

Lessons learned for improving policies affecting forest conservation and climate change adaptation in Kenya's water tower communities

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Key points

- Biodiversity conservation and livelihood policies are poorly integrated, undermining the implementation of both.
- National strategies for CC adaptation and mitigation follow traditional ministerial silos, risking the replication of problems associated with isolated portfolio approaches.
- Successful ecosystem-based adaptation on Mount Elgon requires greater cooperation between ministries, decentralized (local) governments, nongovernmental organizations (NGOs) and local communities to:
 - Integrate conservation (CC mitigation) and development (CC adaptation) objectives and activities.
 - Build coherence in spatial planning to achieve biodiversity conservation, watershed protection, disaster mitigation, and agricultural intensification across landscapes.
- Decentralized governments have the potential to serve as coordinating bodies for jurisdictional EbA strategies and lead development of subnational CC initiatives.

How will climate change (CC) affect the forest-based ecosystem services that East Africa's mountain communities and regional watersheds rely upon? How will Kenya's highland agricultural communities meet the challenges of increasing population pressure and extreme climate events? How effective will national policies and forest governance practices be in protecting fragile mountain forest biodiversity in the face of long-term climate change and increasing demand for forest products and agricultural land? What solutions could improve stakeholder support for forest conservation policies, enable the pursuit of prosperous livelihood strategies and reduce vulnerability to climate-associated disasters?

"Adaptation of people to climate change in East Africa: Ecosystem services, risk reduction and human well-being" (AdaptEA) is a multidisciplinary, collaborative project involving partners and stakeholders in Uganda and Kenya. The four project sites are in close proximity to Mount Elgon, a unique source of forest ecosystem services. They represent four different forest governance and community access regimes. Using an ecosystem-based adaptation (EbA) approach, this project promotes the resilience of smallholder agriculture production by integrating a review of CC adaptation policy with local-level analyses of stakeholder vulnerability, assessments of forest cover and biodiversity, and the modeling of climate impacts on forest and tree-based ecosystem services.

AdaptEA: Project essentials

EbA approaches to enhance resilience of Mount Elgon's forest ecosystem services

Mount Elgon is a key transboundary water tower (altitude 4321 m) straddling the border of Uganda and Kenya. It supports a rich diversity of flora with altitudinally-stratified ecological niches ranging from the moorlands of the crater to bamboo thickets, montane forests, and a matrix of banana, tea, maize and bean cultivation patches interspersed with on-farm trees on its slopes. In Kenya, the Nzoia River, which arises on Mount Elgon, enables productive activities for a watershed population of over 1.5 million. However, commercial logging concessions within and around Kenyan protected areas have made significant inroads into the forest over the last 20 years, opening the way for encroachment by small-scale farmers. In Uganda, Mount Elgon's foothills are among the most densely-populated areas in the country. The population relies on forest- and tree-based ecosystem services for its subsistence agricultural and pastoralist livelihoods.

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EbA is a set of principles and approaches for realigning conservation policies and practices with seemingly conflicting policies and practices associated with promoting rural development. It is recognized as particularly relevant in developing co-benefits between CC adaptation and mitigation. By integrating an analysis of climate resilience across political, societal and environmental sectors, this project provides critical insights into how an array of policies must be structured and realigned in order to help both countries achieve multiple post-2015 Sustainable Development Goals (SDGs) and United Nations Framework Convention on Climate Change (UNFCCC) commitments. This research is part of The Rockefeller Foundation's Initiative for Climate-Smart Agriculture in Africa.

Study design: Impacts of different forest governance approaches on local forests and livelihoods

This project builds on long-term forest conditions, institutions and user group data sets that were first established 20 years ago by the International Forest Resources and Institutions (IFRI) network¹ through collaboration between Makerere University, KEFRI, and the late Nobel laureate Dr. Elinor Ostrom at Indiana University. In addition, the project uses CIFOR's Poverty and Environment Network (PEN) research methodology to investigate the contributions of forests to livelihood strategies. The research sites in each country include one that permits community access and use of forest resources and one that prohibits community access. This selection provides scientists with natural experiments that compare the long-term impacts of: (i) participatory *versus* exclusionary forest policy approaches on forests, livelihoods and CC vulnerability outcomes *within* each country; (ii) participatory and exclusionary national forest policy approaches on forests, livelihoods and CC vulnerability outcomes *between* countries; and (iii) the national CC policy contexts for climate change adaptation and mitigation *between* countries.

