July 2021

Nawiri Desk Study:

Livelihood Systems in Isiolo and Marsabit County

Elizabeth Stites
Feinstein International Center, Friedman School of Nutrition Science and Policy at Tufts University

USAID FROM THE AMERICAN PEOPLE

CRS CATHOLIC RELIEF SERVICES faith. action. results.

This survey/study/report is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of Catholic Relief Services, recipient of cooperative agreement no. [72DFFPI9CA00002] and do not necessarily reflect the views of USAID or the United States Government.

Contents

Executive Summary

This desk study documents, examines and investigates the ways in which these livelihood systems in the Kenyan Arid and Semi-Arid Lands (ASALs) and Marsabit and Isiolo Counties in particular operate as part of the basic causes of malnutrition as illustrated in the new conceptual framework on acute malnutrition in Africa's drylands (Young 2020). The objective of the desk study is to review the existing knowledge on the role of livelihood systems in the underlying causes of malnutrition in the region and to highlight evidence gaps that that may benefit from new primary data collection. These desk studies comprise part of the first phase of the Nutrition in ASALs within Integrated Resilient Institutions (Nawiri) project, funded by USAID/BHA and implemented by a consortium led by Catholic Relief Services (CRS).

Key findings from the literature

Dryland ecosystems are characterized by dynamic and non-equilibrium conditions due to unpredictable rainfall and spatial and temporal variations in natural resource distribution. While scholars once blamed pastoral production systems for perceived environmental destruction and loss of life in these areas, over the past three decades it has come to be understood that pastoral livelihood systems have evolved as a direct, appropriate, and largely benign responses to these dynamic and non-equilibrium conditions (Ellis and Swift 1988; Scoones 1995). These livelihood systems are well-suited to cope with high rainfall variability between seasons and years, including single-year droughts. Multi-year droughts, however, place much greater strain upon these systems and are more likely to lead to substantial livestock loss, increased human mortality, and acute malnutrition (Ellis and Swift 1988). However, the impacts of multi-year droughts have increased due to greater drought severity and increased temperature, as well inadequate preparedness, mitigation and responses mechanisms.

Pastoralist employ short-term coping systems on a seasonal basis and in response to single-year droughts as well as longer term adaptations to manage systemic change. Risk-spreading strategies have allowed human populations to "demonstrate long-term persistence in a difficult environment" (Ellis and Swift 1988, 457). Herd management, including splitting herds and shifting migration patterns, allows pastoralists to take advantage of the spatial and temporal distribution of water and pasture. These effective and appropriate coping systems are only possible when mobility is allowed, conflict is managed, and services and inputs (such as veterinary support) are available and accessible.

Longer term adaptations take place in response to both systemic shocks and emerging opportunities. Such adaptations include diversifications in herd composition (often from large to small ruminants and between cattle and camels) (Roth 1996; Opiyo et al. 2015b) and income activities such as increased market engagement (Fratkin and Smith 1995; Adongo, Shell-Duncan, and Tuitoek 2013; Smith 1997; Watete et al. 2016), intensification of some strategies (such as the sale of natural resources or milk), migration of select individuals or entire households (often to urban areas) (Fratkin, Roth, and Nathan 2004; R. Ouma, Mude, and Steeg 2011; Stites 2020), and greater reliance on non-animal food sources (including purchased cereals, wild foods and relief food). Some coping strategies and adaptations may be unsustainable and/or coercive. Individuals, household and communities are most likely to turn to these maladaptive options when they have few or no other alternatives (Young 2009). Examples include the heavy exploitation of natural resources, such as firewood harvesting and charcoal production, cattle raiding, or joining an armed group.

While resources are important, it is the broad range of policies and institutions that have the greatest impact on livelihood systems and their

success. These may function at the local, regional or national levels (or at multiple of overlapping levels) and include both formal systems and informal norms. Critical polices and institutions discussed in this desk review include mobility, informal social safety nets, natural resource management and governance mechanisms, market systems and processes, wealth and inequality, gender and generational norms, aid modalities and humanitarian assistance programs, formal social safety net programs, decentralization and devolution, conflict and conflict management, and assumptions and negative narratives on theory and programming in the drylands. The dynamic and varied nature of these policies, institutions and systems means that different sub-groups experience shocks very differently and have different recovery trajectories (Mcpeak and Little 2017).

Gaps in knowledge and areas for additional research and analysis to improve programming

There have been decades of humanitarian assessments and academic studies conducted in Isiolo and Marsabit Counties, but numerous gaps continue to exist in the knowledge base, including on livelihood systems and the links to acute malnutrition. These gaps are posed as broad questions, but it is essential to keep in mind the diversity and differences within the geographic areas of interest in regards to ethnicity, wealth, gender and location.

As pastoralist adapt livelihoods in response to systemic shocks and long-term changes, what are the changes within intra-household livelihoods, including gendered and generational divisions of labor, control over resources and income, responsibilities and expectations? What are the implications of these shifts for food security and nutritional outcomes?

What are the implications and impacts of adaptations within local livelihood systems arising in response to the growing economic, political and social role of towns in northern Kenya? How do these changes affect food security and nutritional outcomes, and for whom? This gap in the knowledge base is both about the growing urbanization of populations and also about the increased role of towns in providing markets and services for those who may continue to live (entirely or predominantly) in rural locations.

How is herd management changing by ethnic group, wealth, and location? What are the potential impacts of these changes on food security and nutritional outcomes? Related to this, how are distribution of livestock and migration patterns changing by wealth group and location of producers as well as by species? What are the potential implications of these changes on access to and governance of natural resources, food security and nutritional outcomes?

How is conflict at the local level changing, what are the factors of this change, and what are the potential implications for nutrition and food security? How does this conflict affect local institutions, policy making and programming, and how are development actors taking conflict and conflict resolution mechanisms into account?

Introduction

This desk study is part of the Nutrition in ASALs within Integrated Resilient Institutions (Nawiri) project, funded by USAID/BHA with the support of the American people, and implemented by a consortium led by Catholic Relief Services (CRS).[1] Nawiri is operational in Isiolo and Marsabit Counties of northern Kenya, which are part of Kenya's Arid and Semi-Arid Lands, or ASALs. The goal of Nawiri is to sustainably reduce persistent acute malnutrition by designing and implementing an approach for supporting, strengthening and protecting systems and institutions. The first phase of this study includes primary data collection which is informed by a series of desk studies. This desk study focuses on the livelihood systems of the populations of Marsabit and Isiolo Counties and seeks to document, examine and investigate the ways in which these systems operate as part of the basic causes of malnutrition and in turn how they drive and influence the underlying causes of malnutrition in the region.

This desk study is part of a Nawiri desk study series that addresses each level of the conceptual framework for drivers of malnutrition in drylands, including:

- Malnutrition outcomes: Acute Malnutrition Hotspot Analysis in Marsabit and Isiolo (Ochola, 2021a & b);
- Immediate and underlying drivers: The immediate and underlying drivers of child malnutrition in the Kenya ASALs (Marshak, 2021);
- Basic causes:
    - Livelihoods and Nutrition - this study;
    - Gender Gap Analysis (Stites and Dykstra-McCarthy, 2021)
    - Natural Resource Management and Nutrition (Birch, 2021);
    - Nutrition, Environment, Conflict & Disasters (Marshak and Venkat, 2021)

Livelihoods within the drylands nutritional framework

The understanding of the causes of malnutrition within the Nawiri project is based on the drylands nutritional causality framework (Figure 1), a revised conceptual framework that seeks to better reflect the drivers of nutrition within Africa's dryland regions, specifically in the Sahel and East Africa (Young 2020). This framework revisits UNICEF's conceptual framework on "causes of malnutrition and death" from the early 1990s (United Nations Children's Fund 1991). The revised framework for drylands illustrates not only the immediate and underlying causes of child malnutrition, which include food, health, and care and occur at the individual, community and local level, but also the systemic and basic drivers which may operate nationally and internationally. These systemic drivers of malnutrition include the institutional context and governance frameworks that generate and implement policies and programs that address the immediate and underlying causes. Attention to the systematic drivers illustrates that in order for any actions/ programs to address malnutrition to be sustainable, they must be "embedded in the relevant systems and institutions to ensure sustainability"(Young 2020, 8).

Many organizations have adopted and employed the UNICEF framework over the past several decades, with a heavy focus on the immediate and underlying causes of malnutrition. However, "it is evident that analyzing and addressing the basic causes of malnutrition have not resonated or been prioritized by policy makers, practitioners, and scholars to the same degree as the immediate and underlying causes" (Young 2020, 10). The

[1]The consortium is led by Catholic Relief Services, and includes Concern Worldwide, Village Enterprise, Tufts University, The Global Alliance for Improved Nutrition, International Business & Technical Consultants, Inc., and the Manoff Group.

adapted causality framework for drylands highlights three interlinked areas that inform the basic or systemic drivers of malnutrition and require greater understanding and emphasis. As illustrated in Figure 1, these are environment and seasonality; systems, formal and informal institutions; and livelihood systems. The ways in which these three areas influence and inform each other is critical to understanding the drivers of malnutrition in drylands. As such, although this desk study focuses on livelihood systems, these systems are rooted in and adapted to the unique environment and seasonality of Africa's drylands, characterized by extreme rainfall variability, frequent climate shocks, and rising temperatures linked to climate change (Marshak and Ventak 2021). The experience and impacts of the dryland seasonality and environment are mediated by institutions and systems, which include multiple levels of governance, economic systems, and formal and informal social institutions around gender, age, status and other social norms. Taken together, these aspects underpin and influence the livelihood productions systems pursued at the household level, which in turn drive the underlying causes of malnutrition.

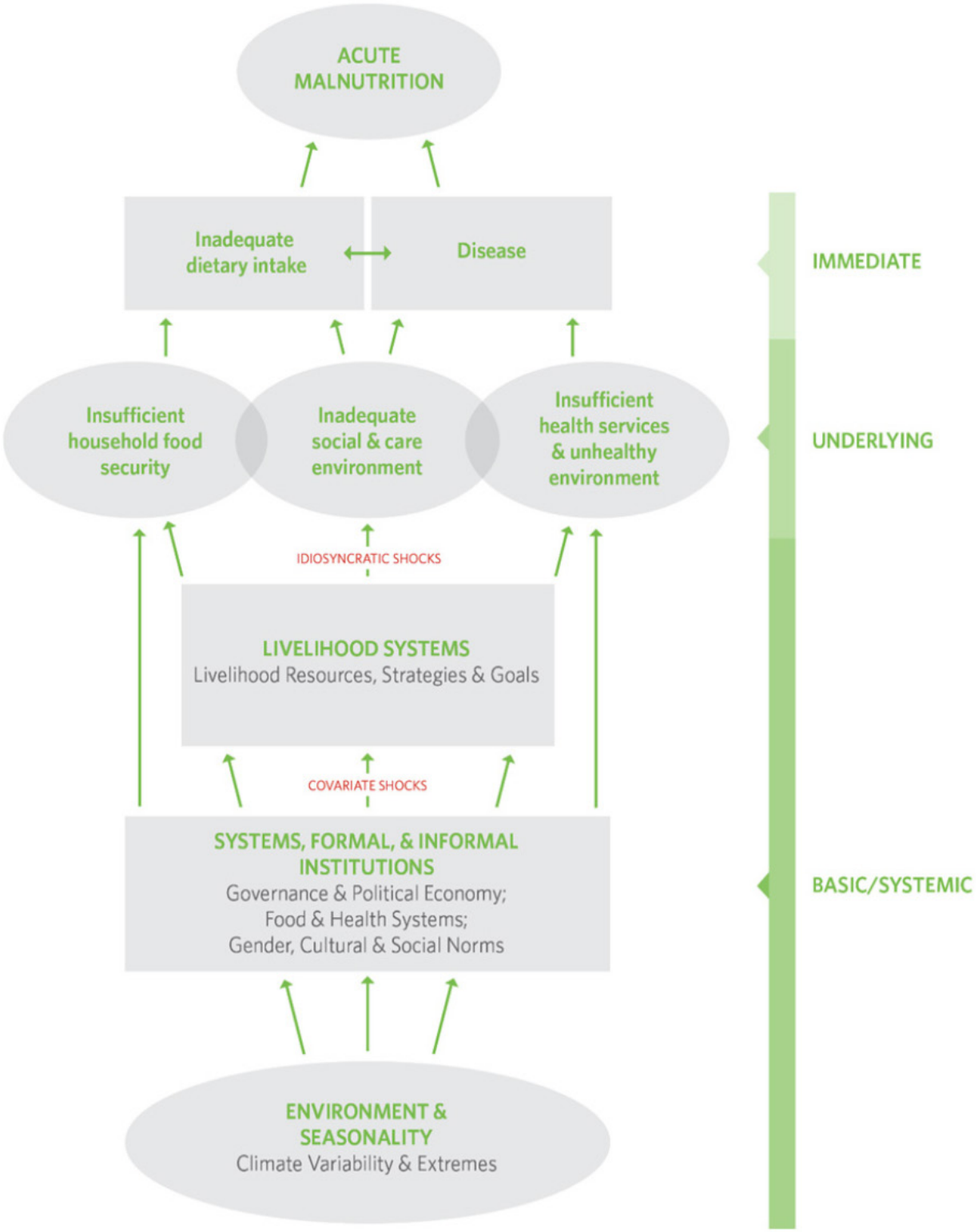
The conceptual framework makes clear that we cannot discuss livelihoods, or the linkages between livelihoods and acute malnutrition, in isolation. This desk study centers on livelihoods systems within the Kenyan ASALs with a broad view of how these are situated and centered within the environment and impacted by seasonality and climate change. We investigate some of the many aspects that influence and determine differences in livelihood systems and outcomes and may affect nutrition, including coping and adaptive strategies, gender, wealth, ethnicity/ identity, and conflict. These variables are rooted in the formal and informal social, economic and political systems and institutions; both these variables and the systems that inform them are dynamic as opposed to static, shifting over time and by location. In addition, the resources, strategies and goals of a household will determine the ways in which household members experience, navigate and are influenced by these systems and institutions. This combination of factors ultimately informs the underlying and immediate causes of malnutrition. Below we briefly describe the livelihoods framework and revisions for situations of conflict or chronic vulnerability.

