



Pastoralist perspectives on livestock health, livelihood improvement, and environmental change in rural Tanzania

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Research Brief

Feed the Future Innovation Lab for Collaborative Research on Adapting Livestock Systems to Climate Change

Abstract

East African pastoralists and the livestock integral to their food security, culture, and livelihoods are vulnerable to climate-change driven alterations in resource availability and disease transmission. In the rural villages bordering Ruaha National Park (RNP) in Tanzania, pastoralist communities already face pasture and water scarcity and high disease losses in their herds. As part of a long-term project to assess the impacts of education on livestock health, human nutrition, and pastoralist livelihoods, researchers conducted focus groups with diverse pastoralist representatives from 21 villages bordering RNP. These focus groups were designed to validate priority livestock health concerns with a broad sample of pastoralists in order to develop locally relevant education. Additionally, researchers sought to identify other factors constraining pastoralists' ability to improve their livelihoods and to gain local perspective on how environmental change shapes both animal health and human livelihoods. This research brief outlines pastoralists' perceptions of the barriers to creating resilient livestock-based livelihoods. Among other priorities, pastoralists described a critical need for educating both male and female household members about livestock health. 

Researchers deepen discussions on livestock health and environmental change through focus groups

Pastoralists and livestock populations in the semi-arid grassland regions of Tanzania are extremely vulnerable to climate change. Climate change-driven alterations in rainfall will likely have direct impacts on livestock productivity through water and pasture availability, and significant indirect impacts by altering disease dynamics and incidence. Response of disease vectors, animal hosts, and pathogens to climate change may increase outbreaks of diseases like Rift Valley fever, which can cause severe symptoms and even death in livestock and people. To better understand the factors limiting pastoralists' ability to adapt to these changes in animal health conditions, and thereby improve their livelihoods, researchers expanded upon previously collected data through a series of focus groups with pastoralists living near Ruaha National Park.



Focus group in Tanzania. (Photo credit: Christopher Gustafson)



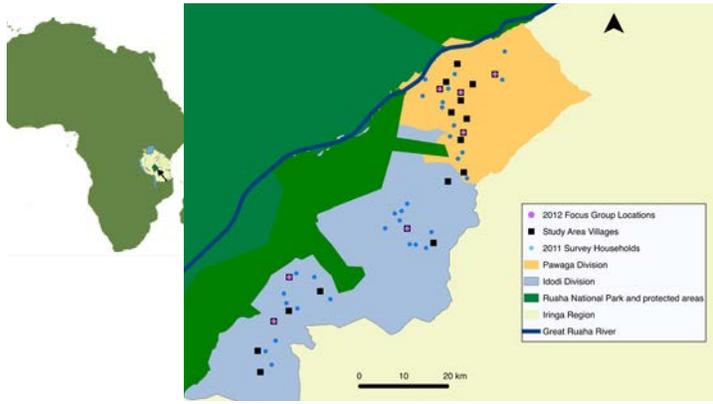


Figure 1. Focus group and village locations within the study area bordering Ruaha National Park in Tanzania.

Previous surveys conducted in 2011 with 31 pastoralist households and eight extension officers from villages bordering RNP (reported in Livestock Climate Change Innovational Lab research brief RB-07-2012) identified key diseases limiting local livestock production and ranked education as a top priority for building healthy and resilient herds. To expand upon the initial livestock health assessment surveys, researchers conducted seven focus groups in 2012 with pastoralist representatives and local leaders from the 21 villages of Pawaga and Idodi divisions – two administrative units bordering RNP and community wildlife management areas. Ultimately, 118 pastoralists, 41 of whom were women, participated in the focus groups. Focus group participants in 2012 offered a more representative sample of the gender, tribes and geographic distribution of pastoralists in the study area than the 2011 household survey participants.

In each focus group, pastoralists discussed 1) livestock diseases of concern and priority topics for education; 2) additional constraints to livestock production and livelihood improvement; and 3) environmental change. The semi-structured format of the discussions allowed participants to elaborate on specific health and environmental concerns. Three of the focus groups were held in the southern division (Idodi), representing nine villages, and four focus groups were conducted in the northern division (Pawaga), representing 12 villages. As climate conditions grow increasingly arid moving from the southwest to the northeast of the study area, focus groups included participants from two to four neighboring villages to reflect spatial distributions in environmental and health concerns.

