

# Pastoralism & Poverty Reduction in East Africa

A Policy Research Conference

## Policy Briefs

27-28 June 2006 • Safari Park Hotel • Nairobi • Kenya

Organized by the International Livestock Research Institute (ILRI)





# Pastoralism and Poverty Reduction in East Africa: A Policy Research Conference

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Nairobi, Kenya

The most recent drought in East Africa has once again sharply exposed the layers of poverty, underdevelopment, and political marginalization in the region's arid and semi-arid lands (ASALs).

Like any natural disaster, including the recent Asian tsunami and Hurricane Katrina in the U.S., the poor and vulnerable bear the brunt of such events, and tragically remind us that their short-term suffering is symptomatic of longer-term structural problems of poverty and inequality. Yet, in contrast to most disasters, droughts in East Africa frequently call for renewed efforts to transform — or even abandon — the area's prime livelihood system, mobile pastoralism. In short, the problem often is perceived to be an outdated way of life and a production system ill-adapted to 'modern' contingencies.

Poorly understood and the natural bane of governments and administrations, mobile pastoralism serves as a convenient scapegoat for the many social and economic problems of the ASALs that are so graphically exposed during disasters.

Understanding the complex relationships and causes of poverty in pastoral areas of East Africa is a necessary first step toward informed and effective policy and programs. There has been considerable research in pastoral areas during the past three decades. This conference aims to highlight key threads of this research.

The goal of the conference is to forge stronger links between researchers and policymakers and to motivate a new, more evidence-based discussion of the underlying causes and consequences of poverty and possible approaches towards its alleviation in pastoral areas.

For electronic versions of the papers presented at this conference, please visit our website at <http://www.ilri.org/research/theme1/>



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## Maasai Pastoralists: Diversification and Poverty

*By K. Homewood, E. Coast, S. Kiruswa, S. Serneels, M. Thompson, P. Trench*

### Introduction

Sub-Saharan African pastoralism involves highly fluid production systems responding flexibly to variable and unpredictable arid and semi arid rangeland environments. Consequently, a critical feature of the pastoral production system is access to extensive public land offering potential grazing and water resources that afford pastoralists the necessary flexibility to relocate their livestock when local rangelands fail. As such, increasingly restricted access to key resources of pasture, water and through-passage in East Africa has increased pastoralist vulnerability to drought herd loss and threatens the sustainability of the pastoral production system.

The research summarized in this brief highlights the consequences of changing land tenure to pastoralist livelihood strategies. In particular, it explores the patterns, scale and trends of livelihood diversification among the Maasai pastoralists of Maasailand who have been particularly affected by the loss of access to key dry season land and water resources. Maasailand, split between Kenya and Tanzania, has witnessed the extensive reallocation of rangelands from open commons accessible to pastoral production to conservation, through the gazettement of protected areas and commercial cultivation, shifting these key resources to large-scale cereal farming and intensive irrigation. Remaining rangelands are themselves increasingly privatized through sub-division (Kenya) and allocation of rights for ranching, farming or wildlife enterprises (Tanzania). High rates of internal population growth and in-migration have added to both real and perceived pressures on key resources. Together, the confluence of these events has fueled the increasing diversification of Maasailand pastoralists.

### Cross-border Comparison

The study focuses on the Maasai populations living in the protected area-adjacent zones on either side of the Tanzania/Kenya border. The contrasts between Kenyan and Tanzanian lands potentially offer a controlled comparison, with related issues and factors operating in essentially similar ecological, ethnic and socio-economic circumstances, but radically different macro-economic and political contexts.

This analysis of livelihood diversification among the Maasai draws on a large-scale cross-border comparable survey of socioeconomic indicators for the Maasai, collected in 1998 in Narok and Kajiado Districts (Kenya) and Ngorongoro District (Tanzania). This data is supplemented by detailed data from the Mara (Kenya) and Logindo (Tanzania) districts collected in 2002.

## **Diversification Patterns**

The large-scale privatization of Maasailand for both commercial and conservation purposes has placed a considerable constraint on the capacity of the rangelands to support pastoralism as a viable livelihood option for the majority of households in the area. As a natural response to the decreasing returns of pastoral production in the area, the Maasai are beginning to diversify their income source portfolios in an attempt to avoid or alleviate poverty as well as to spread the risks associated with the increasingly vulnerable pastoral livelihood. Diversification often involves a change along one or more of the following dimensions; an expansion of the set of income sources, a change in the key sources of income, and/or a change in location.

Across the study sites in both Kenya and Tanzania, livestock continues to feature as a source of income with 100% of the Mara households, 98% of Narok, Kajiado and Ngorongoro households, and 95% of Longido households having some livestock. Furthermore, for a majority of households in all areas, livestock continues to be the main source of income. Nevertheless, despite the enduring importance of livestock, the pattern of livelihood portfolios indicate that the Maasai are beginning to diversify into other activities.

### **Wealth-differentiated diversification**

While Maasai pastoralists across the wealth spectrum are diversifying in response to the changes in land tenure, diversification trends are demonstrably different across different spheres of wealth. Due to the reduced capacity of the rangelands to support pastoralists, poorer households who lose their livestock are less able to recover the losses during favorable periods. As such, the poor are forced to engage in other income-earning activities out of necessity. Better off households, on the other hand, diversify in order to balance risks, buffer shocks and spread investments across a wider portfolio to maximize earnings potential.

Poorer sample households generally diversify into unskilled, low-status activities with low returns and little or no job security. They resort to gathering honey, brewing and selling illicit liquor, gathering and selling firewood and charcoal, and engaging in casual farm or construction labor. And while the presence of lucrative wildlife resources and conservation practices offers special opportunities for the Maasai outside pastoralism, access to these opportunities are largely limited to a few wealthier households. Better-off households are also more likely to have members engaged in relatively secure and better paid employment such as teaching and government administration. Furthermore, these households are also more likely to have family or close relatives in urban areas that offer remittance support and provide networks to improve access to jobs, education and health services.

## **Conclusion**

The confluence of international conservation pressures as well as considerable commercial and State interests in Maasailand is driving the rapid privatization and enclosure of the rangelands. As a result of these processes, poorer households in the area are particularly vulnerable to poverty as their traditional pastoralist livelihood is threatened. While diversification offers some promise, the poor are especially ill-equipped to diversify into high-return, low-risk livelihood options. A combination of low literacy and educational attainment, lack of familiarity with the national language and powerful cultural divides threatens to further marginalize poorer Maasai households and sink them further into poverty.



# Longitudinal Analysis of the Impact of Land Privatization on Samburu Pastoralist Livelihood Strategies: 2000-2005

*By Carolyn K. Lesorogol*

## **Introduction**

Extensive pastoralism as practiced by East African pastoralists such as the Samburu of Northern Kenya, is premised on access to relatively large tracts of rangeland. Most pastoral land has been communally managed by groups of pastoralists who have, over time, developed rules and norms for regulating access to and use of the resources. In recent years, however, a number of pastoral groups have begun to privatize land, raising questions about the implications of this shift for pastoral livelihoods and the future of commonly held rangelands.

A school of thought prevalent among rangeland scholars suggests that maintaining pastoralists' mobility is critical to enabling them to remain successful herders. Accordingly, privatization of pastoral lands and the trend toward increasing sedentarization of pastoralists appears to be a threat to the continued viability of pastoral production and livelihoods. However, there is little empirical data demonstrating the effect of a shift from communal to private rangeland on pastoralists' well-being or economic survival strategies. The study summarized here offers some evidence on the effect of land privatization. A longitudinal analysis compares the changes in welfare across two relatively similar Samburu communities, Siambu and Mbarigon, that differ in the land tenure systems they follow. While land continues to be considered as communal in Mbarigon, land in Siambu is privatized.

## **Samburu Pastoralism and Land Privatization**

The Samburu are semi-nomadic pastoralists who live in the semi-arid Samburu district in north-central Kenya. During the process of land adjudication following independence, the semi-arid and arid lands were exempt from the titling of individual land due mostly to the unproductive potential of the land and the mobility required by its largely pastoralist inhabitants. Titles were instead distributed to groups as a formality required to lay claim to land.

However, a small group of Samburu who saw an investment opportunity in privatized land, began agitating for individual titling and petitioned the government for land in the late 1970s. A conflict between the two factions ensued that was finally settled in 1986 when the government decided to sub-divide part of the land under dispute, known as the Lorroki plateau, to the petitioners. This area of privatized land constitutes the community of Siambu. The other sample community, Mbarigon, is located 40 km southeast of Siambu.

Data for this study was collected in detailed household level surveys fielded in 2000-2001 and again in 2005 when the initial households were revisited. A total of 159 households, 70 from Siambu and 89 from Mbaringon participated in the survey.

### **Wealth, Inequality and Livelihoods.**

As the initial survey was conducted just after the prolonged drought of 1999-2000 that led to large losses of livestock for many households in both communities, the ensuing period is likely to have been one of recovery. However, while both communities post an increase in the mean Tropical Livestock Units (TLU) per household, an increase in average per capita income over the sample period only occurred in Mbaringon. In fact, as the table below reveals, average income in Siambu decreased. By this metric, Mbaringon, which was worse off than Siambu in 2000, becomes better off by 2005. This may be explained by the fact that being nomadic pastoralists, livelihoods in Mbaringon are more centered on livestock which faced high rates of mortality due to the drought. Nevertheless, the slight increase in median income suggests that the welfare improvement in Mbaringon was limited to a few households. It also appears that crop production in Siambu was less effective in supporting household well being in the latter period than in the earlier one. Indeed, inequality analysis reveals a significant degree of stratification. Across both communities, the wealthiest quintile owns more than 50 percent of the livestock while the poorest own less than two percent.

		TLU		Income (Ksh)	
		2000	2005	2000	2005
<b>Siambu</b>	Mean	3.28	3.69	21,658	20,622
	Median	2.47	2.39	16,936	16,262
<b>Mbaringon</b>	Mean	2.71	4.28	16,311	22,056
	Median	2.39	2.74	14,524	14,704

An analysis of livelihood portfolios suggests considerable differences, both between and within the two communities. Wealthier households derive the bulk of their income from livestock, largely from sales and home consumption of milk. While livestock continue to be a key source of income for the wealthy in Siambu, the livestock share of total income is declining as households diversify into trade, agriculture, and wage labor. Poorer households in both communities receive the bulk of their income from wage labor and trade.

## **Land Inheritance: Emerging Norms**

As privatization of land in Siambu created a need for new rules regarding inheritance of land, the authors sought to investigate the emerging norms of land inheritance. This is an important question as the pattern of inheritance that is ultimately established will have important effects on access to key resources for the next generation and is of significance to policy formation on pastoral or mixed use land tenure regimes. In-depth interviews were conducted with those involved with the 10 cases of inheritance that had thus far occurred in Siambu.

No single pattern or norm for inheritance seems to have emerged though there was evidence for several competing rationales proffered as the “right” way for inheritance to occur. On the one hand, there were those who believed that inheritance of land should follow the norms of livestock inheritance among the Samburu where the oldest son inherits his father’s remaining livestock (and other possessions) upon his death. Other proposals, based on concerns for equity, suggested that either land should be divided among all sons, or among younger sons, excluding the eldest who lays claim to other possessions. Nevertheless, the overwhelming majority felt that oldest son should also inherit the land.

## **Conclusion and Policy Implications**

Understanding the survival strategies of pastoralists is fundamental to designing policies that aim to reduce poverty. The results of this study have a number of policy implications. Interventions that do not take into account the high degree of inequality among pastoralists, and the fact that most of the livestock are held by wealthier pastoralists, may fail to address problems felt by poorer households. For example, many recent development programs in northern Kenya have emphasized the development of livestock marketing infrastructure and improvements in the provision of animal health services. While these are important interventions, they disproportionately favor the relatively wealthy. Poorer pastoralists relying on wage labor and trade would benefit more from support in terms of education and job skills.

Land tenure policy is another area of practical application of this research. Much research and advocacy work has focused on securing pastoralists’ rights of access to rangelands and in preserving mobility, which are extremely important. However, in some pastoral areas (especially in higher rainfall areas), internal pressures to privatize are a reality and need to be addressed. By providing empirical data on the actual outcomes of privatization in Samburu, this work can contribute to informed policy making. The examination of emerging social norms demonstrates the malleability of social institutions, often accompanied by social conflict and differential gains by various social actors. As such, good land policy needs to be sensitive to the likely effects of legal changes, especially for more vulnerable groups such as women and poorer pastoralists.

# Livelihood Choices and Returns among Agro-Pastoralists in southern Kenya

*By Maren Radeny, David Nkedianye, Patti Kristjanson, Mario Herrero*

## Introduction

The economic options available to pastoralists are relatively few, and the returns to the various options across households little studied. This brief summarizes an article that addresses livelihood choices and income diversification strategies among agro-pastoralists and pastoralists in the Kitengela area of Maasailand, and the factors influencing the returns to the diverse livelihood strategies being pursued. How variability in income and wealth levels across households can be explained by household-level versus geographic factors is explored.

Kitengela is quite unique in that it is very close to a major metropolitan area, Nairobi (and therefore has some very valuable land), is a dispersal area that supports a large and long distance wildlife migration to and from Nairobi National Park (NNP), has seen significant population growth and in-migration of non-Maasai peoples in recent years, and is taking part in a wildlife conservation payment scheme (called the land leasing program) that may or may not be sustainable in the long run.

Despite this uniqueness, the adjustments in livelihood strategies and outcomes in terms of incomes and asset levels that we are witnessing in this area have important lessons for other pastoral and agro-pastoral communities facing similar challenges in the future (e.g. land privatization, diversification of incomes, wildlife-livestock-people conflicts). The information generated in this study can contribute to more evidence-based decision making occurring across pastoral areas and inform policy decisions regarding conservation of wildlife and poverty reduction strategies.

## Methods

In 2004, a formal household survey was carried out on a random sample of 177 households in Kitengela. It builds upon previous household socio-economic studies conducted in the area in 1999, 2000 and 2003. Detailed information was sought regarding household demographic characteristics, revenues, production costs, income sources and income levels under various land-use options as well as off-land activities. In addition to this information, spatial variables were generated for each household, including distance to the nearest tarmac road, town, park, permanent water source and primary school. Various other secondary sources of data on crop and livestock prices and other spatial information were also used.

A multiple linear regression model was used to look at the determinants of annual total net income (i.e. adding up net income from livestock, crops and off-land

activities) – i.e. which of the different household characteristics or geographically determined factors help explain the wide range of incomes that we see across Kitengela. Separate similar regression analyses were also carried out to examine the most important factors influencing the components making up net income (livestock-related and income from other sources), land prices and herd value.

### **Livelihood strategies and outcomes in terms of income and wealth**

The range of household characteristics, size of land and livestock holdings, choice of land-use and other activities is wide across Kitengela. Key informants feel that, on average, family sizes have been shrinking, more children are going to school and for longer, and land and herd sizes are smaller than before. Data from our survey and two earlier ones support these perceived trends, although they only cover a 5-year period.

Average per capita herd size in 2004 was 7.1 TLU (total livestock units), slightly higher than the 5 to 6 per capita TLUs considered to be the threshold below which the household can no longer survive purely on livestock. One-half of the cattle are owned by the 20% of households with the highest incomes, earning more than US\$4,842/year/household, or US\$13/day/household.

The lowest income households, on the other hand, own only 11% of the cattle and earn less than US\$1,917/year/household, or US\$5/day/household). Despite the fact that cattle ownership is not equally distributed, livestock-related earnings (including the value of the meat and milk they consume) still account for over 50% of incomes across all income categories.

Poorer households actually have more income sources than the wealthier ones, although non-livestock earnings are considerably lower and from less reliable sources. Higher income-earning households have a larger proportion of their incomes coming from wages and business, for example, while those in the lower ones depend more on petty trading and other informal sector activities to help them diversify their incomes.

