

Changes in the drylands of eastern Africa: case studies of pastoralist systems in the region

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Acronyms

CoBRA – Community Based Resilience Analysis
CBC - Community based conservation
CBOs - Community Based Organizations
CBPP – Contagious Bovine Pleura-pneumonia
DFID – Department for International Development
ECF – East Coast Fever
FAO – The Food and Agriculture Organisation
FMD – Foot-and-mouth disease
IDS – Institute of Development Studies
IGAD – Intergovernmental Authority on Development
NGOs - Non-Governmental Organizations
NUSAF2 – The Northern Uganda Social Action Fund Project
UNDP – United Nations Development Programme
UNICEF – The United Nations Children's Fund
WFP – World Food Programme
PARIMA – Pastoral Risk Management in Southern Ethiopia
UNDP – United Nations Development Programme
SORALO – South Rift Association of Land Owners

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Introduction

While there has been recent convergence on the meaning of resilience, translating this into appropriate and practical policy and programming approaches and interventions has been far more challenging. Operationalizing resilience is made more difficult in contexts of dynamic change, in which the levels and combinations of capacities needed to facilitate resilience may themselves shift markedly in response to volatility or rupture happening in wider systems – ecological, economic, political, security. The tendency to focus on recent trends and current conditions can also obscure a clearer understanding of longer-term dynamics influencing what is needed to strengthen resilience. New, grounded insights are necessary to turn resilience thinking into practical action. Understanding and planning for resilience requires a *longitudinal perspective* to uncover longer patterns in poverty, vulnerability and wealth, as well as a *focus on systems* to map actors, variables and connections in and amongst these across scales.

This report applies a conceptual approach (***Pastoralist Livelihood Systems Analysis***) to understanding longer-term pathways for pastoral livelihoods and their consequences for poverty, vulnerability and resilience in different areas of dryland eastern Africa. The Pastoralist Livelihoods Systems Analysis, as detailed in the accompanying report on **Changes in the drylands of eastern Africa: a review of evidence and data and their implications for efforts to strengthening resilience**, consists of three layers of evidence and data gathering and analysis: (i) the first layer proposes methods for mapping the overall context of pastoral systems and how they have developed over time using textured evidence as well as meta-level data indicating key influences on livelihoods and productive activities; (ii) the second layer draws on evidence and literature to categorise the livelihoods of individuals and groups within a system and; (iii) the third layer proposes the use of household level data to map livelihood trajectories over time and resilience to shocks. This report focuses on the first and second layers of analysis, applying this to five pastoral areas in eastern Africa.

The report adopts a focus on ***pastoralist systems***. These **refer to a production system centred on the rearing, marketing and trade in livestock and animal products**. However, a pastoral system encapsulates a far wider range of non-livestock livelihoods and productive activities existing in drylands, as well, which nonetheless may be associated with pastoralism through a variety of social and economic relationships. Pastoralist systems have experienced dynamic changes – economic, social, political and environmental – as well as intensifying ties to the region’s political and commercial capitals, markets beyond and a global diaspora. Importantly, these changes are evident in the fact that the nature and magnitude of pastoral systems today is not a linear function of the number of pastoral herding households, or their livestock holdings (Kratli and Swift, 2014), but a much wider constellation of pastoral peoples no longer focussed on livestock-keeping, as well as actors in a wider political economy who have invested in drylands.

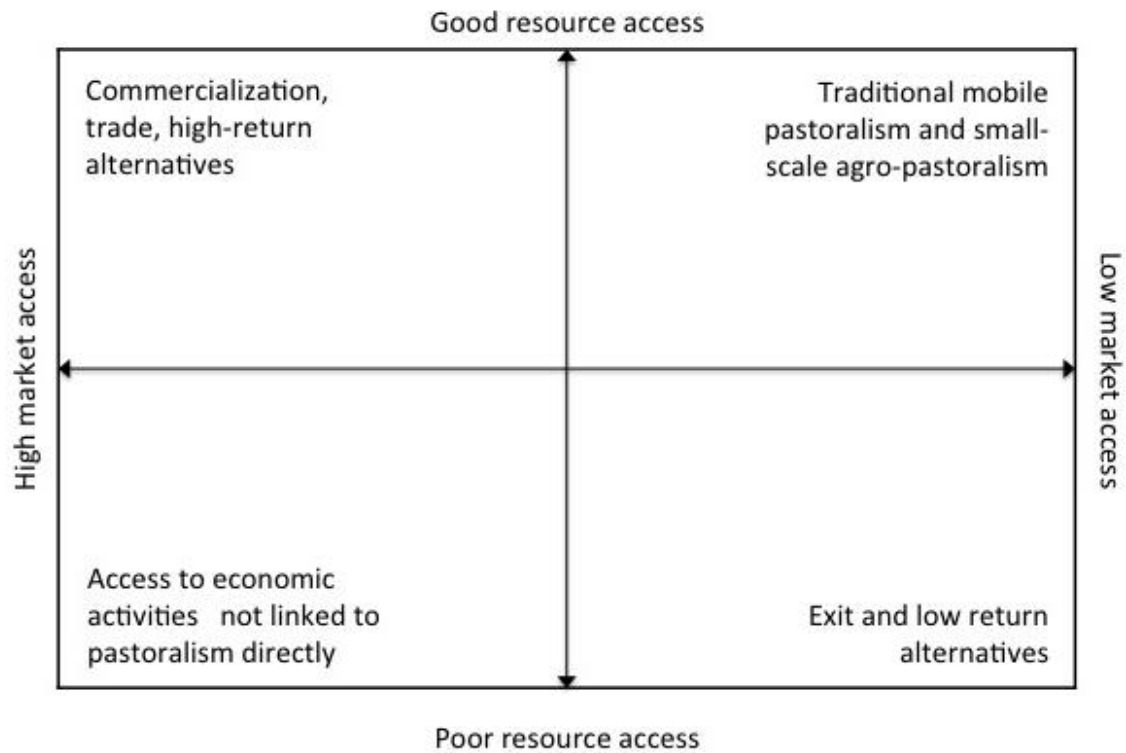
Different livestock-based production systems have emerged in different political-economic and socio-ecological settings in the drylands, underlining the importance of understanding ***trajectories – or changes over time*** – in particular places. Today, varieties of pastoralism include commercialised forms of livestock-keeping oriented to large domestic and regional export markets; smaller-scale livestock-keeping for subsistence and local marketing combined with farming and other rural activities; the maintenance of very few small-stock in and close to towns alongside the pursuit of various tasks-for-cash; and customary pastoralism based on long distance movements, key resource use, and

maintaining a network of bond friendships through which to exchange livestock and labour as the basis for mitigating risk.

This report focuses on five pastoralist systems (see Map 1): **Maasai** system in Kenya's South Rift Valley, **Somali** region of Ethiopia, **Borana** Plateau in southern Ethiopia, **Karamoja** in northern Uganda, and **Northern Bahr el Ghazal** region in the greater Bahr el Ghazal livelihood zone of South Sudan. These systems were purposely selected to reflect the very different trajectories of pastoralism in the region, which in turn relate to varying access to markets and resources and the nesting of these in diverse political-economies and ecological and socio-cultural systems. Further, within pastoralist systems there are starkly different options for individuals and groups defined by age, gender, and wealth and ethnic/section affiliation. Diverging pathways across and within pastoralist systems highlight the challenges of programming to reduce vulnerability and strengthen resilience.

Figure 1 presents a simple schema for thinking broadly about change over time in pastoral areas; it constitutes the first layer of the **Pastoralist Livelihood Systems Analysis**. This schema indicates four pathways for pastoral livelihoods in the region: some are **moving up** into commercialisation, regional and export livestock trades, and other high return economic activities, others are **moving out** into activities not linked to pastoralism directly but that may nonetheless be linked to livestock-keeping through various feedback loops and value added diversification activities, some are **hanging in** traditional mobile pastoralism and small-scale agro-pastoralism, while many more are **dropping out** or exiting into a range of tasks-for-cash and other low-return economic activities. This schema builds upon Catley et al. (2013), earlier IDS and Tufts University work on 'moving up' and 'moving out'. It relates directly to the DFID framework of 'stepping up'/'stepping out' to examine directions for agricultural livelihoods (Dorward et al., 2009). We adapt this model to develop an understanding – in a general sense – of the broad contours of a pastoralist system today: the context, structure, and trends (in policy, climate, economy, demography, land and resource access, conflict) shaping current conditions and options.

Figure 1. Pastoralist livelihood pathways in eastern Africa



As the case studies below show, diverse trends shaping pastoralism in the region have very different consequences, with distinct trajectories apparent at a system-level as well as diverging prospects for individuals and groups within systems. This report assesses key insights from academic and grey literatures concerning trends and drivers of change over time in pastoral areas, the outcomes of these for poverty and vulnerability, and their implications for thinking about and approaching resilience. Resilience analysis requires understanding of how changes are constraining livelihood opportunities and risk mitigation strategies but also providing opportunities to create wealth and transform lives and livelihoods. By focusing on the five systems detailed below, we propose a method to empirically test the **Pastoralist Livelihood Systems Analysis** approach using existing evidence and data, allowing for analysis within and across contexts and for an exploration into the dynamic pathways experienced in different places by different people.

Somali Region pastoralist system (Ethiopia)

Background

In the Somali Region of Ethiopia, the pastoralist system is multi-faceted: customary livestock production systems exist in the central part of the region where access to grazing is better; the northern reaches of the region bordering Somaliland are part of a broader 'livestock export zone' connected to the Gulf of Aden ports through cross-border trade; across the region pastoralists have exited into a variety of low-return economic activities in and around towns such as Gode and Mandera, while others have moved into irrigated farming.

A 2008 study for Save the Children UK found that 60 percent of the region's population was still practicing pastoralism as a main livelihood activity. Approximately 25 per cent of the regions' rural population is thought to be agro-pastoralist, practiced in riverine areas mainly in the Jigjiga zone, and existing alongside other livelihood systems. The practice of combining small-scale, opportunistic farming with herding has existed for a long time, but has been on the rise since the 1950s as livestock keepers sought alternative livelihood sources to complement herding.

A further 15 per cent of the region's rural population is classified as 'farming', using both rain-fed and irrigated crop production systems. The actual figure may be much higher when taking into consideration the number of recently resettled households. According to official figures, the resettlement of around 145,000 households (approximately 957,000 people or 21 per cent of the total population of the region) could mean – if all figures are reliable – that the proportion of the population that is farming has expanded beyond 40 per cent of the rural population, and is higher than the pastoral population.

According to the last population census, 14 percent of the region's population lives in towns or urban areas. These areas are expanding because of improving transport and infrastructure, and also as people seek schooling, basic services and employment. The population of the region's largest town, Jigjiga, expanded from 24,716 in 1984 to 109,637 in 2005 and is now believed to be around 150,000. It is thought to be Ethiopia's fastest growing town, with an annual average growth rate of more than 10 per cent (Abdurehman, 2008). According to Goyder and Mathys (2012), wealth differentiation and food aid incentives have led to rapid growth in the size of other towns in the region, with Kabri Dehar growing to 60,000 people, for example.

Women's roles are changing, both by choice and by necessity, as more women engage in the markets outside the home, working in urban areas as petty traders, as wholesale khat dealers, livestock traders and charcoal sellers (Goyder and Mathys 2012). The need and demand for a more vibrant small-scale trade industry remains unmet for a variety of reasons: lack of capital, transport issues, and lack of numeracy and literacy skills (Ibid).

A 2013 study interviewed 396 elders, women, men, young people and children from dryland communities in Shinile and Jigjiga (see Table 1). When asked about their plans for the future, most described living in a landscape of growing towns and cities, in which vibrant market places consisted of businesses owned by men and women, with an enlarged professional class, and strong links to rural areas wherein a smaller, wealthier class of rural pastoralists would continue to engage in cross-border livestock trade, maintain grazing large herds while also sending their children to school.