Focus groups confirm key livestock diseases and identify education priorities

All focus groups emphasized the importance of education on livestock health topics, including identifying clinical signs of disease and understanding appropriate disease treatment and prevention — the same findings identified in the 2011 household surveys. Key diseases or disease syndromes of importance identified include respiratory disease in cattle, sheep, and goats, circling disease in goats and sheep and Newcastle disease in chickens. While knowledge of emerging diseases (including circling disease) was considered important for all pastoralists, a participant from the central study region highlighted the need for education about common existing diseases, such as parasitic infections, to help transfer knowledge to younger members of the households. Pastoralists from all tribes echoed the desire for any forthcoming education to extend to all members of the household. Both female and

male pastoralists emphasized the need for women to have access to livestock health education. Participants at a number of focus groups were interested in learning more about zoonotic diseases—diseases that can be transmitted from animals to humans. In all groups, disease was discussed as a critical factor limiting livestock production and education was confirmed as a priority for increasing herd health and resilience

In addition, geographical differences in disease prevalence were reported in the study, highlighting the importance of an adaptable system of livestock health services that incorporates local needs. For example, pastoralists in the northern division, Pawaga, described circling disease as a critical concern for livestock health more frequently than their counterparts in Idodi where tsetse fly-associated disease was more common.

Additional challenges to livestock production and livelihood improvement

While focus group participants consistently mentioned disease as a factor limiting herd and household well-being, other impediments were also identified, including human capital development, problems with access to vaccines and medicines, insufficient access to livestock markets and changes in environmental resources.

Pastoralists lack access to livestock health inputs

One of the most frequently—and passionately—mentioned problems that pastoralists face is a lack of access to livestock health inputs. These inputs roughly fall into three categories: 1) the veterinary extension service, 2) health-related infrastructure and 3) medicines. When their livestock are ill, pastoralists do not feel they can rely on the veterinary health extension officers to provide timely, effective services. All of the parties involved, from the government veterinary officers to the extension officers to the pastoralists, agree on some of the same problems. For instance, extension officers are not provided with transportation as part of their job, hampering their ability to arrive at a pastoralist household in a timely manner, particularly if multiple households are requesting their services.



One of the three rural village livestock dips in the study area. (Photo by Christopher Gustafson)

Local animal health infrastructure constraints include a limited number of livestock dips, a method of parasite removal in which livestock are immersed in a parasiticide. Only three dips are currently available to pastoralists in the 21 study villages; many pastoralists live hours to days away from these services.

Additionally, acquiring medicines necessary to treat sick livestock poses a significant challenge to pastoralists and extension officers. The closest veterinary pharmacies are in Iringa, a 3-4 hour one-way bus ride from the study villages. Lack of authentic and accessible medicines has the potential to delay critical treatment for sick livestock.

Pastoralists express need for more robust and local livestock markets

Pastoralists see few opportunities to sell livestock and livestock products at a “fair” price in Pawaga and Idodi divisions. While small-scale sales of livestock products, such as milk and eggs, occur locally, each division has only two markets that offer the chance to sell livestock. One of these markets opens twice a month; the other three are held monthly. Pastoralists at a number of focus groups listed a more robust local livestock market as an important need. While not necessarily representative of the entire study area, pastoralists in the south reported walking their animals three days to a market along the highway connecting Tanzania to Zambia in search of better prices. Focus group representatives from villages in both divisions also described training on economics, entrepreneurship and livestock marketing education as vital to improving livelihoods.

Pastoralists face pasture and water shortages

Representatives at all of the focus group sessions mentioned access to pasture and water as limitations to livestock production. Pastoralists perceived lack of pasture to be primarily a problem of increased demand for land by agriculturalists; many pastoralists said that the amount of land available to them has decreased considerably in the



Expanding irrigated agricultural activities, such as rice production, have decreased available pasture and water for livestock herds.

(Photo credit: Liz VanWormer)

recent past. While not discussed explicitly as a property rights issue by participants, conflict over land ultimately speaks to a land-use system that favors agricultural production over communal grazing. At a few focus group sessions, representatives proposed the idea of a reserve that would set aside grazing lands for pastoralists to reduce competition with agriculturalists.

