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Economics of Land Degradation and improvement
in Tanzania and Malawi

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MAIN FINDINGS

- 1 Fifty-one percent of land mass in Tanzania and 41% in Malawi is affected by land degradation.
- 2 Over the next 30 years, the costs of inaction could amount up to 15.6 billion USD in Malawi and 138.8 billion USD in Tanzania. Measures to abate land degradation can be implemented at much lower costs: 4.05 billion in Malawi and 36.3 billion on Tanzania. Every dollar invested to take action against land degradation returns about four USD.
- 3 Enhancing secure land tenure and high-quality access to agricultural extension services and information play a key role in adopting sustainable land management practices.
- 4 To increase the probability that sustainable land management practices are implemented the provision of local credit services and inputs such as seeds, fertilizers and extension services have to be included in the planning process.

Introduction

Soil erosion affects about 51% of the land area in Tanzania. In Malawi, degradation from soil pollution and salinization has led to a 15% loss of arable land over the last ten years.¹ Key drivers of sustainable land management are secure land tenure and access to markets and extension. We assessed by applying a Total Economic Value approach that the annual costs of land degradation during 2001-2009 are about 244 million USD in Malawi and 2.3 billion USD in Tanzania.

Policies that facilitate secure land tenure and extension are also likely to stimulate investment in sustainable land management. Thus, local institutions providing credit services such as seeds and fertilizers must be included in development policies.

Data sampling and econometric estimations

The data is based on the Living Standards Measurement Surveys conducted by the national statistics bureaus in Malawi and Tanzania and are supported by

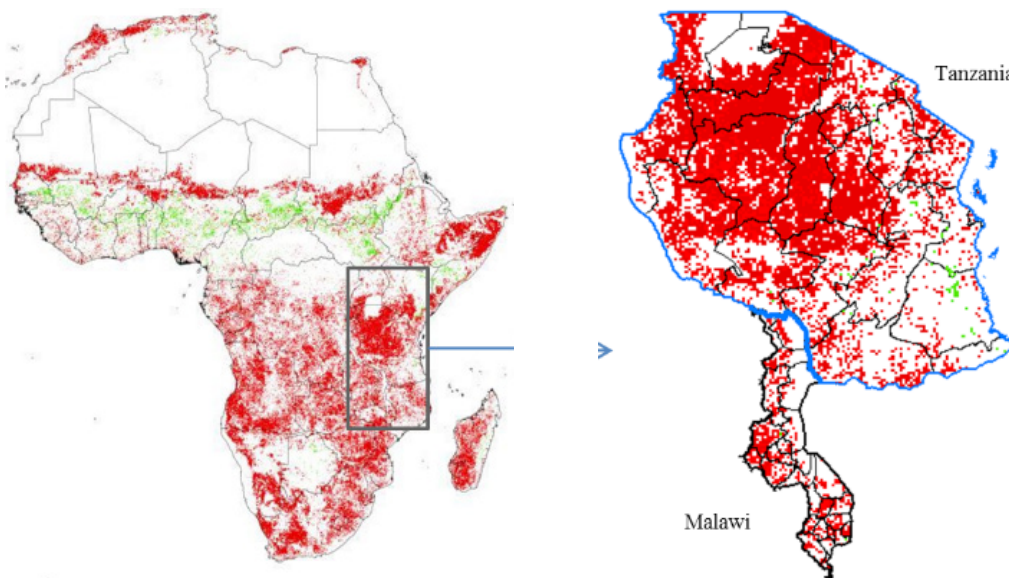


Figure 1. Biomass productivity decline in Malawi and Tanzania, 1982-2006.²



the World Bank. Among the options of sustainable land management practices, are dependent variables such as soil and water conservation, manure application, intercropping and crop rotation. Independent variables include both proximate biophysical factors such as temperature, rainfall and soil properties and underlying factors such as access to markets, extension services and land tenure.

Adoption of SLM practices

On about 85% of the studied plots at least one sustainable land management practice was applied. Inorganic fertilizers, improved seeds and intercropping are, in comparison, more frequently applied than manure application or crop rotation. Integrated Soil Fertility Management (combining both inorganic fertilizer and organic inputs) are applied least of all. However, 16% of all surveyed households do not apply any sustainable land management practice at all. The adoption of sustainable land management practices is positively influenced by several factors such as:

- Rising temperatures influence the adoption of SLM-technologies in Malawi.
- Higher rainfall leads to a higher SLM adoption in Malawi, but less in Tanzania.
- In general, male-headed households are less likely to adopt SLM strategies in both countries.
- An increase in education and secure land tenure both increase the level of adoption.
- In addition, agricultural extension services, access to credits and household assets all increase the

chance of SLM adoption.

Costs of land degradation in Malawi

The annual costs of land degradation between 2000 and 2009 were about 244 million USD due to land use and cover changes. Over the next 30 years, the costs of action against land degradation could reach to about 4.1 billion USD whereas the costs of inaction account for 15.6 billion USD. The regions that experience most costs are Mangochi, Nkhata Bay and Nkhotakota district. These regions should be given priority in addressing land degradation. With regard to static cropland, land degrading practices could lead to a 34% decline in yield of maize over the next 30 years. For rice on irrigated fields, the yield decline is 33%. This simulated yield declines would lead to losses amounting to about 114 million USD in Malawi over a period of 10 years in maize, wheat and rice farms.

Costs of land degradation in Tanzania

In Tanzania, the annual costs of land degradation between 2000-2009 were about 2.3 billion USD, most of these experienced in Morogoro, Ruvuma and Rukwa. Over a 30-year planning horizon, the costs of action against land degradation are about 36.3 billion USD, but the costs of inaction are substantially higher with 138.8 billion USD. Thus, for every dollar invested in taking action against land degradation due to land use and cover changes in Tanzania returns about 4 dollars. In Tanzania, maize yields could decline by 34% over the next



30 years as a result of land-degrading management.

Other costs of yield losses due to land degradation in both Tanzania include:

- For the three crops maize, rice and wheat, the costs of land degradation due to degrading management practices is about 162 million USD.
- Losses are also experienced in the production of meat and milk.

Actions to improve ecosystems

For Tanzania, the value of ecosystem services for both cropland and forests are decreasing in most districts. Measures to counteract this loss of ecosystem services include afforestation, regulations for forest protection, grazing controls or closure of grazing areas.

Conclusions

The assessment shows that 51% and 41% of land mass is affected by land degradation in Tanzania and Malawi respectively. Enhancing secure land tenure and high quality access to agricultural extension services and information are important with regard to the adoption of sustainable land management practices. Policies that facilitate secure land tenure are also likely to improve investments in sustainable land management. Furthermore, local providers of credits and inputs such as seeds, fertilizers and extension have to be included in the planning process. Climate factors need to be incorporated in the geographical planning and targeting of land management practices.

The financial losses due to land degradation are based on land use and

land cover changes: Between 2001-2009 alone, they account for 24 million USD on Malawi and 2.3 billion USD in Tanzania.

Over the next 30 years, the costs of inaction could amount up to 15.6 billion USD in Malawi and 138.8 billion USD in Tanzania. Measures to abate land degradation can be implemented at much lower costs: 4.05 billion in Malawi and 36.3 billion on Tanzania. Thus, every dollar invested to take action against land degradation returns about 4 dollars.

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