Table 1. Summary of Aspirations in Ethiopia

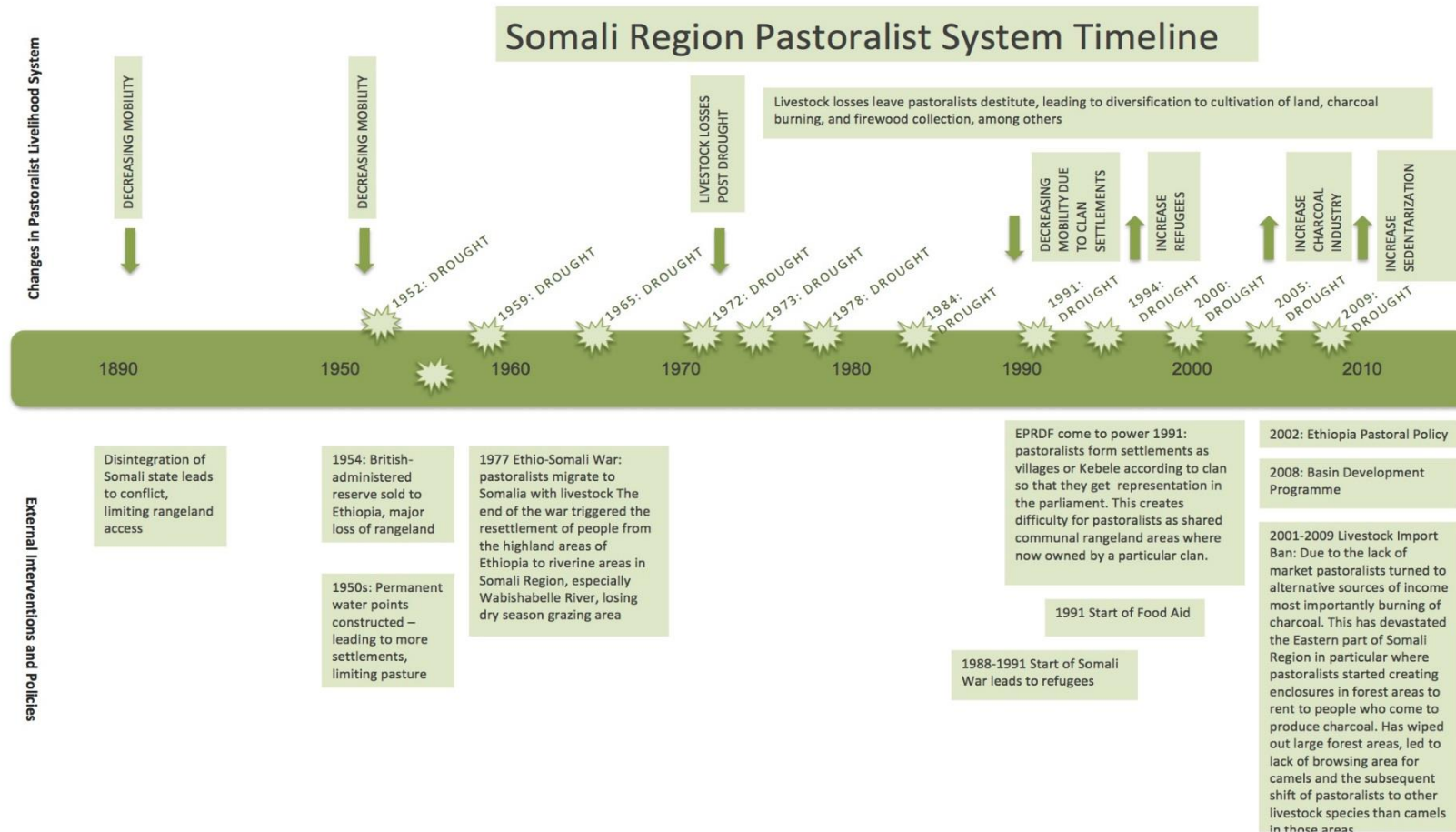
AGE GROUP	WOMEN	MEN
· Adult / Elderly	<ul style="list-style-type: none"> · Alternative livelihoods (i.e. Women groups) · Diversified income source · Education 	<ul style="list-style-type: none"> · Improve current livelihoods · Diversified income source · Education
· Youth	<ul style="list-style-type: none"> · Business (Non crop/non livestock) 	<ul style="list-style-type: none"> · Business (Non crop/non livestock)
· Children	<ul style="list-style-type: none"> · Education leading to a professional career 	<ul style="list-style-type: none"> · Education leading to a professional career

Key influences on the Somali Region pastoralist system and resilience

The main influences on pastoralist systems in Somali Region over time include changing land use and trends in livestock trade (see Figure 2). Ethiopia's federal government together with the regional state is implementing a voluntary sedentarisation programme, aimed at settling pastoralist along the region's riverbanks (Devereux 2007). The Somali Regional government is reported to have settled 88,000 households in 2015, a considerable jump from 2,000 households settled the previous year. The regional government aims to settle an additional 55,000 households in 2016. Triangulating population data, as well as analysis of the size of the pastoralist population (estimated at 60 per cent in 2008), recent resettlement efforts would imply that the population still engaged in (semi) mobile livestock production has halved in less than five years.

Privatization of communal rangeland areas has increased over the past two decades (Beyene and Korf 2008; Korf et al., 2015). Communal rangelands were carved up into individual and family plots for grazing and crop production in some areas. This restricted the movement of livestock along traditional migratory pathways, as well as prevented access to key grazing areas. In areas like Fafen and Sitti Zones, large private enclosures were established in areas that were formerly for communal use and management. In Shabelle and Liban zones, large irrigation schemes were established in

Figure 2. Key events timeline, Somali Region (Ethiopia)



areas used for dry season and drought reserve grazing. According to Talsan (2009), private land enclosures are the fastest growing phenomenon along the border area with Somaliland.

While the government justifies sedentarisation as necessary to improve livelihoods and the provision of basic services, this approach, combined with changing land use, complicate established pastoral techniques for managing uncertainty, such as herd splitting and movements, and access to key resources during dry seasons and droughts (Mebtrau and Gebre-Michael 2009; Solomon 2013). Climate risks are a perennial threat, and Somali pastoralists point to drought as the most important driver of change in their livelihoods, indicating the new difficulties that they encounter in managing variability and uncertainty as their rangeland fragments and access to key resources shrinks. The possible longer-term trends in rainfall are uncertain. A study conducted by Somali Region's Environmental Protection Agency has shown that the actual length of the rainy season is getting shorter each year. Droughts that used to occur every seven or ten years now occur every two or three years. Contrasting evidence comes from Devereux (2006) provides contrasting evidence, using available data to suggest that rainfall has in fact increased over the last 30 years. Rainfall in the 1980s and 1990s was higher than it was in the 1970s and statistically identical to the early 2000s. There has not been a clear analysis of what decreased length of rainfall means for Somali pastoralists.

In this context, the mismanagement and disappearance of communal rangeland areas is a trend that is undermining traditional drought management mechanisms, such as movement to drought grazing reserves. The strict use of these grazing areas at times of drought was enforced by customary institutions, however, these structures have weakened over time, with more and more people turning to the official political-administrative structures for guidance and enforcement of land use.¹

A number of other dynamics are leading to deterioration in the quality of rangeland areas for grazing. One of these is increasing charcoal production (Abdi 2014). Charcoal burning has expanded rapidly in the past fifteen years, mainly as a result of the livestock import bans that were imposed by the Gulf States. Oxfam-GB estimated that in one year alone, 846,720 sacks of charcoal, each weighing 35KG, were produced in Harshin district. The spread of small trees, *Prosopis julifera* and *Parthenium*, has affected many areas. The uncontrolled expansion of permanent water points has encouraged sedentarisation and rangeland fragmentation, as well. More than 500 boreholes have been constructed in the twenty years, as well as hundreds of water harvesting structures. Most of these were established without considering their likely environmental and social impacts on the pastoral system.

Livestock trade in Somali Region has a long history. It evolved through the exchange of commodities with Arabian communities and continues to rely on ancient export destinations, trade corridors, routes and methods of organization. Remote pastoral traders still sell their animals at bush market, but much of their livestock is then moved on through cross border trade, passing through various interlocutors via well-established trekking routes, and with little interaction and integration with Ethiopia's wider highland economy. The region's pastoralists identify the main reasons for their involvement in the informal cross-border trade as market proximity, reduced risk to their stock, working through brokers and the availability of consumer goods (Oxfam-GB, 2011). Most of the animals exported from ports in Djibouti, Somaliland and Somalia are from the Somali Region. In the late 1990s, Shank (1997) estimated the annual value of livestock going through the Somali ports of Berbera and Bossaso to be more than 120 million USD, 80 percent of which came from the Somali

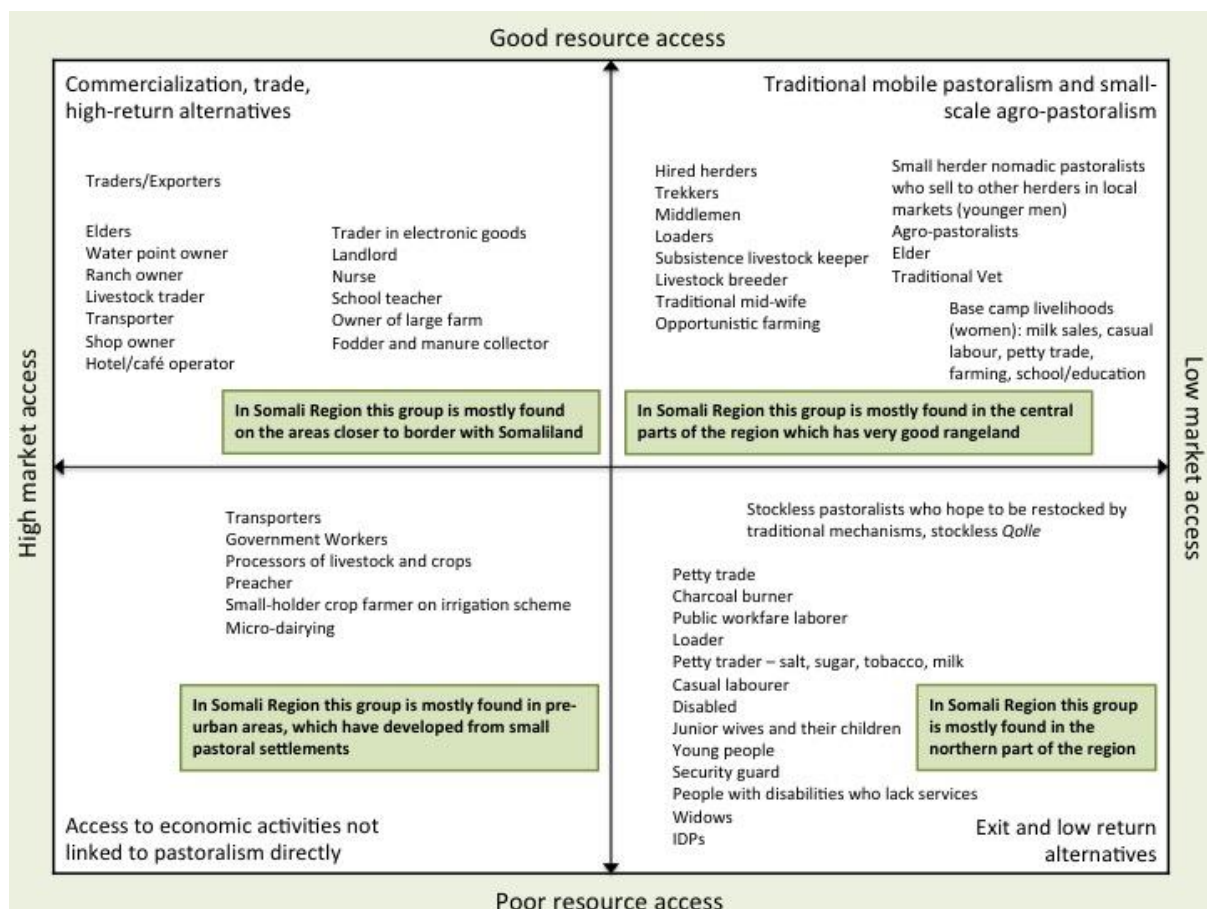
¹ Key informant interview.

Region of Ethiopia. In 2014, the value of livestock going through Somali ports was close to 600 million USD in 2014 (FSNAU Data, 2015) and about 50-65 per cent of this is believed to originate from Somali Region (Oxfam GB, 2011).

Crucially, the cross-border livestock trade developed without intervention from Ethiopia's central government. Instead, the trade is governed through the clan system, which negotiates and enforces a host of informal trade rules and regulations. The growth of cross-border livestock trade was constricted between 2001 and 2009 by livestock import bans imposed by Gulf States. The import bans devastated the pastoral economy of the Somali Region and impoverished many pastoralists. The lifting of the livestock ban in 2009 led to a doubling of livestock prices in a short period (Eid, 2013); however, this growth in trade was by then enjoyed only by those whose herds remained viable thereby concentrating wealth and profits (Majid 2010).

Changes in Ethiopian federal government policy presented new challenges for pastoralists, but without substantially slowing the informal livestock trade. Seeing the potential of livestock exports to generate much needed foreign exchange, Ethiopia's Growth and Transformation Plan (2010) sought to generate an annual revenue of one billion USD from the export of live-animals and meat by 2014/15, as compared to the 125 million achieved in livestock sales in 2010. To achieve this target the government sought to curb informal cross-border livestock trade by establishing new customs offices, increasing border patrols, and preventing the provision of hay near the border (Eid, 2014).

Figure 3. Pathways of change in the Somali Region pastoralist system



Yet, these measures did little to stop animals leaving the region. Instead, it has increased the cost of trading animals across the border, with livestock-keepers bearing the brunt as traders passed on higher costs to producers including small-scale livestock traders (Oxfam et al., 2013).

While state efforts to control the trade have proved ineffective so far, inevitably the informal trade system will need to adapt. Moreover, the Intergovernmental Authority on Development (IGAD) initiatives are looking into the cross border issues in the Horn of Africa to find ways to align national policies while maintaining the benefits the trade is generating for pastoral households.

Vulnerability and resilience

The Somali pastoral system has been impacted by a number of factors over several decades, including warfare, rebellion, widespread famine, and more recently the conversion of large key resource areas into irrigation schemes (Figure 2). A variety of transnational forces and flows have knitted the Somali pastoral system into wider systems of trade, exchange and economic opportunity, girding the system's resilience through decades of turbulence and recurring crisis. The livestock boom over the past ten years marks the latest chapter in Somali pastoralism, with a minority of large-scale livestock-owners and traders benefitting enormously from the growing livestock trade to the Arabian Peninsula (Figure 3). Other types of commercialization, including the cross-border livestock trade of small-scale livestock keepers (smaller animals, including camels) are providing benefits for pastoralists but efforts by the State to capture this trade, and re-direct it through formal channels, are likely to continue to disadvantage smaller livestock-keepers and encourage a further concentration of wealth amongst the largest traders (Figure 3).