Transdisciplinary knowledge creation through active research/policy dialogues

This project reflects a transdisciplinary research approach, engaging extensively with national, subnational and village stakeholders at the project's inception, mid point and ending in order to tailor the project design, ground-truth analyses, and co-produce interpretations of lessons learned. This helps to make the findings more relevant to, and improve uptake by local stakeholders and subnational practitioners (both governmental and NGO). The project aims to inform the current CC adaptation policy gaps and to promote cross-sectoral engagement.

Key research insights

Impacts of exclusion and capacity building in communities on reversing deforestation

The research team analyzed trends in forest structure, biodiversity and management approaches using IFRI data collection protocols over the period 1997–2013. In Kenya, the forests were heavily impacted by industrial deforestation, small farm encroachment and livestock grazing in the 1980s and 1990s. This research indicates that the forest area under strict protection status (Chorlem) has been successful in stabilizing forest conditions. However, this success cannot be taken for granted given the limited investments in local livelihoods and continued evidence of some illicit logging activities. In contrast, due to what appears to be limited investment in community capacity building or sensitization for monitoring and enforcement in the participatory forest management area (Kimothon), deforestation, encroachment and livestock browsing continue to worsen forest cover and biodiversity trends. This is of particular importance given that climate change-induced temperature increase on Mount Elgon will have severe impacts on the resilience of certain endemic or characteristic flora and fauna.

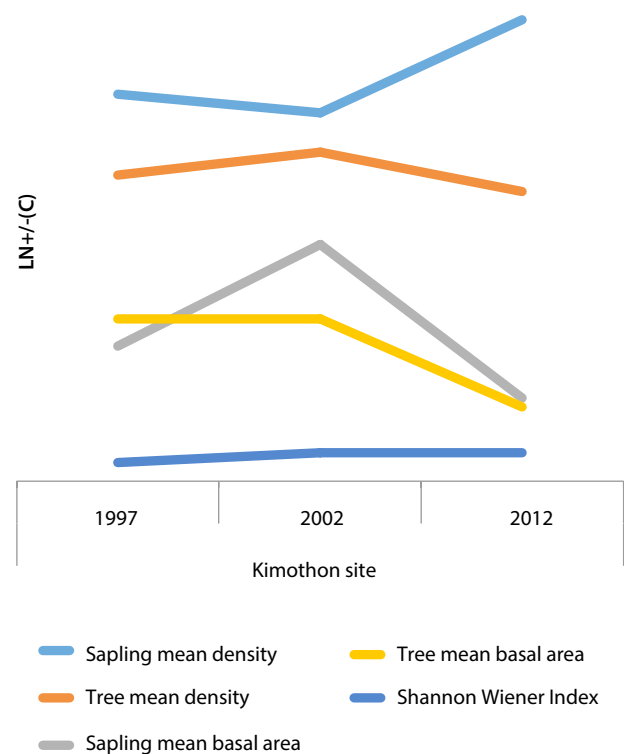


Figure 1. Forest governance impacts on forest structure and biodiversity (Kimothon).

¹ IFRI is presently coordinated by the University of Michigan.