The livelihoods framework

Theoretical work on livelihoods systems dates to the early 1990s, summarize in a paper by Chambers and Conway (1992) which outlined what would become known as the Sustainable Livelihoods Framework (SLF). Practitioners and academics came to recognize the SLF as a useful tool for understanding and mapping complex systems at the household level in development contexts, and the SLF approach was adopted and promoted by the UK government's Department for International Development (DFID) and a range of international non-governmental actors (including, for instance, CARE and Oxfam-GB). Although variations of the livelihoods framework emerged, the basic premise and components remained relatively consistent. These components include i) an examination of the basic assets, resources or capital at the household level (including human, natural, physical, financial and social/political assets), ii) the livelihood strategies pursued by the household and the goals they hope to realize, and iii) the governing environment that determines how households are able to access and utilize assets in their strategies. This environment is based upon a set of informal and formal policies, institutions, and processes (often referred to as PIPs) that encompass internal and external systems, norms, regulations, culture and customs.

While the SLF became widely used in policy making and programming in the 1990s, it was most relevant to post-conflict or development contexts (Lautze and Raven-Roberts 2006), and agencies struggled to apply the model in conflict or crisis settings (Le Sage and Majid 2002). According to Lautze and Raven-Roberts (2006), this was driven both by the assumption at the organizational level that livelihoods support was not applicable in crisis situations and by aspects within the SLF that made it insufficient for the analysis of livelihoods in these contexts. Work by researchers at Tufts University and by Lautze and Raven-Roberts led to the adaptation of the SLF to improve its applicability for situations of violence, conflict, and protracted vulnerability. These adaptations take into account the ways in which assets can become liabilities for households, the fact that livelihood goals are often not realized, and the dynamic nature of livelihood outcomes—be they positive or negative—as the household moves

Figure 1. Acute malnutrition in Africa's drylands: a new conceptual framework (Young 2020)



forward in time. This reconceptualization also recognizes that vulnerability is neither fixed nor external, but is instead embedded within and acting upon all aspects of livelihood system (Young et al. 2005; Lautze and Raven-Roberts 2006). This understanding of livelihood systems as non-linear and dynamic is relevant for our examination of livelihoods in the Kenyan ASALs and, in particular, how they inform the underlying and immediate drivers of nutrition.

In order to understand the nexus of livelihood systems and nutrition in a drylands context we must examine the ways in which households use both adaptive and coping strategies in response to covariate (or widespread) and idiosyncratic (or localized) shocks. In her work on food insecurity, Susanna Davies distinguished between coping—short-term adjustments in response to an immediate decline in food access—and adaptive strategies, which can lead to a longer term transformation of the system itself. Davies explains:

> People in secure (resilient and insensitive) livelihood systems practice coping strategies only when necessary, as part of a wider portfolio of risk management. In contrast, people in vulnerable systems are more likely to pursue **adaptive** strategies, seeking to use all available options at all times to maximize the trade-off between increasing resilience and reducing sensitivity. In so doing, adaptive livelihood systems are moving towards a new equilibrium, part of which is the trade-off between sustainability and subsistence, or seeking to preserve assets for future production, often at the cost of current consumption. (1993, 62)

Although her analysis is specific to food insecurity, this understanding of different forms of responses to shocks and shifts continues to inform work on livelihood systems, and in particular how these systems evolve over time. Basing his model on a stable agricultural context, Ian Scoones categorized different broad types of adaptations within livelihood strategies: diversification, intensification/expansion, and migration (1998). Scoones also investigated the possibility that some livelihood strategies might not be sustainable, may have negative effects upon other people and the environment, and that trade-offs within livelihood systems can have different impacts based on access to power, position, and social status. Livelihood options and actions also have both positive and negative "multiplier effects," with potential implications for a broad range of people and resources in the present and future (Scoones 1998, 11). Likewise, coping strategies that are designed to provide temporary relief can have longer term implications and multiplied impacts, especially upon those who have limited voice in household decision making or upon sensitive environmental ecosystems. As highlighted by Davies and discussed in this paper, the same holds true for adaptations that seek to balance short-term gain and longer-term losses within livelihood systems.

Helen Young termed "maladaptive" the adaptive behaviors that can occur in situations of limited livelihood options and increased vulnerability (2009, 193). Such strategies may entail the over-exploitation of limited natural resources (such as water or fuel wood) or may be violent or coercive in nature, such as joining an armed group. These maladaptations may also come at the expense of another household, community, or individual, with negative impacts upon the survival, well-being or livelihood systems of that group. Young details how the Northern Rizaygat *abbala* in Darfur, Sudan, often referred to pejoratively as the Janjaweed, joined militia groups as an economic survival strategy after decades of marginalization by the central state and when faced with few alternative livelihood options. This militarized adaptation had severe and direct negative consequences on the many communities who experienced displacement, plunder, and extreme violence, as well as indirect and far-reaching impacts on the regional market systems and systems of governance (Young 2009). While the case of the Northern Rizaygat is an extreme instance of adaptation that was both maladaptive and predatory, numerous other examples exist, in particular when people are faced with few alternatives due to limited access to resources, a poor governance environment, or the threat of violence. As our examination of livelihood systems in the Kenyan ASALs demonstrates, maladaptations may occur more regularly when resources and systems are under strain from a variety of ecological, political and economic factors.

Methods

This desk study began with a search for peer-reviewed and grey literature on pastoralism, agro-pastoralism, arid and semi-arid regions (broadly, in East Africa, in Kenya, and Isiolo and Marsabit counties specifically), pastoral and agro-pastoral livelihoods, pastoral and agro-pastoral livelihood change, pastoral and agro-pastoral livelihoods and (mal)nutrition, and pastoral and agro-pastoral livelihoods and food (in)security. Targeted searches were conducted on select topics in Marsabit and Isiolo specifically, including gender roles, conflict, devolution, decentralization, border disputes, male age-sets, development, humanitarian assistance, disaster risk reduction, and drought management. Papers were evaluated for relevance and quality, with a focus on methodology, sample size, and areas of potential bias (such as anti-pastoralist views). This desk study should be read in conjunction with the other desk-based outputs for Nawiri, including i) *Natural Resource Management and Nutrition* (Birch 2020), ii) *Gender Gap Analysis* (Stites and Dykstra-McCarthy 2020), iii) *Drivers of child malnutrition in the Kenya Arid and Semi-Arid Lands* (Marshak 2021), and iv) *Secondary Data Analysis of Environment, Conflict, and Disasters in the Kenyan ASALs* (Marshak and Ventak 2021).

Desk study overview

This desk study begins with a review of key components of the dynamic pastoral livelihood systems in the Kenyan ASALS with a focus on Isiolo and Marsabit Counties. Topics covered include climatic conditions, the non-equilibrium environment of the drylands, herd management strategies in a non-equilibrium context, coping and adaptive strategies to manage risk and mitigate vulnerability, and ethnicity in northern Kenya. The next section focus on the institutions, policies and systems in the drylands and how these influence livelihood systems. Topics in this section include mobility, informal social safety nets, natural resource management and governance mechanisms, market systems and processes, wealth and inequality, gender and generational norms, aid modalities and humanitarian assistance programs, formal social safety net programs, decentralization and devolution, conflict and conflict management, and assumptions and negative narratives and the impacts on theory and programming in drylands. The concluding section focuses on knowledge gaps in livelihood systems and areas for additional research and analysis.

Livelihood Systems in the Kenyan ASALs in context

Environment, seasonality and climate change

The Kenyan ASALS are characterized by high climate variability along both spatial and temporal lines (Hutchinson and Hermann 2008, Kratli 2015). As demonstrated by Marshak and Venkat in a desk study in this series, climatic variations occur both within and between dryland counties (2021). Within each county there can be significant spatial variability in rainfall, temperature, and vegetation given differences in elevation. In addition, while Marsabit and Isiolo have two clear annual rainfall peaks, the distribution of precipitation is extremely variable within the ASAL counties. For example, even in the wettest months (April and November) parts of Turkana, Marsabit, Isiolo, and Wajir still receive less than 50mm/month.

Dryland livelihood systems are well-suited to take advantage of the variability of the local ecosystems to maximize the productivity and health of their herds. The mobility and flexibility that is inherent in pastoral livelihood systems also enables people to manage the seasonal and annual fluctuations in rainfall. As Scoones explains: "A seasonal downturn in rainfall or a mid-season drought could be compensated for by ingenious, but well-tried responses – moving livestock, cutting browse, harvesting water, shifting crop mixes and much more" (2004, 116). Ellis and Swift (1988) found in their Turkana case study that single-year droughts were only slightly more stressful than a normal dry season. Multi-year droughts, in contrast, "provide a much more formidable stress and require more drastic responses" (Ellis and Swift 1988, 457). The nature of resource management, governance systems, and disaster preparedness and mitigation mechanisms at all administrative levels play important roles in determining the impact of drought events (Birch 2020).

Existing evidence points to a trend of increased rainfall variability and rising temperatures in the Kenyan ASALs due to climate change, with associated livelihood impacts. For instance, Fratkin et al. found evidence of only eight documented droughts in northern Kenyan in the period 1900-1970, but then the same number occurring again from 1970-2000, with resulting high rates of livestock loss and increased settling of formerly nomadic groups near to towns (2004). As discussed above, pastoralists are adept at managing one-off or single year droughts, but have less experience with increased temperatures. Average annual temperatures appear to be rising, as shown in a study by Ouma et al. which examined the magnitude and trend of temperature and rainfall extremes in four counties (Marsabit, Isiolo, Samburu, and Turkana) during the periods 1961-90 and 1991-2013. They found that the maximum and minimum temperatures increased in all locations (J. O. Ouma et al. 2018). Opiyo et al. examined drought intensity from 1950 to 2012 in Turkana and found increasingly severe water stress (2015a). A study by Boru and Koske in Marsabit found that nearly 94% of respondents in Marsabit County had noticed changes in both rainfall and temperature in the past 15 years and reported adverse impacts upon their livelihoods (2014). Work by Young and colleagues with pastoralists in Sudan found that herders were adopting new strategies to cope with increased temperatures, including nighttime grazing, livestock sheltering in the shade to avoid the midday sun, slowing movements to water points so as to reduce stress, and reducing watering frequency (Sulieman and Young, Helen 2019).

Some studies indicate that rising temperatures may pose a greater challenge for pastoral production than increased droughts, especially as pastoral livelihood systems are adept at drought

management. However, must studies focus on the impacts of prolonged droughts—as opposed to those caused by rising temperatures—on livelihood systems in the Kenyan ASALs. For instance, respondents in Opiyo et al.'s Turkana study listed the following impacts of increased drought intensity (in order of prevalence): livestock deaths, drying up of water sources, food shortages, decline in pasture availability and access, increase in food prices, loss of income, and decline in crop yields (2015a). A study of perceptions and impacts of droughts and floods in Isiolo County showed particularly pronounced impacts of drought upon cattle mortality, with greater resiliency among goats (Quandt and Kimathi 2017). Waila et al. demonstrate a decrease in land availability, natural resources, and animal health as a direct result of recurring droughts in Turkana (2018). Also in Turkana, Vehrs et al. found that changing climate patterns contributed to dwindling livestock numbers, which pushed the Turkana to take up alternative livelihood activities, including firewood sales and charcoal burning, the sale of local brew, and fishing (2017). Importantly, the impacts of climate change and seasonality are not uniform, even within the same pastoral community, and will differ from one household to the next depending on wealth and herd composition (McPeak and Little 2017), social connections allowing assets transfers, including through bridewealth (Watete, Makau, Njoka, MacOpiyo, et al. 2016), and the degree of market integration (Elhadi, Nyariki, and Wasonga 2015), to name just a few relevant variables. In addition, some communities may have more effective disaster response and mitigation mechanisms in place and be better able to withstand shocks, whether drought or—as illustrated in a study by Oba of indigenous responses in northern Kenya—the multiplying stressors of drought and conflict (Oba 2001).

Non-equilibrium environment of the drylands

It has been more than twenty-five years since scholars highlighted the need to revisit the thinking around dryland ecologies and associated livelihoods, and in particular to present an alternative viewpoint to the prevailing idea that pastoral systems of production were largely to blame for environmental destruction (desertification) and accompanying loss of human and animal life (Ellis and Swift 1988). In contrast to this narrative, Ellis and Swift posited that the dominant paradigm of environmental equilibrium and associated parameters such as carrying capacity did not apply in dryland contexts characterized by unpredictable rainfall, mobile grazing systems, and "stochastic perturbations of multi-year droughts" that resulted in high livestock mortality (1988, 458). Range degradation in such locations, argued Scoones, is not a serious problem because scarce rainfall limits the production of both grasslands and livestock herds (1995). More recent work revisits the debate and challenges the still-lingering policy assumptions and popular narratives around a linear process of desertification of the drylands (Behnke and Mortimore 2016).