Considerable changes to the traditional communal grazing areas have resulted in many pastoralists abandoning traditional production systems in search of other alternatives (Figure 3). Overall trends indicate that this has brought higher levels of poverty to pastoral households in both rural and urban areas, against a backdrop of government commitments to persuade pastoral populations to become sedentary and take up farming (Hodgson 2015). While some pastoralists in the system are choosing to continue their way of life in other areas, larger numbers are settling in and near small towns and irrigation schemes to start up micro-dairying operations, small-holder farms, charcoal burning and tasks-for-cash activities in the region's towns. These activities generate only meagre incomes, and many pastoralists who have opted for this way of life are deeply vulnerable (Devereux, 2006), as was evident in the 2011 Horn of Africa drought crisis.

Borana pastoralist system (Ethiopia)

Background

The Borana rangelands stretch over an expansive semi-arid savannah of southern Ethiopia, around 570 km south of Addis Ababa². The Borana distinguish between two forms of livestock keeping. One

² Borana people extend across the Borana Plateau in Southern Ethiopia, south through the northern portion of Kenya to the Tana river area. However, the different groups in different states have had very different trajectories over the last decades (Homewood 2008). Therefore, we consider the Borana Plateau in Ethiopia as the pastoral system that is the focus of this case study. For a detailed socio-ecological analysis, see Homewood 2008, p. 128-130.

is home-based herding, which involves the herding of milking cattle with calves and small stock close to the encampments. The herds in this category are usually referred to as *worra*. The other is satellite herding, including bulls and immature stock herded further away from the encampments. This group of herds is known as *forra*. They usually range more widely and have access to better forage. The Borana people have historically specialised in selling cattle and also produce sheep, goats, donkeys (Cossins and Upton 1988, in Homewood 2008) and increasingly, camels to adapt to more frequent droughts (Simachew et al., 2010).

Rangelands are usually divided into three categories: *qaye*, *kalo*, and *mata tika*. *Qaye* is the area close to villages, usually within 1 km radius. Due to high livestock footprint, the understory herbaceous plant coverage is much lower here than in the other two types of rangeland. *Kalo* is characterised by rangeland with fences and pastoralists save these lands for livestock consumption in the dry season. In some kebeles with high livestock density, the *kalo* is only reserved for calves in the dry season. *Mata tika* is the major herding area, usually situated far from the villages. *Mata tika* is further divided into *worramatatika* and *forramatatika*. The former are used for *worra* livestock that return to the villages every night. The latter are used for *forra* livestock far from villages that cannot return overnight (Dida, 2010).

Borana communities have well-established systems of governance through indigenous institutions that enable them to manage access to a range of natural resources. Access to and use of these resources, particularly watering rights and grazing, is shaped by a variety of overlapping institutions, regularized practices, set of rules, and organizations and decision-making practices.

The Borana social structure provides a framework within which pasture and water resources management is carried out at two broad levels of traditional administrative structure. These are referred to as “administration from above” and “administration from within”. The former is administered by the *gada* system (the top level body responsible for resource management and all social affairs within the Borana social structure) and the latter refers to management of the region’s deep wells, or *tula*, by clan arrangement. The ownership right and administrative responsibility for these wells falls to each clan, whereas the management of ponds sits with territorial units, including the village (*olla*), compound villages occupying a particular geographic unit (*ardaa*) or adjacent geographic unit known as *reera*. The people who reside in the same *madda* usually meet at different water sources to discuss how to the sharing of pasture and water resources.

Key influences on the Borana pastoralist system and resilience

Starting in the 1970s development programmes focused on expanding livestock ranches to improve production in the Borana Plateau. According to Homann et al (2008), before the 1970s Borana pastoralists organised rangeland management according to indigenous knowledge and techniques, making good use of the limited supply of water in deep well areas, which determined the mobility and land use patterns of pastoralist communities. Since the 1970s, external interventions most notably the construction of water ponds and a ban on burning pasture, in conjunction with the promotion of crop cultivation and settlement, have led to degraded rangelands (Figure 4). As more impoverished households settled in deep well areas, those areas became degraded; and as more people turned to cultivation, rangeland areas were transformed; ultimately leading increased privatisation of the rangelands (Berhanu et al., 2007; Homann et al., 2008; Terefe et al., 2010). The establishment of ranches is one of the major contributing factors to the loss of Borana pastoral land, an area that is the backbone of Borana economy – 60 per cent of Borana reported that they lost a substantial portion of

their land as a result of ranch establishment. Many of the current conflicts over land ownership and ranches in Borana are therefore actually associated with sites initially expropriated by the state in the name of livestock development. Ranches in the Borana rangelands still occupy a very vast area of land, which accounts for about 33805ha. The *Dida liban* and *Surupa* ranches are owned by a private company known as ELFORA, and another ranch, *Dida Tuyura*, is owned and run by the state. Just one ranch, *Sarite Community Ranch*, allows access to pastoralists.

One of the most worrying changes in Borana rangeland is the expansion of private ranches on former communal grazing lands (Tache, 2013) that are expropriated by those with connections to the political administration and the urban business community (Solomon et al., 2007; Skinner 2010). As in Somali Region, a land rush is taking place as individuals and groups of businessmen stake their claims to private ranches. Recent trends also show that wealthy and influential herd owners increasingly gain private ownership of the rangelands (Kamara et al., 2004; Homann et al., 2008; Aklilu and Catley 2009; Napier and Desta 2011).

Alongside these land use dynamics, many Borana communities are opting to divide use of the rangeland, leaving some for use in the dry season when they must contend with restricted access key resources and the need to rely on drought reserves. More land is being fenced as *kalo* (Table 2). Some communities have also started to collect grass from farms to keep for dry season consumption.

Table 2. Use of kalo in 2014 in Borana Plateau

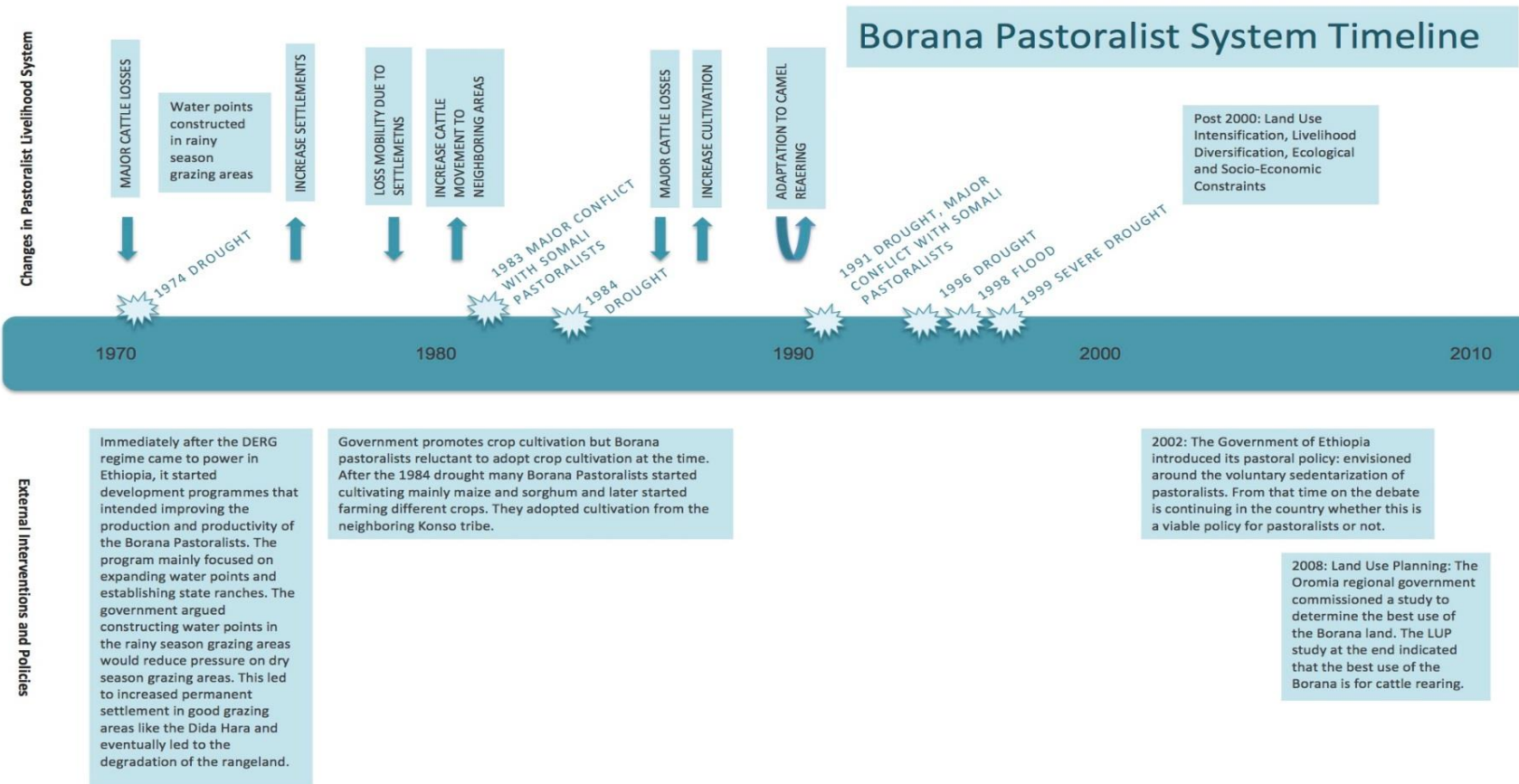
Used	Frequency	Percent	Cumulative Percent
For family herd	5	27.8	27.8
For marketing animals	6	33.3	61.1
Both	5	27.8	88.9
Others	2	11.1	100
Total	18	100	

Source: Tiki, Waktole (2014) Livestock Marketing Value Chains: Dynamics and Challenges, *Unpublished*. Written for the CHAINS Project. United States Agency for International Development. Atlanta: Emory University.

Encroachment of woody plants on open grassland and savannahs has been one of the major threats to the livelihood of Borana pastoralists and their ecosystem. The densely interrelated woody plants prevent cattle from accessing nutritious herbaceous plants in their rangeland. As a result, many Borana pastoralists are forced to change their livestock portfolio by keeping more camels and small ruminants thereby reducing the cattle population. Three decades of not burning the grasslands has taken its toll on rangeland environments, with woody plants largely replacing herbaceous plants in a substantial proportion of lands in Borana. The few industry fuel loads are far from being enough to trigger a fire. Pastoralists have no choice but to cut the bushes with axe.

Efforts are being made to restore rangeland areas, including adopting participatory management approaches to reverse trends and renew inclusive land management practices (Napier and Desta 2011; Toru and Kibret 2014).

Figure 4. Key events timeline, Borana (Ethiopia)



The other key influence on the Borana pastoralist system concerns developments in livestock marketing and trade. Borana cattle are the traditional and predominant breeds of Ethiopia's semi-arid southern plateau because of their ability to flourish in lowland areas. The Borana pastoralists are respected for their husbandry and over the last two decades have become a major supplier of cattle for domestic and international markets, and large-scale traders (Coppock et al., 2012; Aklilu et al., 2012).

A complex range of people and processes, from the pastoralist herders themselves, to local collectors, brokers, traders, transporters, hotels and restaurants, characterize the marketing structure for cattle in Borana. While Ethiopian export abattoirs source most of their animals from Borana, studies show that the herders themselves only receive a minimal percentage of the overall profit that the animal achieves, compared to other actors in the market (Zander 2005). The Borana used to sell some their animals in Kenya during the period of the livestock ban on exports to the Middle East (Aklilu and Catley 2009). However, since 2008 this trade has reversed, with animals from Kenya and Somalia now entering into Borana by informal means (Debsu 2013; Waktole 2014). The Borana are benefiting from this trade, as they are able to sell a large number of their animals and share in some of the profit of those informally entering the country. However profitable, these long trade routes to export are risky: the demand for livestock is unpredictable, prices fluctuate, there is too much reliance on informal credit, and herders may need to navigate insecure areas posing a threat to their lives and livelihood. The cost of negotiating a long value chain, and having to pay for inappropriate transport and feedlots can also be expensive.

Investment has been made into livestock marketing over the last twenty years (Coppock et al., 2012; McPeak and Little 2006; McPeak Little and Doss 2012) and considerable wealth is now being generated for those pastoralists who have commercialised (Aklilu and Catley 2009). According to Aklilu and Catley, the wealth generated from livestock marketing largely benefits those at the 'sharp end of the business' (exporters, ranchers, feedlot operators, and butcheries) who are able to make the most out of both domestic and export livestock markets; and traders who can navigate the risky routes can also generate considerable relative wealth. These benefits do not reach the poorest households who need to build up their herds – if they still have animals at all – and who therefore are unable to take advantage of export markets. In Borana, Aklilu and Catley found that 'the middle and better off income groups also sold respectively six and twelve times more sheep and goats than the very poor' (2009: 15).

Over the past three decades, small towns have expanded across the region, and approximately 16 per cent of the population now reside in nineteen urban centres. The region is inhabited by almost one million people (CSA, 2008). The pull factors towards urban living including job opportunities, access to education and other services, and better living conditions. Pastoralist are also pushed into a different lifestyle because of poverty, limited livelihood opportunities and difficult living conditions in rural areas that result from long term trends that threaten their resilience: droughts, rangeland fragmentation and degradation, population pressure, policy neglect and conflicts (Little et al., 2001a; Brockelsby et al., 2009, Fassil et al., 2011; Teshome and Bayissa, 2014).