### **Factors influencing income levels**

Looking at the factors influencing overall income levels, the results suggest that almost half of the variation in net incomes (45%) across these Kitengela households can be explained by household level factors alone, including livestock assets (TLUs), education level of the household head, and extent of diversification (i.e. number of off-land activities being pursued).

When livestock-related income was considered on its own, the analysis showed that herd size alone is able to explain over half (52%) of the variation in livestock income. Households with larger herds still earn significantly more than households with smaller herds of livestock. The results suggest that a 10% increase in TLU per household (e.g. of 4 TLUs from the average TLU per household of 42) would increase livestock returns by 7.5 percent. Of the spatial variables, distance to the



nearest permanent water source was the only one showing up as important, with the implication that households located closer to water points tend to earn more from livestock than those living farther from permanent water sources.

The main factors driving returns to activities other than livestock, including crops and off-land activities turned out to be the number of years of education of the household head, herd size (TLU), and the number of off-land activities. The fact that larger herds also mean higher off-land income suggests that in some cases, livestock and milk sales help households pursue other opportunities (although off-land income is also used to purchase livestock).

### **Land Issues**

Land price per acre was regressed on spatial variables that included average NDVI, population density, distance to NNP, distance to permanent water, distance to town, and distance to school. The results show all of these variables as significant determinants of land price, able to explain 70% of the variation in land prices observed.

An examination of land versus herd values for each household highlights the huge trade-off in herd-related versus land-related wealth. Households with larger herds and more livestock wealth tend to be living on less valuable land (farther from Nairobi), versus landowners living on extremely valuable land, that are more likely to be located nearer NNP and good roads, but with smaller herds and generally lower livestock assets.

The implications of being able to predict land prices quite accurately, based on spatial, rather than household-level information, are large in this area where these households have had no access to such information. This can empower community-based organizations such as KILA (Kitengela Landowners Association) to pursue more transparent negotiations with district and national officials and others, such as the administrators of the lease program. For example, lease payments in the future may need to be adjusted to account for the varying value of land assets across the Kitengela landscape in order to be sustainable. This model will also allow predictions of land prices into the future, e.g. given different population growth or infrastructural development scenarios.

### **Wealth versus incomes**

Both household and spatial factors were unable to explain much of the variation across households in livestock asset wealth. Household labor was positive and significant, along with years of education of the household head. So larger and more educated households appear to have an advantage when it comes to accumulating livestock assets. With respect to spatial determinants of livestock wealth, households living closer to livestock market towns tend to be wealthier, as are those that are living further away from NNP.

## Conclusions

While Kitengela is a fairly unique area, lessons learned here will be valuable for the many other agropastoral communities facing similar issues across the region. Relatively few household characteristics can explain almost half of the variation in income levels across Kitengela (livestock asset levels, education level, landholdings, and diversification of income sources), and location largely determines land prices (70% of the variation in land prices can be explained by four spatial variables – distance to the nearest livestock market town, permanent water source, Nairobi National Park and pasture potential, or NDVI). While the weather cannot be influenced by policy, investments in infrastructure and services can influence the other factors, so these findings and their policy implications are important. For example, the Kitengela community is currently working closely with the Ministry of Lands and local government (OIKejuado Council) to develop the first coherent, evidence-based local land policy for this area; the type of information generated in this study can contribute to these efforts.

Despite the rapid economic and social changes the Maasai in Kitengela have been experiencing in recent years, policymakers need to recognize that earnings from livestock are still critical in terms of overall household earnings. Households with larger herds not only have more overall net income, but also more livestock and off-land income, suggesting that livestock/herd size may be driving diversification strategies in some cases (this is a complex relationship, working both ways, since income from off-land is also used to purchase animals). These higher income households also tend to be the ones educating their children past primary school, so they have improved employment opportunities. This is in fact counter-intuitive to conventional wisdom about pastoral families, i.e. a picture of large, uneducated households with huge herds but not much income, and points to the difference that education is already starting to make in this particular area. It suggests that investments in education beyond primary school have potentially high payoffs in this and other pastoral areas (and doesn't automatically signal the end of pastoralism).

Sales from milk provide roughly a third of household income in a good rainfall year, and is completely in the control of women. This simple fact has a huge policy implication. Interventions and policies that assist women in improving their earnings from milk have potentially large poverty impacts at the household level. For example, marketing of milk is currently very disorganized, so training and technical assistance in milk handling, marketing and management skills, for example, through women's groups could be very beneficial.

Diversification through cropping still appears a quite tenuous option, with many households not getting a harvest even in a year considered to be a 'good rainfall year'. While relatively few households are yet receiving wildlife conservation-related income, for those that are, it is a more lucrative option than cropping, from which very few are earning positive returns.

This kind of information has, and will continue to be, shared with community members and local and national policymakers, as it can contribute to a better understanding of the huge trade-offs that these households are facing, and the information they require as they struggle to adjust their livelihood strategies to cope with widespread and rapid socioeconomic changes. After all, it is the communities themselves that must influence new, and hopefully more evidence-based, land, livestock and other policies that will improve their levels of well-being sustainably over the long run.

## Strengthening Pastoralists' Voice in Shaping Policies for Sustainable Poverty Reduction in ASAL Regions of East Africa

*By Ced Hesse and Michael Ochieng Odhiambo*

### **Pastoralists Marginalized**

The absence of a representative and effective pastoral civil society movement capable of articulating the development concerns of its members is one of the key factors that explains the continued marginalization of pastoral communities. Despite decades of empirical research providing evidence of the value and resilience of the pastoral livelihood, many policy makers, government staff, and NGO personnel continue to view pastoralism as a backward, environmentally destructive and unsustainable production system. In the eyes of the State, pastoralists often represent a minority vote, occupy vast areas of relatively invaluable land, and produce livestock products inefficiently. It is thus not surprising that pastoralists and their interests are not very high on national policy agendas.

For their part, pastoralists often lack the knowledge, capacity and resources with which to lobby their cause. A considerable constraint to organizing a collective effort lies in the significant heterogeneity that exists among pastoralists. High levels of differentiation according to ethnicity, gender, wealth or political affiliation affects their readiness and capacity to act in solidarity with each other. Historical inter-ethnic animosities arising from recurrent conflicts of land rights and livestock raids poses an additional challenge. Moreover, poverty and frequently recurring droughts limit the capacity of pastoral communities to invest time and resources on a long-term and intangible process of empowerment.

### **Reinforcing Pastoral Civil Society**

Despite these problems (or perhaps in reaction to them), a pastoral civil society movement is gradually emerging in East Africa (particularly in Kenya and Tanzania) as community-based groups and national level associations are galvanized by the increasing support and attention that pastoralist issues are attracting from international organizations. Supporting these organizations to develop the capacity and political leverage to effect substantive policy changes is critical, especially in the face of prevailing prejudices against pastoralists and the constraints to organizing that pastoralists themselves face.

One such initiative, spearheaded by the Drylands program of the International Institute for Environment and Development (IIED), has been supporting a process to build the capacity of pastoral groups in East and West Africa to understand, engage with and ultimately influence the overall policy framework regulating their

livelihood systems. This process is focused on the design and implementation of a training course on pastoralism and policy. Initially designed in the Sahel, the course has subsequently been adapted for East Africa within the context of the regional program on *Reinforcement of pastoral civil society in East Africa*.

The paper summarized in this brief champions the training course as one important factor for addressing the challenges of poverty and marginalization among pastoralists of East Africa. The authors delineate the core hypotheses underpinning the design and implementation of the training course, describe the training content and its pedagogic approach, and analyses the practical relevance of the training to on-going policy debates and reform processes touching on pastoralism and poverty reduction in East Africa.

### **Pastoralism and Policy in East Africa**

The course, *Pastoralism and Poverty in East Africa*, targets key stakeholders, seeking both to empower pastoralists to effectively articulate their concerns and to demonstrate the viability of the pastoral livelihood to policy makers. Currently, the course is delivered in English at the Danish Training Center for Development Cooperation based in Arusha, Tanzania. It targets pastoral civil society leaders, policy decision-makers including government personnel from key ministries, project staff of development organizations, sector specific donor advisors and university students. Plans are in place to widen its scope and invite local leaders from affected communities and senior policy members such as Members of Parliament.

The course is delivered as two modules that run for a total of three weeks with a six to eight week break between modules. Module 1 presents and analyses the *dynamics of pastoral systems in East Africa*. It demonstrates how pastoralism is a “system” regulated by ecology and complex modes of social, political and economic organization well adapted to dryland environments. Since the perception of pastoralism is often that it is unstructured, backward and inefficient, the objective of this module is to help participants discover the dynamics and internal logic underpinning the key components of different pastoral and agro-pastoral systems in East Africa.

Module 2 analyses the *policy challenges and options for pastoralism in East Africa*. The module focuses on how successive policies have sought to either alienate pastoral land for other uses and/or to modernize pastoral systems, nearly all with disastrous effects. The module looks specifically at current reforms with respect to land and natural resource management within the context of national poverty reduction strategies, decentralization and increasing privatization and foreign investment particularly in land and natural resources, and the constraints and opportunities these present for pastoral communities. The module enables participants to identify and analyse the key premises underpinning these policies and to generate alternative policy options based on what was learnt from Module1.



## **Designing the Training Course**

In order to assure that the material and method of presentation was relevant and optimally suited to equipping key stakeholders to understand and effectively engage and influence policy relating to pastoralist issues, great care was taken to design and develop the course. As the course is adapted from a similar course designed in the Sahel, it was necessary to assure that the materials were relevant for the East African context. A highly participatory process was adopted, and a core group of partners in East Africa were selected to take the original course and adapt it for the East African context.

Although much of the content needed to be changed to reflect the nature and challenges facing pastoral communities in East Africa, the internal structure and innovative pedagogic approach characteristic of the Sahel training was considered highly relevant. In collaboration with leading pastoral experts from within the region, a detailed template for the training course was subsequently developed. On the basis of the template, pastoral and other experts were commissioned to provide the most pertinent data and scientific evidence in their specific disciplines to support the arguments developed within the training. Finally, a series of tests were conducted over eighteen months with representatives of the training's different target groups to evaluate the logic of the arguments presented in the training, the pertinence and accessibility of the evidence provided in support of the arguments and the effectiveness of the pedagogic approach.

## **Challenging the Policy Environment for Pastoral Development in East Africa.**

The successive waves of policy reform sweeping East Africa in the form of donor initiated poverty reduction strategy processes (PRSP) provide a policy discourse framework that can be used by the pastoral community to leverage resources and influence policy. Indeed, in Kenya, Tanzania and Uganda, pastoral communities have taken advantage of these provisions to assert their rights and articulate their specific needs in poverty reduction.

In Kenya these efforts have led the government to devote an entire chapter in its *Economic Recovery Strategy for Wealth and Employment Creation* to strategies for the development of arid and semi-arid lands. In Tanzania, active advocacy and engagement by pastoral NGOs resulted in the *National Strategy for Growth and Reduction of Poverty* recognizing pastoralism as a legitimate livelihood system. In Uganda, the 2004 *Poverty Eradication Action Plan* articulates the interests of pastoralists for the first time with a commitment that "pastoralists and their farming systems will be a key component in the new (livestock) policy".

While this is a notable step, a gap exists between policy and legislative stipulations on the one hand, and practice on the other. This is partly a function of the failure by key policy makers to adequately understand the pastoral livelihood and the key issues their practitioners face. It is also a function of the absence of a well-organized, informed and effective pastoral civil society with both strong political

legitimacy and the capacity to articulate the value of pastoralism as a land use and livelihood system. The course, *Pastoralism and Poverty in East Africa*, provides a practical tool to strengthen the voice and capacity of the pastoral civil society, equipping them to build policy support for the pastoral agenda and help bridge the gap between policy rhetoric and practice.

# Economic Diversification and Livelihood Strategies of Pastoral Communities of Ethiopia: Challenges and Prospects

*By Kejela Gemtessa, Bezabih Emana, Waktole Tiki*

## **Introduction**

This study focuses on the way of life of the Borana pastoral communities of Southern Oromia in Ethiopia, documenting a region moving from pure pastoralism to agro-pastoralism. This change is forced by a variety of factors, including environmental conditions, poor pasture and livestock productivity, and population growth. The aim is to contribute to a heightened understanding of the complex economic and social dynamics affecting pastoral communities with an eye to influencing effective policy decisions concerning pastoralist issues.

Commissioned by the Pastoral Community Development Project, the study was conducted in Dire District of Borana zone in Oromiya region in 2005. Three communities were chosen from Dire Woreda, a district approximately 665 km south of Addis Ababa. The communities Haralo, Dhasi and Gololcha were selected. Haralo is recognised to have both pastoral and agricultural activity, while Dhasi and Gololcha are classified as pure pastoral communities. However, evidence in the study suggests that elements of agriculture are now present in these latter two communities as well, due to poverty and decreased livestock productivity. The main issues covered in the survey include: land tenure, land and resource management, livestock mobility, livestock markets, sources of income, household expenditures, food security, and major challenges faced.

## **Land Tenure and Management**

Land is divided into rangeland, cropland, forestland and water resource areas. Rangeland belongs to the clan, and is allotted to members of the community through decisions by the elders, known as the Jarsa Reera. While most grazing land is open to all, the Jarsa Reera fences off an area to be reserved for the dry season, and access to this land, called the “kalo”, is controlled though the elders.

The process for acquiring farming land was similarly simple. Individuals would approach the kebele officials and the Abba Olla, or village leader, and be allotted a plot of land. This land could be passed from father to son, but once abandoned (as the land is fragile and cannot sustain multiple rotations of crops) the land would return to the community. Sadly, due to increased demand, this process is slower and less reliable today. The increase in farmland threatens rangeland, as does the prospect of private ownership. And while owning livestock is a more secure livelihood, it is becoming too expensive for a large portion of the community who need to supplement their income with crops. Community member identify the following factors as a cause of poor productivity of the rangelands: Declining

traditional management system, 27%; Increased livestock population, 48%; Climatic Factors including soil erosion, 25%. An important traditional management system was the clearing of brush by bush burning, which has recently been banned. This has led to an explosion of the local tick population and to an increase in the incidence of mastitis, resulting in only 40% of milking cattle having four functional teats.

### **Livestock Mobility**

Before moving to potentially better pasture, the leader of the community sends a group of men to scout out the various migration locations. This group, called aburu, determines the presence of natural resources, the carrying capacity of the rangeland, and the presence of any livestock disease. Once a region is selected and the elders have negotiated the move with the locals in the new region, the boys and men set off with the animals, while the women and elderly stay at the permanent homestead. Those who are left behind are now responsible for tending to the new crops. In years of intense drought or conflict, a more permanent move may need to occur.

There are also negative effects of mobility. Competition for grazing land and water with the host community is a serious concern, which often spurs ethnic conflict. Greater environmental damage can occur with the greater volume of animals. The spread of disease is also a concern, with more possibility of transmission between herds. During the search for pasture, women are left without access to livestock, depriving them of nutrition.

### **Marketing of livestock and livestock products**

While a market for livestock has emerged, there is little market for livestock products. Livestock have begun to fetch good prices at the districts markets Dubluk and Mega. Moyale's market, a likely source of illegal exports into Kenya, maintains even better prices for both livestock and milk. Milk sales are most often organized by the women, who sometimes consolidate their wares to maintain a higher volume and higher price.

### **Income and Expenditure**

The major sources of income for the rich and the medium households are livestock and livestock products, crops, and trading services. Poor and destitute households manage through wages, crop farming, sale of charcoal and firewood, relief food and remittances (payments sent from wealthier relatives). The total annual income for a rich household is approx. Birr 7,800 (US\$900), while for a destitute household it is approx. Birr 2,020 (US\$233). When divided between a family of six, average per capita income for the rich is US\$150 and US\$39 for the destitute.

