



Pastoral Transformations to Resilient Futures: Understanding Climate from the Ground Up

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Research Brief

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Abstract

Africa is an area of the world experiencing rapid change that threatens sustainability. The extensive livestock systems of east Africa are particularly at risk because of rapid changes in climate, human population, and land use. Our goal is to understand climate and global drivers of change affecting two areas of Kenya, the Greater Mara Ecosystem and the Athi-Kaputiei Plains. The workshops we conducted brought together pastoralists from many areas of Kenya. Our project developed an understanding of pastoral perceptions of climate and global changes and their effects on livestock management, the environment and the economy. Workshop participants also identified a broad suite of solutions that would help the livestock economy now and into the future. 

Background

One of the fundamental challenges in climate change development today is to understand how societies and ecological systems are linked, and how they respond in the face of short-term shocks and long-term drivers of change. Changes in climate, land use, landscapes and environments and the implications for people, economies and ecosystem services are vitally important to the future of pastoral populations. The challenge includes understanding the climatic and global change drivers and assessments of human and ecosystem responses.

The African continent is warmer than it was 100 years ago: warming occurred through the twentieth century at the rate of about 0.5 °C per century. The current century is likely to see more rapid climate change, a challenge that particularly threatens poor populations. Just as importantly as increases in temperatures, rainfall variability will increase and extreme events will become more severe and more frequent. The extreme drought in Kenya in 2009, for example, has been reported as one of the worst on record.

Maasailand, the vast region of Maasai-speaking peoples in Kenya and Tanzania, is home to a variety of pastoralists and agro-pastoralists heavily dependent on livestock for their food security. The region also includes several of the world's signature conservation reserves, such as Maasai Mara National Reserve, Amboseli National Park and Nairobi National Park. Like other dryland regions, Maasailand is undergoing rapid changes including high population growth, early privatization of rangelands, strong in-migration of non-pastoralists, changes in weather and seasonality, and land cover and land use changes. Thus, this region represents a potential future of pastoralism elsewhere. As such, studying livestock systems and climate change here will yield particularly useful knowledge about future trajectories of intensifying and diversifying pastoral systems both here and elsewhere.



Maasai women listening in a focus group. (Photo by Stefan Ellis)



In this brief, we present results of household surveys and two workshops in two regions of Maasailand. We compare perceptions of change in the Athi-Kaputiei Plains (AKP) and in the Greater Mara Ecosystem (GME) to help us understand changes in a more intensified system (Kitengela) compared to a less intensified system (Mara).

Methods

In 2011, Dickson Ole Kaelo, a graduate student at the University of Nairobi, interviewed 25 randomly selected households, which were followed by a focus group discussion with 25 men in Narok County. We also sponsored two workshops, one in Kitengela town in February 2011 and another in Narok town in September. Both workshops were followed by gender-specific focus groups. Preliminary results are described here from the surveys and one workshop.

We helped our Maasai participants create a video as well as a photo essay about their participation in our study. We developed a trailer of an upcoming collaborative documentary, *Our Pastoralist Voices on Climate Change*, of the PTRF project and local issues related to climate change from the perspective of local pastoralists.



*A pastoralist and her video production course certificate.
(Photo by Joana Roque de Pinho)*

Our Observations

Effects of climate and other changes on the local economy:

Although there is a perception and a real trend that pastoralist households are diversifying their lifestyles, more than 50% of household income is still derived from the sale of livestock. Eighty five percent of households in our study did not cultivate any crops or livestock and only one household sold milk. The main household expenditures were the purchase of food and school fees. Livestock management costs including the hire of labor, veterinary drugs and purchase of livestock consume, in large part, the rest of the family income.

Livestock herds have changed. Sixty four percent of respondents introduced new cattle breeds and the majority of households have introduced new sheep and goat breeds. Cattle are being replaced by sheep because of changes in vegetation that favor short grasses. Most herders reported grazing outside their village on land owned by neighbors, in the National Reserve or on conservancy land. Most herders join with relatives, neighbors or friends to move their livestock.

The herders agreed unanimously that weather patterns have changed. More than half of the respondents had no idea what causes the changes in weather

though many said, "Only God knows." Others suggested that there were too many people and livestock creating gullies and changing the vegetation composition on the plains. Others suggested it was due to the destruction of forests in the watershed and due to pollution.

Faced with the challenges of recurring and severe droughts, respondents intend to reduce their livestock, introduce better breeds and fence part of their land to conserve pastures for the dry season. During good years people spoke of purchasing livestock to fatten and sell before the next dry season and use the proceeds to build new homes, make water dams, build businesses in neighboring towns or to bank the money. About 40% of those we interviewed were members of conservancies and most reported that the revenue generated and disbursed from conservancies benefited their livelihoods and contributed to better livestock health.

“The herders agreed unanimously that weather patterns have changed. More than half of the respondents had no idea what causes the changes in weather though many said, ‘Only God knows.’”



