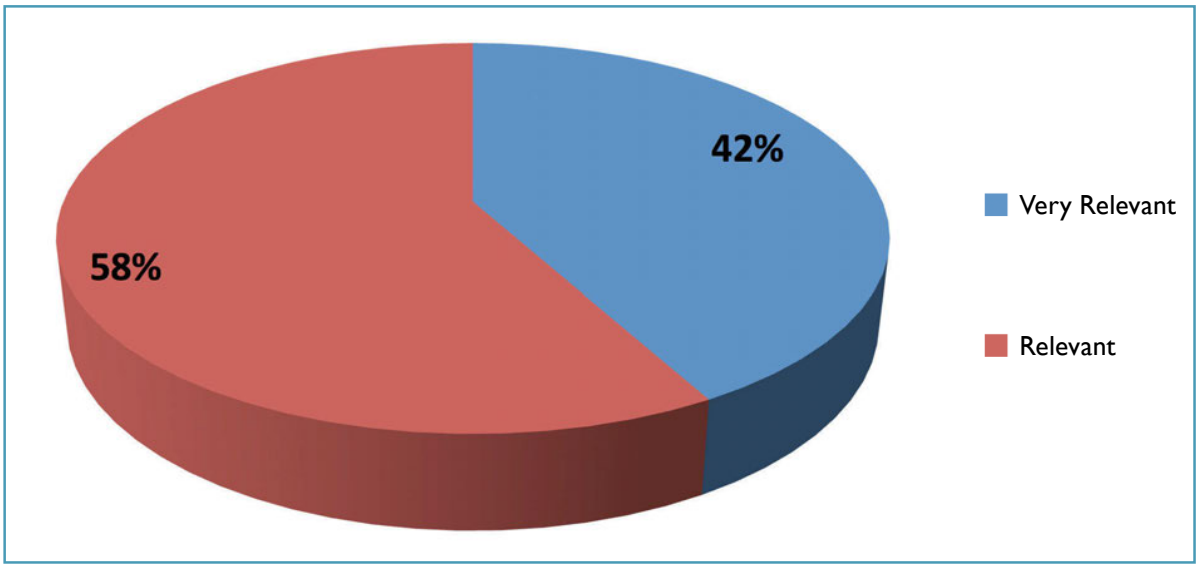
23	Animal Straying Act Chapter 40			
24	Animals Prevention of Cruelty Act			
25	Branding of Stock Act Chapter 41			
26	Cattle Traders Act Chapter 43			
27	Cattle Grazing Act Chapter 42			
28	Dairy Industry Act Chapter 85			
29	Veterinary Surgeons Act Chapter 277			
30	Food and Drugs Act Chapter 278			
31	Game Preservation and Control Act Chapter 198			
32	Hide and Skin Trade Act Chapter 89			
33	National Drug Policy and Authority Act Chapter 206			
34	Environment and Natural Resources Gender Strategy 2016-2022			
35	Water and Sanitation Gender Strategy 2018-2022			
36	Public Health Act Chapter 281			
37	Rabies Act Chapter 44			
38	Uganda Wildlife Act Chapter 200			
39	Uganda Wildlife Training Institute Act Chapter 139			

APPENDIX III. EVALUATION



53% of the participants found that the level of participation was excellent while 37% found it fair.

RELEVANCE



As indicated in the pie chart, 58% of the participants found the training content very relevant.

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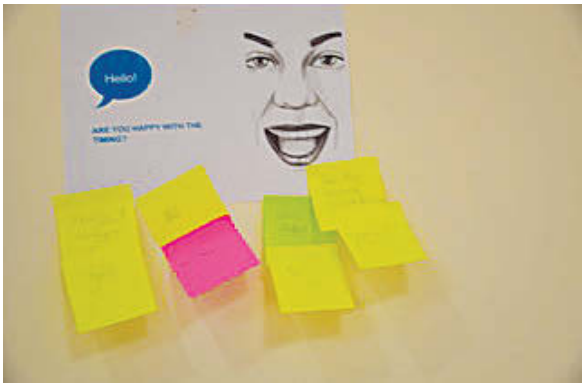
Photos by Charles Hopkins

APPENDIX V. AGENDA

DAY	SESSIONS
MONDAY	**SESSION 1: OPENING WORKSHOP:** welcome, introductions, events since ToT 3 **SESSION 2: SETTING THE AGENDA:** journey so far, progress/issues since ToT 3, agenda for ToT 4 **SESSION 3: REPORT BACK BY AT ON NEW MATERIAL DEVELOPED:** (i) relevance of material, how is it supporting the argument and key messages; (ii) completeness and clarity of the material in support of the arguments; (iii) how to turn the material into training steps.
TUESDAY	**SESSION 3: AT REPORT BACK ON DESK REVIEWS** Review new material—Pillars 1, 2, and 3, and legal and policy framework; identify additional work as necessary
WEDNESDAY	**SESSION 3: AT REPORT BACK ON DESK REVIEWS** Review new material—Pillars 1, 2, and 3, and legal and policy framework; identify additional work as necessary
THURSDAY	**SESSION 3: AT REPORT BACK ON DESK REVIEWS** Review new material—Pillars 1, 2, and 3, and legal and policy framework; identify additional work as necessary
FRIDAY	**SESSION 4: INTEGRATION OF MATERIAL INTO UNIVERSITY CURRICULA AND LOCAL ADAPTATION:** two parallel groups: (i) Table of Contents for students' textbook and process for integration into university curricula; and (ii) content and process of local adaptation. **SESSION 5: NEXT STEPS**



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