People are seeking education in towns and studies show that across the system pastoralists are increasingly open to sending their children to school (Teshome and Bayyisa 2014). Younger, literate households with more exposure to markets have been shown to prefer a more diversified income (Berhanu et al., 2007). And efforts are being made to support diversification through supporting collective action and microfinance (Coppock et al., 2012).

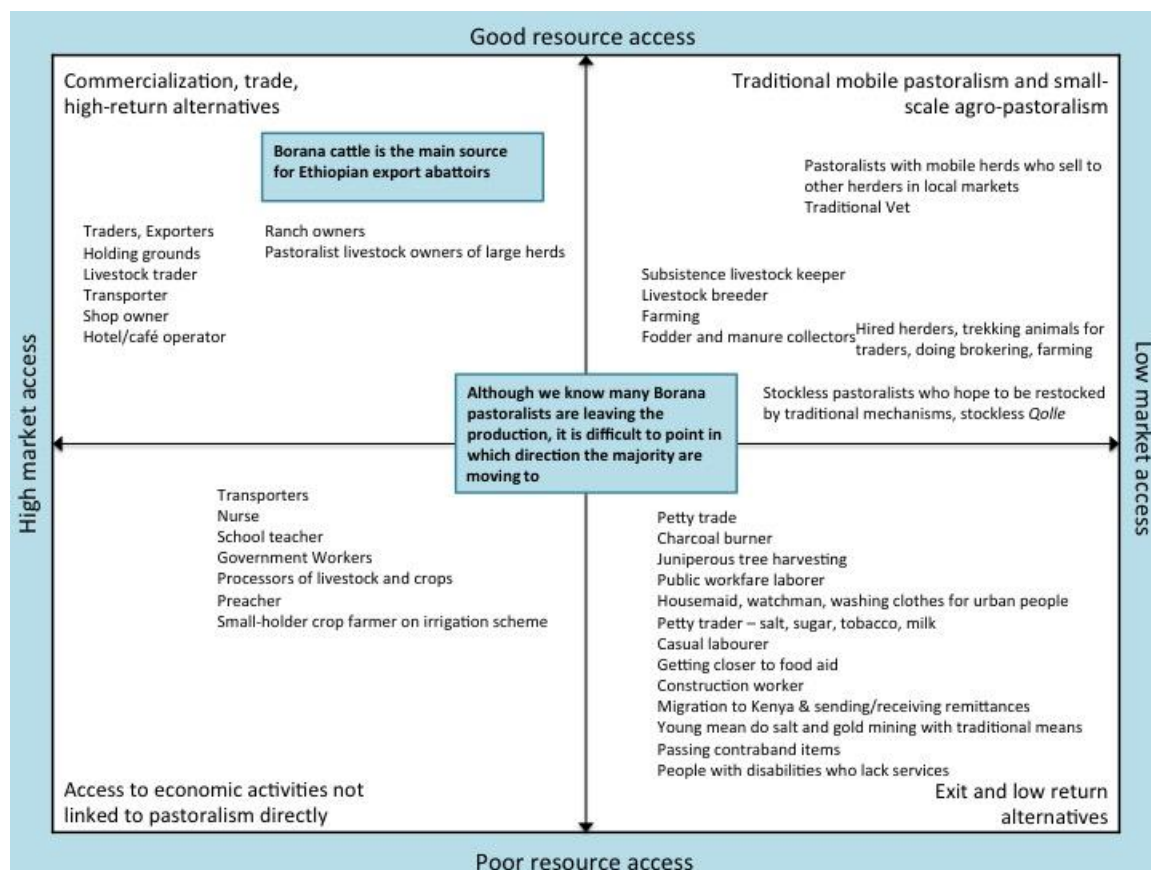
Finally, persistent inter-ethnic conflicts in southern Ethiopia have created a crisis in security of customary land tenure in the grazing lands (Mahmoud 2010). Inter-ethnic conflicts have undermined customary institutions for resource sharing. Borana pastoralists are in conflict with neighbouring ethnic groups on four different areas: with Somalis in the East; with Amer and Konso tribes in the Northwest; with Kenyan tribes in Southeastern areas; and with the Guji Oromos in the Southwest.

Vulnerability and resilience

Homann et al (2008) argues that Borana pastoralists are in transition from traditional pastoralism to a semi-sedentary grazing system because they cannot make full use of indigenous knowledge-based rangeland management strategies (see also Solomon 2013). Borana pastoralists believe that resilience necessitates being able to maintain a decent living standard over time by keeping a viable number of livestock. They equate resilience to being able to quickly come back from the loss of livestock (Tiki, 2012) and have started to believe that having a diverse livelihood portfolio is preferential to being reliant on just one type of income generation activity. They know that the Borana rangeland is not suitable for anything but livestock-keeping but frequent droughts and the encroachment of inedible woody plants is making this way of life much more difficult. This is pushing Borana pastoralists into adapting to their situation, for example by changing herd composition to herd camels or utilizing new feedlots and fodder.

Over time per capita livestock holdings have been declining (Lybbert et al., 2004; Desta and Coppock, 2008; Desta et al., 2008; Teshome and Bayissa, 2014) and people have been increasingly turning away

Figure 5: Pathways of change in the Borana pastoralist system



from pastoralism (Homann et al., 2008; Gebra and Desta 2010; Solomon 2013; Teshome and Bayissa 2014).

Per capita income is highest for those in places with higher mobility and resource access alongside good market development (McPeak et al., 2012).

According to Teshome and Bayissa (2014), the number pastoralists choosing a sedentary way of life is increasingly significantly because of recurrent droughts, conflicts, rangeland degradation, declining productivity and accelerating population growth (Figure 5). The Borana indigenous welfare system has come under strain due to the high number of 'dropouts', though it does still exist and function, potentially assisting a stockless person who appeals for restocking, for example (Teshome and Bayissa 2014). There have been some efforts by NGOs to restock (Belayneh et al., 2009), but a growing number of people are exiting livestock keeping and entering into low return activities, often migrating to towns (Figure 5).

Pastoral 'dropouts' and poorer pastoral groups are living close to market centres (and in particular to the new market yards) to engage in the livestock economy, working as middlemen, loaders, and guards, milking cows in return for milk in kind, selling charcoal, looking after cows and generally continuing in the pastoralist livelihood but in a stockless role. Wealthy pastoralists are continuing in livestock trade (Figure 5), operating in pastoral associations, and are using the privatised rangelands (Aklilu and Catley 2009; Teshome and Bayissa 2014).

The trajectories in the system are very much being negotiated in real time, with questions of inequality and access to resources – be they education, markets or rangeland – central to the issues being discussed.

Karamoja pastoralist system

Background

The Karamoja region is a scarcely populated semi-arid area with unpredictable rainfall patterns and uneven distribution of rain over space and time. This climate uncertainty has always been the main natural hazard that pastoralists face (Dyson-Hudson, 1966). Nevertheless, in this harsh context the Karamojong³ people, not without difficulties, survived through a mixed economy based on livestock keeping, sorghum cultivation, harvesting wild fruits and hunting wild animals (Ibid).

In relation to the unpredictability of the environment and in order to maximize production and consumption, the Karamojong moved their herds seasonally (Quam, 1976). They used a productive strategy - transhumance – to efficiently exploit fluctuations in the availability of natural resources over two seasons: the rainy season (*akiporo*), usually between April and September and the dry season (*akamu*) (Novelli, 1999). Though rain-fed agriculture was also practiced, most families did not depend solely on cultivation due to frequent crop failures, on average once every four years (Dyson-Hudson,

³ The term 'Karamojong' is used to refer to the inhabitants of the Karamoja region in North Eastern Uganda, which comprise different sub ethnic groups from the same linguistic family, separated by administrative boundaries into seven districts. Among others the region includes the sub ethnic groups of the Dodoth (Kaabong), Jie (Kotido), Pokot (Amudat), Bokora (Napak), Matheniko (Moroto), Lobwar (Abim) and Pian (Nakapiripirit). Sometimes the term Karimojong is used to gather three sub ethnic groups (Bokora, Matheniko and Pian) as before the 1970s these groups considered themselves as one tribe.

1966). In summary, the Karamojong were able to survive in this environment through an opportunistic exploitation of different natural resources without substantially impoverishing the ecosystem due to their high mobility.

The traditional Karamojong livelihood system was semi-nomadic and centred on livestock production and opportunistic farming though their cultural and social values were predominantly pastoral. A closer look at intra-household dynamics reveals the broader complexity of Karamojong livelihoods. The traditional social organization was based on two main elements: a clear gender based division of labour and the seasonal movement of herds (transhumance) to distant grazing sites (Ibid). Depending on the harshness of the dry season, these grazing patterns could be more or less distant from the permanent settlements, sometime reaching other regions in Uganda currently known as Acholi, Lango and Teso or other countries such as South Sudan and Kenya.⁴

Both men and boys were responsible for moving livestock to distant grazing and watering sites and establishing temporary camps near to grazing sites. During the rainy season, when pasture and water were more widely available, livestock grazed near the permanent homesteads. Women and girls tended to remain within permanent homesteads throughout the year, together with the elderly and children. They were responsible for cultivating gardens, tending small ruminants and for daily domestic work such as firewood collection, local brewing and fetching water (Dyson-Hudson, 1966).

Key influences on the pastoralist system

Over the past fifty years there have been structural transformations in Karamojong livelihoods and authority systems, as well as in power relations and social support mechanisms. A series of events, some violent, have contributed to these changes including (see Figure 6): the colonial policies of the 1950s that curtailed the movements of people and animals between the region and the rest of the country (Welch, 1969); the planned resettlement schemes for people in fertile areas at the beginning of the 1980s (Cisternino, 1985); and the more recent policies of the National Resistance Movement (NRM) regime, including an 'imposed peace' and forced disarmament exercise in 2006 and the current promotion of policies for agriculture development, among others. Since the disarmament campaign, there has been a period of uneasy peace involving deep social and political change (Kizito et al., 2012; Ekoi and Etem 2013). The long established presence of aid donors and different religion institutions in Karamoja has also promoted new social values and a different economic production system (Caravani, forthcoming) (see Figure 6).

The Karamojong pastoralists have adapted to this period of change – many remain involved in livestock keeping in varying forms, though a decreasing proportion of the population rely solely on transhumant pastoralism for their livelihood (Caravani, forthcoming). Transhumance as the basis of livestock keeping has reduced significantly, to the extent that the current animals dry season grazing patterns are restricted within each administrative district and sub-county. In addition, the most suitable areas used for grazing livestock within the region have also become the areas most exploited for crop production (Caravani, forthcoming; Stites et al., 2010).

⁴ Historically, the Karamojong in Uganda have been closely associated with the Turkana in Kenya and the Jiye and Toposa in Eastern Equatoria in South Sudan. This group has been referred to as the Karamojong Cluster. However, the trajectories of these different groups, living in different nation states and operating in distinct policy environments, has been very different. Therefore, for this case study we focus on the system in Karamoja and recognize that it operates within a larger network with migratory and trade patterns that cross borders and are strongly tied in with social relations with these groups.

Presently, the region can broadly be divided in three major ecological and livelihood zones: Agricultural, Agro-pastoral, and Pastoral. However, within these three livelihoods areas there are similarities and important livelihoods differences depending on the preferences of individual families. Overall, a growing numbers of Karamojong families are now settled, stockless, small-scale farmers and peasant workers, making a living through different means but still focussing on traditional activities and coping strategies on which they have always relied, such as casual labour, crop farming, local brewing, charcoal making and firewood collection (Ayoki 2007; Stites et al., 2007, 2010; Dancouse et al., 2010). Traditionally, these activities are carried out by women, as is farming and casual labour, especially when related to agricultural work that is considered to be an activity that is unsuitable for men (Ibid).

Due to the loss of livestock several men have shifted their focus to looking for alternatives, mostly in farming and casual labour in towns (Burns et al., 2013). Many have been unable to find productive work, however, increasing the burden on women to make a living. In summary, it is clear that the transhumant pastoralism livelihood of many families has transformed into more settled agriculture and town based work, as a result of which the economic role of women has also increased of importance (Caravani, forthcoming).