As opposed to being destructive, pastoral livelihood systems have evolved as a direct, appropriate, and largely benign responses to the dynamic and non-equilibrium conditions which characterize dryland areas (Ellis and Swift 1988; Scoones 1995). The notion that pastoral systems and livelihood activities are well-suited to these non-equilibrium environments is in marked contrast to a mindset that held these systems and populations responsible for over-grazing and desertification that influenced 30 years of "unremitting failure of livestock development projects across Africa" (Scoones 1995, 3). However, ascribing blame to and seeking to fundamentally change pastoral livelihoods is still a common component of policy making and programming in the drylands (Krätli et al. 2015).

Herd management strategies in a non-equilibrium context

Herd management is at the center of pastoral production systems. Herders and livestock owners rely on experience, indigenous knowledge systems, internal networks, and information flows to make decisions regarding where, when and how to move animals to access the appropriate forage mixture and available water sources. Pastoralists follow long-established migratory patterns, allowing for fluctuations in response to precipitation, grassland coverage, known disease outbreaks, and

relations with other groups (Behnke et al. 2020). Dynamic strategies can both take advantage of emerging opportunities—such as a demand for animal products, positive changes in the terms of trade, or a season of above-average rainfall—and can respond to stressors in their environment, such as drought, conflict, livestock epidemics, or a collapse in livestock prices. Examples of this adaptive management in some areas northern Kenya include anecdotal reports of investment in sheep after successive years of good rainfall which allowed access to areas normally more suitable for camels and goats,[2] adjusting the ratio of camels to cattle, and trying out new breeds (Roth 1996; Opiyo et al. 2015a).

An analysis of the fluctuation between camel and cattle in Marsabit and Isiolo Counties highlights specific factors influencing decisions around herd composition. Roth demonstrates the role of external pressures through the example of the Integrated Project on Arid Lands (IPAL) project in the 1970s and 1980s that encouraged nomadic herders to shift to cattle and to settle (1990). Illustrating a different driver of changes in herd composition, a study on the Borana—who culturally prefer cattle (Rufael et al. 2008)—found that they were shifting into more drought-resistant camels in response to intensifying drought cycles (Kagunyu and Wanjohi 2014). Market shifts can also lead to changes in herd composition and livestock management: the steady growth in demand for camel milk in Isiolo and Nairobi was an incentive for increased camel production in Isiolo County (Noor et al. 2013; Anderson et al. 2012). The market demand for goat meat in Kenya also caused a shift towards goats by many herders in Isiolo and Marsabit.[3] A number of additional factors drive a region-wide increased investment in goats, including changing rangeland conditions, limitations on mobility, and ease of sale as needed in order to purchase food or generate cash for household needs (Young and Ismail 2019; Catley 2017). However, a study from Mandera County found that while many herders were interested in expanding small ruminant production, they were hindered by droughts and inadequate veterinary services to cope with common animal diseases, particularly Peste des Petit ruminants (PPR), contagious caprine pleuropneumonia (CCPP), and sheep and goat pox (Abdilatif, Onono, and Mutua 2018). The extent of changes in herd composition, including towards small ruminants, in Isiolo and Marsabit Counties is not well-documented in the secondary literature and is an area for potential further exploration.

Contrary to myths that pastoralists never sell their animals, pastoralists have long been engaged in marketing of animals and animal products, to varying degrees. As towns and markets (along with commodification and monetization) have expanded in northern Kenya, pastoral integration into markets has increased, especially via the sale of animal products. Many pastoralists manage herds with an eye to market opportunities, and pastoral livestock production is a major driver of regional markets. While various scholars have pointed to the development failures that can arise when pastoralists are pushed to sell animals (Scoones et al. 2020), this does not preclude shifts within livelihood systems to incorporate market institutions. Over time and separate from external interventions, livelihood systems in dryland areas have adapted in response to the growth in trade and market systems. As mentioned above, in northern Kenya these adaptations are visible in the production and sale of goats and camel milk to meet growing urban demand for these products. Peri-urban women dominate the sale of camel milk in Isiolo and have for a number of years, as illustrated by studies from the 1980s and 1990s (Waters-Bayer 1985; P. Little 1994; Fratkin and Smith 1995; Oba 2001). Cash from the sale of milk is used to buy food and non-food commodities, and the resulting increased consumption of maize meal may boost caloric intake for children, as maize has more calories per unit than milk (Adongo, Shell-Duncan, and Tuitoek 2013). However, some authors warn that the need for cash may cause some households to over-sell milk, to the detriment of the health of children (Fratkin and Smith 1995; Fujita et al. 2004) or calves (Shibia, Owuor, and Bebe 2013). Such observations may discredit household decision making around resource use and fail to recognize that most pastoral households strategically balance investment in herds (i.e., allowing calves

[2]As relayed to the team by a Borana pastoralist from Isiolo, January 14, 2021

[3]Correspondence with Isiolo County government official, January 12, 2021.

more milk), investments in children (reserving milk for home consumption) and investment in markets (selling more milk) (McPeak and Little 2017). Such strategies may be so widespread as to impact prices, as evidenced in an unpublished Mercy Corps report which demonstrated a glut in the camel milk market during the wet season when many herders move lactating animals close to towns in hopes of benefitting from urban sales (Mercy Corps 2017). To note, the benefits from market integration follow socioeconomic lines, as demonstrated by work in Ethiopia by Aklilu and Catley which shows that wealthier pastoralists reap the greatest rewards from market interactions (Aklilu and Catley 2010; Catley and Aklilu 2013). In the case of camel milk marketing, Adongo et al. found that it was often the poorest households that sold milk to generate income (2013), but being able to sell milk requires both having animals and a surplus of milk, implying that these households were far from the worst off. An important additional limiting factor in the sale of dairy products is distance from markets.

Many pastoral groups have engaged in opportunistic crop cultivation when conditions allow. Faced with restrictions on mobility and animal loss, some have gradually increased engagement in regular crop farming, including near riverbeds in the Kenyan drylands (Flintan, Behnke, and Neely 2013). Given the extent of rainfall variability, however, failure of harvests is common, and those who have transitioned fully away from livestock lack the resources to fall back upon when harvests are unsuccessful. Select areas have higher rainfall, such as central Marsabit, and are better able to support rain-fed cultivation (Ouka et al. 2018). However, anecdotal reports indicate that very few pastoralists in Marsabit or Isiolo have taken up farming in any substantial manner, with 82% of the total land area in the two counties characterized by livestock production (Birch 2020).

Livelihood adaptions occur in response to changes within the livelihood systems, but not all adaptations have positive or sustainable outcomes. As discussed earlier, such maladaptive strategies are most common in the absence of alternative options and may entail over-exploitation of natural resources, coercion of other groups, or increased exposure to risk by those who practice them (Young 2009). Processes of impoverishment in northern Kenya and other pastoral areas often include the loss of livestock and/or the loss of access to productive resources required to pursue animal husbandry. The loss of livestock may be due to a gradual and protracted shock, such as prolonged droughts, or a sudden shock, such as a raid or the death of a household head (often proceeding a woman's loss of access to resources). The absence or presence of formal and informal mechanisms to enable individuals, households or communities to effectively manage such events are likely to determine the extent of the shock's impacts. Examples include conflict management mechanisms, effective systems for drought mitigation and response, functioning social safety nets, and gender norms that would allow widows to maintain access to assets. Maladaptive strategies in the Kenyan ASALs include heavy reliance on natural resources for income (e.g., harvesting firewood, burning charcoal), cattle raiding, smuggling of weapons and other illicit materials across the Somali border and joining militias (Menkhaus 2015). These strategies fall along clear gender and generational lines, as do their associated risks; men pursuing violent pursuits are at high risk of death or injury, whereas women are exposed to attack when collecting resources in remote areas and are at risk of physical harm from carrying heavy loads. Characteristics most commonly associated with youth—such as strength and stamina—are essential for pursuit of many of these livelihoods; the need for such traits mean that these strategies are unsustainable in the long term.

Coping and adaptive strategies to manage risk and mitigate vulnerability

Pastoralist livelihood systems include the flexibility to manage the unpredictable rainfall and harsh environment of the non-equilibrium dryland ecosystems. Using mobility to their advantage, human populations are able to "demonstrate long-term persistence in a difficult environment" (Ellis and Swift 1988, 457). Risk-spreading strategies allow pastoralists to usually manage seasonal and annual fluctuations in rainfall and plant coverage while avoiding serious food insecurity, population loss, or environmental degradation. Mobility is

central to the management of animals' nutritional needs, and entails both seasonal travel and daily movement, always balancing the grazing needs of diverse herds with available forage and water points (Turner and Schlecht 2019). Within the parameters of mobility, herders manage risk (as documented by Ellis and Swift in Turkana) by splitting of human and livestock populations into increasingly smaller components which are better able to take advantage of widely distributed sources of water and can reduce pressure upon grazing lands (1988). However, such strategies are only possible if there are adequate open areas for the human and animal populations to access, if policies are conducive to freedom of movement, and if conflict mitigation is effective enough to allow these smaller—and hence more vulnerable to attack—groups to avoid raids by opponents. In the case of a more severe or widespread drought, herds and humans must travel greater distances to access resources, and are thereby more likely to encroach on the territory of others (Ellis and Swift 1988). Other common coping strategies identified by Ellis and Swift include reducing reliance on livestock food products (by reducing intake and substituting alternatives, such as wild foods, purchased commodities, and relief food) as well as temporary migration out of pastoral production by those of lower status, such as unmarried and widowed females and males not directly involved in herding.

Ellis and Swift found that Turkana pastoralists were able to effectively cope with single-year droughts in much the way they handled annual dry seasons, with roughly similar rates of mortality and asset loss (1998). In contrast, multi-year droughts brought substantial livestock losses, increased human morbidity, and increased malnutrition. For example, the 1979-1980 drought, ensuing famine and inadequate policy response in pastoral areas in Kenya and Uganda led to an increase in infant mortality to 600:1000 live births in Karamoja, up from 169:1000 in 1969 (Alnwick 1985), and decimation of livestock herds (Biellik and Henderson 1981). Such upheavals may lead to longer term adaptations which ultimately bring transformations to livelihood systems.

Adaptive strategies, as detailed by Davies and described earlier, may take place out of necessity and desperation, such as when disaster-management institutions and social safety nets are inadequate to enable households to mitigate risk or adequately recover from shocks. These adaptive strategies might entail all or part of a household permanently exiting pastoral production to settle in or near to towns, changing that household's entire livelihood system. A number of authors found that destitute pastoralists may settle in or near towns in hopes of accessing assistance, whether from kin, existing social networks, or food aid (Catley and Aklilu 2013; Nathan, Fratkin, and Roth 1996; Mude, Ouma, and Lentz 2012). In addition, towns may offer alternative livelihood opportunities, such as casual wage labor in construction, domestic services, and sale of natural resources (Adongo, Shell-Duncan, and Tuitoek 2013; Stites 2020; Fratkin and Smith 1995; Smith 1997). However, evidence shows that these activities are often insufficient to be sustainable and that economies of most towns in arid and semi-arid regions can absorb only a limited number of new entrants (Waila et al. 2018; Catley and Aklilu 2013). This means that those who move to towns after stepping out of pastoralism altogether are unlikely to find themselves better off, and instead become part of the urban poor, creating further strain on already low-capacity local services and institutions.

Returning to the typology of livelihood strategies detailed by Scoones (1998)—diversification, intensification/expansion, and migration—we see overlap in some of these strategies in response to new and emerging opportunities. Early work by Elliot Fratkin illustrates the intersection of diversification and migration among pastoralists in Marsabit County who had settled in or near towns but not abandoned pastoral production. Instead, they were diversifying their income base by taking advantage of the growing livestock marketing opportunities in town (1992). Processes of commercialization, commodification and monetization have further expanded in the often economically and political peripheral dryland areas over the past thirty years, with associated growth in market centers. The households in the best positions to benefit from these opportunities are those with adequate financial and human capital to split households across the rural-urban divide, whereby some members proactively move into or near to towns to take advantage of more diversified economic opportunities and services

(Watete, Makau, Njoka, MacOpiyo, et al. 2016; R. Ouma, Mude, and Steeg 2011; Roth 1990). Such divisions are dynamic and flexible: evidence from Karamoja, Uganda shows a strong two-way connection and movement between rural and urban household units to take advantage of available resources, market price differences, and seasonal livelihood opportunities (Stites 2020).

