Chapter 9

RESILIENCE AND PASTORALISM IN AFRICA SOUTH OF THE SAHARA

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The recent popularity of the term *resilience* in the development discourse concerning arid and semiarid lands in Africa can be traced to two major international issues. The first is climate change, concerned with how to build resilient communities in the face of increasingly extreme weather events. The other is recurrent humanitarian crises, especially traced to the most recent drought- and conflict-induced 2011 disaster in the Horn of Africa. Both of these phenomena have strong relevance for African pastoralism, which many climate-change models show will be strongly impacted. (Thornton et al. 2009). The objectives of this chapter are to summarize (1) applications of a resilience framework for pastoralism, (2) key challenges to resilience among pastoralists, (3) local responses and initiatives, and (4) conclusions and development implications. The chapter draws on research findings and data from northern Kenya and southern Ethiopia gathered for the Pastoral Risk Management Project (PARIMA) (McPeak, Little, and Doss 2012), as well as studies from elsewhere in Africa.

Applications to Pastoralism

Recent approaches to understanding dryland economies encompass the idea of "bounce back," the capacity to prepare for, cope with, and recover from different types of shocks without significant welfare loss or derailment of trajectories of welfare improvement.

There are at least three reasons why resilience should appeal to researchers and practitioners in the context of pastoralism:

- It supports the notion of bounce back in the boom/bust drought cycles so prevalent in pastoralist areas.

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- It complements the "disequilibrium ecology" paradigm, which incorporates ideas of resilience, especially in its focus on adaptations to unstable climate and ecological regimes.
- It is consistent with notions of flexibility and mobility that are so critical in pastoralism.

Key Challenges to Resilience

Five key challenges threaten the resilience of pastoral systems. The first is loss of land due mainly to encroachment of neighboring agriculturalists and farming by herders themselves; to development of irrigation, tourism, and conservation programs in key dry-season grazing and watering zones; and to land investments ("land grabbing") by outside investors. The loss of key resources, especially of dry-season grazing areas and watering points, will probably be the greatest challenge to mobile pastoralism in the next 25 years, according to current research (Homewood 2010; Behnke and Kerven 2011). This process concentrates pastoralists and their animals onto less productive rangelands, undermining their economic welfare (Little et al. 2010).

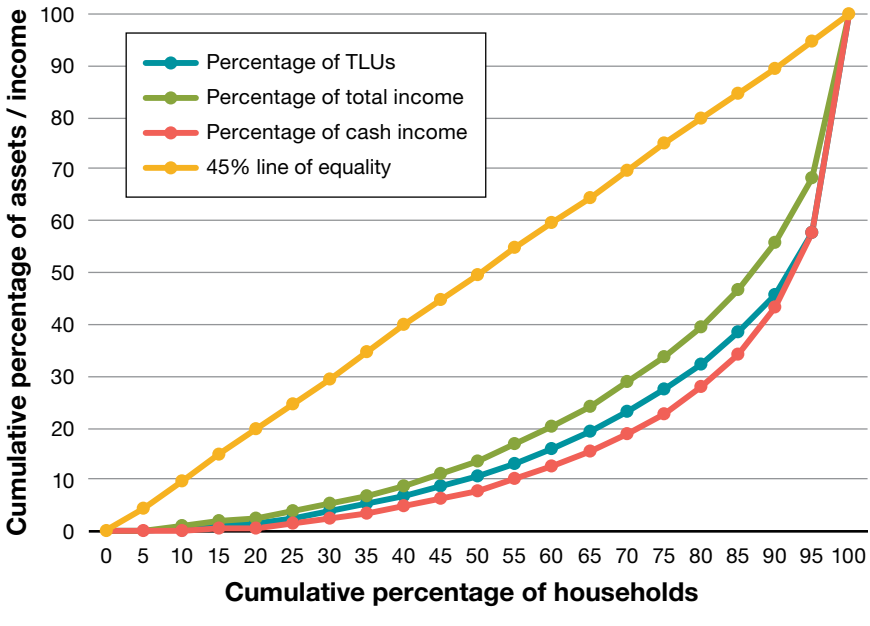
A second major challenge for pastoralism is endemic conflict and violence that disrupt markets and increase vulnerability during droughts. For much of the past three decades, for example, the pastoral areas of northern Kenya have experienced a series of political conflicts and violence that have displaced pastoralists from their homes and created pockets of unused rangelands. Moreover, armed conflicts in neighboring Somalia and Sudan have accelerated the flow of arms into the region, further disrupting local grazing patterns and livelihoods. Similar scenarios occur throughout the rangelands of Africa.