All wealth categories spend the greatest proportion of their income on food. The next highest household expenditure is on stimulants (such as tobacco and khat) and beverages, and this total is often close to the percentage spent on food. There are

also traditional obligations, such as funeral expenses and gifts given when a son is titled.

Rich and Medium households have adequate food supply year round. Poor households are food insecure for about six months, while destitute households are food insecure all year round. Different coping strategies are employed by each group. In a crisis the rich and medium households can sell livestock, while the poor and destitute turn to eating wild root, called Burii. The poorer groups rely on one another through income sharing in times of need. Reduction of meals per day is an option for the rich and medium households, but only a last resort for the poor and destitute, as they are already down to one or two meals a day.

### **Major Challenges to the Pastoral Livelihood**

Changes are occurring which are making traditional pastoralism more difficult. Border conflicts and population increases are straining rangeland resources. Cross-border trade restriction to Kenya, where sale prices are higher, and a deterioration of traditional support systems are eroding the pure pastoral way of life. Communities that were once able to rely on each other in times of need are now too poor to support the growing numbers of impoverished members.

Productivity of the rangeland and croplands are also falling, as is the productivity of the cattle. The falling productivity and increasing volatility associated with livestock production is the single largest contributing factor to the poverty in the region. Livestock represent nutrition, food security, liquid assets and has been the traditional foundation of these communities. The heavy expenditure on addictive stimulants is also cause for concern. There are few support systems in the area for veterinary and human medicine, and no development training or school system.

### **Conclusions and Recommendations**

Pastoralism is deeply entrenched in the culture and traditions of the Borana peoples. However, the cons of living a truly nomadic pastoral lifestyle have begun to outweigh the benefits. Disease, drought, damage to the environment, and rising costs of relocation are forcing these communities to become more sedentary, but with scant options for alternate income sources.

The Borana people must diversify to support themselves. A new system is required for portioning land to encourage investment in agriculture. There is a need for an appropriate land use policy that can be agreed upon by all community members and officials. A solution is needed to accommodate and ensure the mobility of livestock while being cognizant of environmental factors. Trade can be expanded to create jobs and income. Access to credit and business training is necessary to nourish an entrepreneurial culture and would be especially helpful among already established women's groups.

Due to the new reality of a partially permanent agro-pastoral homestead, new infrastructure needs to be put in place to assist these more permanent communities.

Construction of roads, schools and reliable water sources can provide stability for this new, diverse livelihood. Education regarding income-diversifying activities, especially for women, can help ease dependence on livestock production.

# Collective Action and Informal Institutions: The Case of Agropastoralists of Eastern Ethiopia.

*By Fekadu Beyene*

## **Introduction**

Recurrent droughts and a falling water table have led to increasing scarcity of water for crop farming and livestock watering among agropastoralists of Mieso in Eastern Ethiopia. The increasing pressure on water resources and livestock watering points is threatening traditional norms that govern access rights to water. Livelihoods, which are heavily dependent on water, are largely disrupted and subject to an increasing degree of vulnerability.

To address this issue, in 2002 the regional government introduced water harvesting projects in Mieso in order to minimize the disastrous effects of drought and reduce food insecurity. Part of a broader national program, the idea was to harvest rainwater in ponds constructed and managed by organized groups. Supporting collective action efforts at the grass roots level was an explicit policy mechanism that sought to enable the poor to achieve common goals that could not be achieved individually due to capacity constraints or coordination problems.

The research summarized in this brief examines the groups formed to harvest water collectively and maintain water wells among agropastoralists of Mieso in Eastern Ethiopia. While studies on collective action have so far been extensively undertaken among smallholder sedentary farmers in the highlands, this study introduces a novel perspective by focusing on semi-sedentary agropastoralists.

The data underlying this study was generated from in-depth interviews with various stakeholders at the community level, in several focus group discussions and in individual interviews with 80 households randomly selected in 4 peasant associations from November 2004 through April 2005.

## **Structure of Collective Action**

The evidence points to two distinct types of collective action institutions that capture the key differences in their organization: 1) internal or self-organized groups, and 2) externally initiated and facilitated groups. This demarcation, defined by organizing influence, also differentiates against several other key group characteristics. The type of water management scheme the groups were involved in defines one such clear difference. Water-well maintenance was exclusively pursued by self-organized groups, largely because the practice was well established within the communities and traditional rules existed that required collective decision-making to enforce these rules. Water harvesting, on the other hand, being a local government program, required external facilitation. The nature of sanctioning and rule enforcement also differs between self-organized and externally initiated schemes. While peer influence and the threat of temporary exclusion from access is the customary practice for water-well management,

monitoring by chiefs and the possibility of fines are the mode of enforcement for water harvesting.

### **Participation and membership**

Differences in the access rights to water wells and water harvesting ponds have important implications for the effectiveness and sustainability of collective management. Water harvesting essentially entails a collective effort to harvest water for the private use of particular members who can thereafter claim ownership of the water – joint production but private appropriation. Water is harvested for each group member on his own farm in a rotating fashion. Those members who fail to contribute labor will be excluded from membership and the mechanism of minimizing free riders is simple. In this type of collective scheme, cooperation is self-enforcing because the institutional arrangements operate on reciprocity basis.

Because the water points remain a common property resource, the collective management of water wells relies on the strength of community norms. While the rules governing water well management have historically been effective, recurrent drought shocks and longer migration paths in search of available grazing far away from place of residence has eroded the effectiveness of informal management. Because the wells are essentially a common resource, moral hazards (where the leader hardly monitors contributions to the maintenance) have given way to free-riding. In some instances, the breakdown of informal authority, predicated by increased resource scarcity and vulnerability, have resulted in the neglect and consequent drying-up of several wells.

### **Conclusion/Policy Implications**

This study examined the way in which agropastoralists of Eastern Ethiopia organized the collective management of water resources. The authors highlight how differences in the production and access rights of water wells and water harvesting ponds critically determine the effectiveness of collective management efforts. The fact that harvested water, though jointly produced, is privately controlled and allocated means that informal organizations can rely on the threat of exclusion to discourage free-riding. As water wells are common property, access rules based on traditionally accepted practice, or informal community control, are less effective in the face of prolonged stress where the strength of cultural norms are trumped by the imperative of survival. Poor techniques of water harvesting and storing, inadequate extension services, and the random grouping of members, on the other hand, impede water harvesting.

Development programs and intervening agencies facilitating collective action in such societies must thus be very sensitive to the interaction of cultural and economic factors governing collective action. Mechanisms to adjudicate conflicting claims to traditional water sources need to be put in place. At the same time, water harvesting schemes need the regular support of technical experts in order to be more efficient and to mitigate instances of food insecurity resulting from water scarcity.



# Women's Groups in Arid Northern Kenya: Origins, Governance, and Roles in Poverty Reduction

*By D. Layne Coppock, Solomon Desta, Adan Wako, Ibrahim Aden,  
Getachew Gebru, Seyoum Tezera, and Chachu Tadecha*

## **Introduction**

Collective action is well known as a positive force for improving risk management in many rural communities of the developing world. Group formation can contribute to building social capital, and this, in turn, can have positive effects on human welfare, especially as a result of income generation among the poor. For sub-Saharan Africa, Kenya is noteworthy in having a long history of formal cooperative movements involving smallholder farmers. A wide variety of other, less formal, self-help groups that have recently emerged in rural sites of the Kenyan highlands is also documented. These groups, often numerically dominated by women, undertake many activities that include income generation, asset building, commodity marketing, and social/cultural functions.

There is far less evidence, however, of similar forms of collective behavior occurring among rangeland inhabitants in Africa. This is logical given the vast expanse of rangeland areas, the low densities of pastoral populations, and the loosely structured social organizations that have evolved among pastoral societies to accommodate a need for more household-level independence and opportunism to exploit patchy, harsh environments. In recent decades, however, some trends towards sedentarization in higher-potential rangelands may help create subpopulations that are more suitable or amenable to collective action. This prominently includes the swelling numbers of former pastoralists, or semi-settled active pastoralists, now residing near small towns and villages.

The main objective of the research summarized here was to document and explore a sample of varied women's groups that have sprung up across northern Kenya. The authors sought to know how such groups have been formed and governed, what activities they pursue, and what efforts have been successful and what have failed.

## **Women's Groups of Northern Kenya**

Extensive qualitative interviews for 16 women's groups residing in Moyale and Marsabit Districts in northern Kenya in early 2005 were conducted. The groups were purposively selected from key locations that were readily accessible to data collectors. To promote confidentiality of interview respondents, the names or locations of the groups are not reported. Interview questions were typically open ended and elicited monologues, discussions, or other forms of qualitative

responses. Ranking methods were also used in some cases. Interviews were conducted in Kiswahili. While the women we interviewed represented dominant pastoral ethnic groups in the region (i.e., Boran, Rendille, etc.) they pursued sedentary lifestyles and resided in towns and villages. They and their families are linked to a variety of agro-ecological production systems. One women's group was in a farming area while three other groups were in an arid area wholly devoted to livestock production. The remaining 11 groups were in mixed, agro-pastoral locations.

At the time of interviews, the groups had existed for an average of 10 years, with two being 18-19 years old. Charter memberships averaged about 24 women, 20 of whom were typically illiterate. Half of the groups had been formed after facilitation by a GO or NGO partner and half formed spontaneously. Groups are governed under detailed constitutional frameworks outlining rights and responsibilities of members. All groups have eventually been registered with the Kenya government. Chairladies of the groups are typically elected to two-year terms. Group applicants and candidates for office are carefully screened.

### **Objectives and Activities of Women's Groups**

The large majority of the groups indicated that the key reason for organizing was to improve living standards of the members. Major objectives across all groups prominently included the reduction of poverty by increasing incomes via micro-enterprise development and livelihood diversification. Groups undertake a wide variety of social and economic activities founded on savings and credit schemes and small business development. Across all groups, livestock continues to play a vital role. Commercialized livestock activities provide capital for small business ventures and vice-versa. Secondary objectives, largely pursued by more established groups, include the expansion of education, health service, and natural resource management functions.

Groups also serve as a form of social insurance, often supporting members faced with unexpected hardship. Groups appear to vary in their effectiveness of responding to drought. Several mature groups were able to offer drought mitigation assistance to their members. While most of the sampled groups register prolonged periods of hardship, many have weathered the storm and respondents generally indicate improved welfare as a direct result of group membership.

The greatest threats to the sustainability of these women's groups come from external factors such as drought, resource scarcity, poverty, and political incitement as well as internal factors such as unfavorable group dynamics and illiteracy. Principles of good group governance and wisdom in business creation and management were repeatedly stated by respondents as the key ingredients for long-term success; making linkages to external development partners is also vital to secure access to technology and small grants.

### **Policy Implications (Supporting collection action in pastoral areas)**

Groups have ambitious plans to further improve their social and economic circumstances. Evidence is shown that rates of group formation in the region appear to be increasing. In a highly risky and poverty-stricken environment such as northern Kenya, such groups help create relatively deep pools of social, human, and diversified economic capital. Many of these processes fill large gaps in public service delivery and should be encouraged by policy makers.

What policies are needed to support and encourage the efforts of productive, grass-roots organization in pastoral areas? At the micro- and meso-levels, groups need support that runs the gamut from provision of small grants and technology to various forms of capacity building that involve training for people in the areas of leadership, group dynamics, gender dynamics, micro-finance, micro-enterprise, and commercial and non-commercial aspects of pastoral livestock production. Meetings involving women's group representatives and facilitators from GO and NGO partners should be held to directly inform policy makers on the details of priority interventions. At the macro-level, policies that promote investment in rural development—prominently including improvements to physical infrastructure, reducing insecurity, increasing access to education, improving governance, and promoting cross-border trade, could yield many local benefits by widening the economic niches to allow for sustainable growth and proliferation of self-help groups.

Increased prospects for regional and international trade could help justify mergers of local groups into larger cooperative associations with possible benefits in terms of the bargaining power of groups and successful market penetration. One recent example of impact that illustrates synergism among the inter-related roles of local group capacity building, aggressive regional networking of buyers and sellers, and involvement of policy makers is provided by the creation of a northbound marketing chain for small ruminants that largely occurs in pastoral Ethiopia. Animal supply originates in northern Kenya and southern Ethiopia, with animals processed in Addis Ababa and products then exported to the Gulf States. Such models illustrate how local social capital in the form of group collective action can be transformed into larger benefit flows via connections to outside markets.

# Heterogeneous Wealth Dynamics: Evidence from Boran Pastoralists in Southern Ethiopia

*By Paulo Santos and Christopher Barrett*

## **Herd Dynamics of Boran Pastoralists**

Contemporary policy debates are rife with discussions of “poverty traps” which describe structural features of the state of poverty that cause it to persist. Different factors may give rise to different types of poverty traps: there may be groups within a population for whom there exists a unique equilibrium associated with persistent poverty and others who face multiple equilibria and thus face wealth dynamics conditioned by their starting positions. As the policy implications of the different poverty-trap generating mechanisms are markedly different, it is important to identify the causal mechanisms behind apparent poverty traps. The research described in this brief investigates the wealth dynamics of Boran pastoralists in southern Ethiopia and highlights the role that poor weather and herder-specific ability to cope with such shocks play in conditioning wealth dynamics. Building on recent evidence of nonlinear herd dynamics consistent with the hypothesis of poverty traps, the authors find that Boran pastoralists with low ability converge towards poverty regardless of the herd size with which they start with, while those of higher ability exhibit multiple wealth equilibria.

## **Data**

Several data sets, all based on Boran pastoralist households drawn from 4 communities in southern Ethiopia (Arero, Mega, Negelle and Yabello), were utilized. The first data set involved a recall exercise among sample households that allowed for the construction of reliable panel data reflecting 17 years of herd histories. The second data set, collected from different households in the same four communities, consists of household data collected every three months, March 2000 - June 2002, and then annually each September-October starting in 2003. The data include detailed information on household composition, migration histories, changes in herds, shocks, etc.

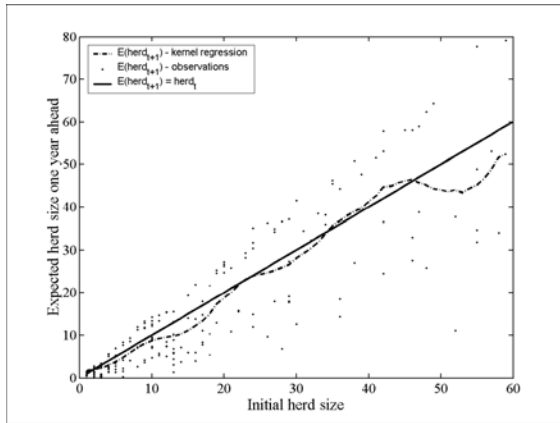
Using this same set of households, the third data set consists of subjective expectations of herd dynamics that collected in the following way: the authors started by randomly selecting four hypothetical initial herd sizes for each respondent, one size within each range of previously estimated herd dynamics. Conditional on their seasonal rainfall expectation (good, normal, or bad), the authors then elicited each respondent’s subjective, one-year-ahead herd size distribution.

