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Community Perceptions Concerning Key Ecological Resources at Risk in Baringo District, Kenya

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Pastoral Risk Management Project

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Key ecological resources in arid and semi-arid lands are often characterized by small patches of seasonal grazing and important water points that lend critical support to entire production systems. When key resources are degraded or lost, production systems can be badly compromised. The Baringo District of north-central Kenya is well known for enduring decades of environmental degradation and food relief. As an initial part of an effort to map and characterize key ecological resources at risk in Baringo, we interviewed 136 resident leaders from pastoral and agro-pastoral areas. We asked them to identify and rank their most vulnerable ecological resources, clarify why these resources have become compromised, and propose ideas for resource rehabilitation. Overall, pastoralists and agro-pastoralists ranked vulnerable resources differently. Climate and human factors were mentioned as being responsible for resource-related problems. When solutions to problems were discussed, respondents noted that government must play the critical role in resource rehabilitation. In contrast, they rarely proposed solutions based on their own initiative, and we interpreted this to suggest that the population in general has become overly dependent on outside forces to affect change. Resource rehabilitation efforts would require strong partnerships between government and resource users to be sustainable. How to forge and sustain such partnerships should be a focus of future research and development efforts.

Background

Key ecological resources in arid and semi-arid lands are often characterized by small patches of seasonal grazing and important water points that lend critical support to entire production systems (Scoones, 1991). Examples are dry-season grazing, permanent oases, and seasonal water points. When such key resources are degraded or lost, the production systems can be badly compromised. One example would be the loss of pastoral dry-season grazing to crop cultivation by settlers, a common process in the arid and semi-arid lands of east Africa. Another example is degradation of vital water points through erosion or pollution, hence making areas of associated grazing no longer accessible. Loss of key resources is often related to breakdowns in traditional systems of resource management and conservation.

Baringo District of north-central Kenya is largely comprised of arid and semi-arid environments. The district is well known for the extensive environmental degradation that has occurred over many decades due to a growing human population and heavy pressure on resources for grazing and fuel wood collection (Little 1992). In response to this situation, government and non-government organizations have repeatedly provided food to Baringo residents via emergency famine relief and food-for-work programs. As part of a larger study concerning the mapping and characterization of key ecological resources at risk throughout Baringo District, we engaged communities at various administrative levels to better identify the issues. One hundred and thirty six

key informants were interviewed from seven divisions in Baringo. Four of the divisions were in the arid pastoral zones while three were in the semi-arid agro-pastoral zones. These key informants were asked to: (1) identify the vulnerable and lost key resources in the district; (2) rank key resources in order of their degree of vulnerability; (3) note major factors influencing vulnerability and loss of resources; and (4) suggest possible means of restoration. Key resources have been subsequently mapped on a GIS template. Here we report some of the interview results.

Preliminary Findings

Table 1 indicates that pastoralists and agro-pastoralists ranked vulnerable key resources differently. Agro-pastoralists tended to have greater concerns about water and croplands, while pastoralists were most concerned about vulnerability of dry-season grazing and water. Overall, the most cited key resource of concern involved water points.

Table 2 illustrates the factors perceived to be the main reasons as to why key resources have been vulnerable to loss or destruction. These factors were aggregated into indirect climate-related causes, direct human-related causes, and "other" causes. For example, climate-related causes included drought and a general "drying out" of the ecosystem, increasing soil salinity (in some cases), as well as changes in the courses of waterways. Direct human-related causes included insecurity, resource competition,

Table 1. Key resources at risk, their descriptions, and ranked vulnerability to loss by pastoral and agro-pastoral communities in Baringo District.

KEY RESOURCE	DESCRIPTION ¹	OVERALL RANKING ON VULNERABILITY TO LOSS		
		Pastoral (n=70)	Agro-pastoral (n=66)	Overall District (n=136)
Grazing Land	Primarily dry-season grazing	1	3	2
Water	Includes all types of watering points	2	1	1
Arable Land	Includes crop lands and valuable trees	4	2	3
Livestock	Includes cattle, sheep and goats	3	4	4

¹Where: Grazing land consists of riverine vegetation used as dry-season grazing, vegetation on hills reserved for dry-season grazing, grazing areas in swamps, depressions and valley bottoms used in dry seasons, and pastures found on high elevations; Water includes permanent springs, rivers, reservoirs, boreholes, and shallow wells; Arable land includes all forms of rain-fed and irrigated lands; riverine trees used as forage for bees and sites to hang hives. The top rank is (1) in all cases. Source: Mutinda (unpublished data).

over-population of people and animals, destruction of watersheds, pollution, and soil erosion. Other causes, which may be at least indirectly related to human use patterns, included invasion by noxious woody species. Considering factors in these aggregate classes, climate was mentioned 334 times as a major factor in the loss of grazing, water, and arable lands, direct human influences were mentioned 510 times as a major factor, and “other” influences were mentioned 32 times as a major factor. This suggests that the population interviewed considered climate and human-related effects as co-dominant in the decline of key resources in Baringo District.