A third challenge is increased population and settlement. There are roughly 23.4 million pastoralists in the Horn of Africa (including Kenya), or about 14.8 percent of the region's population (Simpkins 2004). Three factors need to be disentangled in this respect: population growth in pastoral areas, settlement of livestock keepers, and immigration by people from outside the pastoral areas. Certain studies show successful absorption of added population through intensification (supplemental feed, crop residues, and intensive grazing strategies), but others suggest increased overgrazing and reduced pastoralist welfare (Moritz 2010; Coppock et al. 2011). For example, in the Sahel region of West Africa, more settlement and population have brought more intensive grazing (including night grazing) and labor use, with a growing integration of pastoral livestock and crop farming (Ayantunde et al. 2008).

A fourth issue is the question, "Resilience for whom?" Pastoralist households are highly differentiated by wealth, a process that has seemingly accelerated during the past 25 years. For instance, the PARIMA data show that the wealthiest 10 percent of herd owners control about 46 percent of aggregate tropical livestock units, while the poorest 20 percent control less than 3 percent, with a similar pattern of inequality in control over cash income and total income, where the cash value of all home-produced and consumed goods is added to cash income (Figure 9.1). This level of wealth differentiation affects how different households (poor, middle, or better-off) respond to market opportunities and their capacity to recover (resilience) after droughts. It also can result in significant movements of poor pastoralists, whose livestock holdings are too low to maintain a pastoral livelihood, out of pastoralism and into high-risk rainfed farming and environmentally destructive activities such as charcoal making, which can compete with and impact the sustainability of pastoralism itself.

Finally, climate variability and change is a challenge to resilience in pastoralist areas. Pastoralists have always dealt with climatic uncertainties and variability,

FIGURE 9.1 Income and asset distribution, southern Ethiopia and northern Kenya



Source: McPeak, Little, and Doss (2012), 93.
Note: TLU = tropical livestock unit.

and extreme climatic events will continue to affect them. Despite considerable uncertainty over the direction of climate change in the region's drylands, extreme events (either prolonged drought or flood) already have had major impacts on pastoral livelihoods and markets, as witnessed most recently in 2011.

What Enhances Resilience

So what contributes to resilience among pastoralists?

Mobility. Mobility is herders' key strategy under conditions of high risk and uncertainty. Due to highly variable spatial and temporal distribution of rainfall and related vegetation conditions, herders must be flexible in the movement of their animals. Accessing diverse grazing and water resources allows herders to ensure the survival and reproduction of their livestock (Table 9.1), and also improve animal productivity and hence milk production for local consumption.

Access to critical patches. Rangelands are characterized by "patches" of high ecological value alongside large expanses of marginal range and shrub lands. Because of the uneven nature of dry landscapes, herders often move their animals to capture variations in forage and water availability. Such variations can occur due to differences in elevation or at a given elevation due to localized rainfall (or both effects combined). The value of these patches is especially revealed during dry seasons and droughts, when herds can be decimated in three to four months. How herders manage access to these valuable sites during critical intervals in the year determines the sustainability of the pastoral system as a whole. Consequently, much of the conflict and insecurity in pastoral areas stems from competition over access to these resource patches.

TABLE 9.1 Herder mobility and drought impacts, 2000–2002

	Average per capita livestock (TLUs) 2000–2002	% decline March–December 2000	Average # of watering points used each quarter	% of households relying on mobile satellite camps
Kargi	7.0	0	3.3	88
North Horr	3.6	–24	1.7	45
Logologo	2.5	–46	2.0	91
Sugata Marmar	1.1	–33	1.3	28
Dirib Gombo	1.0	–79	1.1	46
N'gambo	0.6	–50	1.5	1

Source: Little et al. (2008), 599.

Notes: TLU = tropical livestock unit; in column 2, "% decline" refers to reductions in livestock; in column 4, "mobile satellite camps" refers to units of herders that move periodically during the year with their livestock based on climate and vegetation conditions.

Markets and food security. Concerns about markets and food security figure prominently into pastoralist resilience. Herders need to maintain market linkages to sell livestock and to buy essential grains, because they do not produce adequate cereals but consume them daily. As is well established in the literature, herds are not sufficiently large for most pastoralists to survive on direct consumption of livestock products (McPeak and Little 2006). At the onset of an unusually low-rainfall period, a herder might assume the worst-case scenario and unload animals on the market. If many others follow the same logic, the selloff reduces prices even beyond the reduction generated by the animals' loss of condition due to poor grazing conditions. At the same time, grain prices may increase due to increased demand and, in a widespread drought, tight supply. As McPeak, Little, and Doss (2012) pointed out, "there is large variability not only in the prices for livestock that pastoralists sell [especially during droughts] but also in the prices of the goods they buy." During a drought, not only do prices for livestock decline, but the variation around the mean also shows more volatility than in nondrought years (McPeak, Little, and Doss 2012).

