

9. Investment in infrastructure, capacity building of communities and structuring of institutions will benefit local communities in the drylands. Government should also invest in drylands development research to generate more knowledge and to deal more comprehensively with dryland research and development.

## References for further reading

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## Profile of the Project

This research was supported by Association for the Strengthening of Agricultural Research in Eastern and Central Africa (ASARECA) and conducted by the International Union for Conservation of Nature (IUCN), International Livestock Research Institute (ILRI), the Resource Conflict Institute (RECONCILE), and Egerton University as the coordinating institution.

The research goal was to make a significant contribution to understanding high priority regional policy issues and potential reforms that will favor improved and sustainable biodiversity

conservation, while enhancing livelihoods in pastoral areas of the Eastern and Central African region. Specifically, the research endeavored to: i) inform policy harmonization in sustainable management of drylands and pastoral areas biodiversity, ii) develop tools that will guide sustainable investment options in drylands and pastoral areas; and iii) promote a regional approach to drylands and pastoral areas conservation and use.

This brief *Tanzania: Wildlife and livestock need each other for prosperity* is the third in a series of policy and information briefs that explores issues related to the sustainable development of drylands. It explores drylands with specific emphasis on the Tarangire Park area in Northern Tanzania to learn lessons and map the way forward.

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# Tanzania: Wildlife and livestock need each other for prosperity

*ABCD series Policy brief no. 3*

Land-use change is central to environmental management due to its profound influence on biodiversity, ecosystem services and livelihoods. Environmental management and land-use planning require information about the dynamics of land use. Yet, in sub-Saharan Africa, this information is often lacking and this makes planning a difficult exercise especially in drylands. In Tanzania, drylands occupy 67% of the total land area. The major land uses in these areas are pastoralism and conservation. They present a clear point of interaction between natural resource management, pastoralism and biodiversity conservation within a gradient of conflicting policies that define access to, control over and participation in management and sustainable utilization of resources by communities living there. Recent work in the Masai Mara in Kenya shows that livestock facilitate both small and medium herbivores in the wet season but also contribute to creating and maintaining the conditions that make such movements possible. The findings suggest that coexistence between wildlife and livestock is possible, provided changing land use patterns are regulated in a way that does not compromise the habitat requirements necessary to maintain wildlife.

This brief gives a review on the impacts of land use changes on wildlife and livestock in Tarangire ecosystem in Tanzania. Further, it recommends steps and policy discussion on how to strengthen the rich heritage of the drylands biodiversity and pastoral livelihoods.

## Positive engagement with pastoralists as custodians of the drylands - The Tarangire case study

The drylands in Tanzania are critical to tourism and national food security. They support agriculture, livestock rearing, tourism and wild resource harvesting. Ninety eight per cent (98%) of meat and thirty per cent (30%) of milk and other livestock products consumed in Tanzania come from the drylands. Livestock accounts for about 30% of the agricultural GDP. Out of this contribution, about 40% comes from beef production, 30% from milk production and the remaining 30% is from poultry and small stock production. The tourism industry is all situated in the drylands and provides a niche for national income.

The Maasai-Steppe of Tarangire is one of the richest wildlife areas in Tanzania. It is well known for its migration of wildebeest, zebra and elephant. Tarangire National Park (TNP) is the heart of the ecosystem and contains the only source of water

in the dry season, where the majority of the large mammals, including the migratory herbivores congregate along the Tarangire River. It is now severely threatened by land use changes that are affecting wildlife habitats, and pastoral livelihoods that depend mainly on livestock keeping.

Using spatial modelling, we simulated land use change in the study site. We used a predictive model and empirically tested the model with real data to help describe patterns and dynamics of local scale changes in land use. Agricultural land cover changes were derived through digital analyses of satellite images for 1984 and 2000. Fieldwork was then conducted to validate results with the help of local Maasai elders knowledgeable about the history of the area. We ascertained changes in agriculture revealed from the satellite images for both 1984 and 2000.



Photo courtesy: Fortunate Msoffe

Several variables, ranging from agricultural suitability of land as indexed by the agro-climatic zone, rainfall amount, slope, distances to the nearest rivers, towns to park boundaries and their interactions determine the possible changes in land use. Not surprisingly, agricultural farms are located close to rivers and park boundaries—habitats that are clearly favoured by wildlife—and thus compete directly with wildlife conservation (Lamprey 1964, Mwalyosi 1992, Borner 1985).