Household splitting to take advantage of new opportunities frequently occurs along gender and generational lines. Those who move to towns are often women with their children, leaving males in the rural areas to continue livestock production (Fratkin, Roth, and Nathan 1999; Fratkin 1997). Surplus males not needed for herding may also take advantage of manual wage labor opportunities in urban areas (Ellis and Swift 1988; Quandt and Kimathi 2017). Pastoral families may enroll some children in urban schools in a form of long-term diversification (whereby it is hoped that some children will enter a salaried profession) (Opiyo et al. 2015b; Watete, Makau, Njoka, Aderomacopiyo, et al. 2016). Unlike female-headed households who may move to towns following an idiosyncratic shock (such as spousal death or abandonment), those who move to town as part of a proactive diversification strategy are likely to be wives or co-wives in better-off male-headed households who are maintaining a foothold in pastoralism (which also indicates pastoralism's continued importance and viability).[4] This is supported by Achiba's 2018 study of Borana pastoralists in Isiolo County, which found that male-headed households were better off and better positioned to take advantage of town-based market opportunities than female counterparts. Male-headed households were more engaged in high-value income activities, including livestock trade and retail shop activities. Watete et al. found that certain Mandera households in northern Kenya were able to increase their overall wealth after settling in or around towns (2016). Watete et al.'s data do not account for gender of household head, but we can assume that most of these successful households were male-headed. This contrasts with Achiba's analysis of female-headed households who had settled in towns, who were more likely to be working in "low entry-barrier" activities with minimal economic returns, such as the collection and sale of wild products (Achiba 2018, 9–10).

Ethnicity in northern Kenya

Northern Kenya is home to a number of different ethnic, clan and territorial groups, and variations in livelihood systems and herd composition are often associated with specific ethnic identities. These differences in livelihood specializations have evolved over generations and are influenced by informal institutions that shape collective identity. While there are many cultural differences between groups, in regard solely to livestock ownership, the Borana and Samburu have a preference for cattle whereas the Somali, Gabra and Rendille historically prefer camels (Watson, Kochore, and Dabasso 2016). The specific characteristics of location, micro-climate, elevation and access to resources also play a role in livestock preferences, with camels thriving in the hotter and drier low-lying areas and cattle doing better in higher and wetter locations (Schlee 1989). While the livestock preferences of certain groups—such as the Borana—are deeply interwoven with their culture and identity and often considered immutable, evidence indicates that some, including the Borana of Isiolo, have diversified their herds to include camels (Kagunyu and Wanjohi 2014; Watson, Kochore, and Dabasso 2016). This shift is apparently being undertaken due to the greater resiliency of camels to conditions associated with climate change, but evidence is lacking on how widespread or long-lasting this transition may be.

Ethnic identity in northern Kenya overlaps with colonial and post-colonial policies of land allocation, border demarcation, and, more recently, militarization linked with counter-insurgency operations. These processes and how they link to conflict are discussed in more detail below.

[4]This discussion draws on previously written work by the author produced under the NAWIRI project in the paper "Gender Gap Analysis in Marsabit and Isiolo Counties, Kenya," December 2020.

Institutions, Policies and Systems over time and their influence on livelihood systems

Access to resources and assets are key components of livelihood systems, but ultimately it is the broad range of policies, processes and institutions that have the greatest impact on the type of livelihoods that people pursue and the success and sustainability of these livelihood systems over time. These policies, processes and institutions may function at the local, regional or national levels – or at multiple and overlapping levels—and include both formal systems and informal norms. The dynamic and varied nature of these policies, institutions and systems means that different sub-groups experience shocks very differently and have different recovery trajectories (Mcpeak and Little 2017). This section briefly discuses some of the policies, institutions and processes that have the greatest influence upon livelihood systems in Marsabit and Isiolo Counties.

Mobility

Mobility—and the systems that enable it-- are central to pastoral production. Being able to move with animals depends on dynamic and nuanced systems of knowledge sharing, communication among and between groups, and conflict resolution. These long-standing mechanisms are designed to ensure shared and consistent access to resources by different groups in order to meet animals' nutritional needs while adapting to seasonal and annual fluctuations in vegetation and water availability. However, while mobility is the cornerstone of successful pastoral livelihoods systems, freedom of movement is only possible when enabling policies and effective institutions are in place. Constraints on mobility in dryland areas often include restrictions on land use (such as gazetting areas for forests, wildlife, or tourism), privatization of rangeland, the expansion of agricultural or urban settlements, the presence of 'no-go' areas due to conflict and inadequate conflict resolution mechanisms, the closure of international or internal borders to herders and herds, and political tensions between ethnic groups or administrative regions. In the counties of northern Kenya, demarcation of land for hydrocarbon exploration and development corridors pose additional threats to the ability of pastoralists to move freely (Menkhaus 2015).

A range of formal and informal policies and institutions govern pastoral mobility, including those at the local level that ensure peaceful coexistence and co-management of resources by different users. At the formal level, pastoral production is most effective when local, national and regional policies are in place to promote and support strategic mobility of livestock and access to seasonal natural resources. In the absence of such pro-pastoral policies, other systems of land use—such as crop production and private ranching—often receive priority and may, as found by a study of mobile herders and statutory legislation across the Sahel—limit access to natural resources by pastoralists (Dyer 2008). Policies to promote strategic mobility include frameworks to allow cross-border migration of herds and herders and the protection of pastoral land rights. Efforts to this end include the African Union Policy Framework on Pastoralism, adopted in 2011, and an ECOWAS policy in West Africa to allow cross-border movement of herders across 15 member states (Bonfoh et al. 2016).

Informal social safety nets

Informal social safety nets are integral parts of communal mechanisms for coping with idiosyncratic shock and for mitigating vulnerabilities within communities. Broch-Due's analysis of poverty among the Turkana illustrates two registers of wealth—livestock and people—and shows that true impoverishment only exists for those who have a deficit in both categories (1999). People in her sample might experience livestock loss, but their social connections, networks, and expectations of reciprocity would normally allow them to recover and rebuild. Those without these networks and connections were the truly vulnerable. Little et al.'s study of northern Kenyan and southern Ethiopia discusses pastoralists' involvement in these social networks through the exchange of livestock assets (2008). They argue that when herds are poorly managed, and/or some people drop out of pastoralism, and/or livestock losses are widespread, the informal social safety nets cease to function effectively. Unlike Broch-Due's respondents who claimed that recovery was possible for anyone linked into the social network, Little et al. found that while those with large herds can "create intricate social networks that further buffer them against a volatile environment," the poor are often unable to participate in these support networks (2008, 598). That said, there may be differences in the form of social connections that allow for rebuilding of herds in comparison to those that enable basic survival. In Darfur, Sudan, for example, the darra custom of daily shared meals ensures adequate food for many members of the community, regardless of what an individual household can contribute (Fitzpatrick et al. 2021). Even within this system, however, not everyone may be considered part of the community, particularly newer arrivals, minorities, or seasonal resource users such as migrating pastoralists.[5] Given the potential impacts for nutritional status, additional information is needed about how informal social safety net systems function in Marsabit and Isiolo, how these have changed over time, and who might be excluded and for what reasons.

Natural resource management and governance mechanisms

Natural resource management and governance mechanisms are the systems which determine access to critical resources. These resources entail the different types of pasture and watering points central to animal husbandry and also forests, mineral reserves, and plants and herbs used in food and medicinal preparations. As detailed in the accompanying desk study on this topic (Birch 2020), a range of interlinked systems and policies influence the ways in which resources are managed and governed. These extend from the international and national level—such as tenders for large-scale foreign investors but also growing engagement and involvement by international conservation groups and an expanding tourism agenda—to the communities (in the form of community conversation groups and systems of rules and regulations on resource access and use), and even to the individual (where resources use and access is influenced by dynamics of age and gender and, increasingly, systems of wealth and equity). These systems of resource management and governance are themselves influenced by conflict resolution mechanisms, systems of drought management and response, market forces, and development. The literature illustrates that changes to resource governance in dryland systems occurs in conjunction with changing settlement patterns and land use regimes. Birch lists fragmentation of landscapes, decline in the quality of rangeland cover, and an increase in boundaries created by settlements, among other factors, as influencing change in how resources are managed and governed in dryland areas. A key component of how well these systems function is their institutional capacity, which is closely linked to the confidence of constituents and resource users at the same time that it is inseparable from the ways these systems are embedded in and shaped by the broader governance and policy environment.

[5]Correspondence with Helen Young, April 13, 2021.

Market systems and processes

Market systems and processes, including trade networks, commercialization, and commoditization have gradually expanded into northern Kenyan over the past century in parallel to population growth, national economic policies, and the expansion of infrastructure and transportation networks (Fratkin, Roth, and Nathan 1999). These processes are evident in the physical emergence of bigger and more diverse markets, increased engagement in market transactions by pastoral communities (including for basic needs), and the growth of cash as a regularly-used medium of exchange. Highlighting the gradual nature of these processes, Roth points to the role of colonial administrative policies that simultaneously curtailed grazing and increased the importation of goods including maize, sugar and tea (1990). Fratkin's data from the late 1980s showed pastoralists taking advantage of the growing marketing opportunities offered by towns in Marsabit County (1992). The expansion of markets can result in increased opportunities for economic diversification, as discussed earlier in reference to the herd management and dairy sales, while also placing new demands upon pastoral lifestyles. In his study of livelihoods diversification among the Maasai in northern Tanzania, McCabe illustrates that traditional subsistence practices can exist simultaneously with integration into the monetary economy, and that Maasai regularly sold animals to acquire cash for school fees, food, clothes, taxes, medical bills, veterinary medicine, non-food supplies, and transportation (McCabe 2003). Importantly, engagement in these institutions associated with markets does not take place in a vacuum, but is shaped, constrained, and mediated by the systems and institutions that exist within and among local groups. For example, in his study of diversification into non-pastoral income-earning activities in Isiolo County, Achiba finds that informal gender norms both determine the type of market interaction that is pursued and the likely rewards, with women engaged in less profitable activities with low barriers to entry (2018). Catley and colleagues illustrate that both market engagement and outcomes are influenced by wealth. Catley found that it was wealthier households who were able to sell animals to the local, national and export markets: better-off households in northern Kenya sold 26 times the number of animals as sold by the very poor (2017). Catley and Aklilu posit that wealth differentials in market engagement helps to explains how trade in livestock—including for export—can be *increasing* at the same time that pastoral livelihoods at the subsistence level are in crisis (2013).

Wealth and inequality

Dynamics of wealth and inequality play a determining role in most livelihood systems, and the drylands of northern Kenya are no exception. The nature of wealth in pastoral areas was long misunderstood by many external observers who did not recognize wealth held in the form of livestock, as opposed to income, consumption, or other material measures (Catley 2017). In recent decades, pastoral populations are often associated with the extremely impoverished (Broch-Due and Anderson 1999). As discussed, although pastoral livelihood systems are exceptionally well-suited to the dryland non-equilibrium ecology and variations in rainfall, these systems can only flourish in a policy environment that allows freedom of movement, supports and promotes strategic mobility of herds, includes systems of conflict resolution, and contains effective institutional mechanisms to manage droughts and govern natural resources; this set of conditions has generally proved lacking. Additional processes further impede the success of these systems and contribute to dynamics of impoverishment, including political and economic marginalization (Broch-Due and Anderson 1999), privatization of rangelands (Galaty 1994; Fratkin 1994), and ill-conceived development projects (Fratkin 1992).

Although once categorized as egalitarian and communal systems, closer examinations of East African pastoral societies in the 1980s posited that those who lost their herds- i.e., the pastoral poor—were socially excluded and rendered essentially invisible (Iliffe 1987). As discussed above, Catley and colleagues have detailed how processes of inequality take place in relation to markets in a number of pastoral areas. Earlier work among the Maasai illustrated how wealthier pastoralists were able not only to bounce back from environmental crises but also to actively benefit vis-à-vis the poor

due to their greater financial and social resources; these cycles of disaster and recovery further reinforced social and economic differentiation (Waller 1999). As inequality increases, those who are better off may seek to protect and privatize their access to resources, further crowding out the less well-off. Work by Aklilu and Catley demonstrates that better-off Borana and Somali pastoralists in Ethiopia are increasingly privatizing critical resources, such as grazing points and watering holes (2010). In the Ethiopian rangelands and elsewhere, these access restrictions allow the wealth exclusive use of these critical resources while the poor must travel greater distances to meet their same needs. The growing destitution and inequity undermine the system of social support that may have protected the livelihoods of at least a portion of the poorer households (Catley 2017; Aklilu and Catley 2010). As Catley explains, when combined with the disproportionate accrual of market benefits to the better off, these factors

> led to a gradual shift in financial assets, i.e., livestock, from poorer to wealthier producers…In simplified terms, the poor fall out of pastoralism and become destitute; the wealthy stay in pastoralism, adopt more commercialized approaches, and supply markets. The asset gap between the two groups increases over time, making it more difficult for the poor to return to pastoralism. Increasing numbers of people become caught in a poverty trap. (2017, 11)

However, such descriptions are generalizations, and we can assume that not all pathways to wealth or poverty are uniform or linear. Additional research is needed to better understand some of these trajectories, and, in particular, the ways in which changes within these livelihood dynamics affect drivers of malnutrition. Furthermore, data is lacking as to how these trends may be playing out in Isiolo and Marsabit Counties.

Gender and generational norms

Gender and generational norms determine the ways in which individuals within households and communities are able to access and utilize resources and incorporate such resources into their livelihood strategies. These norms are informal but structured and, in the pastoral context, determine such things as who controls, manages, and benefits from certain types of livestock (such as cattle of men and poultry of women) as well as who makes decisions in various domains. Although pastoral societies are based on social hierarchies of age and gender, a more nuanced analysis indicates the overlap and dynamism of roles and responsibilities. Hodgson points out that although animal husbandry falls largely within the male domain, women are active participants within the broader pastoral livelihood system. The success of this system requires the mobility of men and herds which is itself "premised on the capacity of women to stay in one place for long periods of time and fend for themselves" (2000, p13).