Understanding how livelihood strategies and gender impact CC adaptation interventions

Mount Elgon's farming communities have identified an increase in climate variability in recent years, including disturbances to seasonal rainfall patterns, as well as more frequent and extreme peak temperatures, wind gusts, hail stones and loss of fog. These patterns are associated with increased incidence of flooding and crop damage. Stakeholders also attribute increasing crop pest and disease incidence to changes in rainfall patterns and extended periods of drought. A detailed household survey highlights that these events disproportionately affect households with less access to land and education and with less livestock ownership, among other factors. Interventions to enhance resilience must recognize that key livelihood activities and asset ownership are correlated. Households headed by women have different livelihood, asset ownership and poverty patterns depending on the specific local ethnic context, but are overall more vulnerable than male-headed households. Women's roles in decision making, and alignment with men's perceptions of climate change appear higher in families that are more reliant on forest resources. As they are already facing changes to climate patterns, Mount Elgon communities need greater extension support to diversify crop varieties, enhance farming methods and improve marketing methods that recognize these livelihood and gendered differences. Community rights of access to forest resources remain important in general, and particularly for coping with climatic shocks or as sources of income for the landless and poorer households.

Table 1. Correlations among livelihood strategies (ex. Kimothon)

a) Agricultural strategies are common and dependent on scale of capital.			
Cropland	Total Income**	Crop income**	Total land**
b) # Cattle somewhat correlated with livestock income, cropland ownership.			
# Cows	Cropland **	Total land**	Livestock income**
c) Forest income common somewhat correlated with livestock income.			
Forest Income	Livestock income**		

** Significance level (0.01)

Uncertainty over future crop production due to change climate

Climate analogue analysis indicates that the effects of climate change around Mount Elgon are highly variable, impacted by local socioeconomic variables and microclimates defined by slope, aspect and tree cover. Overall, Mount Elgon is likely to become warmer, but it is uncertain how total rainfall will change. Although CC models suggest that cash-crop production for maize and coffee could improve under future conditions, these do not account for the negative impacts of increased frequencies of climate extreme events (such as hailstorms, wind gusts or floods) and pests and diseases. There is a possibility that delays in seasonal rainfall and stream flow may shorten the months available for agricultural production. A strategy of crop diversification, use of climate-tolerant crops and encouragement of on-farm tree resource development is likely to benefit smallholder farmers.

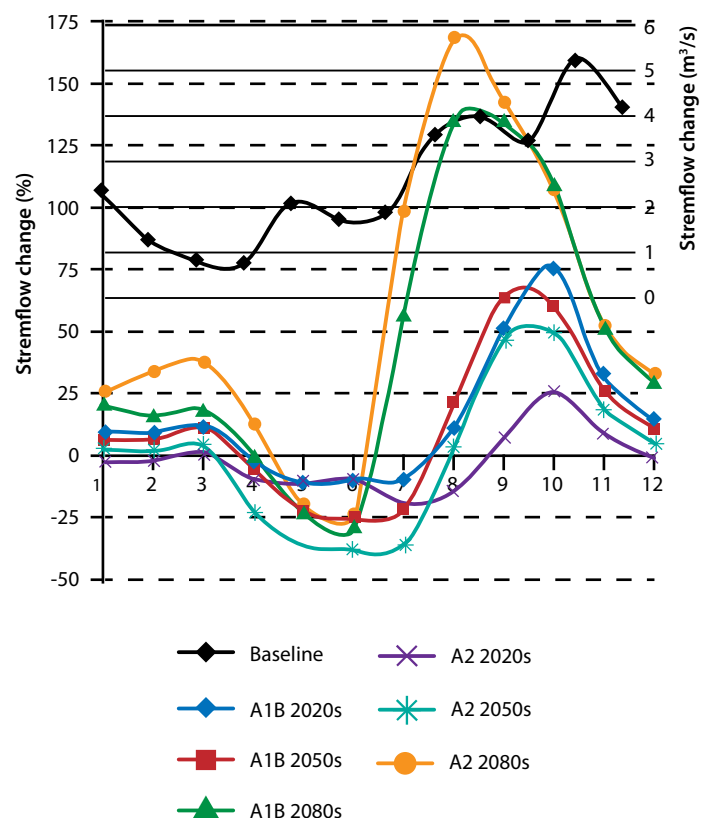


Figure 2. Projected climate-induced shift in hydrology from unimodal to bimodal seasonal cycle.