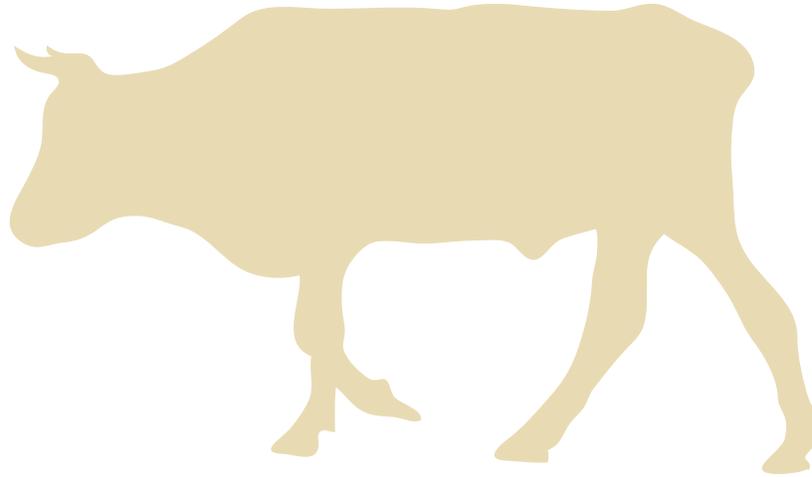
Pastoralists voiced concerns about water quality and quantity, linking problems with water to human population expansion and changing land-use patterns. For example, in addition to increasing competition for available water, new agricultural development has physically blocked livestock access to surface water sources. Destruction of forests for charcoal production and farming and an increased harvest of remaining trees near water sources for cooking fuel were identified as important drivers of decreased water quality. Pathogen contamination of water sources was not discussed, but pastoralists in one focus group emphasized the potential for agricultural chemical runoff to lower water quality.

Pastoralists in all focus groups agreed that changing precipitation patterns also contributed to limited pasture and water resources. They suggested that the climate throughout the study area is becoming warmer and drier, with rainfall decreasing in recent years. While the cause of decreased rainfall was generally not linked to human influences, one representative identified it as the result of human use of cars, firewood and airplanes. As the human population grows in this area, pastoralists perceive increased resource consumption demands, land use decisions and climate change as critical to both water and pasture availability.

Future capacity building in livestock marketing needed to help pastoralists adapt

All of the changes discussed—reduced water quantity and quality, decreased rangelands, and global changes in climate patterns—have the potential to adversely affect livestock health. Less forage and water can influence nutrition and immune status, making livestock more vulnerable to disease. Decreased water availability can also drive contact and disease transmission among livestock, wildlife, and people, as well as increasing direct competition for water resources. Climate change may also alter transmission patterns of existing diseases and allow novel diseases to emerge.

Pastoralists have many traditional disease remedies, but the emergence of novel or unknown diseases and the reduction of the natural resource base from which these traditional remedies derive compromise their ability to rely on traditional knowledge. An increase in veterinary services and education and training opportunities is needed to help pastoralists cope with livestock health challenges. Locally relevant education has the potential to make pastoralists' livestock herds and livelihoods more resilient in a landscape rapidly being altered by environmental change. While this project is focused on livestock health and human nutrition education, future capacity building efforts concentrated on increasing training in entrepreneurship and livestock marketing could increase this adaptability further. 🐄



Strengthening Tanzanian Livestock Health and Pastoralist Nutrition and Livelihoods in a Changing Climate

Principal Investigator: Jonna Mazet, UC Davis

East African pastoralists, whose livelihoods depend crucially on livestock, are seriously threatened by climate change impacts on water, pasture and disease dynamics. In Tanzania's biologically diverse and economically important Ruaha landscape, pastoralists relying on livestock for food, economic security and cultural preservation have felt the devastating effects of disease on animal survival, productivity and marketability. During recent livestock health capacity interviews, pastoralists repeatedly called for household-level education and better trained and equipped livestock extension officers (LEOs) to increase herd resilience to disease threats in their changing environment. LEO interviews echoed this critical need for livestock health training and diagnostic capacity. The project's interdisciplinary team will implement an innovative intervention to meet this demand; extend educational opportunities to women and children; and intensively monitor and evaluate impacts on animal health, human nutrition and livelihoods. Integrating novel cell phone education delivery and follow-up, the research team will simultaneously expand training opportunities and collect real-time data on disease and monthly nutrition and economic outcomes. These data will enhance the ecosystem services modeling approach, addressing health outcomes from water policy and management decisions under changing climatic conditions. This collaboratively developed multi-level intervention will provide locally relevant knowledge and practices promoting adaptability and resilience of livestock systems, human nutrition and pastoralist livelihoods and will be evaluated for broader use in semi-arid systems threatened by climate variability. The project will leverage existing infrastructure and partnerships, build collaborations among researchers and stakeholders, develop institutional and local health services capacity and engage pastoralist communities that will be most affected by climate change.



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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