

RESEARCH BRIEF

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Harnessing the Biodiversity Economy in the Great Limpopo TFCA to Promote Inclusive Livelihoods, Poverty Reduction, and Gender Equality

Successful conservation of biodiversity must be combined with development of livelihoods and equality.

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Research questions

This study explores critical policy-relevant questions concerning the different impacts of participation in the biodiversity economy on household welfare, specifically income, poverty, inequality, and gender issues, across the three cross-border population groups of the Great Limpopo Transfrontier Conservation Area (GLTFCA), using regression and impact analysis. The key questions guiding the policy discussion are:

1. How does participation in the biodiversity economy, particularly through using natural resources, affect household welfare outcomes?
2. In what ways do these impacts vary across different income groups and between male- and female-headed households?
3. How do the welfare effects differ between licit (legal) and illicit (illegal) forms of use of resources?

4. What socio-economic, institutional, and environmental factors drive household participation and dependence on natural resource extraction within the GLTFCA

Key Messages

The success of Transfrontier Conservation Areas (TFCAs) like the GLTFCA depends on addressing deep-rooted socio-economic and institutional challenges that drive communities toward unsustainable and illicit resource use. Low education levels, weak governance, limited livelihood options, and human-wildlife conflict continue to undermine conservation and development objectives, particularly for vulnerable and female-headed households.

Conservation and development must be pursued jointly. Strengthening rural education, expanding non-farm employment opportunities, and empowering local institutions are vital for reducing dependence on illegal extraction. Investments in community-based organizations, gender-responsive livelihood programs, and mechanisms to manage human-wildlife conflict can enhance both social equity and ecological sustainability.

A shift toward inclusive, livelihood-oriented, and gender-sensitive conservation policies is essential to transform TFCAs into engines of resilience, poverty reduction, and sustainable biodiversity management.

Background and Methodology

Transfrontier Conservation Areas (TFCAs) were established under the SADC framework in the 1990s to promote regional integration, biodiversity conservation, and sustainable development. Supported by international partners, TFCAs aim to balance ecological protection with socio-economic growth in rural areas where communities rely heavily on natural resources. By linking ecosystems across borders, initiatives such as the GLTFCA—which spans Mozambique, South Africa, and Zimbabwe—foster cross-border cooperation, peacebuilding, and poverty reduction through joint natural resource management and community participation in conservation-based enterprises.

Central to these initiatives is the biodiversity economy, encompassing both extractive (e.g., harvesting plants, wildlife products, or fish) and non-extractive activities (e.g., ecotourism, wildlife viewing, or bioprospecting). In South Africa, the National Bioeconomy Strategy identifies biodiversity as a driver of innovation, investment, and inclusive economic growth. Across the SADC region, the biodiversity economy is increasingly recognized as a pathway for creating green jobs, alleviating poverty, and improving livelihoods, provided implementation is inclusive, equitable, and tailored to local contexts.

However, the potential of the biodiversity economy within TFCAs is poorly used due to weak evidence bases and fragmented policies. Limited understanding of illicit environmental activities, such as illegal harvesting or poaching, often driven by poverty and livelihood insecurity, has led to conservation strategies that unintentionally marginalize local communities. This study addresses these gaps by examining both licit

and illicit biodiversity-based activities in the GLTFCA and assessing their impacts on household income, poverty, inequality, and gender dynamics through cross-country data analysis, interviews, and econometric methods.

The study recruited a total of 1,108 households in the GLTFCA: 322 respondents from Zimbabwe, 374 from South Africa, and 412 from Mozambique across 40 villages with traditional authorities located inside or on the border areas of the National Parks. The survey explored local perceptions of the governance of conservation areas, human-wildlife conflict and environmental income generation as part of community livelihoods. Data were collected through face-to-face structured interviews in three rounds: December 2022 in South Africa, July 2023 in Zimbabwe, and December 2023 in Mozambique.

Results – structural problems lead to unsustainable practices

The findings highlight deep structural challenges, including low education levels, poor institutional capacity, limited livelihood diversification, and human-wildlife conflict, which push households, especially female-headed ones, toward unsustainable practices. The poverty levels are high in Mozambique and Zimbabwe, and lowest in South Africa. Poverty rates are significantly higher among female-headed households compared to male-headed households. In general, male-headed households display greater overall income inequality than female-headed households. South Africa exhibits the highest levels of inequality across most income sources, except for livestock income, where Zimbabwe reports greater inequality. Inequality in Mozambique is relatively lower for environmental and livestock income sources. Female-headed households exhibit higher income inequality for the livestock category. Crop income appears to be more evenly distributed or equalizing among female and male-headed households. While illegal extraction offers short-term economic relief, it undermines conservation goals and perpetuates long-term vulnerability.

Policy Implications

The study calls for evidence-based, gender-responsive, and livelihood-oriented policies that:

- Address poverty and inequality in the GLTFCA;
- Increase access to environmental resource use and participation in the broader biodiversity economy;
- Promote nonconsumptive wildlife uses to balance consumptive use;

- Strengthen educational outcomes and promote non-farm income opportunities;
- Enhance local governance and community-based institutions;
- Improve management of human-wildlife conflict.

Achieving sustainable and inclusive biodiversity economies in TFCAs requires integrating ecological conservation with socio-economic resilience to ensure that local communities equitably benefit from natural resource management.

The Environment for Development initiative is a capacity-building program in environmental economics focused on international research collaboration, policy advice, and academic training. It consists of centres in Central America, Chile, China, Colombia, Ethiopia, Ghana, India, Kenya, Nigeria, South Africa, Sweden (University of Gothenburg), Tanzania, Vietnam, Uganda, and the US (Resources for the Future). Financial support is provided by the Swedish International Development Cooperation Agency (Sida).