Policy constraints for effective CC adaptation and mitigation

The CC policy context

Improving the resilience of local populations and the forests that support them requires integrated CC adaptation strategies. In analyzing national climate- and livelihood-relevant policies, as well as projects specific to Mount Elgon, AdaptEA scientists have found that the capacity of forest-dependent communities to adapt to climate change is constrained by overlapping, even contradictory, sectoral policies. The same is true for the district, regional and national institutional capacities to improve forest/tree-cover conservation and biodiversity. This further impacts on hydrology, soil conservation and energy self-sufficiency at the watershed level (and indeed Lake Victoria basin-wide), as well as national carbon sequestration objectives.

While there are some efforts to coordinate the setting of objectives at national levels (i.e. through Vision 2030, the National Development Plan, the Climate Change Policy), the implementation of policies by individual ministries and associated agriculture- or forestry-related extension and enforcement agents tends to take place in isolation from those enacted by other ministries. This approach undermines their own and each other's achievement of national targets with regard to a range of SDGs (including poverty reduction, forest cover, etc.) and UNFCCC commitments. As a result of this lack of consideration for each other's mandates, forest conservation and rural development/poverty alleviation

activities are seen as inevitably opposed. The perception of subnational stakeholders that forest policies, but not conservation policies, impact on conservation outcomes is difficult to explain. Agricultural and forest policies are recognized as impacting on both livelihood and conservation outcomes to a certain degree, while the Environment Policy is seen as particularly relevant to CC outcomes.

As CC adaptation and mitigation strategies are built upon these existing ministerial portfolios, the legacy of isolated portfolio approaches to project design and implementation is being replicated with regard to all CC initiatives. It must also be noted that while the new Kenyan Constitution (2010) requires that gender issues be mainstreamed across the government, a significant number of national policies still lack any acknowledgment of how individual ministries are expected to interact with women or fail to demonstrate how their activities specifically impact women versus men. Similarly, the very poor perception of the constitutional mandate for governmental decentralization and the local governments contributing to either developmental or conservation outcomes suggests a gap in terms of capacity-building, empowerment and mandate that needs to be addressed.

Kenya's Climate Change Secretariat within the Ministry of Environment and Natural Resources has engaged in an extensive identification and prioritization of national CC flagship projects and is mandating that all relevant departments within the government establish CC coordination units. As indicated, however, programs of particular relevance to the forestry sector and CC adaptation around Mount Elgon appear to reflect a distinct tendency toward sector-based approaches with relatively limited evidence of the integration of rural development (read "CC adaptation") needs with those of natural resource protection (read "CC mitigation").

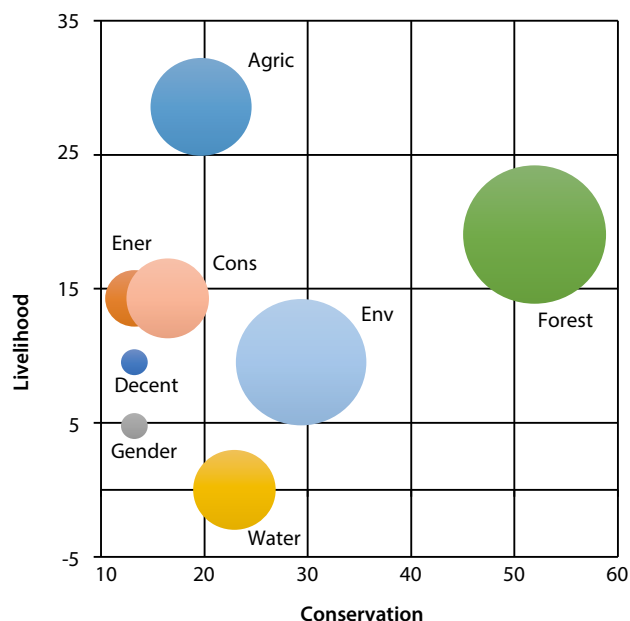


Figure 3. Practitioner perceptions of Kenyan policies on livelihoods and biodiversity.