## Expected Herd Dynamics

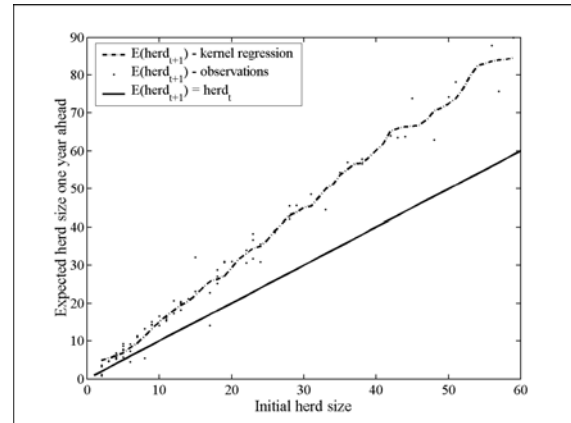
Figure 1 below presents the scatter plot and kernel regressions (smoothed continuous version of the scatter plot) relating the one year ahead expected herd size and the initial herd size, conditional on rainfall expectations (bad vs good/normal). The difference is striking and shows that under good or normal climactic conditions, herders expect herds to grow no matter the initial herd size. Under bad conditions, however, expected (negative) growth is dependent on the initial herd size.

**Figure 1: Expected herd dynamics conditional on rainfall conditions**

**a) Bad rainfall conditions**



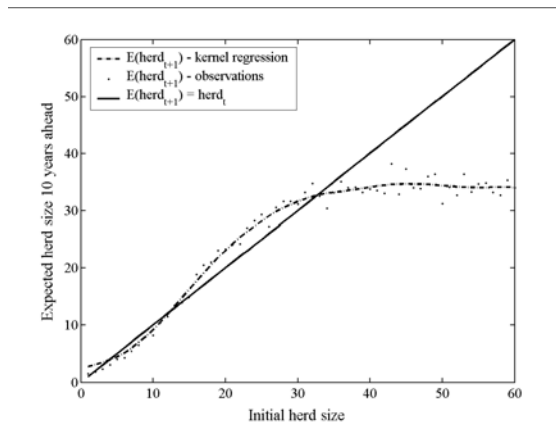
**b) Good/normal rainfall conditions**



The dispersion around the expected values is also much bigger under bad rainfall conditions than in a good or normal year: if this is due to differences in individual herding ability, it would seem that ability matters most when times are tough.

Based on this year-ahead expectations conditional on rainfall, and using data on the actual rainfall (from the period 1991-2001) the authors simulate the expected 10-year ahead herd dynamics. These results, presented in Figure 2, are remarkably similar to the dynamics revealed by actual herd history data collected amongst households in the area, both in the general shape of the curve as well as in the location of the different equilibria. This suggests that Boran pastoralists have a remarkably accurate understanding of the nature of how their herds evolve, including the implied existence of poverty traps. That is, they expect that someone with a small herd - below approximately 12 cattle - will not accumulate wealth, but will instead collapse towards a destitute, sedentarized equilibrium with just one animal.

**Figure 2: Simulated expected herd dynamics**

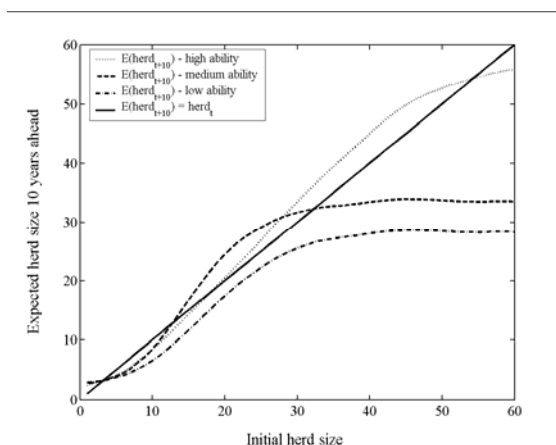


### Ability and Expected Herd Dynamics

The considerable interhousehold dispersion of beliefs about herd dynamics under adverse states of nature (see Figure 1a) suggests that herder-specific characteristics, perhaps especially unobserved husbandry skills, play a central role in conditioning herd dynamics. The authors investigate this hypothesis through a two-step process: first, they use panel data on actual herd size for these households, collected in the period 2000-03 as part of the PARIMA project, to estimate individual herder ability. After dividing the sample into three sub-samples based on herder ability - low, medium and high - they then again simulate the 10-year ahead expected herd size conditional on ability.

Figure 3 is the analogue of Figure 2 for each of the three ability classes. The results suggest that herd dynamics indeed differ across herder ability. In particular, low ability herders face a unique dynamic equilibrium at a low welfare level, giving rise to a different sort of poverty trap than that faced by medium and high ability herders, who expect to accumulate wealth if (and only if) they start with an adequate herd size.

**Figure 3: Expected herd dynamics conditioned on herder ability**



## Expected growth, inequality and the efficacy of post-drought herd restocking

When the authors take into consideration the role individual difference in herder ability plays in shaping herd dynamics, they find that both average herd size and wealth inequality increase over time, as low ability herders collapse into destitution while higher ability herders are able to maintain or even grow their herds. The natural dynamic of the system is thus towards polarization between viable herders and stockless pastoralists. These different subpopulations require different forms of support.

This raises natural questions about existing interventions that do not take herd dynamics and herder ability into account, such as herd restocking, perhaps the most common form of post-drought assistance provided to pastoralists in the region. The authors simulate household herd dynamics under three alternative (equal cost) restocking intervention designs. In the first, which roughly mirrors current practice in the region, the poorest households with livestock are given animals to boost their herd to five cattle. In the second scenario, stock transfers are targeted not to the poorest first but rather in order to maximize expected herd growth from the transfer, assuming there exists no effective mechanism to elicit herder ability. Finally, a third option again targets transfers so as to maximize asset growth, but now assuming one can accurately identify herders by ability group. The results (Table 1, below) reveal a tradeoff between the number of beneficiaries, the size of the average transfer and the ex ante wealth of beneficiaries, with scenario 1 providing fewer animals to more and poorer recipients, scenario 3 providing more animals to fewer and wealthier beneficiaries, and scenario 2 lying between these two.

**Table 1: Expected effects of restocking under different targeting assumptions**

Scenario		Number	Average Transfer	Average herd size (2003)	Expected herd size (2013)		Expected gains from transfer
					w/ transfer	w/out transfer	
1	Beneficiaries	17	2.12	2.88	4.06	2.71	1.35
	Non-Beneficiaries	80	0	14.86	12.05	12.05	-
2	Beneficiaries	13	2.69	12.54	14.63	11.48	3.15
	Non-Beneficiaries	84	0	12.80	10.25	10.25	-
3	Beneficiaries	9	4.00	13.22	24.15	15.26	8.89
	Non-Beneficiaries	88	0	12.72	14.54	14.54	-

As one would expect based on the estimated growth dynamics in the system, restocking targeted to the lower levels of wealth fails to promote growth among the poor, suffering a -4.4% compound annual return on investment in transfer resources, given expected herd losses below the critical herd size threshold. The

growth-promoting impacts of herd restocking become more satisfactory in the other two scenarios. Under scenarios 2 and 3, the average net returns to this policy after 10 years are 17% and 122%, respectively, showing that the growth payoff to identification of a reliable mechanism for identifying herding ability is potentially considerable since herder skill seems to matter a great deal to herd dynamics.

### **Conclusion and Policy Implications**

This research shows that southern Ethiopian Boran pastoralists understand the nature of herd dynamics revealed by herd history data. Moreover, their responses enable us to unpack the herd history data highlighting that the mechanisms that trap people into poverty are diverse. Specifically, even among a homogeneous population with only one livelihood option – livestock herding – differences in structurally important factors, i.e. herding ability, can critically affect wealth trajectories.

The policy consequences of these results are important. For those of low herding ability, livestock transfers – e.g., through restocking projects – seem an unwise investment. Identifying herders' unobserved ability may be difficult, and may require community-based targeting methods to take advantage of local information unavailable to central governments and external donors and NGO's. For higher ability herders, the results suggest a need for safety net programs that safeguard minimum herd sizes – e.g., through water point improvements, veterinary treatments, supplemental feed deliveries – or provide restocking to at least the critical threshold necessary to resume herd growth.



# Beyond Group Ranch Subdivision: Collective Action for Livestock Mobility, Ecological Viability and Livelihoods

*By Shauna BurnSilver and Esther Mwangi*

## Introduction

Recent developments in ecological and common property theories suggest that mobility is crucial for livestock production in areas where rainfall is low and variable, conditions that dominate throughout Kenya's rangelands. However, a combination of government policy and internal drivers has resulted in the privatization of communal rangelands in most of these areas. In Kajiado District of southwestern Kenya, for example, Maasai pastoralists now face a critical dilemma. They are caught between new land tenure rules associated with the subdivision of communal rangelands, and an unchanged ecology. The trend towards subdivision implies dramatic change in pastoral land use and fewer options for mobility.

This paper examines emerging collective arrangements and mechanisms for re-aggregating subdivided parcels, and asks why herders are adopting these strategies in a post subdivision setting. We argue that re-aggregation is crucial for maintaining the flexibility that is necessary for livestock production in variable environments, rendered even more risky after subdivision. However, official policy at different governance levels has not kept pace with these ongoing developments.

## Data

This paper leverages data and results from two PhD studies carried out across eight Kajiado group ranches from 1999-2005. BurnSilver looked at land use and land tenure change and its effects on economic strategies in four group ranches in southern Kajiado district. These included one recently divided ranch (Osilalei) and three Amboseli area group ranches that are largely unsubdivided (Imbirikani, Olgulului/Lolarrashi, and Eselenkei). 184 pastoral households were interviewed in order to gather data on socio-demographic characteristics, economic strategies (e.g. livestock, agriculture and off-farm activities), animal numbers, livestock management, and verbal descriptions of monthly movement patterns for 24 months across a good year (1999) and a bad year (2000).

Mwangi examined why Maasai in the central Kajiado District group ranches of Enkaroni, Meto and Nentanai supported group ranch subdivision, how group land was allocated amongst registered members, and the distributional outcomes of subdivision. The data presented in this paper are a subset of 154 drawn from a wider set of 334 interviews with elders, youths, married women and widows from the three study sites. It is used to provide insights into the nature of collective

activities that individuals pursue after subdivision and the emergence of pasture sharing arrangements.

### **Subdivision and Forage Access**

In general, forage options for individual herders decrease dramatically under privatization. If households share their parcels with other contiguous households within a 5km<sup>2</sup> area, however, access to forage increases. Grazing options further expand through sharing of 1km<sup>2</sup> pastures that are distributed randomly.

### **Emergent Re-aggregation Mechanisms**

A range of post-subdivision mechanisms have emerged in Nentanai, Meto and Enkaroni group ranches that act to re-aggregate household access to forage outside of private parcels. Households redistribute portions of their herds and swap/share pastures. Movement of animals occurs between parcels owned by members of extended families (sons, fathers, in-laws) and between those of friends (age-mates, clan-mates and stock associates). Sharing is reciprocal in time and reflects efforts at rotational grazing. Some leasing arrangements based on monetary exchange also occur but these are rare.

### **Grazing Movements**

Herders in Enkaroni, Meto and Nentanai moved their livestock to neighboring parcels, to neighboring group ranches, and to other group ranches and Tanzania during the course of the year. Most (93%) respondents moved their livestock during the dry season and during drought, and those with larger cattle herds were more likely to move. Parcel size did not affect mobility. Although only two surveyed Osilalei households moved off their private parcels in 1999 – the year of normal rainfall, 75% (n=21) of surveyed households migrated in the drought year of 2000.

In the unsubdivided Amboseli area of southern Kajiado, sixty-one percent of households moved at least once in 1999; this figure rose to 85% in 2000. Mobility was significantly different between study areas in both years. Households in subdivided Osilalei and agropastoral S. Imbirikani were less mobile overall. Households in the group ranch areas were mobile regardless of herd size.

### **Post-Subdivision Collective Action**

Collective action mechanisms that govern access to shared resources continue to occur in Meto, Enkaroni and Nentanai. Individuals continue to work together to maintain the earth dams, boreholes, roads, schools and health clinics that were constructed when their group ranches were established. These maintenance activities are facilitated by an elected committee, which functions to mobilize labor and finances for the various maintenance activities.

## Critical Issues

The results of 14 focus groups carried out in Amboseli indicate that subdivision, economic diversification and herder efforts to cross breed their animals (particularly zebu cattle) with improved breed Sahiwal and Boran animals were the most critical issues raised. Herders believed subdivision to be “unstoppable”, and were concerned that privatization would lead to less flexibility. While subdivision was expected to give people the security of a title deed, they feared it could force a decrease in the numbers of livestock held by households. Pastoral households expect to pursue a range of coping strategies in response to subdivision. They also anticipate limitations on livestock mobility. Economic diversification and intensification of livestock production strategies are actions that households perceive will mitigate the impacts of subdivision. Leasing and continuing to use subdivided parcels communally to some degree are seen as potential coping mechanisms.

## Conclusion and Policy Implications

Parcel sharing translates into more grazing flexibility, particularly when it occurs between households in different locations. “Sharing” in a post-subdivision environment takes many forms; whether based on redistribution, agreements, pasture swapping, or leasing of pastures based on monetary exchange. The most commonly used sharing/swapping mechanisms are those that are based on pre-existing social relationships and norms, e.g. familial ties or friendships.

New economic norms of pasture leasing are present, but are not the dominant mechanism of maintaining mobility. Individuals also organize around water and infrastructure provision. Those pursuing collective strategies do so both for economic expediency and for productive reasons - in an effort to access additional forage resources and re-create access to a full complement of pasture types.

These efforts by Kajiado pastoralists to reinstitute mobility and maintain flexibility in the face of subdivision are instructive to policy on several counts. First, contrary to dominant policy and research narratives, *privatization does not signal the end of pastoralism as a livelihood strategy*; collective action strategies that seek to maintain mobility are emerging in many areas that have privatized.

Second, the drive to subdivide among pastoral households arises largely from the perceived need to defend land against external (in-migration) and internal (land grabbing) threats. The fact that parcel re-aggregation is occurring provides a strong case for subdivision as a defensive strategy. There is critical need for policy to recognize group or collective rights, providing them the same measure of protection as it does private, individual rights, especially in circumstances where groups and collectivities continue to use and prefer such arrangements.

Third, the ecological exigencies of the semi-arid to arid pastoral environment have not changed. Pastoral households in a post-subdivision environment are seeking ways to enhance the viability of their production system through re-aggregation

mechanisms. A policy dialogue between land managers and herders that is supportive of mechanisms to maintain mobility in this setting is crucial.

Fourth, group ranch subdivision does not preclude individuals from seeking common solutions to shared problems. There is wide scope for actors in both government and non-government agencies to explore innovative measures to enhance collective action.

# Empirical Forecasting of Slow-Onset Disasters for Improved Emergency Response: An Application to Kenya's Arid Lands

*By Andrew Mude, Christopher B. Barrett, John McPeak,  
Robert Kaitho, Patti Kristjanson*

## Introduction

The ability to forecast the onset, duration and severity of droughts, floods, and disease outbreaks with reasonable accuracy, especially in terms of their prospective human welfare effects, is critical to the design of timely and cost-effective early warnings and emergency response systems that can minimize the suffering of populations adversely affected by such relatively slow-onset events. As the consensus on climate change and its consequences grows, there is an increasing worry that the frequency of climate shocks will rise, with more frequent and serious humanitarian crises and ensuing demand for emergency response.

Given the finite resources allocated for emergency response initiatives, there is growing demand for the development of timely, rigorous, efficient and practical methods of emergency needs assessment. To contribute to this effort, the research reviewed in this brief develops an empirical forecasting model to predict the human impact of slow onset disasters for early warning and emergency needs assessment.

## Geographic Focus: Kenya's Arid North

The research focuses on the arid lands of northern Kenya. Largely populated by nomadic pastoralists and particularly vulnerable to recurring shocks such as droughts and floods, the region is well-suited for the purposes of this study. As part of an effort to address the vulnerability of the region's population, the Arid Lands Resource Management Project (ALRMP) has been collecting data in various communities across Kenya's arid districts since 1996. Data collected include detailed household-level information on livestock such as herd sizes, mortality rates, lactation rates, and managed off-take rates, and child-specific nutritional data, specifically mid-upper arm circumference (MUAC) measures.