According to Stites (2010), people are moving to towns for the following reasons:

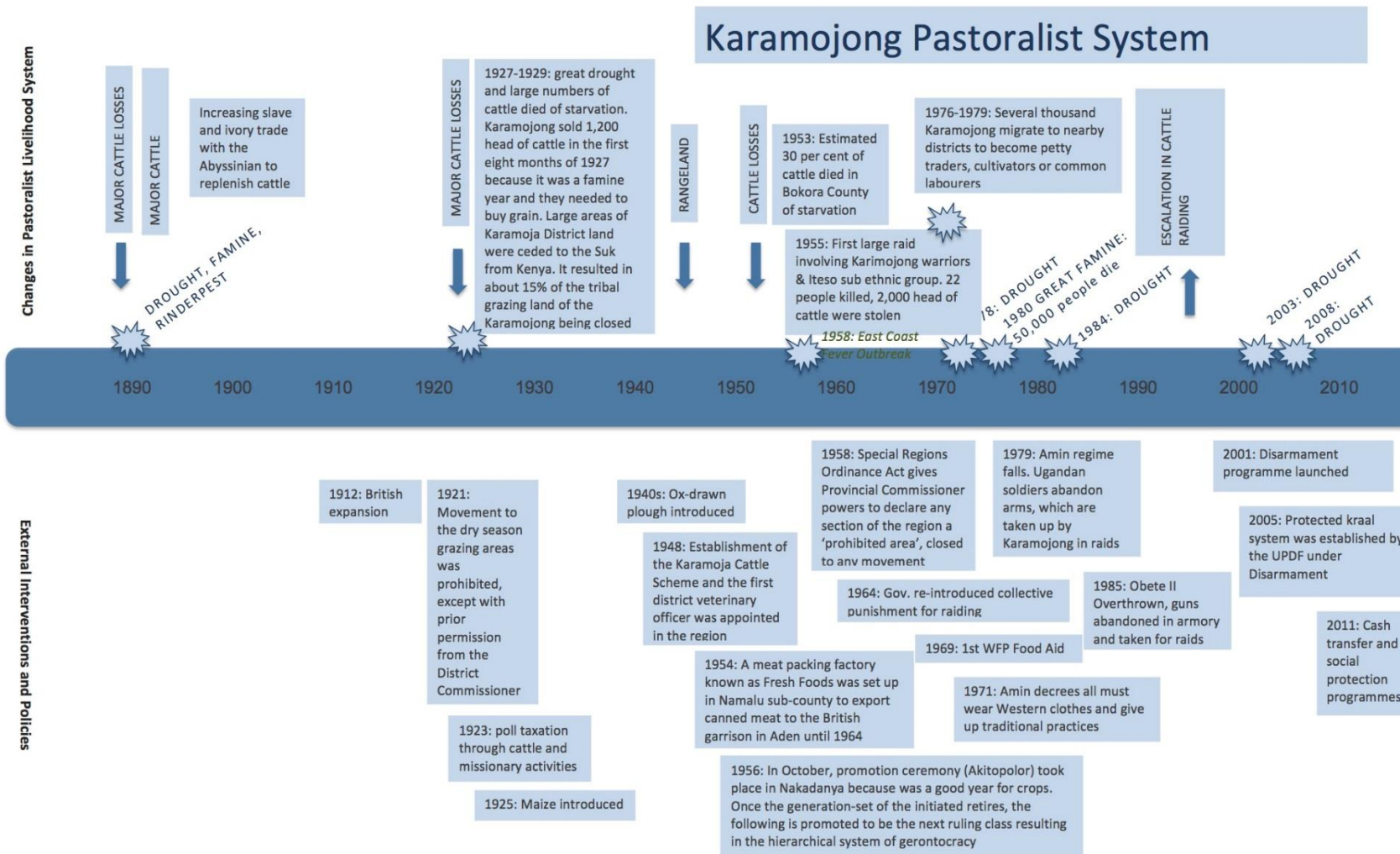
- Loss of livestock (and hence livelihoods) due to raids until 2009;
- Loss of livestock due to disease;
- Persistent insecurity until 2009;
- Invited or encouraged by a relative to move to an urban area;
- Lack of food in rural areas (due to loss of animals, crop failure, or both);
- Family problems (e.g., poor treatment by a step-parent, escaping revenge killings, divorce, domestic violence, injury/illness/death of a family member, loss of land by widows, detention of male household head);
- Tired of carrying firewood every day, coupled with insecurity in bush areas until 2009;
- Inability to support children or parents in rural area.

Alongside changes in livelihoods, there has been considerable demographic growth in the region, from approximately 26,490 people in 1919 to nearly one million in 2015. This demographic increment is mostly visible in towns, a phenomenon that is further exacerbated by the loss of animals that ultimately pushed many families to settle in more urban settings to earn a living (Caravani, forthcoming; Burns et al., 2013).

According to Chetail et al 2015, living in town also presents opportunities for girls:

As they move out of pastoralism, adolescent girls acquire the capacity to further contribute to the resilience of their families, households and communities. They report having more access to social services than girls in pastoralist areas – overall they spend more time under “normal” conditions in school, have access to health and family planning services, and are engaged in more diversified income- generating activities. This transition also provides more opportunities for increased decision-making power, for example in the choice of their

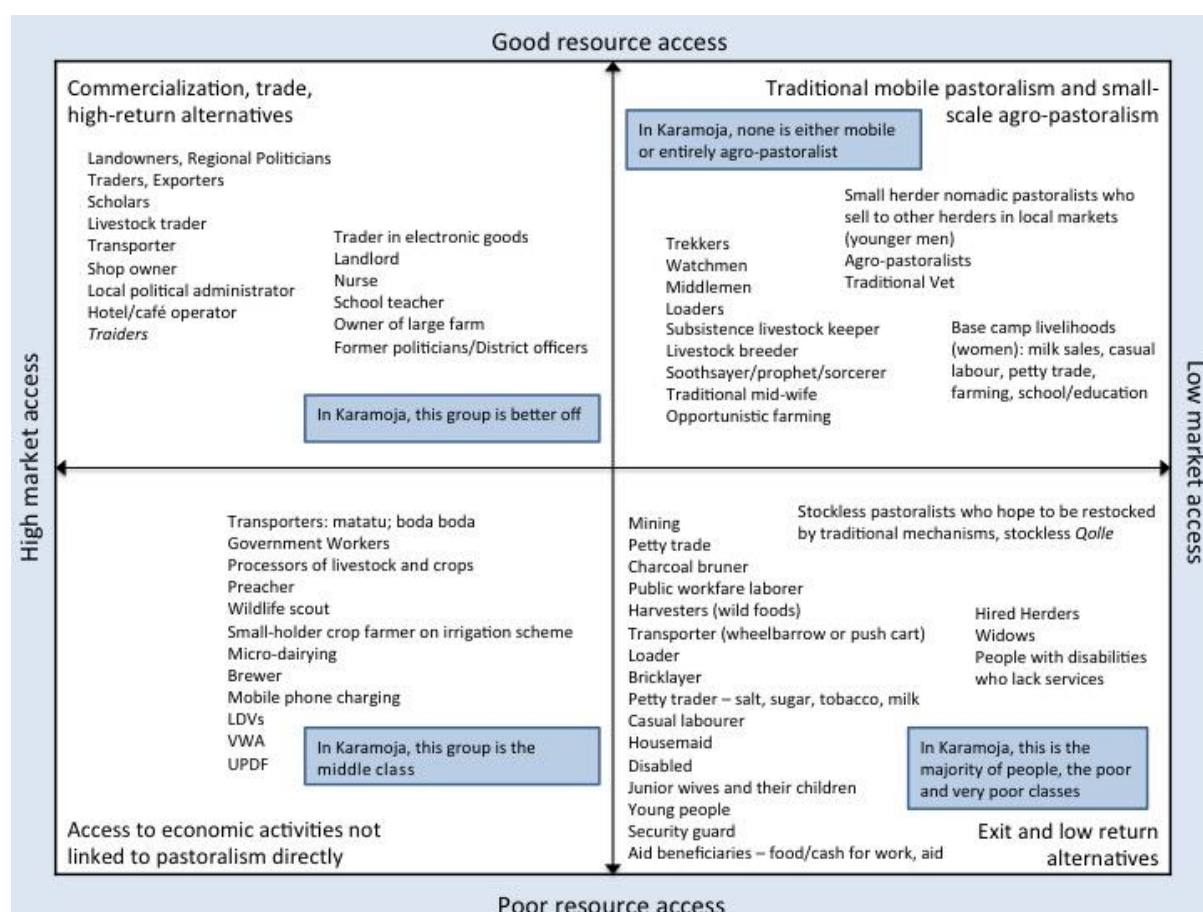
Figure 6. Key events timeline, Karamoja (Uganda)



husband. When asked about their aspirations, girls from communities in transition voice a more expansive vision of their contribution to their communities and the broader civil society than girls in pastoralist areas. They express a desire to work outside the home and community, and aspire to career goals requiring completion of higher education. However, when drought hits, these girls are pulled out of school to devote more time to income-generating activities, which increases their exposure to new risks.

Overall, the demographic growth combined with the loss of animals for many families resulted in the ratio of cattle/person declining in Karamoja over the past fifty years.⁵ In spite of this, possession of livestock is still one of the most important drivers for wealth accumulation and food security. The latter is endorsed by several food security assessments such as the Emergency Food Security Assessments carried out by the World Food Programme (WFP) in 2007 and 2015. These assessments reveal that those families who were able to maintain their livestock have on average been more food secure than those without livestock.

Figure 7. Pathways of change in Karamoja pastoralist system



Broadly, in terms of food insecurity, 20 per cent of families in Karamoja are currently classified as food insecure and 38 per cent as seasonally food insecure (McKinney, 2009). Recent nutrition analysis conducted by the WFP and UNICEF in 2015 show that the level of Global Acute Malnutrition rate has steadily increased over every lean season since 2012 and presently is at the highest levels (14.1%) since 2010. In a study of change over a five year period, Stites et al found that there was a decrease in

⁵ However, both animals and population figures in Karamoja are really unreliable.

dietary diversity, decreased reliance on animal products, decreased availability of cultivated crops, an increase in the portion of purchased food, and an increase in the sale of small or unhealthy livestock (Stites 2010). Interestingly, one district only - Amudat in the South-eastern part of the region - has shown a clear and steady improvement in its food security score with better family dietary diversity since 2010. This is mainly due to greater access to animal proteins and animal products owing to high livestock ownership. In fact, on average, 44 per cent of families in Karamoja own some livestock, with the highest level being in Amudat District (77 per cent) and the lowest level being in Moroto District (28 per cent) (WFP, 2015).

In 2013, one of the largest social protection programmes in the region – the WFP/NUSAF2, was reduced in scope due to lack of funding. Implemented since 2011 in all seven districts of Karamoja, only the most food-insecure districts of Moroto, Kotido, Kaabong and Napak continued to receive support, leaving other districts, including Amudat without supplementary food or injections of cash. Nevertheless, a comparison of the nutrition scores of Moroto and Amudat districts notes that families in Amudat are typically more resilient to shocks and enjoy better dietary diversity (WFP, 2015).

This necessity for the World Food Programme's social protection programme in Karamoja is one of the outcomes of the current development policies which, instead of breaking the intergenerational transmission of poverty by supporting livestock production, are undermining it and promoting crop production, thus increasing families' food dependency from external interventions (Mercy Corps 2015).

According to the United Nations Development Programme's (UNDP) community based resilience analysis (CoBRA⁶) to promote drought reduction activities in dryland areas, participants from Karamoja identified three of the most commonly cited characteristics of resilient households as: having a business or diversified income generation activities (typically small business ventures); a large herd size; or where a family member has secured employment/wage labour (2014).

Vulnerability and resilience

In conclusion, despite that a growing number of Karamojong people have changed their livelihoods over the past fifty years from transhumant pastoralism to settled agriculture and town-based work, livestock possession continues to be a source of wealth and food security in the region (Figure 7). Families who possess livestock (regardless the livelihoods areas they live in) continue to be less poor and differentiated compared to the others. This points to the evidence that holding livestock assets is still potentially one of the most important factors in poverty avoidance. Despite this, a growing number of people are abandoning livestock keeping and 'choosing' other economic activities to make a living. The reasons for this are rooted in the history of the region as well as in the way the NRM regime and development partners conceive and implementing development policy in the region (Caravani, forthcoming).

In Karamoja today, those who have fallen out of livestock production are poorer than those who retain their animals as an asset. With too much of a reliance on small-scale agro-pastoralism as a livelihood, they are more vulnerable to recurrent droughts that undermine their food security. When crops fail,

⁶ CoBRA – Community Based Resilience Analysis – a conceptual framework and methodology from UNDP's Drylands Development Centre (April 2014)

they have no livestock to fall back on, and their only option is to find ways to earn meagre amounts of cash to get them through difficult times.

Northern Bahr el Ghazal pastoralist system

Background

The people of Northern Bahr el Ghazal state, in the northwest of South Sudan are predominantly agro-pastoral, maintaining a living by growing sorghum and rearing cattle. Livestock rearing is the most important source of income and all wealth groups also cultivate some crops (FEWSNET 2013). Poverty rates in the state vary from 67-82 per cent (SSNB and WB 2012) and poor people are reliant on food aid for six months of the year (FEWSNET 2013). The main income sources for those living in poverty are the sale of goats and sheep, natural products such as grass, firewood, charcoal, labour, wild foods, fish and local brew. The better off sell cattle, sorghum, maize, timber and fish, and their trading activities are more retail orientated (FEWSNET 2013).

Key influences on the pastoralist system

The defining influence on the pastoralist system in Bahr el Ghazal has been years of conflict and insecurity (Figure 8). Historically, the Northern Bahr el Ghazal system has functioned with seasonal transhumance, with multiple groups negotiating grazing rights and access to rangelands. Also included in this pastoral system are the *Rizeigat* people from Northern Sudan (Craze 2013) who have continued their annual seasonal migration peacefully across a 14-mile area of contested land (between North and South Sudan) known as the Munro-Wheatley Line (REACH 2014).

Today's conflict is significantly affecting livestock mobility and traditional migration routes and patterns across the whole of the country. The political crisis in South Sudan has also resulted in massive fighting among rival pastoral communities, which is placing great strain on traditional pastoral ways of life.

Pastoralists are being prevented from accessing traditional water and pasture resources and getting their livestock to market has become dangerous and difficult. Insecurity is forcing pastoralists with large numbers of cattle to abandon pastoral domains; and many have fled to safe areas within their own states or to other states or regions, mainly Lakes, Warrap, Upper Nile and Greater Equatoria (FAO 2015). These movements have resulted in the intermingling of livestock from different geographical areas, as well as of pastoralist populations and pastoralist and farming populations, giving rises to significant tensions.