Table 2. Kenya's climate flagship projects

Ministry	Priority Project
Min. of Agriculture	ASAL Development Projects
Min. of Livestock Development	Setting up Five Livestock Disease-free zones in the ASAL regions
Min. of Housing	Installation of physical and social infrastructure in slums in 20 urban areas
Min. of Environment and Mineral Resources	Rehabilitation and protection of Indigenous forests in Five Water Towers
Min. of Energy	Energy scale up programme and rural electrification - generation of 23,000 MW and distribution at competitive prices

This reflects pre-existing policies that have proven relatively unsuccessful in either enhancing livelihood benefits or reducing illicit logging or forest encroachment, and there is a risk that national policy objectives for either CC adaptation or mitigation – or both – may be similarly undermined. However, when we look at the institutions that subnational stakeholders engage with (beyond their own agency) to source information relevant to the conservation of biodiversity or rural livelihood development around Mount Elgon, it is clear that subnational stakeholders engage in significant information exchange. The Ministry of Agriculture, the Ministry of Environment and Natural Resources and the Kenya Forest Service are all regarded as significant sources of expertise across traditional ministerial silo mandates and as useful sources of information regarding CC adaptation. Interestingly, the communities themselves are also regarded as a key source of information in both areas, however decentralized governments have not yet been seen as having significant roles as sources of information for other stakeholders.

Recommendations for improving climate change policy coherence

Sustained attention to intersectoral policy coherence paired with government decentralization could prove beneficial in meeting the challenges of CC adaptation and mitigation. On the Kenyan side of Mount Elgon, this also has significant implications for a range of economic sectors due to the hydrological services provided by this “water tower” to a large watershed in western Kenya.

The relatively nascent process of governmental decentralization initiated through the promulgation of Kenya’s new Constitution (2010) gives hope for the greater integration of ministerial mandates and services and enhanced livelihood and environmental outcomes across subnational jurisdictional landscapes. However, while empowered by statute, it is noted that continued agenda setting and control over budgetary allocations by central ministries undermines county assembly planning units.

In addition to greater integration among ministerial agencies, it is noted that the need for additional resources and staff to fulfill these mandates at more local levels, as called for under decentralization, has not been fully addressed. Therefore, the ability of local governments to engage with communities in setting priorities addressing local concerns may be limited. As a final conclusion, this analysis underscores that whether forest or land resources are managed by communities or government agencies, they are unlikely to succeed without strong institutional support in terms of sensitization, extension, conflict mediation, monitoring and enforcement.

Further hope is derived from the emergence of financial support and knowledge transfers being provided to counties, municipalities and larger subnational jurisdictions for CC adaptation planning through international government networks.

For further information about this project and project publications, please contact the project leader at (russell.ajm@gmail.com).

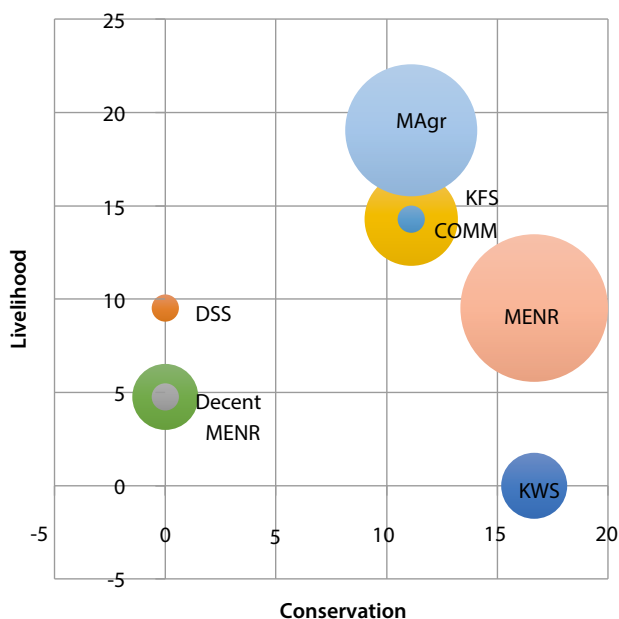


Figure 4. Inform(ation)al linkages for rural development and conservation across institutional boundaries in Kenya.

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RESEARCH PROGRAM ON
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