The ALRMP data are monthly, February 2002 to May 2005, for 54 communities across four districts (Baringo, Marsabit, Samburu and Turkana). The authors supplement the ALRMP data with a rich source of climate and forage availability data collected and produced by researchers of the USAID Global Livestock CRSP Livestock Early Warning System (LEWS) project and its successor, the Livestock Information Network and Knowledge System (LINKS) project. One desirable feature of these data is that they originate with remotely sensed and other data external to communities, so they are information imported into, rather than merely extracted

from, the system under study. As changes in livestock fertility, mortality and productivity respond strongly to lagged changes in forage and water availability, use of these variables can improve the precision and forecast lead time of models to predict the human impact of the climate shocks that frequently confront pastoralist communities.

### **Severe Child Malnutrition and Food Crises**

Emergency response to widespread acute food insecurity is largely conditioned by the degree and prevalence of gross malnutrition. Acute food insecurity is typically assessed based on the proportion of children whose anthropometric measure(s) of weight relative to height or age reflect widespread high levels of food stress and acute undernutrition, commonly known as “wasting”. Mid-upper arm circumference (MUAC), a superior predictor of child mortality, is one such measure. A MUAC Z-score of less than -2 is widely regarded as an indicator of severe wasting. (A Z-score is a statistical measure of MUAC values relative to a universal reference population. A Z-score < -2 indicates a child more undernourished than 97.5% of children of similar age.) A food crisis might be objectively defined as occurring whenever twenty percent or more of children are severely wasted.

Using this definition of a food crisis, the authors developed a model to forecast child nutritional status (as given by MUAC) based on movements in key explanatory variables several months in advance. Herd dynamics variables (the size of herds, mortality rates, sales and slaughter rates), measures of food aid, as well as variables capturing rainfall and forage availability were used to predict the prevalence of MUAC, and consequently, the likelihood of a food crisis.

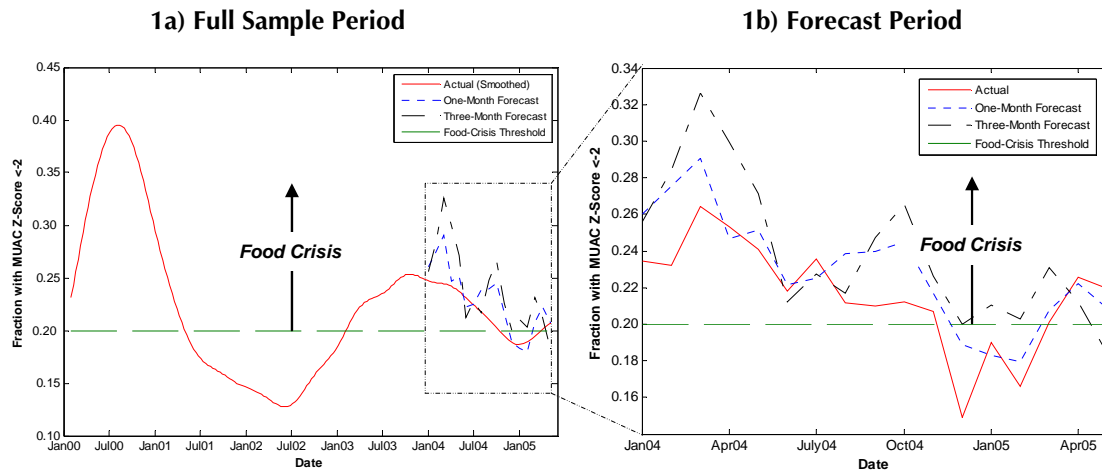
### **Early Warning: Forecasting Food Crises**

Effective response to food crisis requires early warning of emergency conditions so as to mobilize resources. Two forecasting models are developed: a one-month forecast and a three-month forecast for the prevalence of severe wasting. While a one-month forecast will typically be more accurate, the short lead time leaves little leeway for food security managers to make effective use of the forecast. The longer forecast horizon afforded by a three-month forecast, however, comes at a cost of diminished accuracy. The inverse relationship between forecasting horizon and forecast precision forces an operational tradeoff between models. Different end-users will favor different characteristics and thus different models.

Figure 1 shows the monthly forecasts generated for January 2004 to May 2005 compared against subsequent, actual values. Figure 1a presents the forecasts superimposed on the full sample of actual values - the proportion of children with MUAC Z-scores < -2. The values are smoothed to highlight trends, especially the considerable variability in the prevalence of severe wasting. A food crisis existed during and following the 2000-1 drought, then re-emerged in 2003-4 in these northern Districts, then began reappearing last year. Figure 1b highlights forecast precision by zooming in on the forecasting period and plotting the unsmoothed

actual values against the one- and three-month ahead predictions generated by the forecast model.

**Figure 1: Fraction of Children with MUAC Z-score<-2: One and Three Month Forecasts**



Three key points emerge from the figures. First, recall that a food crisis is defined as the state where 20% or more of children exhibit MUAC Z-scores <-2, reflecting severe wasting. Thus defined, the sample sites regularly experienced food crisis over the January 2000 and May 2005 period, but crisis was not constant. Second, the forecasts trace the actual values quite well, and seem to improve with time, as additional data improves forecast precision. Third, while the one-month forecasts outperform the three-month forecasts, the differences are not substantial.

### **Making Practical Use of the Forecasts**

How can policy makers use such forecasts of food crisis to make critical emergency response decisions? Furthermore, how confident can policy makers be in decisions they make based on the model's recommendation? To answer these questions, the authors construct a plausible scenario in which the model's forecasts can be used, and offer a measure of forecasting performance.

Consider the case of an organization tasked with responding to food crises. This sort of forecast model can provide early warning of a food crisis at a particular site in the form of predictions of specific levels of severe wasting. The organization can decide on the minimum likelihood of food crisis required before they deploy a costly aid package. This policy decision will depend on a range of variables, including the availability of funds to support emergency response, the operational costs of serving the affected population, logistical considerations regarding access, etc. Once such a threshold likelihood is chosen, the organization might initiate response if the forecast of food crisis reaches or exceeds the pre-determined minimum threshold.

To test forecast performance operationalized in such a way, a minimum response threshold was arbitrarily set at 66% (that is, the organization deploys aid whenever the forecast predicts a 66% or greater likelihood of food crisis). Defining emergency response when there is actually a food crisis, or no response where there is no food crisis, as ‘correct’ decisions, one can then calibrate forecasting performance by calculating the fraction of correct decisions generated by this decision rule in combination with the forecast model.

The results, presented in Table 1, are quite striking. Decisions based on forecasts are likely to be correct more than 75% of the time - quite an impressive forecast performance. Moreover, the fairly small depreciation in performance as the forecasting horizon increases shows that these models can be used fairly accurately to provide a reasonable, three-month early warning to help with emergency response to mitigate the consequences of impending crisis.

**Table 1: Model Performance in Generating Correct Decision for Famine Response**

Fraction of Correct Decisions	
One Month	Three Month
0.786	0.756

## Conclusions and Policy Implications

Based on data collected from primarily pastoralist communities selected across four districts in Kenya’s arid north, the authors have developed an empirical forecasting model that can predict, with reasonable accuracy and at least three months in advance, the expected human impact of slow onset shocks such as drought. Information on herd composition and herd management, climate and forage availability and food aid flows enable reasonably accurate three-month-ahead forecasting of child nutritional status, specifically severe wasting reflect in very low MUAC levels, with impressive precision. Longer lead forecasts may also be feasible and warrant investigation.

These forecasts were generated from a relatively small subset of variables that ALRMP regularly collects, augmented by data collected routinely by LEWS/LINKS. These data are not overly restrictive or costly to collect. Limiting data collection to these set of variables, collected consistently through time, might offer a cost-effective way to provide effective early warning to policymakers and emergency response professionals. The precision of these predictions appears sufficiently high that delays in acting on this information due to concerns over forecast accuracy should be limited. However, there remains work to be done to establish how best



to communicate this information in as clear and timely a fashion as possible to appropriate audiences.

The authors recommend that the model be adapted as an effective famine early warning tool. As the model can be easily and regularly updated with new information that should continuously increase its forecast performance, a premium should be placed on developing standardized collection procedures and failsafe methods for entering, identifying and storing the necessary data. Such a forecasting model could prove an invaluable tool for early warning and emergency response to food crises.

# Is Settling Good for Pastoralists? The Effects of Pastoral Sedentarization on Children's Nutrition, Growth, and Health Among Rendille and Ariaal of Marsabit District, Northern Kenya.

*By Elliot Fratkin, Martha A. Nathan, and Eric A. Roth*

## **Introduction**

The settling of formerly mobile pastoral populations is occurring rapidly throughout East Africa. Pastoral sedentarization has been encouraged by international development agencies and national governments to alleviate problems of food insecurity, health care delivery, and national integration. Although the majority of pastoralist households in many areas remain committed to a nomadic livestock production system, many formally pastoral families have settled near towns or on farms to pursue alternate livelihoods that include cultivation, agro-pastoralism, trade or wage labor.

Pastoralists settle for a variety of reasons, both in response to 'pushes' away from the pastoral economy and to 'pulls' of urban or agricultural life. Maasai in southern Kenya, for example, have lost grazing lands due to the growth of agricultural and pastoral populations, privatization of land for commercial farms and ranches, and the expansion of tourist game parks. In the more arid and sparsely populated north and northeast of Kenya, many pastoralist families have settled in response to the environmental stress of drought and famine combined with the political violence of livestock raiding and ethnic conflict.

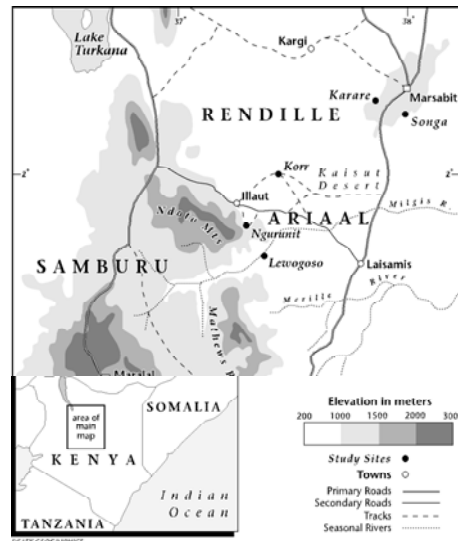
While settling provides access to a wider economic resource base that may mitigate the consequence of food insecurity and offer access to alternative livelihoods, it has not been demonstrated that abandoning the pastoral way of life has been beneficial to the health and well-being of pastoral populations. The paper summarized in this brief reviews the outcomes of a long-term study of nutritional and health changes among nomadic and settled Ariaal and Rendille communities in Marsabit District, Kenya.

## **Nutrition and Health Effects of Sedentarization**

To monitor child growth and health the authors surveyed five Rendille/Ariaal pastoral communities in Marsabit District, northern Kenya, every two months from September 1994 to June 1997. One community, Lewogoso, is fully nomadic with the other four, Korr, Karare, Ngrunit, and Songa, are sedentary communities. Forty women and their under six year old children were selected from each community, for a total sample of 205 adult women and 488 children. Data collected include dietary recalls, anthropometric measurements, morbidity data and economic differentiation and specialization. Monthly household expenditures, wages and

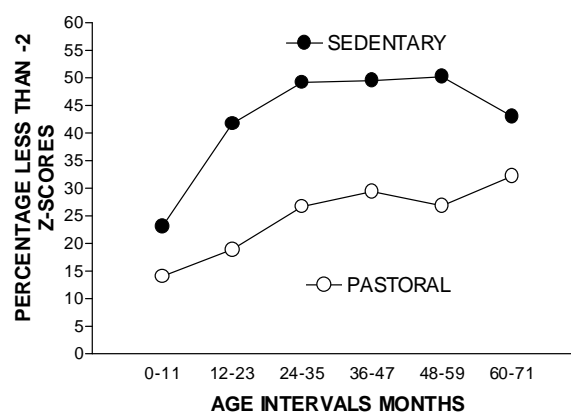
sales of livestock, milk and/or vegetables, and mother's reproductive status, (pregnant and/or breastfeeding), were also recorded each visit.

#### Study Area in Northern Kenya



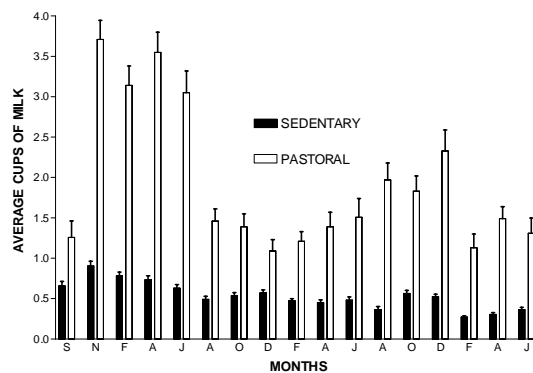
Analysis of the growth and morbidity data yielded interesting, if unexpected, results. The authors find far poorer growth patterns in the sample of children from the four sedentary communities relative to the same-aged children from the nomadic community. As Figure 1 shows, the percentage of children in the sedentary community whose weight-by-age Z-Scores are less than -2 (meaning those children whose weight-by-age is 2 standard deviations less than the norm) are much higher than those in the nomadic community. As weight-by-age measures wasting, a good indicator of current nutritional wellbeing, this suggests that nomadic children are larger and healthier than their sedentarized counterparts.

**Figure 1: Weight for Age: Percentage of children with Z scores less than -2.**



Examination of the incidence of respiratory diseases, fevers, and diarrhea among settled and nomadic Rendille children in Marsabit district further revealed that nomadic children suffered significantly less morbidity from diarrhea and respiratory disease than did children from settled towns. This is quite unexpected as the nomads have the most tenuous access to water and no formal sanitation system. The study also revealed strong differences in women's nutrition, with nomadic Rendille obtaining more nutrients, particularly milk protein, than highland farmers. As with children, the most striking dietary change with sedentism for women was reduction in milk intake and an increase in grains. As Figure 2 shows, there is a marked difference in the average daily per capita intake of milk between the nomadic and sedentary communities. Given that milk is such a rich source of protein and micronutrients, this could explain part of the differentials in child growth and morbidity rates.

**Figure 2: Daily Cups of Milk**



### Conclusion and Policy Implications:

The key finding of this research is the significant difference evidenced in the growth patterns and morbidity of nomadic versus settled women and children. Differences in child growth are attributed mainly to better nutrition, and particularly access to camel's milk within the nomadic communities. The considerably lower incidence of diarrheal and respiratory diseases for the nomadic versus settled communities, coupled with the finding of lower rates of malnutrition and stunting among nomadic children, indicate an unexpected edge for health and nutrition among nomadic pastoralists.

The policy implications of these findings are significant. Although pastoralism is no longer an option for everyone living in dry regions like northern Kenya, the relative health advantage evidenced in nomadic children vis-à-vis their sedentarized counterparts, should be part of decisions affecting social, economic, and health policy for pastoral regions. Specifically the authors recommend that animal husbandry be supported in both settled and nomadic communities, and the production of protein-rich legumes be encouraged among communities of settled farmers and agro-pastoralist.

# The Policy and Practice of Educational Service Provision for Pastoralists in Tanzania

By Elizabeth Bishop

## Introduction

Since the 1990s, international organisations and funding bodies have become increasingly interested in the plight of pastoralists. Donors have compelled recipient countries with large numbers of pastoralists to take on board this agenda, pressuring governments to focus more on pastoralist issues in their Poverty Reduction Strategy Papers (PRSPs). Increasing donor support for the pastoralist agenda has also led to an increase in the civil society organizations championing pastoralist issues. These factors have led governments with significant pastoralist populations to display, to varying degrees, an increasing concern for the plight of pastoralists. Moreover, if countries are to make progress on achieving the Millennium Development Goals (MDGs), it is recognised that attention will have to be paid to pastoralist areas, which have both a high incidence of 'poverty' (as defined in the MDGs), and low levels of educational participation and attainment.