Respondents were then asked to suggest possible opportunities to restore vulnerable or lost resources. By far the most popular solutions involved putting all the responsibility on government. This included that government should develop new water resources (100 percent of respondents), provide more security (98 percent), restock herds (94 percent), control noxious bush species (90 percent), employ grazing guards (85 percent), provide food relief (82 percent), and give title deeds to farmers (52 percent). In contrast, very few respondents (only 2 to 8 percent) suggested ways of restoring key resources that involved community leadership or involvement.

Practical Implications

The downward trend in the ecological condition of Baringo District is known. Our work confirms that the pastoral and agro-pastoral communities in Baringo are well aware of the vulnerable state of their key ecological resources in general. They acknowledge that both climate and human activity are responsible for environmental changes they have observed. We have been surprised, however, by the minimal role given to community responsibility or initiative in the restoration

of key resources by these respondents. While it is conceded that government must have a central role in efforts requiring large investments like water development, promotion of security, and provision of food relief, the general impression we have is that these communities exhibited an overwhelming tendency to look outside of themselves for viable intervention approaches. How this has come to pass is an important and interesting question. While this finding may simply be a case of respondent bias, we speculate that the pattern may indicate a “dependency syndrome.” It is possible that poor governance and lack of effective technical intervention in the region over many years has undermined any hope or confidence that communities can be successful in taking the lead on their own development. They may be precluded from taking their own lead by external forces, or they may lack the internal leadership structures, resources, or vision to tackle complex issues themselves. There are cases elsewhere in Africa where community-led innovation is a cornerstone of development efforts (www.innovationafrica.net.) If restoration of key ecological resources is to have a good chance of success, strong partnerships between government and local resource users are required. Further research and development efforts are needed to reveal what types of partnerships are needed, and what limits them from being created.

Table 2. Major factors perceived to influence the vulnerability of key resources as identified by survey respondents (n=136).

KEY RESOURCE	FACTORS IDENTIFIED BY KEY INFORMANTS AS INFLUENCING THE VULNERABILITY AND LOSS OF KEY ECOLOGICAL RESOURCES	PERCENT OF RESPONDENTS
GRAZING		
	Climatic factors (drought, low rainfall, high temperatures)	96
	General insecurity	56
	Expansion of crop cultivation	45
	Lack of grazing guards to control reserved grazing	26
	Invasion by unpalatable bush species (<i>Dodonea viscosa</i>)	19
	Encroachment by settlements (sedentarization)	13
	Invasion by <i>Prosopis juliflora</i> (especially in swamps)	13
	Increased livestock numbers	6
	Breakdown of traditional resource management systems	4
WATER		
	Drying up and silting of earthen dams or pans	98
	Climatic factors (drought, low rainfall, high temperatures)	96
	Insufficient water sources	66
	Animals drinking from sources for people (reservoirs)	55
	Destruction of watersheds	51
	Damage to water points	47
	River changing course	22
	Pollution in up-river catchments	19
	Over subscription of water supplies	14
LAND		
	Population increase	51
	Cutting of riverine vegetation for building materials, charcoal making, and to clear sites for cultivation	32
	Increased soil salinity	22
	Scarcity of land that can be irrigated	19
	Soil erosion	6
LIVESTOCK		
	Diseases and lack of grazing	69

Further Reading

Scoones, I. 1991. "Wetlands in drylands: Key resources for agricultural and pastoral production in Africa." *Ambio* 20(8): 366-371.

Little, P. 1992. "The Elusive Granary: Herder, Farmer, and State in Northern Kenya." *African Studies Series* 73. Cambridge, UK: Cambridge University Press. 212 pp.

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The GL-CRSP Pastoral Risk Management Project (PARIMA) was established in 1997 and conducts research, training, and outreach in an effort to improve welfare of pastoral and agro-pastoral peoples with a focus on northern Kenya and southern Ethiopia. The project is led by Dr. D. Layne Coppock, Utah State University, Email contact: Lcoppock@cc.usu.edu.



The Global Livestock CRSP is comprised of multidisciplinary, collaborative projects focused on human nutrition, economic growth, environment and policy related to animal agriculture and linked by a global theme of risk in a changing environment. The program is active in East Africa, Central Asia and Latin America.

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