Shifts in pastoral livelihoods have resulted in an evolution of gender and generational norms, with women playing greater economic roles within many households due to their engagement in petty trade and exploitation and sale of natural resources in towns and trading centers (Fujita et al. 2004; Burns, Valone, and Carlberg 2017; Rao 2019; Rao et al. 2020; Oumer 2007; McPeak and Doss 2006). Smith's data from the 1990s in Marsabit County supports these findings, showing that women's economic roles increased when households intensified cultivation or settled near towns, and that women were likely to benefit in particular from the sale of crops. Smith explains:

> [The] ability to generate cash from produce sales gives [women] greater leverage in household decision making. Even if they do not own the land, women can claim control over the produce they harvest in the same way they have rights to the milk they have obtained from the family's herd. (1997, 13)

Generational roles are also gradually changing, in part because young men are increasingly seeking manual labor in towns as households settle, diversify their livelihoods base, or when there is surplus labor due to seasonal fluctuations or household demographics. Young men, traditionally bound by the gerontocratic hierarchy system, find themselves able to generate their own income and decide how to spend it. At the same time, the currency of the authority of the elders—livestock—may be fewer in number, held by fewer

households, and less important in the social and economic systems of certain households. Research from agro-pastoral societies in West Africa and Kenyan found that, similar to women, young men were able to claim harvest-related profits without challenging the established gerontocratic order (Rao et al. 2020; Smith 1997). The extent and impact of these and other changes in the context of northern Kenya are unknown.

Aid modalities and humanitarian assistance programs

Aid modalities and humanitarian assistance programs are dynamic institutions which have interacted over time with the livelihood systems in the Kenyan drylands. Although an in-depth historical analysis of relief in the region is beyond the scope of this paper, there are several broad patterns. Following independence in 1963, national development policy in Kenya explicitly favored a focus on regions that had the most "potential," as illustrated in the now infamous Sessional Paper #10 of 1965, which stated:

> To make the economy as a whole grow as fast as possible, development money should be invested where it will yield the largest increase in net output. This approach will clearly favour the development of areas having abundant natural resources, good land and rainfall, transport and power facilities, and people receptive to and active in development. (as cited in Office of the Prime Minister 2012b, 1)

This sentiment defined a policy of political and economic marginalization that continued for the next forty to fifty years, with resulting neglect of services and infrastructure in the ASAL districts. This marginalization was complemented by the view (discussed earlier) that the primary livelihood system in much of the ASALs—pastoralism—was irrational and the cause of environmental destruction. Not surprising given this policy environment, international and national relief efforts in northern Kenya following major droughts in the 1970s and 1980s contributed to the settling of pastoral populations and the rapid growth of towns (Fratkin 1992). Fratkin explains that while some of the increased sedentarization occurred as households sought to benefit from the expanding markets and services, aid actors including the Catholic Church (with financial support from CRS) intentionally sought to settled pastoralists:

> The missionaries and development agencies consciously introduced changes in the local economy and way of life of the district's residents. The policies of the Catholic Church aimed at settling pastoralists in towns, even though there were not enough grazing resources to keep livestock. Similarly, a major objective of the UNESCO-IPAL project was to conserve the environment by reducing pastoral herd size through increased marketing and restrictions of the pastoral range. Few planners at UNESCO or the Catholic Church considered livestock pastoralism as the basis of food production in the district, nor that they are few alternatives to it for human subsistence in this arid region. (1992, 121)

National and international actors alike encouraged the growth of centralized locations for the distribution of relief and access to services as solutions to food insecurity, poor health care, and limited governance (Fratkin, Roth, and Nathan 2004). The local infrastructure created by the Catholic Church did enable Marsabit District to provide relief quickly in disasters; during the 1971-73 drought the Marsabit Diocese was providing famine relief food items to approximately 16% of the district's population (Fratkin 1992 citing O'Leary 1990, 162).

The prevalence of sedentarisation as the explicit goal of development interventions declined among some donors and implementers as awareness of the appropriateness of pastoral production systems in the drylands increased. However, as pointed out by Scoones et al., "The political imperative to control the pastoral margins through modernist projects has not gone away" and transformation of these areas is manifest in major investments, large-scale initiatives for irrigated agriculture, and land grabs by state and private sector actors (2020, 3). At the policy level, the 2000s saw a shift to disaster risk reduction (DRR), and a heavy emphasis on food aid and cash transfers as the primary means of humanitarian relief, along with some emergency livestock

support. The nature of response shifted after the severe 2010-2011 drought in the Horn of Africa which resulted in famine in Somalia and massive livestock loss across the region. National and regional actors and their international funders took intentional steps to revise the ways in which they responded to drought disasters. Resilience programing, early warning systems, and drought management at the national level soon came to dominate policies and funding streams. Major initiatives included the scaling up of the IPC, the launch of IGAD's drought disaster resilience and sustainability initiative (IDDRSI), and the launch of the National Drought Management Authority in Kenya (The LEGS Project 2018).

National policies on the Kenyan ASALs have undergone a major shift in the past decade as part of the countries Vision 2030 strategy. Vision 2030 includes a specific development strategy for northern Kenyan and other arid lands that seeks to actively address the economic marginalization experienced in these areas over the past 50 years and includes recognition of the unique and ecologically appropriate livelihood systems (Office of the Prime Minister 2012a). A complementary national policy is focused on challenges specific to the ASALs, including how to close the development gap with the rest of the country, how to "protect and promote the mobility and institutional arrangements which are so essential to productive pastoralism," and how to ensure food and nutrition security in a region prone to high climate variability (Office of the Prime Minister 2012b, v). These efforts represent a seismic shift in how the Kenyan state and counties consider the position and potential of pastoralism in development.

Formal social safety net programs

Formal social safety net programs in Kenya are part of the medium-term national development policy Vision 2030. These two main programs, the Orphans and Vulnerable Children (OVC) program and the Hunger Safety Net Program (HSNP), are funded by a mix of government, donor, NGO and private sector actors. The HSNP program is part of the national Ending Drought Emergencies (EDE) framework and is located within the National Disaster Management Authority (NDMA) (Ulrichs and Slater 2017). The HSNP targets those deemed food insecure or chronically poor in four counties in northern Kenya, including Marsabit and (as of 2019) Isiolo Counties (Donovan 2015).[6] The unconditional cash transfer program provides regular transfers to a set of individuals and can expand to a larger beneficiary list for one-off emergency payments during droughts. A 2017 evaluation of the HSNP found positive spill-over impacts in the local economies, improvements in well-being, and alleviation of the worst effects of poverty in the most vulnerable households. Impacts of the program on supporting livelihoods, building resilience, or encouraging investment in assets were more mixed; wealthier households appeared to garner more benefits from the cash transfers than the very poor (Merttens and et al 2017). A separate analysis found that households used the regular cash transfers to both protect against and absorb shocks, but that complementary and systemic livelihood inputs were needed to build longer-term resilience in the ASAL regions (Ulrichs and Slater 2017).

Decentralization and Devolution

Coming in the wake of political violence in 2007 and 2008, Kenya's 2010 constitutional reforms created the framework for political devolution from the central to county governments in part to create greater equity of resources among the regions and address historic marginalization. Northern Kenya received a large influx of economic resources which coincided with increased investment by national and international actors in infrastructure and resources in the region (Lind 2018). With the flow of funds counties were able to allocate resources and draft policies that were appropriate to the local conditions, including around development, drought management, and disaster response and recovery. The increase in national and county level pro-pastoral policies (such as the pro-pastoral components of Vision 2030 and accompanying strategies, discussed above)

[6] See https://www.hsnp.or.ke/index.php/as/objectives. Accessed April 1, 2021.

came in the wake of the plans for devolution and correlated to the increased focus on the development gap for northern Kenya. Political influence of the ASAL counties has increased in concert, as evidenced in the expanded voice and visibility of the Pastoral Parliamentary Group (PPG) which was formed in 1998 but has experienced a number of lobbying and legislative successes in recent years,[7] as well as Frontier Counties Development Council (FCDC), which is an association of governors of 10 northern Kenyan counties.

While devolution may bring positive steps to address decades of intentional marginalization, the process includes a number of challenges and potential pitfalls. Some observers have found that decentralization in Kenya has not reduced patronage and corruption, but simply relocated these process to the county level (D'Arcy and Cornell 2016). Another area of concern is the potential for conflict at multiple levels, including

> between counties over borders, between local communities over control of the county government and its revenues, and between county governments and the central state over disputed lines of authority and shared powers. In the short term, devolution guarantees a political environment of uncertain, nascent, and contested authority, with no established "rules of the game" in local politics, and with generally weak, inexperienced county administrations assuming control of expansive budgets and responsibilities. (Menkhaus 2015, 11)

The combined processes of devolution, the increased political voice of the dryland counties, and the growth of pro-pastoral policies all represent positive steps in political and economic investments in these long overlooked areas. However, central government interest in these locations is increasing at the same time, especially in areas with potential hydrocarbon resources, those suited for development corridors (such as the multi-country LAPSSET project) or large-scale commercial agriculture, and those deemed to be at risk of supporting radical Islamist groups (Menkhaus 2015). These factors run counter to decentralization sentiments and may contribute to longer term tensions over political, economic, social and natural resources.

Conflict and conflict management

Northern Kenya has seen numerous forms of conflict perpetrated by the state in the past century, including "pacification" under colonial rule (Lamphear 1992), coercive measures and brutal crackdowns on secessionist efforts in the *Shifta* war in the 1960s (Branch 2014), and a system of "collective punishments" against civilians in the 1970s and 1980s (Anderson 2014), including massacres in northern Kenya by security forces (Menkhaus 2015). Much of the region was under a state of emergency until 1991 (Lind 2018). In addition to these top-down forms of violence, other drivers of violence have persisted at local levels for decades, including widespread if low-intensity conflict associated with cattle raiding (Hendrickson, Armon, and Mearns 1998; Mkutu 2008) and disputes over land use and access (McPeak and Little 2018). Political instability and upheaval in the 1990s in neighboring states, including Ethiopia, southern Sudan, and Somalia, resulted in the flow of small arms into northern Kenya as well as an influx of large numbers of Somali refugees. The influx of refugees exacerbated tensions in northern Kenya, including between refugees and host communities over access to resources (Menkhaus 2015). At the same time, the increase in recruitment, attacks and cross-border activity in northern Kenya by the Somali-based Al Shabaab group drove the increased presence of Kenyan and foreign (including US) security forces engaged in counter-insurgency operations in the region, resulting in greater militarization of local communities, especially along border areas (Bradbury and Kleinman 2010). Cycles of Al Shabaab violence and retaliation and restrictions by security forces continue to undermine civilian livelihoods, including mobility of herds and access to markets and resources, in these areas (Goderiaux et al. 2020).

Long-standing tensions among groups over livelihood assets also creates the potential for

[7]See https://dlci-hoa.org/ppg/overview for more information, accessed April 30, 2021.

conflict in northern Kenya. Colonial policies exacerbated divisions that granted access to rangeland according to clan affiliation, and clans or tribes have continued to seek to protect their rights to specific territories along these same lines (Menkhaus 2015). These colonial territories are at times at odds with more recent parliamentary constituencies, and contradictions in resource allocation and access can contribute to violent clashes, such as a 2005 security incident in Marsabit County between Gabra and Borana counties that left 70 dead and displaced more than 6000 (IRIN 2005).

Although devolution to the counties was meant to decrease political tensions, violence in northern Kenya has increased in the past decade, and some observers see a link between this spike and the decentralization process. Lind argues that devolution does play a role, but that the process is not strictly linear, with a number of simultaneous and related processes contributing to the rise in violent conflict. These include the growth of extractive industries in many areas, a new emphasis on development and accompanying competition by local officials to control the resources, an increase in political violence associated with attacks by Al-Shabaab, and an associated increased militarization by the (central) state (2018).

Assumptions and negative narratives and impacts on theory and programming in drylands

One of the long-standing misplaced assumptions about dryland ecosystems is that they would have the potential to achieve equilibrium "if not for the destabilization of these systems" due to the "overstocking and overgrazing of pastoralists" (Ellis and Swift 1988, 457). Although work from more than 25 years ago disproved this paradigm through evidence on the appropriateness and efficacy of the interface between pastoral livelihood systems and the environment (Ellis and Swift 1988; Scoones 1995; Behnke, Scoones, and Kerven 1993), the belief that pastoralism remains a problematic and destructive way of life is still widespread among many local and national politicians and policy makers. Writing in the mid-1990s, Scoones identified a central and problematic patterns of dryland interventions: "the history of livestock development in Africa has been one of equilibrium solutions being imposed on non-equilibrium environments" (1995, 4). An example is the "ranch model" with fenced animal paddocks, water points, and reseeding of rangeland (McPeak and Little 2018). Twenty-five years later, the promotion of private ranges is still a common solution proposed to a variety of ills in pastoral areas, despite their inappropriateness for an ecosystem characterized by dynamic change and best navigated through equally dynamic livelihoods. As was obvious to Scoones and others in the mid-1990s, a developmental mindset that seeks to "make unpredictable environments more predictable" was set to both continue and to continue to fail for many years to come (1995, 5).