By 2000, five wildlife corridors were remaining in the ecosystem (Oikos 2002; Msoffe et al. 2011). Of these, three are seriously threatened with blockage, on the north-east; (i) the Kwakuchinja wildlife corridor, used mainly by wildebeest and zebra from TNP to Manyara Ranch and Lake Manyara National Park (LMNP); (ii) the corridor from TNP through Lolkisale GCA up to Losimingori Mountains, used mainly by elephants and (iii) the third corridor to the east from TNP to the Simanjiro Plains, used mainly by wildebeest and zebra to the calving grounds. All these are currently being replaced by extensive cultivation and settlements.

We produced maps showing the probability of land being converted to agriculture. The map shows that 36% of the land has a very low, 29% has a low, 21% has a medium, 10% has a high and 4% has very high probabilities of conversion to agriculture (Msoffe et al. 2011).

The implications of all these include:

- 1) Livestock and livelihoods: Wildlife conservation needs to be integrated with the livestock sector policy and development goals because wildlife and livestock both depend on the same resources; i.e. forage and water and compete with farmers for land (TNRF 2008).
- 2) A cross-sectoral approach is necessary to coordinate wildlife management in a holistic manner with land, tourism, forestry and livestock sectors since these resources often all exist together at the village level (TNRF 2008). Only then will wildlife conservation contribute positively to local livelihoods and economic activities.
- 3) Many wildlife species need resources during certain times of the year which are found outside protected areas. Conservation of wildlife in these areas depends on both protected areas as well as areas on village and private lands. However for wildlife to be conserved outside protected area boundaries, it needs to legally generate major economic value for the local communities (TNRF 2008).
- 4) Drylands are multifunctional landscapes and the values are diverse and multi-sectoral: national governments should adopt an overarching policy objective of sustaining and building pastoralism and dryland investments that transcend sectoral policy dialogue.
- 5) Drylands are not homogeneous areas, but contain very diverse biophysical and socio-economic realities. Land use planning and livelihood strategies, investments and policies need be matched to this diversity.
- 6) Pastoralism is a key traditional livelihood strategy in dryland areas. The pastoral ecosystem is highly resilient and recovers quickly from common disturbances such as fire, herbivore pressure and drought.
- 7) Bhola et al. (2012) suggests that livestock facilitate both small and medium herbivores in in the wet season but also contribute to creating and maintaining the conditions that make such movements possible. The findings suggest that coexistence between wildlife and livestock is possible, provided changing land use patterns are regulated in a way that does not compromise the habitat requirements necessary to maintain wildlife.
- 8) **Unfavourable Climate:** Analyses of long-term rainfall data in the Tarangire ecosystem indicated unfavourable conditions for crop cultivation. Future forecasts of climate warming and substantial reductions in rainfall in East Africa imply that the adverse effects of climate change on wildlife and pastoralism will be further accentuated by the rapid land use changes (Msoffe et al. 2011).