Livelihood diversification. Our findings indicate that the most successful households diversify their livelihoods, combining access to the livestock economy and to the cash economy. Overall, households rely on nonlivestock-related activities and sources to obtain more than a third of their total income in the PARIMA data.

Effective governance. Effective governance and local empowerment are critical factors for resilience. The persistent dilemmas of land alienation, insecurity, and access to services and infrastructure reflect deeper-seated problems of governance and political marginalization. The strong inverse relationship in rural Kenya between government-provided services and infrastructure investment on the one hand, and poverty levels on the other, for example, signals a mutually reinforcing relation wherein poorer areas such as the arid and semiarid lands lose out in the political competition for scarce resources at the same time that the resulting infrastructure and services deficiencies ensure these locations' poverty in the future.

Pastoral Responses and Development Initiatives

Herd composition. Diversifying herd composition is one way in which pastoralists respond to changing environmental conditions and enhance resilience. As perennial grasses become scarcer due to changing environmental conditions, bans on bush burning, or stocking pressure, herders adapt by increasing the share of hardier, browse-dependent goats and camels. They also may adopt

breeds of any of these species that are either more drought resistant, more marketable, or more adapted to value-added finishing.

Intensification of production. Another adaptation strategy is changing production techniques. In some areas, we see herders creating enclosures to use for value-added finishing for markets. Purchased fodders and other supplemental feeds can be used both in "normal" times as part of a marketing strategy and in drought periods as a means of protecting the core breeding herd or, in some cases, amassing herds from other herders who are selling livestock at very low prices.

Drought cycle management. The most prominent example of such management is the framework developed by the Livestock Emergency Guidelines and Standards, which provides a clear checklist of key warning indicators and associated action plans.

Regional cross-border coordination. A theme related to advance planning is the recognition that the production and political context of such planning is often multiethnic and involves communities in different countries. Through migration, herders can establish protocols with neighbors for contingent and reciprocal rights to key rangeland resources, tranhumance corridors, and markets.

Index-based livestock insurance (IBLI). Recent work in rangeland areas has illustrated that IBLI is a viable concept from a technical point of view in East Africa. Given remote-sensed data on rangeland conditions over time and spatially and temporally explicit information on herd mortality over time, it is possible to predict covariate mortality rates using real-time remote-sensed data. Currently, IBLI products are in the pilot phase and donors are working to address the major challenge of creating informed demand through extension messaging. The most daunting question is whether private-sector insurers can identify a sustainable business model for IBLI to become a profitable commercial product that also benefits their livestock-owning customers.

Conclusions and Development Implications

In spite of the challenges, it is important to think about what a successful (resilient) pastoralist system looks like now and what it might look like in 10–15 years. Our findings suggest that the key indicator of drought resilience, bounce back, is useful to differentiate those who do and do not recover from a weather-related shock. However, the indicator needs to be coupled with a concept like that of a poverty trap, which draws attention to not just recovery but recovery to a different level of welfare.

While resilience importantly stresses that things should not deteriorate, we would argue that the challenge of development in pastoral areas is to ensure that things improve. What we are aiming for is reduced poverty, improved

living standards, and reduced vulnerability. Resilience as a core concept is better viewed as one objective among others rather than *the* objective of development efforts.

Several development initiatives hold the promise of assisting pastoral households and communities to plan for, cope with, and recover from frequent shocks. These are among the most important:

- **Drought cycle management:** Having a specific feasible plan with triggers, responses, and multiple dimensions is preferable to launching an appeal for external assistance after a crisis hits.
- **Index-based livestock insurance:** Pilot projects indicate that insurance products could be applicable for livestock producers. However, designing effective extension efforts to ensure that buyers fully understand the products remains a challenge, and it is unknown whether there is a viable business model for IBLI as a self-sustaining commercial product.
- **Safety nets:** Safety nets in pastoral areas reflect a worldwide movement toward social protection for vulnerable populations. Two kinds of nets are needed: a safety net to prevent households from falling into poverty and a cargo net to pull people up out of poverty.
- **Asset and livelihood diversification:** Livestock and livestock raising are the key to livelihoods in pastoral areas and will remain so. As populations grow, however, there will be an increasing need to build alternative livelihood strategies around livestock production and trade in dryland areas. This transition needs to be guided, inasmuch as desperation-driven diversification strategies (fuelwood harvesting and charcoal production) can undermine the livestock production system rather than enhance it.

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