The current crisis has meant that pastoralist migration is now being driven by the need to save lives and livestock. Insecurity and the associated violent appropriation of assets, cattle raiding en route and in other areas, livestock diseases, and limited availability of grazing resources and water are some of the factors influencing the means, routes and destinations of pastoralist movement.

As migration routes are curtailed, the impact on pastoralist systems is both severe and transformative. Pantuliano discusses the extent to which the political crisis has disrupted the traditional migration routes of Misseriya pastoralists, where only the rich can migrate as before and insecurity has forced the adoption of special herding techniques including herd splitting, with nearly half of the herd kept

in Dar Misseriya, undermining pastoral livelihoods and increasing the reliance on unreliable crop production (2009).

The extent to which pastoral livelihoods are being disrupted specifically in Northern Bahr el Ghazal is difficult to ascertain, but overall in South Sudan, according to the latest assessment by the World Food Programme and the Food and Agriculture Organisation, 'the current conflict and political crisis, which have resulted in massive displacement and disruption of movement of livestock, is threatening the national herd and tearing at the social, political and economic fabric of the country' (2015).

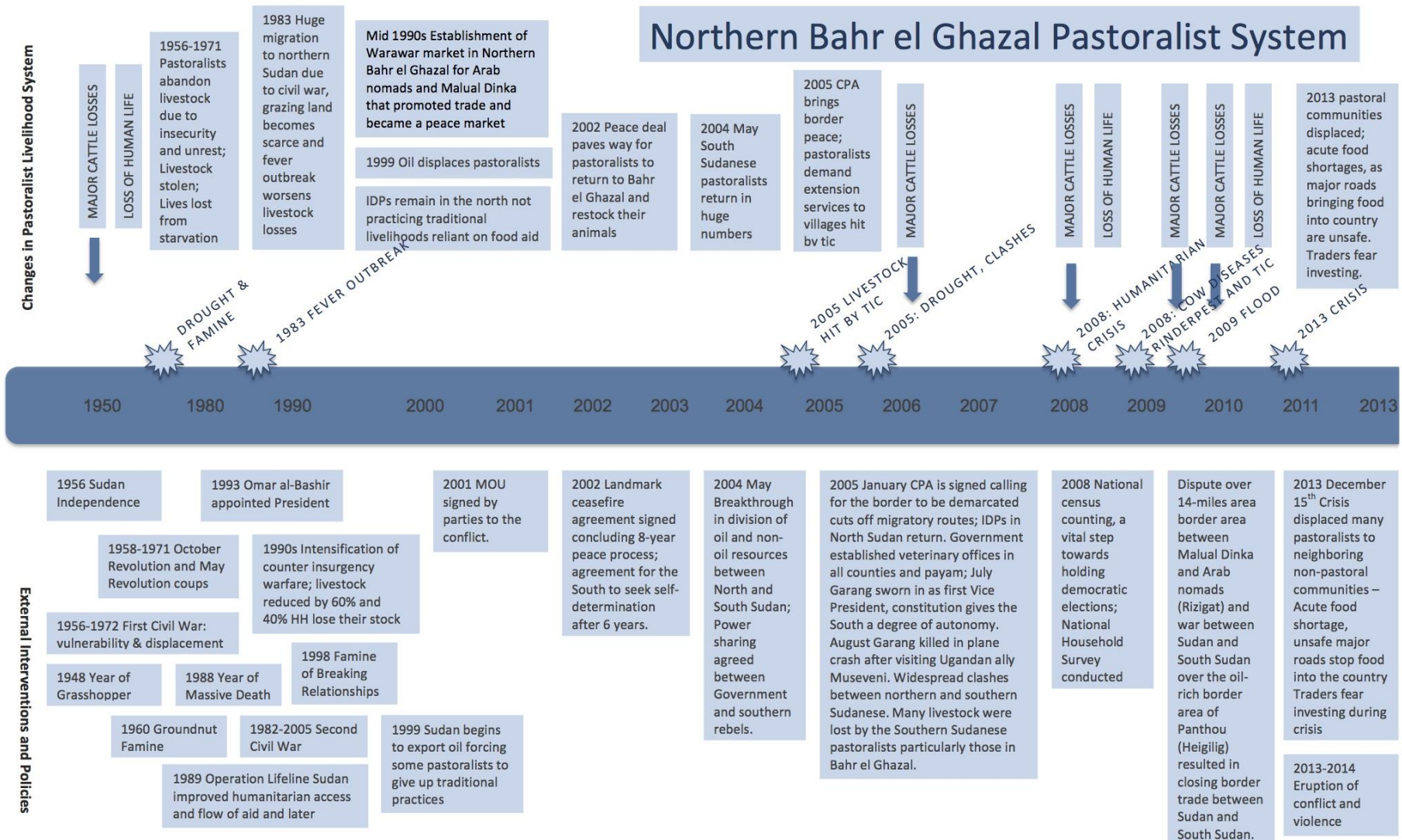
The current movement of livestock into different states and the concentration and intermingling of large numbers of livestock in confined areas is already having devastating effects on animal health. There have been 22 reports of disease outbreaks in greater Bahr el Ghazal since September 2014, including foot-and-mouth disease (FMD), East Coast Fever (ECF) and trypanosomosis. Furthermore, the nature of the work performed by women and men within the livestock sector – including handling raw animal products - exposes them to various health and safety related concerns, such as heightened exposure to zoonotic diseases. Women are traditionally responsible for preparing food for both family consumption and sale, milking animals, processing milk and making meals; therefore, they tend to have greater exposure than men. Livestock losses from disease have a direct impact increased food insecurity and malnutrition (REACH 2014).

The influx of internally displaced people (IDPs) from other states into Bahr el Ghazal compounds an already increasing population growth in the state, putting even more of a strain on scarce water and pasture resources. The encroachment of migrating livestock onto the land of settled small-scale farmers, in a situation when many people are also armed, fuels tension and outbreaks of violence in Bahr el Ghazal.

Resource conflict is a major challenge facing land use practices in Bahr el Ghazal where anxiety caused by competition for water and pasture is a source of conflict (FAO et al., 2015). As populations across the country are displaced and move with their livestock into new areas, social dynamics will be affected. Relationships may come under strain and tensions between groups are likely to rise. The capacity of formal and informal institutions to promote peaceful interaction and dialogue between host communities, internally displaced persons and migrating herders will be tested.

Access to land is structurally linked to tribal affiliation and local power dynamics. While non-tribal members can be granted temporary right of utilization of lands and are in due time incorporated into the tribal system, an inflow of large tribal groups generates problems. These problems are not limited to the availability of arable land, but also relate to power relations in the area and to concerns about the future alienation of land. For this reason, the escalation of local-level conflicts over access to natural resources can be fuelled by tribal and political allegiances of the land users and wider tribal politics in Bahr el Ghazal.

Figure 8. Key events timeline, Bahr el Ghazal (South Sudan)



The cutting of trees has become a major environmental concern in Bahr el Ghazal as the need for firewood and income from charcoal-making increases. According to the 2009 National Budget Household Survey, 97 per cent of the population used firewood or charcoal for cooking fuel (In USAID 2012). This situation is compounded by a lack of strong governance – both customary and state-led – that has led to unregulated and uncontrolled clearing of land for increasing cultivation, unlawful logging for timber exports, and as fuel for the construction industry (brick making and lumber).

Other pressures on livestock production include the inadequacy of pasture and water, as well as limited investments by the government and private sector, poor marketing infrastructure and information, and endemic livestock diseases affecting animal health, especially East Coast Fever (ECF), Foot-and- Mouth Disease (FMD), and Contagious Bovine Pleura-pneumonia (CBPP). The compounding factors result in poor animal productivity and diminishing prospects for livestock product exports (FAO et al., 2015).

The current conflict is exacerbating an already weak infrastructure for livestock production characterised by marketing constraints and lack of extension services (FAO et al., 2015). Poor accessibility hinders movement of livestock to market, impacting on the health of stock and resulting in losses due to death of animals. Herder owners sell their livestock to brokers, who later take them to the market thereby fetching a very low price. Herders and farmers lack advice on crop and livestock diseases, which cause great losses.

Vulnerability and resilience

Pastoralists in Bahr el Ghazal have been able to successfully manage climate variability to enable them to continue to maintain their livelihoods. Cattle are more than a source of food; they signify status and wealth, and serve as the main livelihood asset for pastoralist communities. Livestock are sold for cash, slaughtered for cultural practices, bartered for grain, used as payment for penalties, and given for dowry. By retaining their herds, and engaging in a mix of mobile and settled activities, they have been able to diversify and remain productive, despite the significant impact of conflict in their state.

Like other dryland states in South Sudan, pastoralists in Bahr el Ghazal, face numerous challenges ranging from the loss of grazing areas due to the expansion of agriculture, changing land use and localized insecurity (Geburu et al., 2013) to low investment in infrastructure (Maxwell 2012; FAO et al., 2015). The dislocation of huge numbers of livestock into areas outside their normal domain, has led to a dramatic rise in disease outbreak, with livestock deaths posing a grave threat to the livelihoods and food security of pastoralists. Frequent conflicts have affected utilization of land for food production in these areas contributing to the phenomenon of widespread hunger and food insecurity.

Women usually take responsibility for the nutritional status of their household, and especially for children. The loss of cattle and reduction in milk production because of disease means less milk for the household, which in turn impacts on the health, nutrition and wellbeing of the family. Lack of access to rangeland also heightens the risk of malnutrition in pastoralist groups who rely on milk as an essential part of their diet, and particularly affects children and pregnant and lactating women. It also implies that women are less able to earn income from milk sales, reducing their ability to contribute financially to ensure food security and wellbeing in the household.

Under existing conditions and to retain their resilience, pastoralist communities are using a variety of strategies to sustain their livelihoods, such as: appropriating common property resources, intensifying agriculture on marginal lands, increasing their herds and shortening fallow periods; and migrating

seasonally or permanently to cities, towns, or agricultural plantations to earn cash; moving to more vulnerable and marginal lands; and having larger families in order to diversify sources of income and labour. While these are helping pastoralists to cope with change, continuing conflict and other insecurities mean that many remain deeply vulnerable.

The Pastoral Maasai: Transformations in Kenya's South Rift

Background

The Maasai's traditional livestock husbandry system optimizes foraging by moving herds in response to season rainfall patterns in the rangelands. This allows them to maximize herd size, milk and meat production. Throughout the areas occupied by the Maasai, twin rains allowed for year-round milk production, enabling them to rely to a high degree on livestock production. As a result, they have developed livestock breeds that are well adapted to arid rangelands in respect of milk production, fertility, disease resistance and a tolerance for droughts.

The Maasai vary the species mix of their herds, with numbers of cattle, sheep, goats and donkeys changed in order to maximize production and use of forage. As well as moving seasonally, they also adjust their livestock's daily grazing patterns so as to find the best forage available for each local grazing area. They do this by carefully examining animals at the end of each day, to assess their condition and milk yield.

To cope with the erratic conditions that characterize East Africa's savannahs, the Maasai use a number of different strategies: drought refuges, disease free areas, grass banks and carefully chosen settlement sites, to enable them to exploit the landscape and weather conditions throughout the year.

Strong cultural ties and established informal political systems in Maasailand have enabled diverse Maasai groups (and 'age mates') to collaborate, splitting herds or placing livestock with 'stock friends' in other areas to ensure the productivity of their livestock. This approach has protected the Maasai from localized threats to their herds, such as: drought, disease, raiding or predation, and it also enables herd owners to restock from their own animals when necessary.

Maasai herdsmen have always competed with large ungulates and predators for grazing land. As well as being dangerous, Kenyan wildlife can also endanger herds through the spread of disease. The Maasai have responded with strategies based on mobility, avoidance and even coexistence to survive in this environment (Western & Manzi 2004).

Key influences on the pastoralist system

Early challenges, land loss, vulnerability and resilience

In the nineteenth century the Maasai expanded their territory in the Rift Valley, necessitating the defeat of other pastoral groups, and leaving them over-extended in the amount of area that they controlled (Waller 1976). In the 1880s, their livestock were afflicted with contagious bovine pleuropneumonia (CBPP) and they restocked by raiding animals from other groups. Since then, they have continued to make use of raiding to recover from losses of livestock, also turning to cultivation, hunting or trade until they have amassed sufficient cattle to return to pastoralism. In the 1890s, a rinderpest epidemic resulted in the death of up to 90 per cent of their livestock, as well as a large part of the wild ungulate population. Famine and a smallpox epidemic followed, and this period in Maasai history is referred to as '*e-mutai*', meaning disaster (Waller 1976, Western & Manzi 2004, Hughes 2006).

Maasai transhumance and the loss of people and livestock after '*e-mutai*' resulted in an empty and 'pristine' landscape (Adams 2003). Colonial land grabs in Kenya began in earnest in the early 20th century, at a time when the Maasai were in no condition to resist. Instead, they were compelled to sign agreements with the British. The first agreement, drawn up in 1904, split their territory in half and they were forced to relinquish their best grazing areas around Lakes Naivasha and Elmenteita, but retained areas to the south and the north, in Laikipia. In spite of an initial agreement, which guaranteed land areas in the north and south, British settlers wanted Laikipia as well. In 1911 the Maasai had to sign a second agreement and were moved out of the north entirely, losing access to clean grazing and their drought refuges around Mt. Kenya. A court case was drawn up in 1912 to void the 1911 agreement, but it was lost on a technicality, and they were forced to move to an expanded southern reserve. Although they received more land in the south, they did not consider it to be as good quality for grazing as the land they had lost in Naivasha or Laikipia. These agreements resulted in the Maasai losing between 50-70 per cent of the land they had formerly occupied (Leys 1924, Mwangi 2005, Hughes 2006). The second agreement also allowed for the exploitation of minerals in the Maasai reserves and the Loodookilani Maasai immediately lost a large area surrounding Magadi to a lease given to the Magadi Soda Company (Hughes 2008).