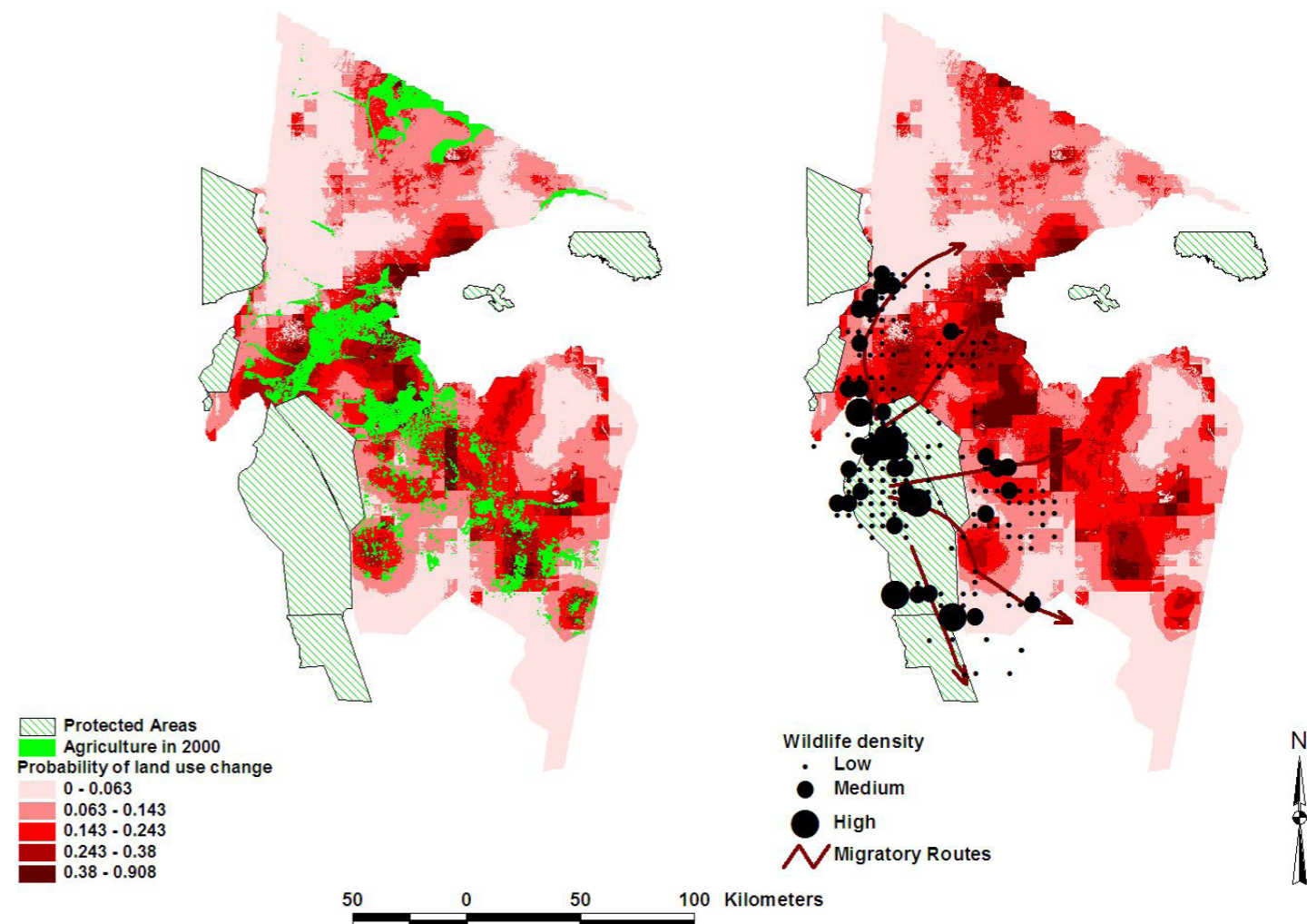


Figure 1: Map showing the probability of land cover changes of Tarangire-Simanjiro Ecosystem in Northern Tanzania based on spatial analysis (left) the second maps shows the spatial relationship between probability land cover changes, wildlife distribution and migratory corridors (Source: Msoffe et al. 2011)

## Effective Policies and Incentives

Policies, legal and institutional frameworks are the core pillars of any conservation, natural resource management as well as development work. The following are key recommendations on wildlife conservation and its benefits to local communities.

1. Tanzania's Wildlife Policies give jurisdiction over wildlife to the government. All animals in Tanzania are public property vested in the President as a trustee for and on behalf of the people. The government only appropriates access and user rights to the people. Given the provisions for community participation in environmental management and wildlife conservation, as well as to provide tenure security and develop village land use plans to resolve competing land uses.
2. There is need to review and harmoniously consolidate the diverse conflicting sectoral policies with a bearing to pastoralism, biodiversity conservation and drylands development.
3. Several policy documents have recognized pastoralists and have provisions aimed at promoting it as a sustainable livelihood. The National Strategy for Growth and Reduction of Poverty popularly known as MKUKUTA recognizes pastoralism. It reiterates the need to empower pastoralists to improve livestock production and access to other services.
4. MKUKUTA's other goal is to increase community income from tourism and wildlife. Conservation-based ventures (CBVs), often developed with private investors, can help pastoralists diversify their income. Streamlining and reducing bureaucracy in the process of setting Wildlife Management Areas will help sustain and bolster community economies which are working in a few places but falling short of their potential.

5. The Village Land Use Act, provides for the recognition of customary rights over land and for the undertaking village land use planning to help reduce land use conflicts by securing rights such as grazing rights. While these policies and Acts of Parliament have definite provision that can promote pastoralism, they are hampered by negative statements (administrative and political policy statements) regarding the future of pastoralism.
6. Create awareness on the Wildlife Conservation Act, 2009, and involve the communities in discussing the subsequent regulation for a more nuanced vision and capacity. This will build the required trust between government and the communities and promote public private partnership in conservation in the drylands of the country.
7. The *in situ* and *ex situ* conservation approaches must be balanced with the principles of community participation and involvement in environmental and biodiversity conservation as envisaged by the national environmental law and policy. The participation of communities in establishment of Wildlife Management Areas as provided for in the Wildlife Conservation Act will improve the relationship between the government agencies and the communities and thus help address the major mistrust and negative perceptions between the communities and the government.
8. There is need for dryland development policies to be consolidated, harmonized and implemented in a participatory manner to ensure that the resultant policy, legal and institutional framework empower pastoralists and other communities in the drylands to participate fully in the country's development agenda.