As discussed above, changes in national and county policies in Kenya are poised to have positive impacts on how policy makers and practitioners consider the role, importance and impact of dryland livelihoods. However, Krätli et al. discuss some of the ways in which even pro-pastoral theoretical approaches may continue to replicate analytical tools and practices that reflect the now disproved equilibrium approach to the drylands (2015). This is not particularly surprising, considering the extent of this change in our understanding, as explained by Krätli et al:

> This theoretical shift eventually precipitated a U-turn in the understanding of drylands food production systems, and pastoralism in particular. In the new understanding, variability is no longer seen as a disturbance but as a defining trait in the drylands, and pastoralism is not seen as economically irrational and ecologically disruptive, but as a sustainable and adaptive system *specialised to take advantage of variability*.(2015, 4 original emphasis)

Krätli et al. argue that the first step in moving towards a methodology that incorporates non-equilibrium thinking is to identify the existing barriers to making this transition. In broad terms, these barriers include an assumption that identity overlaps neatly with livestock ownership and management, a failure to focus on what makes pastoral systems adaptive, and a representation of drylands production based on rigid systems with clear-cut boundaries. These considerations are central to the design of research, programs and policies in northern Kenya.

Gaps in knowledge on livelihood systems and areas for additional research and analysis to improve programming

Although there have been decades of humanitarian assessments and anthropological and ethnographic studies conducted in Isiolo and Marsabit Counties, numerous gaps continue to exist in the knowledge base. These gaps are particularly pronounced when considering the centrality of livelihood systems to our understanding of acute malnutrition in the drylands, as illustrated in the conceptual framework detailed in the introductory section. The literature review provides the basis for understanding pastoral livelihood systems in the Kenyan ASALs; this final section reflects on where information—and particularly information that is likely to impact acute malnutrition—is still lacking. These reflections are presented below as broad questions, but it is essential to keep in mind the diversity and differences within the geographic areas of interest in regards to ethnicity, wealth, gender and location. A detailed investigation of context is beyond the scope of this desk study, but programmatic interventions should keep such parameters at the forefront of design, assessment and implementation.

- **What are the implications and impacts of shifts in gendered roles, responsibilities and expectations within local livelihood systems in northern Kenya over the past two decades on food security and nutritional outcomes?** Women and men of different ages have long fulfilled distinct and important roles and had complementary spheres of influence within pastoral livelihood systems (Hodgson 2000). The drylands nutritional framework illustrates the importance of the underlying factors of household food security and the social and care environment in children's nutritional status; these components lie squarely within the female sphere of influence and are underpinned by the household and community livelihood systems. As these systems evolve and change, male and female roles and responsibilities also change. For instance, men are traditionally viewed as primarily responsible for animal production, which is closely linked to household food security and well-being. As inequality in livestock ownership—as discussed in this desk review—increases, the ability of men in livestock-poor households to provide for their families decreases. Women often increase their income generating activities to fill this void, often through the sale of natural resources, engagement in petty trade, or taking up economic activities such as brewing (Stites and Akabwai 2010). These increases in economic activity may (or may not) help to improve food security, but participatory research in Karamoja, Uganda shows that these increased responsibilities for women normally come with costs to the amount of time that mothers are able to dedicate to child care (Catley, Lotira, and Hopkins 2018). Additional costs may be girls' school attendance if girls leave school to fill gaps in domestic duties (Atim, Mazurana, and

Marshak 2019). Men and boys are also responding to changes in economic and regulatory environment by taking up new economic activities—such as seasonal migration or moving into areas normally dominated by females, such as natural resource exploitation—which will also impact household dynamics. Relatively little is known about how these and other gendered shifts in intra-households livelihoods and associated trade-offs are affecting food security and the social and care environment in Isiolo and Marsabit Counties. Specific gaps for further research and analysis include:

- How are the economic and household roles of women and men changing in Isiolo and Marsabit County? What are the impacts of these shifts for food security and nutritional indicators? How do the impacts differ when accounting for differences in wealth, livelihood specialization, and the way in which the specific gendered or generational economic role is changing?
- How are generational roles changing, including roles and expectations between generations of men, and what are the impacts of these changes on livelihood systems? How do the changing expectations, roles and responsibilities by generation and gender affect food security and nutritional indicators?
- How are the expectations, roles and responsibilities of children changing, by age and gender? How do these changes impact (in particular) the social and care environment and what are the impacts of these shifts on food security and nutritional indicators?
- What factors do households and individual men and women consider when determining if a shift in intra-household livelihood strategies should be undertaken and by whom? What factors do they consider in determining if such shifts are "successful"?

- **What are the implications and impacts of adaptations within local livelihood systems due to the growing role of towns in northern Kenya over the past two decades on food security and nutritional outcomes?** This gap in our knowledge is both about the growing urbanization of populations and also about the increased role of towns in providing markets and services for those who may continue to live (entirely or predominantly) in rural locations. A large body of the ethnographic and anthropological work on livelihoods in Isiolo and Marsabit Counties took place in the late 1990s, such as the research on impacts of sedentarization conducted by Fratkin and colleagues cited throughout this desk review. This earlier work included analyses of sedentarization on health and nutrition, showing generally negative outcomes for those pastoralists who settled on a permanent basis in urban areas when compared to those who continued to pursue nomadic or semi-nomadic pastoral production (see, e.g., Fujita et al. 2004; Fratkin, Roth, and Nathan 1999; Nathan, Fratkin, and Roth 1996; Fratkin, Roth, and Nathan 2004). In the intervening years, the town-based population has increased but few studies have been done to examine the food security and nutritional outcomes of either living in towns or relying more heavily on towns for income, markets, commodities, and health care services. The number of people who engage regularly with town economies and services in northern Kenya has certainly increased, but there is limited knowledge as to how these shifts may be affecting the variables of interest. Specific gaps for additional research and analysis include:
  - How do nutrition and food security indicators differ for households who have been settled for longer or shorter time periods? What factors other than duration influence these differences?
  - How do nutrition and food security indicators differ for households that have settled in towns and stepped out of pastoralism entirely versus

those that have maintained a foothold in pastoralism (such as through household splitting, maintaining herds near urban locations, etc.)?

- How do nutritional and food security indicators differ for households that have settled permanently in towns versus those that move all or some household members to and from towns on a seasonal basis?
- How do nutritional and food security indicators differ for households that are more engaged with town-based market systems (such as through the regular sale of animals or animal products, regular sale of natural resources in towns, town-based employment, purchase a sizeable portion of food commodities in towns, etc.) versus those that have less engagement (due to preference, distance, economic status, or other factors)?

- **How is herd management changing by ethnic group, wealth, and location? What are the potential impacts of these changes on food security and nutritional outcomes?** Flexibility is inherent to pastoral livelihood systems and allows these systems to thrive in dryland areas of high rainfall variability. As part of this flexibility and as discussed above, pastoral producers make adjustments in herd management, including herd composition, herd size, use of different grazing areas, and transhumance routes. These adjustments come in response to seasonal and annual shifts in rainfall and pasture growth, local security conditions, and – for some—market considerations, in additional to other factors. However, much of the information on these shifts in northern Kenya is anecdotal or is specific to one population group or location. A more systematic analysis of these patterns of herd management would help to fill a knowledge gap on how these practices and adaptive strategies may influence food security and nutritional outcomes. Specific gaps for further research and analysis include:
  - How, if at all, have the considerations taken into account by herders changed in recent years when managing their herds? What are the roles of security/insecurity, market access and market demand, wealth, mobility regimes, and climatic factors in these decisions?
  - How is herd composition changing over time for different groups? What are the drivers of these changes? What are the nutritional and food security outcomes, if any?
  - How have herd migratory patterns changed in Isiolo and Marsabit Counties? What are the drivers and effects of these changes, including on markets, livelihood systems, natural resource management, and household and community management of food security and nutrition?
  - For the above questions, how do climate change repercussions affect herd management and composition? Do herders differentiate between increased temperature and extended or more frequent droughts? How do strategies to manage these two climate aspects differ?
  - How do herders and their households take into account expected nutritional needs when making herd management decisions? Who is making these decisions and with what information? How, if at all, has this decision making process and the weight of nutritional needs changed over time and what are the drivers of this change?
  - How, if at all, do herd management practices change in the short term in response to fluctuations in food security and/or nutritional needs at the household level? How is such information communicated and how are subsequent decisions made?
- **How are distribution of livestock and migration patterns changing by wealth group and location of**

producers as well as by species? What are the potential implications of these changes on access to and governance of natural resources, food security and nutritional outcomes? The geographic distribution patterns of specific species, such as camels or sheep, may be changing in the region as a function of climate shifts and/or market demand (such as growing demand for camel milk in Isiolo and meat more broadly). Additional data on these aspects would allow programmers to make informed decisions on veterinary support and other livestock interventions. In addition to broader distribution patterns, research on pastoral areas in the Horn of Africa indicates growing inequity at the household level in livestock ownership. Details on these patterns and the factors behind such shifts in Marsabit and Isiolo are lacking. This information is critically important for understanding dynamics of wealth and poverty, with implications for nutrition and food security. Increased inequity in animal ownership likely affects the functioning of informal social safety nets, the system of horizontal exchanges that accompany life events (such as marriages, births, and coming-of-age rituals), community-level management of vulnerability, and the customary governance mechanisms managed by male elders in which livestock form the medium of exchange. Specific gaps for further research and analysis include:

- What are the factors that influence differences and recent shifts in livestock distribution by species across northern Kenya?
- How have migratory livestock patterns changed, what are the factors influencing this, and what are the implications for small and medium producers' access to natural resources and relationships between producers?
- What is the extent of inequality in livestock ownership in Isiolo and Marsabit Counties and how has this changed over time? What do local people see as the drivers of these changes?
- Assuming that inequity in ownership is an issue, what are the impacts of this disparity and what are the repercussions for food security and nutritional outcomes? Who is included and who is excluded and on what grounds? How do these processes of inclusion and exclusion change over time and what factors influence these shifts? Systems to investigate include the function of informal social safety nets, systems of reciprocity and horizontal exchange, community management of vulnerability, and customary systems of governance that rely on livestock as mediums of exchange.

- **How is <u>conflict at the local level</u> changing, what are the factors of this change, and what are the potential implications for nutrition and food security? How does this conflict affect local institutions, policy making and programming?** The review of conflict in northern Kenya shows both top-down and bottom-up drivers of conflict. Top-down conflict includes collective punishment, brutal security crack-downs, intentional marginalization, and securitization as a component of counter-terrorist strategies. Bottom-up conflict cannot be entirely separated from the top-down aspects which have served to exacerbate local grievances (such as the ethnic claims to land enforced by the colonial administration), but includes cattle raiding and tensions over land rights and access to resources. Specific gaps for further research and analysis include:
  - What are the ways in which conflict is influencing livelihoods systems for different groups across Isiolo and Marsabit County? What are the impacts on food security and nutrition? (Consider market access, staple food prices, transhumance, access to health care, experiences of violence or trauma, opportunity costs, etc.)
  - How, if at all, has the functioning and efficacy changed of the local

mechanisms or institutions that exist to resolve and/or mitigate conflict?

- To what extent are development actors (including Nawiri) taking conflict, the drivers of conflict, and local conflict resolution mechanisms into account in their planning and programming?

References

Abdilatif, Mohamed Haji, Joshua Orungo Onono, and Florence Kanini Mutua. 2018. "Analysis of Pastoralists' Perception on Challenges and Opportunities for Sheep and Goat Production in Northern Kenya." *Tropical Animal Health and Production* 50 (7): 1701–10. https://doi.org/10.1007/s11250-018-1613-8.

Achiba, Gargule Andrew. 2018. "Managing Livelihood Risks: Income Diversification and the Livelihood Strategies of Households in Pastoral Settlements in Isiolo County, Kenya." *Pastoralism* 8 (1): 1–15. http://dx.doi.org.ezproxy.library.tufts.edu/10.1186/s13570-018-0120-x.

Adongo, Amos Otieno, Bettina Shell-Duncan, and Prisca J. Tuitoek. 2013. "Effect of Settlement on Nutrition and Health Status of Pastoral Gabra Women of Reproductive Age in Kalacha Location, Marsabit County, Kenya." *Public Health Nutrition* 16 (9): 1622–30. https://doi.org/10.1017/S136898001200496X.

Aklilu, Yacob, and A. Catley. 2010. "Mind the Gap: Commercialization, Livelihoods and Wealth Disparity in Pastoralist Areas of Ethiopia." Feinstein International Center, Friedman School of Nutrition Science and Policy at Tufts University, Boston and Department for International Development, Addis Ababa. http://fic.tufts.edu/assets/ mind-the-gap.pdf.

Alnwick, D. J. 1985. "The 1980 Famine in Karamoja." In *Crisis in Uganda: The Breakdown of Health Services*, edited by C. P. Dodge and P. D. Wiebe. Oxford, UK: Pergamon Press.

Anderson, David M. 2014. "Remembering Wagalla: State Violence in Northern Kenya, 1962–1991." *Journal of Eastern African Studies* 8 (4): 658–76. https://doi.org/10.1080/17531055.2014.946237.

Anderson, David M., Hannah Elliott, Hassan Hussein Kochore, and Emma Lochery. 2012. "Camel Herders, Middlewomen, and Urban Milk Bars: The Commodification of Camel Milk in Kenya." Journal of Eastern African Studies 6 (3): 383–404. https://doi.org/10.1080/17531055.2012.696886.