The research summarized in this brief explores the context within which policies concerning education in the pastoralist regions of Tanzania have been formulated and implemented. The study examines the practice of educational provision in these areas and assesses the impact these policies are likely to have on pastoralist poverty.

## Pastoral Policy in Tanzania

The initial PRSP from Tanzania had very few references to livestock, and none to pastoralism as a livelihood. This neglect was also evident in other earlier policy documents. Where pastoralism or livestock was mentioned, this tended to paint a negative picture and was generally in the context of improving the livestock industry, rather than concern over the situation of pastoralists. More recently, as a reflection of the heightened international focus on pastoralists, and solicited pastoralist input in the 2004 PRSP Review, pastoralism has begun to be seen, at least in policy documents, as a significant issue. For example, the Tanzanian National Strategy for Growth and Reduction of Poverty 2005 states that:

*"Achievement of sustainable and broad-based growth will incorporate the following strategic actions ...: Promoting efficient utilization of rangeland, empowering pastoralists to improve livestock productivity through improved access to veterinary services, reliable water supply, **recognizing pastoralism as sustainable livelihood...**"*

## **Educational Policy in Pastoralist Areas**

The extent to which the rhetoric concerning pastoralists mirrors a genuine commitment among Tanzanian policy makers to support the sustainability of pastoralist livelihoods is suggested by the manner in which they tackle the challenges for educational service provision in pastoral areas. Providing educational opportunities for the children of pastoralists poses several unique challenges. Low population densities and the relatively harsh and isolated environments that pastoralists inhabit mean schools are few and distant and qualified teachers are difficult to source. Furthermore, pastoralist mobility and a household economy that is traditionally quite dependent on child labour increases the opportunity costs of schooling for pastoral children. This explains the relatively low rates of educational enrolment in two of the study sample villages: 49% and 52% compared to a national average of 95%.

While the Kenyan government has explicitly document a commitment to affirmative action to bridge the education gap between pastoralist children and the rest of the nation's youth, this is not the case in Tanzania. No formal government statement, either in the realm of education policy or a national development strategy, documents any recognition of the unique challenges of providing education in pastoralist areas. While a couple of education programs exist that recognize the specific challenges of educating children from 'disadvantaged' communities, they do not respond to the particular obstacles pastoralists face, nor are they sufficiently operational.

The Basic Education Master Plan (BEMP), drafted in 2001, seeks to target and identify the needs of children from communities of hunters, fishermen, pastoralists and gatherers, in order to afford them with specially designed programs aimed at improving their enrolment. However, the BEMP did not progress beyond the planning stage. Another initiative, the Complimentary Basic Education and Training (COBET) program to provide non-formal education to cater for out-of school youth, including "nomadic Communities, street children, disabled, and orphans", was initiated in 2003. While the COBET program did indeed get implemented, it was plagued with insufficient funding, ill-equipped and trained instructors, and was never distributed widely across the nation.

## **Conclusions and Policy Implications**

This research explored the ways in which international and national agendas concerning pastoralism and education are manifested in the policy and practice of educational service provision in pastoralist areas in Tanzania. Pastoralists in Tanzania lack a voice in the policy process, and are ill-equipped to advocate for change in terms of policies or the implementation of policies. The relative unwillingness apparent in Tanzanian policy and practice to address the specific challenges of educational service provision for pastoralists is also related to Tanzania's past and current national ethos of de-emphasising difference and promoting conformity.

Current education policies in Tanzania have little to offer in terms of policy changes specifically formulated for Tanzania's pastoral communities. It is insufficiently recognised in Tanzanian education policies that these areas have distinct and chronic problems, over and above those faced by the sector as a whole. This neglect of pastoralist areas in terms of educational service provision in both policy and practice are at odds with the international and (to a limited degree) national rhetoric which aims to support pastoralism as a sustainable livelihood.

Changes in policy and practice are essential if education is to reduce poverty and support pastoralism as a sustainable livelihood. Those formulating educational policies in Tanzania need to re-evaluate their agendas concerning pastoralism in order to put into action the Tanzanian government's commitment to recognize pastoralism as a sustainable livelihood. Acknowledging and facing up to the special challenges of providing educational provision to pastoralist areas is an important first step.

# Influencing and developing good policy in Early Childhood Development (ECD) amongst pastoralist communities in East Africa: The case of Samburu in Kenya

*By Tanja van de Linde and Stephen Lenaiyasa*

## **Early Childhood Development**

Early Childhood Development (ECD) projects in Africa must strike a delicate balance between rigor and cultural sensitivity. The value of such programs, which aim to help pre-school-age children overcome poverty and thrive in later schooling and social life, is not generally disputed. However, assembling a functional program is easier said than done. This is especially true for societies, such as pastoralist communities in sub-Saharan Africa, for whom schooling is a low priority due to their nomadic way of life. In order to be effective, ECD programs should involve all segments of the community and build on the particular strengths, structures and goals of the society in question.

The research summarized in this brief evaluates the successes and constraints of an ECD target site in the Samburu district of northern Kenya. Largely inhabited by nomadic and semi-nomadic pastoralists, the Samburu have recently been plagued with recurrent drought, unrest in neighboring countries and various problems associated with gradual sedentarization. In this environment, pre-school programs are understandably not a paramount concern. Earlier attempts to set up EDC projects in Samburu resulted in failure. EDC teachers did not solicit the involvement of the greater community and thus found themselves isolated and without the requisite support. School enrolment rates failed to rise for those children who participated, as they had in other, more successful programs.

Lessons learned from the earlier failures of ECD projects in Samburu were subsequently used to modify and improve the structure and program content. The Samburu District Center for Early Childhood Education (DICECE), in collaboration with the Christian Children's Fund (CCF) and with technical and financial support from the Bernard van Leer Foundation, developed culturally appropriate curricula by adapting and enhancing traditional child-rearing methods and placing ownership of the project in the hands of the parents. Called the *loipi* method, this technique solves problems faced by other programs by embracing, rather than fighting, cultural differences.

## **Samburu ECD Program, 1996-Present**

In keeping with the aforementioned strategy of adapting traditional child-rearing practices into new ECD projects, a tripartite venture by the Kenya Institute of Education (KIE), CCF and Bernard van Leer Foundation has been working since 1996 to integrate the traditional *loipi* Samburu system of communal child-care into



an appropriate ECD program. The program has expanded from two loipi centres upon inception, to six such centres three years later, to 83 today.

The loipi system places child-care responsibilities in the hands of the entire community, not solely with the parents. In the traditional system, children were placed under the care of the community's grandmothers in a shaded enclosure (or *loipi*). As the grandmothers entertained and educated the children with songs, stories and games, the parents were free to supervise the maintenance of the community, gathering water, food and wood. The new Samburu ECD program augments the traditional loipi system by adding the following services and features:

1. Health Activities: the collectivised setting is used as an opportunity to administer growth monitoring, vitamin supplements, immunizations, and treatments for common diseases.
2. Educational Activities: in addition to traditional songs and games, the children are provided educational toys, play structures, and other avenues to advance intellectual and physical growth.
3. Community Development: some parts of the program designed to help children affect the entire community's well-being, including improved water access, food security and parent education.

Designed to carry children through to pre-school age—it services children up to four years old—the ECD program has been very successful at preparing children for later schooling. Though Samburu is Kenya's second-poorest district, it leads the country in percentage of children in pre-school, exceeding the national average by nearly 20%. Transition rates to primary school are also very high, though the dropout rate increases in the upper years.

### **International Extension College study**

Individuals representing the entire breadth of the Samburu community were interviewed for this study to assess the effect the ECD program has had. The response was overwhelmingly positive; many and diverse aspects of Samburu life have been improved, including health levels, social stability, and relations with neighboring ethnic communities. These successes are not exclusively attributed to external organization and resources. The program has given these communities access to health and education services that can be internally sustained. Likewise, the re-establishment of communal child-care by grandmothers and others within the community has enabled mothers to undertake employment through which they can sustain their families and improve their communities' wealth.

The success of the Samburu ECD project, developed through close cooperation between parents, community, government and NGOs, is evident in how its childcare model has spread of its own accord to neighbouring communities, where it has been adapted in keeping with those communities' respective traditions and cultures. The policy environment of Kenya, which allows for contextually and

culturally selective programs, is cited as a contributing factor to the success of the project.

### **Sustainability and its Challenges**

The strengths of this program, and the factors which suggest its sustainability over generations, centre on its generally holistic and organic structure. The program is based in traditional practices, circumventing the natural scepticism that indigenous communities may have for Western intervention. The drive to continue the program comes from within the community, rather than from outside pressure, as community members are motivated by the improvement their children begin to show. Local materials are used in construction of the loipi, and community members are recruited to run it, both of which suggest that self-sufficiency is feasible. Perhaps most importantly, the loipi concept has already begun to spread on its own (as described above), indicating that the program can survive and expand independently.

Some concerns regarding sustainability do remain, however. Some of the resources necessary to run a loipi properly are beyond the scope of a nomadic community acting alone, and may be difficult to maintain after the framework of NGO support is removed.

### **Conclusions**

Broadly, the ECD loipi program improves pastoralist societies through three avenues, by 1) providing development scaffolding in the extremely sensitive and often overlooked years before primary school; 2) improving the subsequent academic performance of its students; and 3) effecting non-educational improvements to the society as a whole, reducing gender and income inequalities and providing a generalized positive impact.

A child's developing mind performs amazing feats of growth in the first five years of life. This cognitive expansion sets the groundwork for all of the learning, both academic and social, that a child will eventually accomplish. But that child simply cannot approach his or her full potential without certain levels of nutrition, health, and stimulation that are necessary to fuel cognitive growth in the early childhood years. The loipi project, and ECD programs like it, satisfies all three of these needs in an efficient, flexible and culturally appropriate package, providing at low cost a service that is important to the future of pastoralist children as those children are to the future of their societies.

## Pastoralists Preferences for Cattle Traits: Letting Them be Heard

*By Emily Ouma, Awudu Abdulai and Adam Drucker*

### **Introduction**

Pastoralists who inhabit the African arid and semi-arid lands (ASAL) are among the world's poorest populations. They lack vital infrastructure in the form of accessible roads, electricity and telecommunications, leaving them increasingly isolated. Livestock holdings of cattle, camels, goats and sheep often comprise the bulk of their limited wealth and are an integral part of their socio-cultural life. Herd size is often directly correlated to wealth and social status in the pastoral societies.

Along with the unfavorable agroecology of the ASAL and the limited livelihood opportunities, pastoral systems in Africa are exposed to frequent shocks ranging from recurrent droughts and banditry to livestock diseases. Such crisis often result in catastrophic herd losses, making the population increasingly vulnerable to food insecurity and forcing them to frequently rely on famine relief aid. Furthermore, where nomadic or transhumant grazing proved to be a viable coping strategy in the past, increasing population and evolving land rights patterns are reducing its effectiveness. With no mechanisms to insure themselves against the high downside risk they face, pastoralists undertake the costly and inefficient accumulation of stock during favorable periods to balance the high losses experienced during major droughts or disease outbreaks.

### **Sustainability of the Pastoralist Livelihood**

Despite the problems that beset the pastoral production system, it is an important source of meat for domestic consumption in sub-Saharan Africa. In Kenya, 70% of livestock is raised under pastoral systems and accounts for about 50% of local beef consumption. Demand for meat in the country has steadily increased since the 1980s and is still projected to rise. Much of the increase in demand since the 1980s has been met through unofficial cross border trade with Kenyan neighbors. This suggests that pastoral livestock production in Kenya can continue to be a viable livelihood option so long as the obstacles limiting its productivity and profitability are addressed.

One key factor determining the expected profitability and associated risk of the pastoral production system is the hardiness of available livestock breeds to withstand the resource and disease pressures common in such environments while maintaining relatively high rates of productivity. In the face of frequently recurring droughts, lack of water and fodder for grazing is one of the leading causes of livestock mortality. Cyclical resource stress also reduces lactation rates, birthing frequency and leaves animals more susceptible to diseases. Diseases, especially those caused by parasites, are a further constraint to livestock productivity in

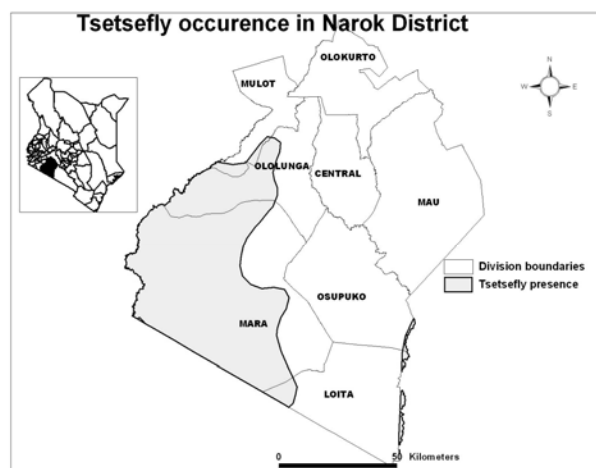
pastoral areas, contributing to the high rates of mortality and low rates of productivity.

These particular set of productivity-limiting constraints suggest a pathway that could enhance the competitiveness of pastoral production systems. Breeding programs which select for livestock traits that result in more robust, drought and disease resistant animals with relatively high lactation and fecundity rates would markedly improve the expected returns to livestock based pastoral livelihoods while reducing their vulnerability. By examining pastoralists' preferences for cattle traits, the paper summarized in this brief sheds light on pastoralists' own valuation of the livestock traits they consider particularly important. Such information can help assure that breed improvement interventions are consistent with the needs of the intended beneficiaries.

### Eliciting Preferences through Choice Experiments

In order to generate a relative ranking and valuation of the preferred cattle traits, the authors conducted choice experiments. By asking individuals to choose among several different cattle profiles, each of which includes the set of traits to be valued in various combinations, measures of the comparative utility each individual derives from the traits were estimated. The choice experiments were carried out in Mara and Ololunga divisions of Narok district in November 2004. Located in the south-west of Kenya bordering Tanzania to the south, Mara and Ololunga fall in lowland, semi-arid part of Narok, where trypanosomosis disease, mainly transmitted by tsetse flies pose a significant constraint to livestock productivity. Figure 1 presents the study sites and tsetse fly occurrence in the district.

**Figure 1: Tsetse fly distribution in Narok district**



Source: ILRI GIS Database

Both divisions are primarily habited by the Maasai people who practice nomadic pastoralism and small scale agriculture. The choice experiment was administered as part of a household level questionnaire to a random sample of 172 pastoral households spread among the two sample communities.

To identify the relevant cattle traits, given the agro-ecological environment and the specific livestock herding constraints faced in Mara and Ololunga divisions, a set of group discussions was held at each site. Based on the findings, the authors coded a total of eight preferred traits for cows and six for bulls. Each trait was the sub-divided into several levels which offered different endowment levels for the trait. Table 1 presents the traits included in the choice experiment and their levels.