*A Masai woman.
(Photo by Photo by Stefan Ellis)*

Changes	Athi-Kaputiei Plains	The Greater Mara Ecosystem
Weather	Longer, more frequent droughts; heavy rainfall over short time periods; high evaporation; high run off; unpredictable weather	Irregular patterns during the long and short rains; frequent droughts; more short rains in the south; violent, scattered storms in Narok
Land tenure and land use	Shift from group ranches; increased land sales; cultivation of pastoral lands; increasing settlements; more fences; housing changing from traditional to modern	Fragmentation of lands into small units which are not viable for agriculture and livestock; shift from pastoralism into other livelihoods
Soil, pasture and water	Reduction of grazing areas; reduced soil fertility, increased erosion; disappearing grass species; faster drying of grasses	Soil compaction; erosion; loss of organic matter, perennial grasses, grasslands and palatable grass species; overgrazing; drying of rivers, shallow wells, swamps, springs and seasonal rivers; siltation
Livestock condition, movement and marketing	Decrease in livestock production; decrease in livestock quality and size; increased susceptibility to disease; less active bulls; less market value; shift to sheep and goat cultivation	Rapid weight loss; low milk production; slowed growth; infertility; increased movement of livestock over increased distances; disease exposure
Livelihoods	Livestock-dependent families getting poorer; malnutrition in children and elderly; school drop outs; diversification of income sources; employment in eco-tourism; increasing land sales after drought	Resources spent on sustaining livestock; little disposable income; family education, health and social welfare affected; embarrassment accepting food aid; lack of nutrition; sale of lands; prolonged poverty cycles; illness
Social Relations	Droughts weaken stability of family relationships; new social networks established to cope with drought; new social networks associated with increased sexually transmitted disease; more intra-clan conflicts, inter ethnic conflict and cross-boarder conflict.	Frequent family quarrels; increased stress; child labor; unfair distribution of burden for the poor

Figure 1. Table describing the primary changes occurring in the two Maasai regions.

Changing Conditions:


Our two-day workshop early in 2011 was attended 27 participants from the Kenyan drylands and designed to elicit their views on climate and other changes. A number of common themes emerged within the group. First, droughts were occurring more frequently. Average or normal years have disappeared or are becoming rare while wet and dry years are becoming more common. Land is increasingly becoming more privatized, though the rate and magnitude of this is much higher in the Athi-Kaputiei Plains. Erosion is increasing causing more bare soil and gullies. Rivers, shallow wells and springs become dry earlier in the season or dry up entirely. Loss of good forage and unpredictable water has affected livestock conditions and production. Many people pointed to slow growth in calves and low milk production as negatively affecting livestock conditions. Livestock sometimes have to be moved long distances, leading to an increase in disease incidence, the potential for conflict and low livestock condition. This, in turn, results in lower market values for livestock. The result is a need for greater diversification in income sources.

Solutions and Action: Images for Desired Futures

Workshop input suggests that county and central governments should recognize the need for land tenure initiatives that support livestock production. Specifically, open, unfenced, large tracts of land are important and necessary. This means land subdivision should be discouraged and pastoralism should be recognized as a preferred land use. However, it is not enough to have only access to land; inputs such as storage of fodder, silage and hay, new livestock breeds and livestock insurance are needed. To increase the value of livestock, access to market information, water source improvement, and livestock disease eradication are needed.

Most people recognized that the means to accomplish these solutions is to develop, enact and implement pro-pastoralist land use policies and laws. Land policies and climate change policy need to provide for pro-pastoralism, at both the county and national levels. Further, pastoralists should organize themselves into networks that link them to wider markets both within the country and in the region. These markets provide information on diversification and other management strategies that strengthen the livestock sector.

Implications for future work

It is clear from the work to date that climate never acts in isolation. There are many other societal changes, such as land privatization, that affect how people will deal with climate. However, pastoralists in our study did not know the causes of climate change. There is a real need for climate forecasts and information for pastoralists that will be useful for the livestock economy. There is great need to communicate and provide an understanding of climate change in a way that is meaningful to pastoralists, for example, in briefs or on the radio in Swahili that explain causes of climate change. This may promote an exchange of information about solutions between various groups and people who are taking steps to adapt to the changes. With real and ongoing information about climate change pastoralists can more readily make the policy changes that are necessary to deal with the future. This is a start. 

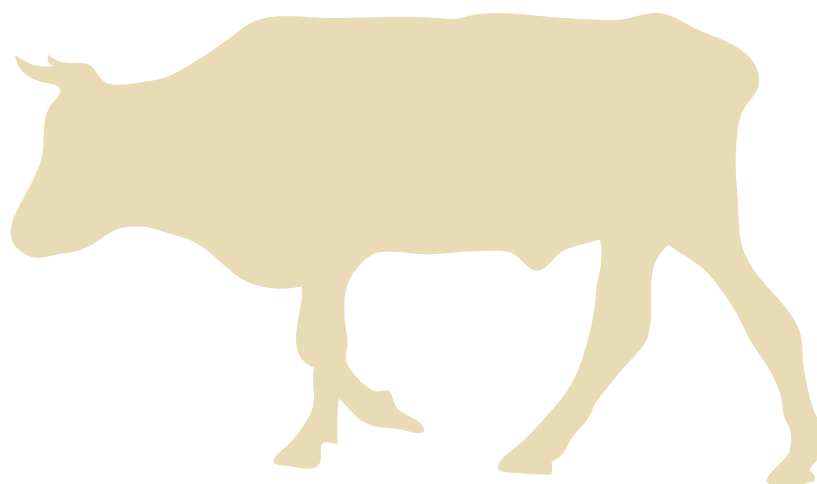
Further Reading

Go online to watch our video and view our photo essay:

Video available at <http://lccrsp.org/2012/03/uniting-pastoralists-scientists-and-policy-makers-through-video-project/>

Photos available at <http://lccrsp.org/2012/03/uniting-pastoralists-scientists-and-policy-makers-through-video-project/>

Our Pastoralist Voices on Climate Change trailer can be found at: <http://www.youtube.com/watch?v=765l9XmMpDY>.



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Feed the Future Innovation Lab for Collaborative Research on Adapting Livestock Systems to Climate Change is dedicated to catalyzing and coordinating research that improves the livelihoods of livestock producers affected by climate change by reducing vulnerability and increasing adaptive capacity.

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