Atim, Teddy, Dyan Mazurana, and Anastasia Marshak. 2019. "Schools out: Why Northern Uganda's Girls and Boys Are Not Getting an Education and What to Do about It." Working Paper. London, UK: Secure Livelihoods Research Consortium, Overseas Development Insitute (ODI). https://securelivelihoods.org/publication/schools-out-why-northern-ugandas-girls-and-boys-are-not-getting-an-education-and-what-to-do-about-it/.

Behnke, Roy, and Michael Mortimore, eds. 2016. *The End of Desertification. Disputing Environmental Change in the Drylands*. Berlin: Springer-Verlag.

Behnke, Roy, Ian Scoones, and Carol Kerven. 1993. "Range Ecology at Disequilibrium: New Models of Natural Variability and Pastoral Adaptation in African Savannas." London: Overseas Development Institute.

Behnke, Roy, Helen Young, H Sulieman, Sarah Robinson, and Ammar E Idris. 2020. "The Seasonal Imperative: Environmental Drivers of Livestock Mobility in East Darfur, Sudan." *Land Use Policy* 99 (C).

Biellik, Robin, and Peggy Henderson. 1981. "Mortality, Nutritional Status, and Diet during the Famine in Karamoja, Uganda, 1980." *The Lancet*, December.

Birch, Izzy. 2020. "Desk Review: Natural Resource Management and Nutrition." Feinstein International Center, Tufts University.

Bonfoh, Bassirou, Gilbert Fokou, Lisa Crump, Jakob Zinsstag, and Esther Schelling. 2016. "Institutional Development and Policy Frameworks for Pastoralism: From Local to Regional Perspectives." *Revue Scientifique et Technique de l'OIE* 35 (November): 499–509. https://doi.org/10.20506/rst.35.2.2537.

Boru, Halkano J., and James K. A. Koske. 2014. "Climate Variability and Response Strategies among the Gadamoji Agro-Pastoralists of Marsabit County, Kenya." *International Journal of Humanities and Social Science* 4 (11): 69–78.

Bradbury, Mark, and Michael Kleinman. 2010. "Winning Hearts and Minds? Examining the Relationship between Aid and Security in Kenya." Medford, MA: Feinstein International Center, Tufts University. https://fic.tufts.edu/assets/WinningHearts-in-Kenya.pdf.

Branch, Daniel. 2014. "Violence, Decolonisation and the Cold War in Kenya's North-Eastern Province, 1963–1978." *Journal of Eastern African Studies* 8 (4): 642–57. https://doi.org/10.1080/17531055.2014.946331.

Broch-Due, Vigdis. 1999. "Remembered Cattle, Forgotten People: The Morality of Exchange & the Exclusion of the Turkana Poor." In *The Poor Are Not Us: Poverty and Pastoralism in Eastern Africa*, edited by David M. Anderson and Vigdis Broch-Due, 50–88. Oxford, UK: James Currey.

Broch-Due, Vigdis, and David M. Anderson. 1999. "Poverty and the Pastoralist: Deconstructing Myths, Reconstructing Realities." In *The Poor Are Not Us: Poverty and Pastoralism in Eastern Africa*, edited by David M. Anderson and Vigdis Broch-Due, 3–19. Oxford, UK: James Currey.

Burns, John, Elizabeth Valone, and Eric Carlberg. 2017. "Constant Gardeners: An Impact Assessment of Permagardens in Karamoja Uganda- a Climate Smart Approach." Mercy Corps.

Catley, Andrew. 2017. "Pathways to Resilience in Pastoralist Areas: A Synthesis of Research in the Horn of Africa." Boston: Feinstein International Center, Tufts University.

Catley, Andrew, and Yacob Aklilu. 2013. "Moving up or Moving out? Commercialization, Growth and Destitution in Pastoralist Areas." In *Pastoralism and Develpoment in Africa: Dynamic Change at the Margins,* edited by Andrew Catley, Jeremy Lind, and Ian Scoones, 85–98. London: Routledge.

Catley, Andrew, R. Lotira, and C. Hopkins. 2018. "Hidden Peaks: Women's Knowledge on the Seasonality and Root Causes of Child Malnutrition in Karamoja, Uganda and Their Programming Preferences." Kampala, Uganda: Karamoja Resilience Support Unit, USAID/Uganda, UK aid and Irish Ai.

Chambers, Robert, and Gordon Conway. 1992. "Sustainable Rural Livelihoods: Practical Concepts for the 21st Century." IDS Discussion Paper 296. Brighton, UK: Institute of Development Studies, University of Sussex.

D'Arcy, Michelle, and Agnes Cornell. 2016. "Devolution and Corruption in Kenya: Everyone's Turn to Eat?" *African Affairs* 115 (459): 246–73. https://doi.org/10.1093/afraf/adw002.

Davies, Susanna. 1993. "Are Coping Strategies a Cop Out?" *IDS Bulletin* 24 (4): 60–72. https://doi.org/10.1111/j.1759-5436.1993.mp24004007.x.

Donovan, Kevin P. 2015. "Infrastructuring Aid: Materializing Humanitarianism in Northern Kenya." *Environment and Planning D: Society and Space* 33 (4): 732–48. https://doi.org/10.1177/0263775815598107.

Dyer, Nat. 2008. “Securing Pastoralism in East and West Africa: Protecting and Promoting Livestock Mobility; Review of the Legislative and Institutional Environment Governing Livestock Mobility in East and West Africa.” London: International Institute for Environment and Development. https://pubs.iied.org/sites/default/files/pdfs/migrate/G03457.pdf.

Elhadi, Yazan, Dickson Nyariki, and Oliver Wasonga. 2015. “Role of Camel Milk in Pastoral Livelihoods in Kenya: Contribution to Household Diet and Income.” *Pastoralism* 5 (1): 1–8. https://doi.org/10.1186/s13570-015-0028-7.

Ellis, J.E., and David M. Swift. 1988. “Stability of African Pastoral Ecosystems: Alternate Paradigms and Implications for Development.” *Journal of Range Management* 41 (6): 450–59. https://doi.org/10.2307/3899515.

Fitzpatrick, Merry, Sarrah Rasheid Beheiry, Hassan Osman, and Elizabeth Stites. 2021. “The Role of Informal Social Safety Nets in Community Resilience in Darfur; A Scoping Study Report for the RISING Program.” Boston, MA: Feinstein International Center, Tufts University.

Flintan, Fiona, Roy Behnke, and Constance Neely. 2013. “Natural Resource Management in the Drylands in the Horn of Africa.” Brief Prepared by a Technical Consortium Hosted by CGIAR in Partnership with the FAO Investment Centre. Technical Consortium Brief 1. Nairobi: International Livestock Research Institute.

Fratkin, Elliot. 1992. “Drought and Development in Marsabit District, Kenya.” *Disasters* 16 (2): 119–30. https://doi.org/10.1111/j.1467-7717.1992.tb00385.x.

———. 1994. “Pastoral Land Tenure in Kenya: Maasai, Samburu, Boran, and Rendille Experiences, 1950–1990.” *Nomadic Peoples* 34/35: 55–68.

———. 1997. “Pastoralism: Governance and Development Issues.” *Annual Review of Anthropology* 26: 235–61.

Fratkin, Elliot, Eric Abella Roth, and Martha A. Nathan. 1999. “When Nomads Settle: The Effects of Commoditization, Nutritional Change, and Formal Education on Ariaal and Rendille Pastoralists.” *Current Anthropology* 40 (5): 729–35. https://doi.org/10.1086/300093.

———. 2004. “Pastoral Sedentarization and Its Effects on Children’s Diet, Health, and Growth Among Rendille of Northern Kenya.” *Human Ecology* 32 (5): 531–59. https://doi.org/10.1007/s10745-004-6096-8.

Fratkin, Elliot, and K Smith. 1995. “Women’s Changing Economic Roles with Pastoral Sedentarization: Varying Strategies in Alternate Rendille Communities.” *Human Ecology* 23 (4): 433–54.

Fujita, M., Eric Abella Roth, M.A. Nathan, and Elliot Fratkin. 2004. “Sedentism, Seasonality and Economic Status: A Multivariate Analysis of Maternal Dietary and Health Statuses Between Pastoral and Agricultural Ariaal and Rendille Communities in Northern Kenya.” *American Journal of Physical Anthropology* 123 (3277–291).

Galaty, John G. 1994. “Ha(l)Ving Land in Common: The Subdivision of Maasai Group Ranches in Kenya.” *Nomadic Peoples*, no. 34/35: 109–22.

Goderiaux, Bénédicte, Thomas Nyagah, Naftali Kiplimo Ruttoh, and Abdullahi Dimbil. 2020. “‘A War That Hurts Us Twice’ Inside Kenya’s War on Terror: Community Perspectives on Security in Mandera County.” Safer World.

Hendrickson, Dylan, Jeremy Armon, and Robin Mearns. 1998. “The Changing Nature of Conflict and Famine Vulnerability: The Case of Livestock Raiding in Turkana District, Kenya.” *Disasters* 22 (3): 185–99.

Hodgson, Dorothy. 2000. "Gender, Culture & the Myth of the Patriarchal Pastoralist, Hodgson." In *Rethinking Pastoralism in Africa*. Oxford, UK: James Currey: 1-29.

Iliffe, John. 1987. *The African Poor: A History.* African Studies. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511584121.

IRIN. 2005. "Kenya: Conflict over Resources in Border Areas," August 1, 2005. https://www.thenewhumanitarian.org/report/55654/kenya-conflict-over-resources-border-areas.

Kagunyu, Anastasia W., and Joseph Wanjohi. 2014. "Camel Rearing Replacing Cattle Production among the Borana Community in Isiolo County of Northern Kenya, as Climate Variability Bites." *Pastoralism; Heidelberg* 4 (1): 1–5. http://dx.doi.org.ezproxy.library.tufts.edu/10.1186/s13570-014-0013-6.

Krätli, Saverio, Brigitte Kaufmann, Hassan Roba, Pierre Hiernaux, Wenjun Li, Marcos Easdale, and Christian Hülsebusch. 2015. "A House Full of Trap Doors; Identifying Barriers to Resilient Drylands in the Toolbox of Pastoral Development." London: International Institute for Environment and Development (IEED). https://pubs.iied.org/sites/default/files/pdfs/migrate/10112IIED.pdf.

Lamphear, J. 1992. *The Scattering Time: Turkana Responses to Colonial Rule*. Oxford, UK: Oxford University Press.

Lautze, Sue, and Angela Raven-Roberts. 2006. "Violence and Complex Humanitarian Emergencies: Implications for Livelihoods Models." *Disasters* 30 (4): 383–401. https://doi.org/10.1111/j.0361-3666.2006.00328.x.

Le Sage, Andre, and Nisar Majid. 2002. "The Livelihoods Gap: Responding to the Economic Dynamics of Vulnerability in Somalia." *Disasters* 26 (1): 10–27. https://doi.org/10.1111/1467-7717.00188.

Lind, Jeremy. 2018. "Devolution, Shifting Centre-Periphery Relationships and Conflict in Northern Kenya." *Political Geography* 63: 135–47. https://doi.org/10.1016/j.polgeo.2017.06.004.

Little, Peter. 1994. "Maidens and Milk Markets: The Sociology of Dairy Marketing in Southern Somalia." In *African Pastoralist Systems: The Frontiers of Theory and Method.*, edited by Elliot Fratkin, K. Galkin, and Eric Abella Roth, Pp. 165-184. Boulder, CO: Lynne Reinner Publishers.

Little, Peter D., John McPeak, Christopher B. Barrett, and Patti Kristjanson. 2008. "Challenging Orthodoxies: Understanding Poverty in Pastoral Areas of East Africa." *Development and Change* 39 (4): 587–611. https://doi.org/10.1111/j.1467-7660.2008.00497.x.

Marshak, Anastasia. 2021. "Drivers of Child Malnutrition in the Kenya Arid and Semi-Arid Lands." Nairobi: Nawiri.

Marshak, Anastasia, and A Ventak. 2021. "Environment, Conflict, and Disasters in the Kenyan ASALs: A Secondary Data Analysis." Nairobi: Nawiri.

McCabe, J. Terrence. 2003. "Sustainability and Livelihood Diversification among Maasai of Northern Tanzania." *Human Organization* 62 (2): 100–111.

McPeak, John G., and Cheryl R. Doss. 2006. "Are Household Production Decisions Cooperative? Evidence on Pastoral Migration and Milk Sales from Northern Kenya." *American Journal of Agricultural Economics 88 (3): 525–41.*

McPeak, John G., and Peter D. Little. 2017. “Applying the Concept of Resilience to Pastoralist Household Data.” *Pastoralism; Heidelberg* 7 (1): 1–18. http://dx.doi.org.ezproxy.library.tufts.edu/10.1186/s13570-017-0082-4.

Mcpeak, John G., and Peter D. Little. 2017. “Applying the Concept of Resilience to Pastoralist Household Data.” *Pastoralism; Heidelberg* 7 (1): 1–18. http://dx.doi.org.ezproxy.library.tufts.edu/10.1186/s13570-017-0082-4.