In 1932, the Kenya Land Commission forced the Maasai to lease their land to other non-pastoralists, resulting in further loss of Maasai pastoral lands (Mwangi 2005). And later, tourism and conservation initiatives increased pressure on Maasai areas as national parks and game reserves were established to protect wildlife and an increasingly lucrative tourism (and hunting) industry. Most of Kenya's (and Tanzania's) wildlife inhabits pastoral lands, and the National Parks Ordinance of 1945 set the stage for more alienation of land: Tsavo and Nairobi National Parks were established in 1948 (Simon 1962, Adams 2003, Mwangi 2005). Amboseli National Park was later created from land that had already been set aside as a game reserve in 1899 (Adams 2003).

The alienation of land suffered by the Maasai over the 20th century has certainly contributed to their desire to enjoy more secure forms of land tenure, most recently in the form of individual title deeds for land ownership. Title deeds, however, did not solve the problem of land alienation and insecurity of tenure (Mwangi 2005).

In the run up to Kenya's independence in 1964, the Maasai had a delegation at the Lancaster House talks, where they made an effort to recover the lands given up in the 1904 and 1911 agreements. They were, however, unsuccessful and walked out.

Post Independence Challenges, Vulnerabilities and Responses

The Maasai maintained a pastoralist lifestyle throughout the 20th century and their livestock numbers rose again after recovering from the catastrophic outbreak of rinderpest in the 1890s (Figure 9). Development initiatives from the 1940s increased availability of water and veterinary services (Western & Manzi 2004) and also contributed to their ability to rebuild a pastoralist way of life. As living conditions improved for the Maasai in the 1960s, concurrent rumours of skyrocketing cattle population, desertification and the “Tragedy of the Commons” began to proliferate, blaming cattle and livestock owners for environmental degradation and the loss of wildlife (Hardin 1968). The proposed solution was better management and ‘development’ initiatives in Maasai areas (Homewood 2008).

At the same time, conservation narratives stressed the establishment of parks that excluded people and especially cattle. The fortress conservation model sparked an increasing resentment of wildlife among people who had managed to live alongside them for centuries and Kenya began to see an increase in human/wildlife conflict. Although Maasai leaders encouraged their communities to accept the establishment of parks and reserves (Nairobi National Park, Amboseli National Park, the Masai Mara National Reserve), there were few visible benefits and people felt excluded. Wild ungulates could cross these park boundaries and graze on their lands, but the reverse was not allowed, sparking resentment.

In the 1970s, an attempt was made to right the imbalance created by the establishment of protected areas on former community lands (Figure 9). A new kind of conservation model took shape around Amboseli, encouraging communities to allow wildlife to graze outside of the park in exchange for a share of the park benefits. Western (1994) explains how the 1973-77 drought helped to reduce Maasai resistance to the Amboseli plan. They had already had to diversify sources of income because of the drought, and with this came a realization that leasing land for wildlife-based activities could provide a safety net at times of livestock loss. This began a new era in wildlife conservation: community based conservation (CBC), where communities agree to protect wildlife populations on their land in exchange for benefits from tourism, hunting or other wildlife based activities.

Group ranches, Subdivision and Settlement

The Land Adjudication Act of 1968 and associated Group Representative Acts paved the way for the commercialization of Maasai livestock and land (Figure 9). The formation of Group Ranches was seen as a way to develop Maasailand in a manner that would not make the Maasai landless, and as the ranches were already stocked with cattle, it seemed to be a cost effective solution. Customary users were given legal entitlement to an area of land, and members of the Group Ranches could elect leaders and devise rules to govern the management of each of the ranches (Mwangi 2005).

However, within a decade, the Group Ranches had been dissolved and the land subdivided because of dissent within pastoralist communities about the success of the collective model. Members of the Group Ranches were persuaded to agree to subdivision, despite the negative impact that it would have on traditional methods of livestock keeping, rendering it unviable, opting instead for owning the title deeds to a smaller area of land. According to Mwangi (2005), there were reasons why members were eventually persuaded to go along with subdivision and title deeds. This could have been because of the leverage of President (Daniel arap Moi) who supported the idea and lobbied for it, encouraging his officers to speed up the process. Another incentive was the possibility that unpaid loans would be written off in the subdivision process. On the ground, individuals were also complaining about non-

compliance and violation of Group Ranch rules: members inviting their friends to come and graze cattle; individual ranchers using the Group Ranch as wet season grazing, then retreating onto their own (fenced and protected) land during the dry season; inequality of grazing between those who had few livestock and those who had many. Added to that, the general uncertainty about and security of tenure over land meant that a title deed was seen as a form of surety that could not be taken away (Mwangi 2005).

Subdivision of Maasai areas led to increased settlement and loss of mobility for the herds. The result was increased land degradation, and lower productivity for livestock rearing in these areas, increasing the Maasai's vulnerability to drought (Western & Manzollilo Nightingale 2004). Wildlife was also directly affected by subdivision of land, which is problematic in areas heavily dependent on tourism (Western, et al., 2009). Human-wildlife conflict has continued to grow.

Responses in the 21st Century

In the 21st century, those living in the Maasai rangelands face new challenges. Key among these is oil exploration and the expansion of geothermal energy sites in the Rift Valley. Group Ranches in the South Rift have been required to host teams exploring the potential for oil on their lands. Group Ranches, having set up wildlife conservancies and lodges, are now concerned about the potential environmental impacts of the exploratory process on wildlife and their businesses. Geothermal expansion in the Rift Valley around Lake Naivasha is also a serious threat to Maasai communities on Mt. Suswa, and near Hell's Gates National Park as well as the park itself. These new investments have resulted in the relocation of several communities from near the Park boundaries, resulting in a loss of livelihoods and business opportunities.

Maasai communities have, over the past several decades, responded to the threats posed by further land alienation and the decline of pastoralism. Some responses are based in tradition, such as a shift to small stock rather than cattle in order to graze on more degraded areas and increase livestock drought resilience (Western & Manzollilo Nightingale 2004). Other responses are more market oriented: milk and livestock sales; and cultivation on partially subdivided ranches, such as Ol Kiramatian Group Ranch in the South Rift (Figure 10).

The Maasai have also turned to wildlife-based industries, especially tourism (hunting was banned in Kenya in 1979) (Figure 10). Wildlife migrates in and out of parks on to community lands, and wildlife numbers in the National Parks have been declining (Western et al., 2009). Much of Kenya's wildlife is outside its National Parks, on community lands or private ranches. Communities (especially Maasai communities) have set up their own conservancies to protect wildlife, and engage in ecotourism businesses, either on their own or in partnership with businesses in the private sector.

The formation of groups, Community Based Organizations (CBOs), Non-Governmental Organizations (NGOs) and pastoralist networks have provided an opportunity for communities to share information, advocate for policies to protect them, and raise funds for projects that help them earn money, conserve resources, provide education and health services as well security.

Figure 9. Key events timeline, Maasai (South Rift), Kenya

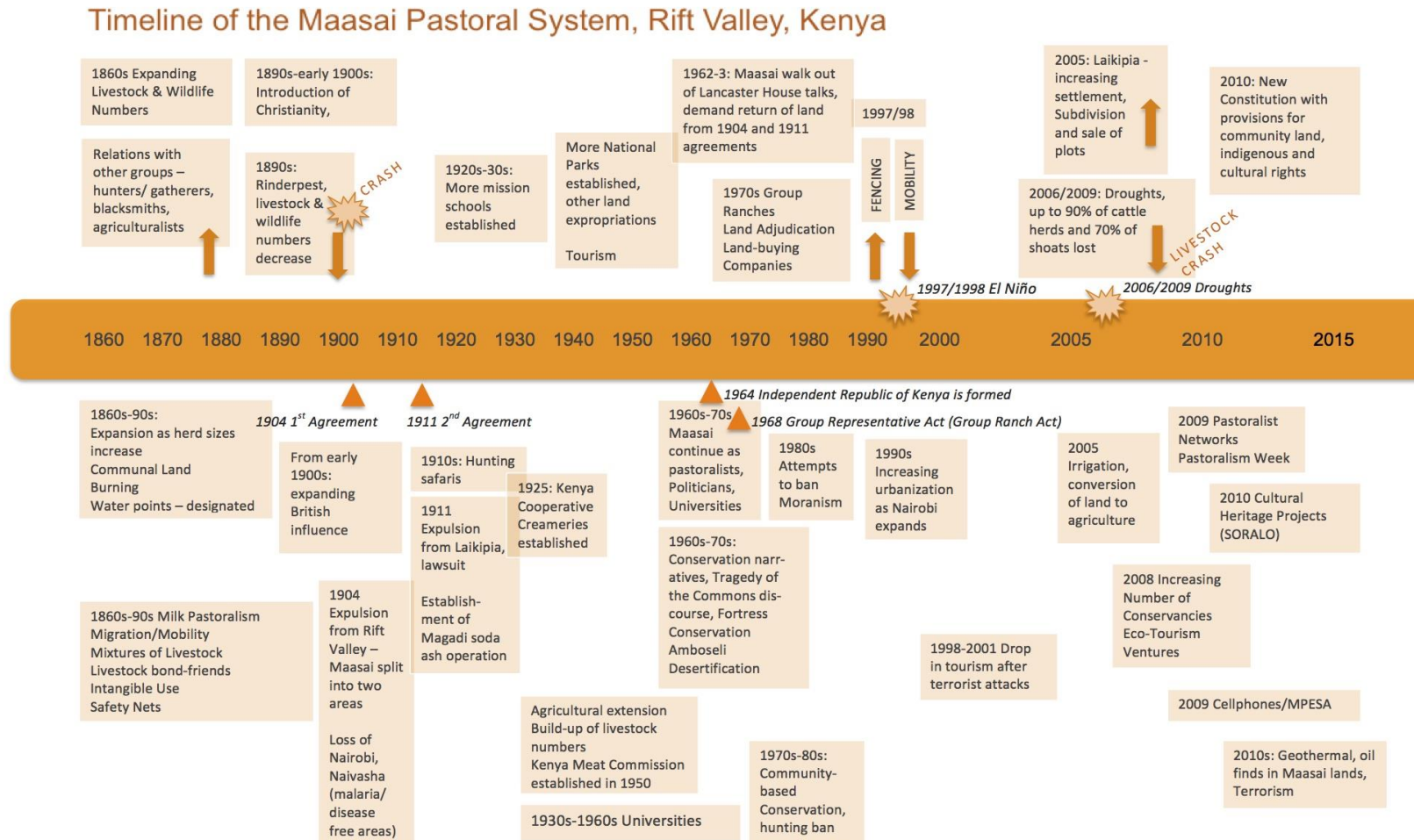
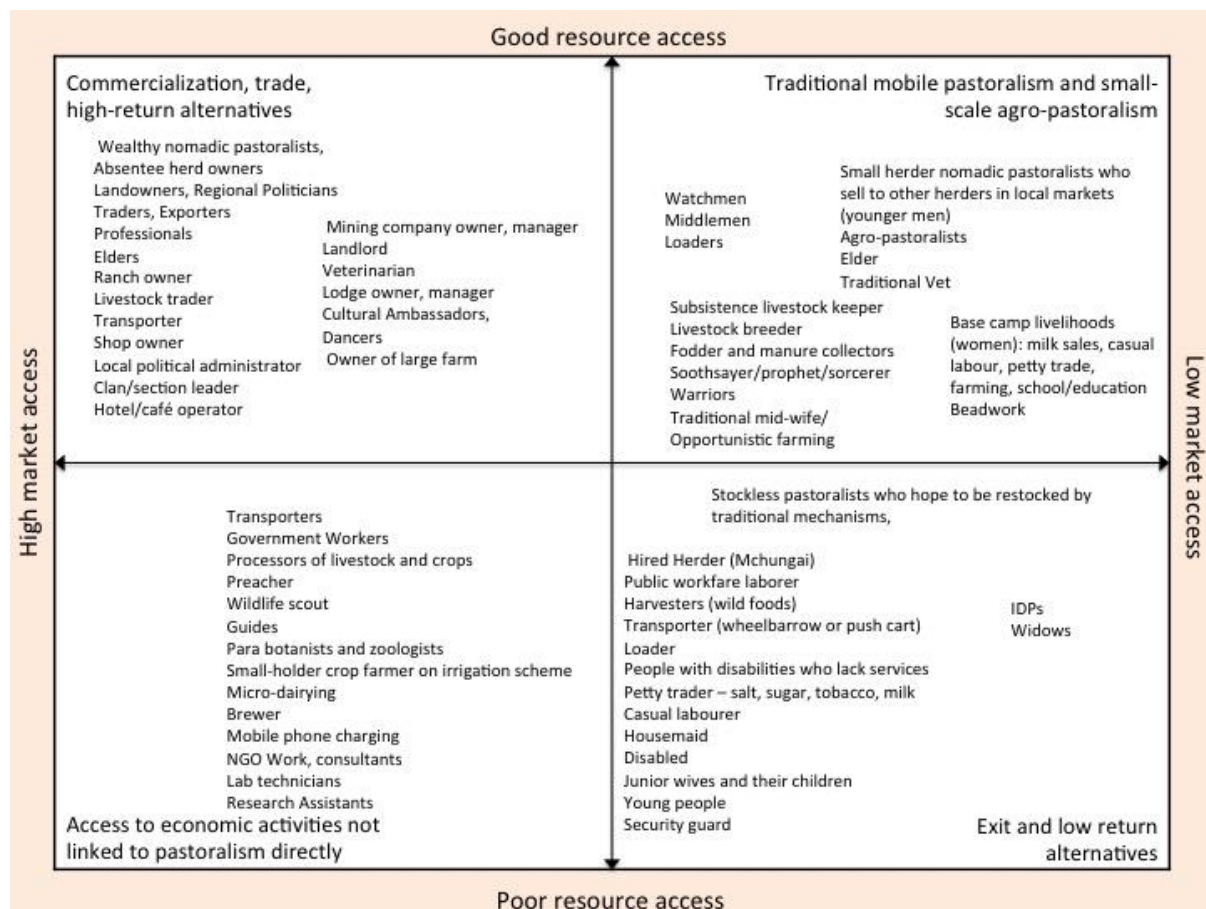


Figure 10. Pathways of change in the Maasai (South Rift) pastoralist system



Some of the conservancies have formed alliances, such as the Kenya Wildlife Conservancies Association.⁷ There are over 140 conservancies in Kenya, with 2 million beneficiaries, occupying 5 per cent of the land (or 15 million acres). These groups and associations advocating for policies and incentives that promote good rangeland use, and that help keep land open so as to include livestock and wildlife.