**Table 1: Traits and Trait Levels used in Choice Experiments**

<b>Cow Traits</b>	<b>Levels</b>	<b>Bull Traits</b>	<b>Levels</b>
<b>Typanotolerance</b>	1. Tolerant 2. Susceptible	<b>Typanotolerance</b>	1. Tolerant 2. Susceptible
<b>Milk Yield</b>	1. 1-2 litres/day 2. 2-4 litres/day	<b>Fertility</b>	1. High 2. Low
<b>Reproduction potential</b>	1. 1 calf every year 2. 1 calf in two years	<b>Coat Color</b>	1. Light-colored 2. Dark-colored
<b>Coat Color</b>	1. Light-colored 2. Dark-colored	<b>Purchase price in 4 yrs</b>	1. Ksh 11,000 2. Ksh 20,000 3. Ksh 27,000
<b>Purchase price at 2 yrs</b>	1. Ksh 10,000 2. Ksh, 15,000 3. Ksh 19,500	<b>Watering Frequency</b>	1. Once in 2 days 2. Once a day 3. Twice a day
<b>Watering frequency</b>	1. Once in 2 days 2. Once a day 3. Twice a day	<b>Live weight at 4 yrs</b>	1. 200 kg 2. 320 kg 3. 450 kg
<b>Live weight at 2 years</b>	1. 120 kg 2. 190 kg 3. 250 kg		
<b>Feeding Requirements</b>	1. Need supplements 2. No need for supplements		

These traits were then combined to create various profiles of cows and bulls, each of which included a unique level of each trait. Respondents were then offered several pairs of profiles and asked to choose the one they preferred. Their choices revealed their preferences.

### **Preferred Cattle Traits**

Results show preference for cows that are trypano-tolerant, have high live weight, high milk yields and high reproduction ability. Many of these preferred traits are interdependent. A trypanosomosis infected cow, for instance, is also likely to have low lactation rates, low weight and be less fertile. The high preference for trypanotolerance is consistent with the costly toll trypanosomosis exacts on pastoralists. Indeed, trypanosomosis is of the most important diseases afflicting pastoralist's herds, limiting livestock productivity due to poor growth, weight loss, low milk yield, infertility and abortion. Total annual expenditures on curative and preventive treatments for trypanosomosis in sub-Saharan Africa by livestock keepers and governments, has been estimated at about US\$ 35 million, administering 25–35 million curative and prophylactic treatments of trypanocidal drugs at a price of approximately US\$ 1 per treatment. It has been estimated that control of trypanosomosis would result in substantial increases of milk and meat supply of sub – Saharan Africa by a substantial 17%.

The key traits preferred in bulls, with the obvious exception of milk yield, are similar. As one would expect given the regular feed and water constraints, traits associated with drought tolerance are also considered important. Willingness to pay estimates indicate that a trypano-tolerant cow or bull is valued at \$11 more than a trypano-susceptible one. This compares with the estimated \$8.70 annual treatment cost for trypanosomosis per animal. Live-weight increases, which is associated with meat production, is valued at \$1.15 per kg. This is comparable with the value of 1kg of slaughter weight of approximately \$1.07.

### **Conclusion and Policy Implications**

The revealed preference for certain cattle traits provides breed improvement programs with important information on the key constraints that pastoralists face. Trypanosomosis disease, which takes a particularly high toll on pastoralists' livestock, and whose impact has serious implications on livestock productivity through weight loss, low milk yield and infertility seems to be of particular concern. Genetically controlled tolerance of the disease by way of systematic breeding of trypano-tolerant breeds offers a potentially effective route for improving livestock productivity. While the positive externalities of trypano-tolerance suggests that average milk yields, live weight, and reproduction rates may improve, breed improvement programs should also integrate other favorable environmental adaptive traits such as drought tolerance into the animals they breed. The possible trade-off between highly productive animals and robust, disease and drought tolerant animals should take into account the environments the breeds will be faced with.

For the benefits of breeding to have an effective impact on livestock productivity for the intended recipients, a participatory approach that solicits the opinion of pastoralists and disseminates the expected benefits of new breeds is important. The design of breeding schemes needs to consider the socioeconomic parameters that may determine the effectiveness of particular programs. For example, while group breeding schemes have been identified in economic literature as potential pathways to achieve measurable genetic gains of livestock traits in zero-grazing systems, pastoralists report an unwillingness to participate in communal breeding schemes due to likelihood of conflict arising from group member differences and management issues.

# Cattle Breeding Strategies using Genetic Markers as a Pathway for Improving Competitiveness of Pastoral Systems in Kenya

*By Ulrike Janssen-Tapken, Haja N. Kadarmideen and Peter von Rohr*

## Introduction

Pastoralists in Kenya have become increasingly food insecure and vulnerable to poverty over the last two decades. This is largely a consequence of the increasing frequency of droughts, a rising population and changes in the land tenure system. Livestock, which constitute the foundation of pastoralist livelihoods, are vulnerable to a variety of factors that increase the risk profile of the pastoralist enterprise. Diseases, particularly endemic diseases transmitted by vectors such as ticks and tsetse flies, are a key concern.

Owing to the centrality of livestock to pastoral welfare, any poverty alleviation efforts targeted at pastoral communities will have to focus on strategies to improve livestock productivity by minimizing the incidence, and thus the costs, of disease. According to a study based in the pastoral area of Kitengela, livestock health was shown to account for 45 to 48 percent of the total annual expenditures per year per household. This research is concerned with investigating cattle breeding strategies as a means of minimizing the consequences of cattle diseases, especially trypanosomiasis, which is ranked among the top ten global cattle diseases impacting on the poor in pastoral systems.

## Genetic Selection for Breeding Programs

The main objective of this study is to evaluate the potential of conventional and novel genetic breeding methods to improve the genetic merit of African cattle. The authors place an emphasis on studying the generic improvement of cattle traits highly valued by pastoralists, especially trypanotolerance.

The use of genetic markers (DNA information) to guide breeding selection is a relatively new and promising methodology. Traditionally, statistical tools were used to compare animals based on the heritability of the traits desired for selection. However, especially for traits that are difficult to measure and that show low heritability, the use of genetic markers has been shown to improve genetic gain by more than 20% depending on the trait. Nonetheless, no study has thus far investigated the potential of using genetic markers in cattle nucleus breeding programs specific to pastoral conditions.

To assure the relevance of the results for the target population, the authors chose to limit the traits they focused on to those identified as critical among pastoralists. They use the results of a study by Ouma et al. (2006), which ranked cattle traits among a sample of pastoralists using an experimental method aimed at identifying



the relative preference pastoralists have for various traits. The study was conducted in the Mara division of Narok district in Kenya and covered 111 pastoralist households. Trypanotolerance, live weight, milk yield and reproduction potential were shown to be the favored traits and define the breeding objective the authors use.

To arrive at the expected economic benefit of breeding schemes that select for certain traits, the rate of genetic transfer of each trait from one generation to the next needs to be predicted and an economic value placed on the trait. Parameters for the heritability of the target traits were drawn from various studies. For trypanotolerance, the trait of main interest in this study, genetic parameters were estimated from a program crossbreeding the N'Dama and Boran cattle breeds. The economic values of different traits were estimated from the Ouma et al. (2006), study on revealed preference where each trait was associated with different levels and valued by participating pastoralists.

## Results

Using the heritability parameters for each cattle trait in the breeding objective and their associated economic values, simulations were run based on two different breeding schemes: the conventional statistical method and a combined hybrid of the statistical method conditioned on genetic marker information. Simulations were iterated several times to mirror the effects of multiple generation breeding. As Table 1 below shows, both breeding methods indicate that crossbreeding will result in higher valued animals. The table displays the additional expected value resulting from crossbreeding, as well as the generation-on-generation marginal change in value. The values are the sum total of the value gains from each of the four traits under consideration: typano-tolerance, live weight, milk yield, and reproduction.

**Table 1: Estimated value of aggregate genotypes over all animals in each generation and genetic gain of successive generations**

Generation	Breeding gains (\$)		Marginal gains (\$)	
	Conventional Method	Genetic Marker Method	Conventional Method	Genetic Marker Method
<b>2</b>	-0.02	0.69		
<b>3</b>	63.00	62.06	63.01	61.37
<b>4</b>	125.13	119.33	62.13	57.27
<b>5</b>	182.65	171.65	57.53	52.32
<b>6</b>	237.62	149.68	54.97	-21.98
<b>7</b>	291.42	125.63	53.80	-24.04
<b>8</b>	341.22	111.53	49.80	-14.10
<b>9</b>	389.84	123.26	48.61	11.73
<b>10</b>	435.58	131.96	45.75	8.70

As one will note, the conventional method shows a far higher gain from breeding, especially in successive generations of crosses. Given that using genetic markers adds an important source of information to the analysis, and given the unrealistically high gains posted for greater than five generation crosses by the conventional method, the gains derived with the use of genetic markers seem more plausible. The use of genetic markers also suggests a decreasing marginal returns from successive crossings which is consistent with natural laws against unbounded gains from physical traits. Of the individual traits, the value gain on milking yields were the highest followed by live weight. Modest improvements in trypanotolerance were also recorded.

### **Conclusion and Policy Implications**

Breeding cattle that are more robust to costly diseases and unfavorable climates is a critical component of maintaining the viability of the pastoralist livelihood. The central aim of this study was to estimate the value of a breeding program by predicting the selection response of various cattle traits. The results suggest that crossing the N'Dama and Boran species is likely to result in a hybrid whose production traits and trypanotolerance is superior to those of its parents. As the Boran is particularly susceptible to trypanosomiasis, this is a surprising but encouraging result. Furthermore, the authors show that estimation methods that utilize genetic markers produce results that are significantly different from those generated by conventional methods. This and the fact that detecting markers in the cattle doesn't require the infection of the animals to measure the trait emphasizes the benefits that genetic markers could bring to breeding programs.

The demonstrated potential of targeted breeding programs to improve the productive capacity and the disease resistance of cattle justifies a policy agenda that lays out a concrete breeding and dissemination program. Supporting efforts to extract the genetic markers of various traits across several different cattle species, such as the popular Maasai Zebu, and to parameterize the heritability of the different traits across species would be an important first step.

# Politics, Land Tenure and Livelihoods of the Maasai of Tanzania: Reducing the incentives for conservation through economic incentives

*By Hassan Sachedina*

## **Introduction**

The Tarangire-Manyara ecosystem of northern Tanzania is a site rich in biodiversity and has the second highest abundance of migratory large mammal species in East Africa after the Serengeti-Mara ecosystem. In addition to the ecological importance of the area, Tarangire-Manyara is the keystone of northern Tanzania's rapidly growing tourism industry. Revenues from the two parks in 2004 earned an excess of US\$3.2 million in gate revenues alone. Despite the ecological and economic value of the Tarangire-Manyara National Parks, tension between wildlife management and local Maasai pastoralists is growing. Nomadic pastoralists, the Maasai livelihood depends on access to wide swaths of open grazing land. The increasing privatization of land that limits the necessary mobility, the increasing shift toward agricultural production fueled by sedentarization and conservation policies largely skewed in favor of wildlife had lead to increasing conflicts.

Though the national parks generate substantial amounts of revenue, the earnings have not had a significant effect on either poverty reduction or local sustainability initiatives. This breeds unsustainable natural resource practices with the Maasai increasingly turning key migratory routes into agricultural land and engaging in poaching for revenue or to protect their crops. Along the Kwakuchinja corridor that connects the Tarangire and Manyara National Parks, wildlife biodiversity has decreased by as estimated 72 percent between 1989 and 1998 whereas agriculture has increase by 130 percent.

To reverse this worrisome ecological trend, and mitigate wildlife-animal conflicts, efforts are currently underway to harness the economic potential of wildlife to help local pastoralist communities, through community-based natural resource management schemes (CBNRM). CBNRM seeks to negate the chain of cause and effect breeding conflict and threatening biodiversity by placing wildlife tourism programs in the hands of local communities, providing them with a viable and potentially lucrative stream of income and increasing their incentives to conserve and support the wildlife and natural resource base. This study highlights the key social and institutional issues that underpin CBNRM and analyzes the potential costs and benefits of various interventions.

## **Land Tenure and National Resource Management**

Tanzania's legacy of socialism and nationalism is fundamental to understanding the unique challenges to CBNRM in Tanzania. Currently, all land in Tanzania is held in trust by the President. Individuals, communities and commercial entities are thus issued with 'rights of occupancy' for up to 99 years. As such, wildlife management on village lands has tended to lean towards being top-down and state-centric. Outside protected national parks, wildlife management is covered by the Wildlife Act (1974) which has limited provision for community-based conservation.

Game Controlled Areas (GCA) are the primary management mechanism supported by the Wildlife Act. GCA's are primarily divided into hunting blocks which are awarded competitively to tourism hunting firms. A single hunting block can overlay several villages, irrespective of village administrative boundaries. This has been a source of much conflict as village lands effectively have wildlife user rights allocated to the private sector with villages having minimal involvement in the decision-making process, management of hunting rights and revenue allocation. In a bid to alleviate the conflict and provide local incentives for conservation, new regulations were established in 2003 that support the creation of Wildlife Management Areas (WMA) which offers legal support for local communities to reap the benefits of wildlife revenue in their area.

Essentially, WMA are protected areas specified by local communities in which wildlife utilization activities may be conducted in a policy environment which favors increased direct revenue flows to villages. Where the private sector previously entered into agreements with the state to invest in wildlife based enterprises on village lands, WMAs provide local communities with ownership rights that requires the private sector to contract directly with them. Direct economic gains can thus be obtained through resident game fees, tourist hunting block fees, concession fees, and more.

## **Biodiversity Based Enterprise Strategy**

The primary vehicle for delivering conservation-based benefits in northern Tanzania is through the development of community based biodiversity enterprises such as eco-tourism facilities and cultural tourism facilities which generate benefits for local communities through partnerships with private sector investors. Viewed as a way of harnessing the economic potential of biodiversity into conservation initiatives and sustainable development opportunities, biodiversity enterprises are necessarily community-driven, providing economic incentives for conservation efforts at the grassroots level.

While institutions such as the Wildlife Management Areas provide a natural vehicle for local communities to initiate biodiversity enterprises, a major obstacle to community centered resource management options is weak community level governance and the potential for elite capture of the benefits. Successful grassroots conservation efforts require the development of effective community based

organizations and advocacy groups that can ensure that opportunities and revenues resulting from CBNRM are widely distributed among community members.

One of the main policy challenges now is to harness the power of the private sector in making fair and lasting partnerships (which may include equity sharing, leases, management contracts and/or employment and supply/outourcing contracts) with poor communities. This is particularly true in terms of attracting the lucrative international tourism market, which depends on specialized marketing and distribution channels that may be difficult for local communities to access.

# Conflict Minimizing Strategies on Natural Resource Management and Use: The Case for Managing Conflicts Between Wildlife and Agro-Pastoral Production Resources in Transmara District, Kenya.

*By Sospeter Onchoke Nyamwaro, Grace Adira Murilla, Miyoro O. Kennedy  
Mochabo and Kennedy Barasa Wajala*

## **Introduction**

The largely agro-pastoralist Maasai population of Transmara district are faced with the difficult challenges that come with living by the periphery of the world famous Maasai Mara National Game Reserve (henceforth, Mara). Though wildlife are supposed to be confined in designated and protected areas (national parks and game reserves), the lack of natural or artificial boundaries inevitably leads to wildlife spillover into human settlement habitats. Many are the instances in which wildlife have destroyed crops, hunted livestock, destroyed infrastructure and even inflicted fatal injuries on humans. Retaliatory and protective measures by humans, not to mention the material incentive of poaching, have in turn resulted in numerous wildlife deaths as well. The consequence has been a significant tension between the affected human population and the national entities mandated to protect wildlife.

The Mara is an indispensable natural resource valued for its abundant variety of wild animals. It has significant instrumental value as well, attracting a majority of the tourists who visit Kenya. Because tourism is a key engine of Kenya's economy, and due to lobbying from national and international conservation organizations, wildlife and their habitats are protected by a legally empowered Kenyan government institution, the Kenya Wildlife Services (KWS). The Maasai population, on the other hand, is disenchanted by policies which they claim favour wildlife over people and do not compensate them sufficiently for the risks and losses that they bear.