McPeak, John G., and Peter D. Little. 2018. “Mobile Peoples, Contested Borders: Land Use Conflicts and Resolution Mechanisms among Borana and Guji Communities, Southern Ethiopia.” *World Development* 103: 119–32. https://doi.org/10.1016/j.worlddev.2017.10.001.

Menkhaus, Ken. 2015. “Conflict Assessment: Northern Kenya and Somaliland.” SSRN Scholarly Paper ID 2589109. Rochester, NY: Social Science Research Network. https://doi.org/10.2139/ssrn.2589109.

Mercy Corps. 2017. “Mapping of Seasonal Camel Herd Movements in Hadado, Wajir County,.” Mercy Corps Kenya: Technical Report for the Building Resilience to Climate Extremes and Disasters (BRACED) programme.

Merttens, Fred, and et al. 2017. “Evaluation of the Kenya Hunger Safety Net Programme Phase 2: Impact Evaluation Final Report.” Oxford, UK: Oxford Policy Management. https://www.opml.co.uk/files/Publications/a0013-evaluation-kenya-hunger-safety-net-programme/impact-evaluation-final-report-ex-summary.pdf?noredirect=1.

Mkutu, Kennedy. 2008. *Guns & Governance in the Rift Valley: Pastoralist Conflict & Small Arms, African Issues*. Bloomington, IN: Indiana University Press.

Mude, A., R. Ouma, and E. Lentz. 2012. “Responding to Food Insecurity: Employing the Market Information and Food Insecurity Response Analysis Framework.” *Journal of Development Studies* 48 (12): 1731–49.

Nathan, Martha A., Elliot Fratkin, and Eric Abella Roth. 1996. “Sedentism and Child Health among Rendille Pastoralists of Northern Kenya.” *Social Science & Medicine* 43 (4): 503–15. https://doi.org/10.1016/0277-9536(95)00428-9.

Noor, Issack Mohamed, Abdi Yakub Guliye, Muhammad Tariq, and Bockline Omedo Bebe. 2013. “Assessment of Camel and Camel Milk Marketing Practices in an Emerging Peri-Urban Production System in Isiolo County, Kenya.” *Pastoralism; Heidelberg* 3 (1): 1–8. http://dx.doi.org.ezproxy.library.tufts.edu/10.1186/2041-7136-3-28.

Oba, Gufu. 2001. “THE IMPORTANCE OF PASTORALISTS’ INDIGENOUS COPING STRATEGIES FOR PLANNING DROUGHT MANAGEMENT IN THE ARID ZONE OF KENYA.” *Nomadic Peoples* 5 (1): 89–119.

Office of the Prime Minister. 2012a. “Vision 2030: Development Strategy for Northern Kenya and Other Arid Lands.” Republic of Kenya, Ministry of State for Development of Northern Kenya and other Arid Lands.

———. 2012b. “Sessional Paper No. 8 of 2012 on National Policy for the Sustainable Development of Northern Kenya and Other Arid Lands; ‘Releasing Our Full Potential.’” Ministry of State for Development of Northern Kenya and other Arid Lands.

Opiyo, Francis, Oliver Wasonga, Moses Nyangito, Janpeter Schilling, and Richard Munang. 2015a. “Drought Adaptation and Coping Strategies Among the Turkana Pastoralists of Northern Kenya.” *International Journal of Disaster Risk Science* 6 (3): 295–309. https://doi.org/10.1007/s13753-015-0063-4.

———. 2015b. “Drought Adaptation and Coping Strategies Among the Turkana Pastoralists of Northern Kenya.” *International Journal of Disaster Risk Science* 6 (3): 295–309. https://doi.org/10.1007/s13753-015-0063-4.

Ouka, C. A., R. Mulwa, R. Kibugi, M. A. Owuor, J. G. Zaehringer, and N. O. Oguge. 2018. "Community Perceptions of Ecosystem Services and the Management of Mt. Marsabit Forest in Northern Kenya." *Environments* 5: 121.

Ouma, Jully O., Luke O. Olang, Gilbert O. Ouma, Christopher Oludhe, Laban Ogallo, and Guleid Artan. 2018. "Magnitudes of Climate Variability and Changes over the Arid and Semi-Arid Lands of Kenya between 1961 and 2013 Period." *American Journal of Climate Change* 07 (01): 27–39. https://doi.org/10.4236/ajcc.2018.71004.

Ouma, Robert, Andrew Mude, and Jeannette Van De Steeg. 2011. "DEALING WITH CLIMATE-RELATED RISKS: SOME PIONEERING IDEAS FOR ENHANCED PASTORAL RISK MANAGEMENT IN AFRICA." *Experimental Agriculture* 47 (2): 375–93. https://doi.org/10.1017/S0014479710000888.

Oumer, Sead. 2007. "The 'Privatisation' of Somali Region's Rangelands." In *Gender and Pastoralism: Rangeland & Resource Management in Ethiopia, Flintan and Ridgewell*.

Quandt, Amy, and Yunus Antony Kimathi. 2017. "Perceptions of the Effects of Floods and Droughts on Livelihoods: Lessons from Arid Kenya." *International Journal of Climate Change Strategies and Management; Bingley* 9 (03): 337–51. http://dx.doi.org.ezproxy.library.tufts.edu/10.1108/IJCCSM-11-2014-0132.

Rao, Nitya. 2019. "From Abandonment to Autonomy: Gendered Strategies for Coping with Climate Change, Isiolo County, Kenya." *Geoforum* 102 (June): 27–37. https://doi.org/10.1016/j.geoforum.2019.03.017.

Rao, Nitya, Chandni Singh, Divya Solomon, Laura Camfield, Rahina Sidiki, Margaret Angula, Prathigna Poonacha, Amadou Sidibé, and Elaine T. Lawson. 2020. "Managing Risk, Changing Aspirations and Household Dynamics: Implications for Wellbeing and Adaptation in Semi-Arid Africa and India." *World Development* 125 (January): 104667. https://doi.org/10.1016/j.worlddev.2019.104667.

Roth, Eric Abella. 1990. "Modeling Rendille Household Herd Composition." *Human Ecology* 18 (4): 441–55. https://doi.org/10.1007/BF00889467.

———. 1996. "Traditional Pastoral Strategies in a Modern World: An Example from Northern Kenya." *Human Organization* 55 (2): 219–24.

Rufael, T., A. Catley, A. Bogale, M. Sahle, and Y. Shiferaw. 2008. "Foot and Mouth Disease in the Borana Pastoral System, Southern Ethiopia and Implications for Livelihoods and International Trade." *Tropical Animal Health and Production* 40 (1): 29–38. https://doi.org/doi: 10.1007/s11250-007-9049-6. PMID: 18551776.

Schlee, Guenther. 1989. *Identities on the Move: Clanship and Pastoralism in Northern Kenya*. Manchester, UK: Manchester University Press.

Scoones, Ian. 1995. "New Directions in Pastoral Development in Africa." In *Living with Uncertainty: New Directions in Pastoral Development in Africa*, edited by Ian Scoones. London: Intermediate Technology Publication.

———. 1998. "Sustainable Rural Livelihoods: A Framework for Analysis." Working Paper No. 72. Brighton, UK: Institute of Development Studies, University of Sussex.

Scoones, Ian. 2004. "Climate Change and the Challenge of Non-Equilibrium Thinking." *IDS Bulletin* 35 (3): 114–19.

Scoones, Ian, Jeremy Lind, Natasha Maru, Michele Nori, Linda Pappagallo, Tahira Shariff, Giulia Simula, Jeremy Swift, Masresha Taye, and Palden Tsering. 2020. "Pastoralism and Development: Fifty Years of Dynamic Change." Text.Serial.Journal. IDS Bulletin. May 27, 2020. https://bulletin.ids.ac.uk/.

Shibia, Mumina G., George Owuor, and Bockline O. Bebe. 2013. "Evaluation of Losses of Replacement Heifers in Pastoral and Peri-Urban Camel Herds in Semi-Arid Northern Kenya." *Pastoralism: Research, Policy and Practice* 3 (1): 23. https://doi.org/10.1186/2041-7136-3-23.

Smith, Kevin Christopher. 1997. "From Livestock to Land: The Effects of Agricultural Sedentarization on Pastoral Rendille and Ariaal on Northern Kenya." Ph.D., United States -- Pennsylvania: The Pennsylvania State University. http://search.proquest.com/docview/304369770/abstract/93D45AA5AC0741A6PQ/1.

Stites, Elizabeth. 2020. "‹The Only Place to Do This Is in Town:' Experiences of Rural-Urban Migration in Northern Karamoja, Uganda." *Nomadic Peoples* 24: 32–55.

Stites, Elizabeth, and Darlington Akabwai. 2010. "‹We Are Now Reduced to Women': Impacts of Forced Disarmament in Karamoja, Uganda." *Nomadic Peoples* 14 (2): 24–43.

Stites, Elizabeth, and Elizabeth Dykstra-McCarthy. 2020. "Gender Gap Analysis on Isiolo and Marsabit." Nairobi: Nawiri.

Sulieman, H, and Young, Helen. 2019. "Transforming Pastoralist Mobility in West Darfur: Understanding Continuity and Change." Building Resilience in Chad and Sudan (BRICS), Concern Worldwide, Feinstein International Center of Tufts University.

The LEGS Project. 2018. "LEGS Drought Tool: A LEGS-Based Preparedness, Planning and Response Tool for Improved Resilience in the Drylands of the Horn of Africa." Wivenhoe, United Kingdom: Prepared by Adrian Cullis for the LEGS Project/Vetwork UK.

Turner, Matthew D., and Eva Schlecht. 2019. "Livestock Mobility in Sub-Saharan Africa: A Critical Review." *Pastoralism* 9 (1): 13. https://doi.org/10.1186/s13570-019-0150-z.

Ulrichs, Martina, and Rachel Slater. 2017. "How Is Social Protection Building Resilience in Kenya?" London: Overseas Development Institute. https://cdn.odi.org/media/documents/11307.pdf.

United Nations Children's Fund. 1991. "Strategy for Improved Nutrition of Children and Women in Developing Countries." *The Indian Journal of Pediatrics* 58 (1): 13–24. https://doi.org/10.1007/BF02810402.

Vehrs, Hauke-Peter, this link will open in a new window Link to external site, and Gereon Romanus Heller. 2017. "Fauna, Fire, and Farming: Landscape Formation over the Past 200 Years in Pastoral East Pokot, Kenya." *Human Ecology; New York* 45 (5): 613–25. http://dx.doi.org.ezproxy.library.tufts.edu/10.1007/s10745-017-9926-1.

Waila, Jacinta Mukulu, Michael Wandanje Mahero, Shamilah Namusisi, Sarah J. Hoffman, and Cheryl Robertson. 2018. "Outcomes of Climate Change in a Marginalized Population: An Ethnography on the Turkana Pastoralists in Kenya." *American Journal of Public Health; Washington* 108 (S2): S70–71. http://dx.doi.org.ezproxy.library.tufts.edu/10.2105/AJPH.2017.304063.

Waller, Richard D. 1999. "Pastoral Poverty in Historical Perspective." In *The Poor Are Not Us: Poverty and Pastoralism in Eastern Africa*, edited by David M. Anderson and Vigdis Broch-Due, 20–49. Oxford, UK: James Currey.

Waters-Bayer, Ann. 1985. "Dairying by Settled Fulani Women in Central Nigeria and Some Implications for Dairy Development." London: Overseas Development Institute. https://www.odi.org/publications/4385-women-milk-cattle-nigeria-fulani.

Watete, Patrick Wekondi, Wambui Kogi Makau, Jesse Theuri Njoka, Laban Adero MacOpiyo, and Oliver Vivian Wasonga. 2016. "Moving in and out of Poverty: A Case of the Somali and Turkana of Northern Kenya." *Nomadic Peoples* 20 (1): 123-.

Watete, Patrick Wekondi, Wambui-kogi Makau, Jesse Theuri Njoka, Laban Aderomacopiyo, and Stephen Mwangi Mureithi. 2016. "Are There Options Outside Livestock Economy? Diversification among Households of Northern Kenya." *Pastoralism; Heidelberg* 6 (1): 1–13. http://dx.doi.org.ezproxy.library.tufts.edu/10.1186/s13570-016-0050-4.

Watson, Elizabeth E., Hassan H. Kochore, and Bulle Hallo Dabasso. 2016. "Camels and Climate Resilience: Adaptation in Northern Kenya." *Human Ecology* 44 (6): 701–13. https://doi.org/10.1007/s10745-016-9858-1.

Young, Helen. 2009. "The Conflict-Livelihoods Cycle: Reducing Vulnerability through Understanding Maladaptive Livelihoods." In *Environment and Conflict in Africa: Reflections on Darfur*, edited by M. Leroy. Addis Ababa: University for Peace.

———. 2020. "Nutrition in Africa's Drylands. A Conceptual Framework for Addressing Acute Malnutrition." Boston, MA: Feinstein International Center, Tufts University.

Young, Helen, and Musa Adam Ismail. 2019. "Complexity, Continuity and Change: Livelihood Resilience in the Darfur Region of Sudan." *Disasters* 43 (Suppl 3): S318–44. https://doi.org/10.1111/disa.12337.

Young, Helen, Abdul Monium Khider Osman, Yacob Aklilu, Rebecca Dale, and Babiker Badri. 2005. "Darfur – Livelihoods under Siege." Medford, MA: Feinstein International Center, Tufts University.