The South Rift Association of Land Owners (SORALO) is another association of private landowners (15 Group Ranches) that have linked together to create a corridor between Amboseli National Park and the Maasai Mara. They try to harmonize ranch management and joint initiatives to improve livestock husbandry, ecotourism, research and cultural heritage projects. They have formed a Cattleman's Association that endeavours to improve livestock breeds and promote the marketing and export of beef for their members. A Research Centre on one of the group ranches brings in money from research projects, workshops, tourism and the sale of crafts, as well as pioneering the use of local ranch members to carry out regular resource assessments. A Maasai Cultural Heritage Program has also been initiated to document and celebrate Maasai culture, through festivals and a cultural centre based at Olorgesailie, a prehistoric site managed by the National Museums of Kenya. An interest in cultural heritage has been fostered by Kenya's 2010 constitution, which protects the cultural rights of communities (Hughes 2013).

⁷ <http://kwcakenya.com/resources/KWCA-Flyer-2015.pdf>. Accessed February 8, 2016.

Maasailand (and Kenya as a whole) has easily adapted to and benefitted from technological innovation. As more remote parts of Kenya are connected to mobile telephony and the internet, local communities are using this technology to inform themselves, share information and engage in business endeavours. Kenya's M-Pesa facility, allowing people to send money over mobile phones, has made it easier for remote communities to engage in business without having to carry cash, or go to a bank, or even have a bank account (Nilsson and Salazar 2015).⁸

The Maasai in Kenya's rangelands have gone through vulnerable periods in the last 150 years, and have used a number of strategies to recover from serious loss of livestock, people and land. Livestock is a cornerstone for Maasai culture and livelihoods. At this point in time, however, because of the amount of land that has been lost or broken up, this has likely gone past the point of recovery. The Maasai are now developing responses (some traditional, and some innovative) to slow down the loss and fragmentation of land, and to maintain some aspects of their pastoral systems, and their culture.

Dynamics of change and transition

Dynamic change in the drylands of East Africa has resulted in differentiated outcomes for different pastoralist systems, as well as for individuals and groups that inhabit these regions. In particular, these changes are characterised by these paradoxical dynamics:

- Mobile and semi-mobile livestock keeping is the most productive activity in nearly all dryland areas yet herd sizes per capita have declined over a long period and continue to diminish for most of the pastoral population.
- Commercialisation of the livestock sector and the export trade in live animals and carcasses are intensifying, particularly in Ethiopia, but levels of poverty and vulnerability are getting worse.
- The mobility of people with herds has greatly decreased yet households are being broken up, with family members re-locating and migrating to towns, urban centres and beyond for education, work and social assistance.
- Climate risks necessitating flexibility and adaptability are perennial yet rangelands are fragmenting and key grazing resources (pasture and water) are being turned into commodities.

While some communities and individuals benefit greatly from expanding trade, marketing and opportunities for commercialisation, a larger proportion of dryland populations continue to struggle to make a living. The dynamics of intensifying commercialisation in the region, occurring alongside large new infrastructural and agricultural investments, are exclusionary, and wealth is becoming even more concentrated among the better-off who are well-positioned to grasp new opportunities. The implication of this is that consideration of the vulnerability of pastoralist communities involves taking into account issues that are complex and dynamic, and multi-layered rather than static. Rather, it is elusive.

⁸ See also <http://www.economist.com/blogs/economist-explains/2013/05/economist-explains-18>. Accessed February 8, 2016.

These complex dynamics define the challenge for development programming and interventions that endeavour to enhance the resilience capacity of poorer and vulnerable individuals and groups. Even though change in the drylands is both rapid and unpredictable, and results in differentiated outcomes for systems, individuals and groups, the means for achieving greater individual and collective well-being among pastoralists is fundamentally the same for both: that is to create the capacity to shape alliances in one's favour, to respond flexibly to new opportunities, and to adapt and transform.

This review of pastoralist systems indicates varying pathways of change across systems and a number of diverging trends. There is also evidence that inequalities are widening and that options for pastoralists to return to productive livestock-keeping are shrinking.

The Somali Region of Ethiopia is part of a wider 'Somali export zone' crossing into Somaliland and Puntland. Here pastoral systems have changed from traditional mobile pastoralism to commercialised forms of livestock-keeping that feed export markets; other pastoralist communities have turned instead to low return economic activities. The Borana zone in southern Ethiopia has seen many pastoralists shift from traditional pastoralism into smaller-scale commercialized livestock-keeping, most recently of goats and sheep, while many have turned to rain-fed cultivation of small plots. The Maasai system in Kenya's South Rift Valley has transformed in a variety of directions over the past 100 years, with change intensifying since the introduction of Group Ranches in the 1970s.

Land commercialization, rather than that of livestock, has changed the face of pastoralism, with many exiting into low return activities. A small minority have, however, benefitted immensely from the subdivision of rangelands and conversion of key resources into other uses, including the establishment of flower farms supplying European markets. Many communities in the Karamojong Cluster (from Uganda and Turkana in north-western Kenya) have retained traditional pastoralist or small-scale agro-pastoralist systems. Yet, many have also exited livestock keeping and are surviving through their involvement in a range of tasks-for-cash activities through which they generate a meagre income to support their livelihoods. Customary forms of livestock keeping are widespread in Northern Bahr el Ghazal, but are greatly affected by war and disease and the lack of an infrastructure and systems for providing rapid support. Despite this, many people have been able to connect into wider systems of livestock trade and marketing, largely in cattle. The impacts of continuing armed conflict mean that many others have lost livestock and shifting into other subsistence activities and survival work.

Over time, pastoralist systems in eastern Africa have been redefined as they have become increasingly bound into processes of state territorialisation and wider dynamics of trade and investment. These changes are apparent in a number of distinct, longitudinal trends in drylands. As Kratli and Swift (2014) note, while herding households remain the backbone of pastoral systems in many areas, the importance of these systems does not correlate with the numbers of people who actually remain in such households or livestock holdings. This is because many pastoralists have exited into an assortment of other productive activities and because stakeholders who are not mobile and who may not even reside in pastoral areas increasingly own livestock holdings.

This evolution in pastoralist systems in eastern Africa is evident in our conceptual understanding of different pathways for pastoralism in the region, as well as in the livelihood categorisation presented in Figure 1. The inequality gap is widening between those who are successful and the others who are just about remaining within, or have exited from a pastoralist way of life. It is involvement in commercialised forms of livestock keeping that distinguishes the successful from those who are 'moving out' of customary pastoralism. Profits from livestock commercialisation are spurring an

assortment of high-return economic activities, seen in the establishment of private ranches where grazing is hired for a fee, to the establishment of a rental market in small towns and urban centres (Stites et al., 2014; Korf et al., 2015). While sedentarisation and rangeland fragmentation are damaging to functioning of pastoralist systems, some communities are *moving out of* customary livestock production into an assortment of value-added activities (such as processing and fattening) as well as non-livestock based activities. Sedentarisation has presented new economic opportunities, especially for women through the sale of agricultural produce, milk and labour. In Karamoja towns, women pursue a range of market strategies including selling livestock for cash; micro-enterprises (selling food items – purchase maize, beans and cowpeas and then resell mixtures for 100Ush per spoonful); and selling local beer (Stites and Huisman, 2010: 8; Caravani, forthcoming). The income women earn from brewing now dwarves that they receive from engaging in casual labour or selling firewood.

Those who are just able to retain elements of customary pastoral systems ('hanging in') now tend to live in permanent base camp settlements, wherein women are engaging in livelihood activities that are both connected to and diverging from traditional pastoral livelihoods. Mobile pastoralists appear to be significantly better off than ex-pastoralist sedentary farmers in the same region (especially farmers without irrigation) (Headey et al., 2012). It is also likely that pastoralist incomes are driving demand for construction, services, crop produce, small industry and natural products (Headey et al., 2012: 15), thus driving improvements in incomes and livelihoods for those who are 'moving from' a pastoralist life. Little et al (2001a), based on analysis of data from the PARIMA programme, found that for the poorest herders, unskilled waged labour and petty trade were the most common non-pastoral options.

A preliminary review of participatory resilience evidence reveals that livelihoods with good resource access and strong market access are the most resilient; and that those who are moving out, hanging in or dropping out face more risks with fewer resources to adapt, thus reducing resilience. Increasing numbers of households in dryland areas have exited customary pastoralism without experiencing any advantages that could be gained from positive diversification – such as are emerging in towns and urban centres (Headey et al., 2012; Desta et al., 2008). Desta (2008) examined the activities of those who have 'dropped out' in Ethiopia's pastoral areas, finding the top activities to be providing daily labour, and selling wood, water and charcoal. Stites et al (2014: 23), who profiled the activities of 'drop-outs' in Karamoja, found that the main activities (in order of importance) were casual labour, brewing, agriculture, and domestic service in a hotel, restaurant or private home. Diversification is not only about leaving pastoralism, but rather many use it as a way to remain in pastoralism, as seen in Karamoja where a majority of migrants in towns have retained their links to rural communities (Stites et al., 2014). Diversification among well off pastoralists is an increasingly important livelihood strategy whereby placing a family member in waged employment outside of pastoralism and the rangeland provides capital for reinvesting in the livestock sector (McPeak and Little 2006).

While many development programmes intended to support the pastoral poor advocate for diversification, the livelihoods of many are already highly diversified. Diversification is seen as way to reduce risk and vulnerability, yet the environmental risks are greater for those who are unable to make the transition (Western and Nightingale 2004: 28). For most of those who have exited livestock production in the drylands of eastern Africa, diversification is marginal, with limited capacity to scale up petty cottage industries, firewood or charcoal production (Headey et al., 2012: p.3) and only meagre incomes from the range of survival work that people engage in (Devereux, 2006). A recent

study finds that livelihood resilience can better be achieved through gaining a few mixed sources of income rather than a larger number of similar income generation activities. For example, the majority of households in southern Somalia have multiple livelihood source, but almost all are based on animal and crop production and, consequently, prone to the same types of weather-related risks (Mercy Corps, 2013: 4). More income generating opportunities outside of livestock keeping are necessary if diversification is to be transformative for pastoralists who live on the margins of poverty.

Changes in pastoralist systems also have a huge impact on women and the way that roles are apportioned by gender within households. Sedentarisation and an increase in zero-grazing strategies to sustain and improve animal breeds in Kenya's South Rift Valley has resulted in livestock being kept close to home. At the same time, more children and young people are starting to attend school, which results in new labour shortages in the household. Women have been taking up the slack, and bearing an increased burden for fodder and manure collection, milking and selling of milk, and grazing small-stock (Wangui 2008: 373), while men are turning to farming. Since women do not have the right to sell livestock, men have appropriated their labour.

As people transition out of pastoralism in Ethiopia, men are getting involved in brokering, trekking, and farming and women in fuel wood collection, passing contraband goods, local brewery, and work as housemaids (Teshome and Bayissa, 2014:29). In Karamoja, as described above, daily labour wage activities, brewing and charcoal making have become the most lucrative non-livestock activity for women, followed by domestic work, while young men are finding opportunities in butchering, unloading buses/lorries, brick making and construction (Caravani, forthcoming; Stites et al., 2014). While brewing is a lucrative activity for women, their other work is generally less remunerative than men's work (Stites and Huisman, 2010). Other differences are apparent in the diverse activities that are pursued by women from different economic backgrounds. Little et al (2001a) found that after adopting a settled lifestyle, low income women took on milk and vegetable trading, making handcrafts, brewing, and waged labour, whereas wealthier women relied more on income from livestock, milk and the sale of ghee.

While there is a reasonable understanding of broad changes in the region, and emergent forms of pastoralism in this setting, practical action will require more extensive data over time as well as more precise insights on what is happening for different livelihood categories (moving up, moving out, hanging in, and dropping out) as well as for groups within these who may seemingly follow a similar pathway but require different sorts of resilience strengthening. The case studies presented here indicate the value of resilience thinking and programming, and also demonstrate a need for more grounded insights on trends over time in these, and other, pastoral systems.

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