The research summarized in this policy brief aims at enumerating the various human-wildlife conflicts that occur among a population of households living in close proximity to the Mara. The authors delineate the complexities involved in effectively managing a valuable natural resource that has large and positive global externalities but a non-trivial, negative externality at the local level. The research attempts to ascertain the extent of losses incurred by the sample population and the benefits received by local communities.

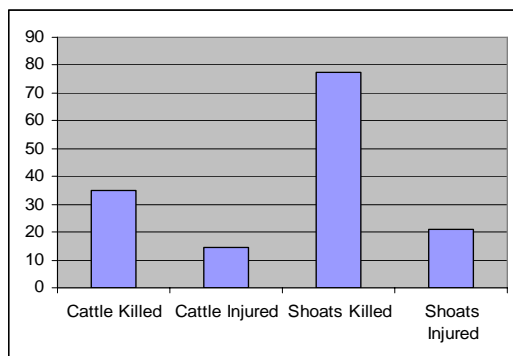
## **Wildlife-human interactions: The cost and extent of conflict**

The study was carried out in the Kirindoni and Lolgoriani administrative divisions of Transmara district. The region lies within the southern rangelands of Kenya and borders the Mara from the northwest. Wildlife-human conflict management is thus

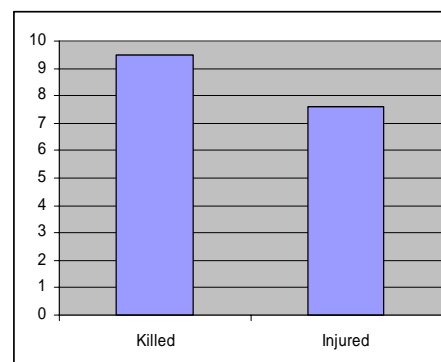
an issue of particular concern among its residents. To elicit the main concerns of the sample population, the research team first informally conducting 17 focus group discussions among key informants in both divisions. A follow-up formal survey questionnaire was then administered to 158 households distributed across both divisions. Among the respondents, 63% pursued a purely pastoral livelihood while 37% were agro-pastoralists. The survey solicited information on the nature, the extent, the policy response, as well as the personal perceptions of the conflicts between humans and wildlife in the area.

Virtually all the respondents (97%) indicated that human-wildlife conflicts were a major problem in the area. Elephants and baboons were considered to be the most destructive wildlife by a majority of respondents. Because both species travel in packs and feed on crops, they can wipe out several households' entire crop in a single visit. Leopards and hyenas were also among those considered as major threats as they preyed on livestock and small ruminants and were of particular danger to humans as well. As the tables below indicate, these problems are quite significant. Table 1 shows the total proportions of cattle, and sheep and goats (shoats), belonging to respondents that were killed or injured in the past one year of the survey. In Table 2, the fraction of respondent households who indicated having a family member killed or injured in the year preceding the survey is shown. As indicated by the majority of interviewees, school-going children were most adversely affected by the threat posed by wildlife. Fear of attack constrained their activities and posed a considerable obstacle to school attendance, especially since most children often have to walk quite a distance to schools.

**Table 1: Livestock casualties due to wildlife in year prior to survey**



**Table 2: Human casualties due to wildlife in year prior to survey**



While the costs of proximity of wildlife with humans are certainly significant, respondents claimed to also receive some benefits and compensation. There is a formal program charged with providing compensation to populations affected by wildlife. Administered by the KWS, the compensation scheme initially included

provisions to reimburse property damage caused by wildlife, but is currently reduced to providing a modest compensation allowance of KShs 30,000 (US\$375) and KShs 15,000 (US\$187.50) for the loss and injury of human life, respectively. The program eventually evolved to include the injection of funds to the local government for the building of infrastructure such as roads, schools and clinics. While the majority of respondents claim to be aware of these compensation schemes and 32% indicated having benefited in some way, the general feeling is that the compensation schemes merely serve to benefit local politicians.

### **Conclusion and Policy Implications**

One of the statutes in the current version of the Wildlife act indicates that “*wildlife is managed and conserved so as to yield to the nation in general, and to individual areas in particular, optimum returns in terms of cultural, aesthetic and scientific gains as well as such economic gains as are incidental to proper management and conservation*”. Within the limits of the act, it is implied that the KWS’s role includes, but is not limited to, initiating government policy on wildlife conservation, managing national parks and reserves on behalf of the society as a whole, and helping farmers and ranchers protect crops and livestock from wildlife.

The study has shown that the human habitants of Kirindoni and Lolgoriani divisions in Transmara district, particularly afflicted with wildlife conflicts due to close proximity to the Mara, are not quite satisfied that the KWS is living up to its role; especially as it concerns protecting their welfare in the face of wildlife disruption. While the authors note a realization among the people that the wildlife are indeed an important natural resource and a key source of revenue, they do not agree that their concerns are adequately dealt with. Without a well established policy of conflict management that adequately responds to the community’s concerns, the community will continue to take their own measures to protect themselves; actions that will inevitably result in both human and wildlife fatalities. Respondents suggest a reinstallation of personal compensation for loss of property, as well as a less bureaucratic and more substantial compensation for human loss and injury. Furthermore, they demand the physical separation of wildlife, either by erecting artificial borders or by increasing policing of the perimeters.



## Contextualising Conflict: Introduced Institutions and Political Networks Combating Pastoral Poverty

*By Fred Zaal, Morgan Ole Siloma*

### **Introduction**

Conflict and poverty are a self-perpetuating cycle in East Africa. Scarce resources and an unbalanced social structure lead to disputes, often resulting in inappropriate management and damage of these scarce resources.

This paper focuses on a conflict over forest resources in the Loita Maasai area in Narok District, Kenya. The Loita forest holds a wealth of natural resources, as well as a plethora of local species, making it an extremely valuable region for tourism. The forest also holds deep cultural meaning for its people, being the site for many traditional beliefs and rituals. Though the Loita Maasai are still very poor, they have consolidating their social capital, or institutional wealth, to increase their political muscle and protect their land.

Previous theories consider an 'indigenous-conservation' model. Using traditional institutions for scarce natural resources can help to fairly allocate resources, and to lessen friction by implementing distribution systems beneficial to all. However, this model cannot control the outside factors of the community at large competing for resources, or corruption within the institutions. And when the perceived legitimacy of mediating government institutions is limited, an essential base for the success of allocation institutions is lost. A solution to this is to merge current traditional institutions that have been very successful in managing the Loita forest upward with government institutions to validate the process of resource management. These traditional management systems limit the forest to use in the dry season, to maximize its water retention potential, and facilitate the sharing of forest grazing with neighboring pastoralists.

### **Loita Institutions: Pastoralists and Politicians**

There are several actors involved in policy decisions and actions surrounding Loita forest. Traditional leaders, NGO staff, appointed government officers and elected leaders have in various constellations grouped themselves in higher-level institutions: Narok County Council (NCC) and the group of Concerned Loita Citizens (CLC) on the one hand, the Loita Council of Elders (LCE) related to the Ilkerin Loita Integral Development Project (ILIDP) on the other. The most influential of these groups is the Loita Council of Elders, established in the past by ILIDP. They currently manage forest use. In addition, ILIDP aims to improve education, livestock and agriculture production, and help the local communities adapt to the economic, political and cultural changes in the region.

## **Loita Forest Conflict**

The conflict began in the late 1890's, when government officials and the then Councilor of Loita conspired to gazette the Loita forest into a National park to profit from tourism revenues. When the ILIDP learned of this, they contacted the Loita Council of Elders. Although these two groups recognized the Narok County Council, represented by the Loita Councilor, as having the formal authority to decide on the future of the land based on a 'bureaucratic-development' model of interference, they felt they had to respond to try and save their right to use the land. The Loita Council of Elders arranged to meet with the Minister for the Environment, who they convinced that the forest should remain accessible to the Loita Maasai. The next step was to establish a legal entity to represent the local peoples, which was difficult as not all the residents supported the Council of Elders. A trust was set up to finance and advertise the cause of the Loita peoples who wished to remain with the forest. A legal battle started between the elected Narok County Council and the LCE, supported by ILIDP who had organized the LCE and the trust to fund them. The ILIDP, though acknowledged to have few legal rights in the situation but exploiting the 'indigenous-conservation' model, gained support through their attention to the traditions and attitudes of the local peoples. Eventually elections took place, and the power structures in the region were altered. Competing forces in the government sidetracked the main political forces interested in tourist revenue, and when the Loita Ward was divided into 5 for maximum representation, the Loita faction succeeded in agreeing with the LCE to withdraw the case from court. Plans for a comprehensive and representative management plan were made.

## **Conclusions**

This conflict had a large impact on the pastoral communities in the Loita forest region and on the politicians who fought them. Though the Loitans managed to retain use of the land, the conflict left mistrust, and all new project proposals are treated with caution, court cases and even violence. The LCE has risen in power, and maintains control of resource management decisions in the region. This affords the local peoples more input, but has started a process of expansion of the council, impeding its efficiency.

The key component to this conflict, and its eventual settlement, was the formation of the Loita Council of Elders, a "neo-African governance" institution. Its ability to consolidate many community perspectives and concerns and bring them to the institutional level where powerful decisions are made was crucial to the continued success of local natural resource management.

This paper calls attention to these new institutions and explores their legitimacy. It provokes discussion of their largely undemocratic formation, and tries to reconcile this with its significant support by the local people. These neo-African institutions often come into conflict with the established (formally democratic) government in the region, which leaves few systems in place to mediate this friction.

# Property Rights among Afar Pastoralists: Forms, Changes and Conflicts

*By Bekele Hundie*

## **Introduction**

In the Afar districts of Northeastern Ethiopia, traditional pastoral land rights evolved to fit the ecological conditions of the drylands, where nomadic pastoralism is the dominant livelihood and where mobility and resource sharing are fundamental. Accordingly, property rights often exist as a complex bundle of rights which often confer conditional access to land according to communally dictated norms. While traditional communal ownership still prevails, the increasing privatization of traditionally owned land by the state has triggered an evolution of land rights privileges that is at considerable odds with traditional property rights norms.

As the key catalyst to the changing nature of land rights, the state based its strategy on the principle that land belongs to the state and that pastoralists have no right to block the former from using land in a specified way. As such, land rights policies did not take into account traditional pastoral land rights and state development programs in the region were developed without consulting the local people or seeking their consent. This is especially true in areas with relatively superior resource endowments where the incentives for privatization were higher. These context-independent state-driven changes in land tenure systems have led to increasing conflicts between pastoralists and the state. Furthermore, as changing land systems disproportionately favored certain groups over others, it fostered tensions that have resulted in violent conflict. The consequences of changing land tenure have been further exacerbated by the problems of recurrent drought and increasing sedentarization that has heightened the vulnerability of the pastoralist livelihood.

This research concerns itself with explaining the unique set of challenges that evolving land rights pose for the pastoralist livelihood. While the author focuses specifically on the process and consequences of land rights changes among the Afar pastoralists of Northeastern Ethiopia, much of it is generalizable to the contemporary experience of pastoralists across the arid and semi-arid lands of Eastern Africa.

## **Study Area**

The Afar Region, located in the northeastern part of Ethiopia, shares an international border with Eritrea and Djibouti. The six Afar communities examined in this study were selected purposively to reflect differences in resource endowments and use patterns, inter-ethnic relationships and state-pastoralist relationships. Four of the sites, Ambash, Kurkura, Doho, and Dudub are found in the middle Awash valley which is also home to several state-owned irrigation

schemes and private farms. These four sites share boundaries with the Karrayou (an Oromo clan) in the east and southeast, the Issa (a Somali clan) in the north and northeast and the Argoba in the southwest. The other two study sites, Harihammo and Daleti, are located across the southwestern escarpments bordering the Amhara region. No extensive commercial farming exists in these sites but pastoral households practice opportunistic farming where rainfall patterns allow them to do so. The Amharas (west and southwest) and the Oromos (northwest) are the neighbors of the Afar pastoralists in these areas.

### **Traditional Property Rights of the Afar Pastoralists**

Property rights in Afar are traditionally based on the philosophy that land is a communal resource. Accordingly, the clan is the lowest social unit to which communal property rights over land and other natural resources are defined. Afarland is divided among all clans of Afar as a function of resource potential and the dominance of a clan (either in number or political power). Clan land often comprises strategic resources such as grazing areas including dry season retreats, browsing resources, and water points. In addition, each clan also has its communal graveyards, settlement areas (*metaro*) and ritual sites. Each clan has a well-established gerontocracy granting authority on decisions regarding land and other natural resource use to a village council consisting of the clan leader, elders, and local wise-men. The decisions taken by the village council include exclusion of non-members, allocation of sites to non-members, negotiating use privileges of other clans' land, and determining resource use patterns. Based on these customary institutions, every member of the clan, by default, has the right to use the fruits of his clan's land in accordance with the established rules.

### **Catalysts of Property Rights Changes**

The state was the key catalyst that triggered the evolution of land rights in the area. Part and parcel of the economic development strategy of the Imperial government of Ethiopia during the 1960s, the expansion of large-scale commercial farming was promoted as a means to supply raw materials to domestic industries as well as to produce surplus food for would be factory laborers. Because of its suitability for irrigated agriculture, Ambash was among those areas whose land was 'captured' for the exclusive use of the state. While the other communities were not directly affected by state intervention, natural challenges and socioeconomic transition resulted in increasing demands for privatization by a small subset of the population that stood to gain. The expansion of truck-stop towns, increased commercialization, increased demand for grain and other cultivars, recurrent droughts and the need to source food aid, all led to an increased demand for private land amongst those who recognized the potential benefits.

### **Increasing Land-Rights Conflicts**

Violent conflicts related to perceived violations of property rights are endemic in the region. While inter-ethnic conflicts among pastoralists feature occasionally in the history of the region, they are now occurring with greater frequency and intensity. As has been the case, most of the conflicts stem from competition over grazing land and water sources. Extensive livestock raids, driven by the honor bestowed to raiders for their courage, are also a major source of conflict. The infiltration of small arms in the area has further intensified the conflicts and increased the associated level of violence and bloodshed.

The conflicts in the study area largely occur between different ethnic groups. Afar pastoralists find themselves in regular confrontation with the neighboring Oromos, Amharas and Somalis. Much of the conflict has to do with the increasing shortage of pasture and water. Resource scarcity is exacerbated by recurrent droughts, vigorous expansion of the *Prosopis juliflora* bush that is replacing palatable and more nutritious grasses. In addition to resource scarcity, weak and inappropriate formal institutions in pastoral areas coupled with the inability of traditional institutions to manage conflicts and secure property rights have contributed to the intensification of violent conflicts and animosity among pastoral groups.

### **Conclusion and Policy Implications**

The issue of property rights is critical to pastoral livelihoods. Access to grazing and watering rights across a vast area of land, which is fundamental to pastoralism in the face of seasonal availability of forage and water, is at odds with the notion of private access to land. As development trends support the privatization of land, pastoralists find themselves with a diminishing stock of resources upon which they can support their herds. This study examined the issue from the perspective of several sites in the Afar region of Northeastern Ethiopia that have been affected by an evolving land tenure regime. The author shows how changes in property rights combine with resource pressures and changing socioeconomic conditions to breed violence in the areas.

These conflicts pose a major stumbling block to realizing the potential gains from resource sharing through peaceful negotiation. As both the engine of property rights changes and the enforcer of law, the state has a responsibility to facilitate negotiations between conflicting groups and to ensure that property rights laws are inclusive of the rights of pastoralists. A coherent property rights policy, supported by a participatory process, needs to be articulated. Without this, the conflicts are likely to escalate in the face of diminishing access to grazing land.





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