



Restoring Woodlands, Sequestering Carbon and Benefiting Livelihoods in Shinyanga, Tanzania

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Short title: Traditional forest restoration in Tanzania

Key Message: Through local knowledge and traditional land use practices degraded forest landscapes were restored and the livelihood of indigenous people improved. But gains need to be protected.

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Reviewer: Gill Shepherd

What was the problem?

The Shinyanga Region in central Tanzania, formerly extensively forested with dense woodland and bushland species, came to be called “The Desert of Tanzania”. Drought, over-grazing, political changes which destroyed Sukuma forest protection traditions, cash crop cultivation and the destruction of forests to wipe out the tsetse fly, reduced forest cover, increased soil erosion, and threatened people’s livelihoods in the region. Indeed, most of the goods and services provided by trees and woodlands were lost. It took many more hours to collect fuelwood, the forage badly needed by the oxen was no longer available, and the wild fruits and medicinal plants became rare to find.

What was done to solve it?

In 1986, a government initiative named Hifadhi Ardhi Shinyanga (or HASHI), which means “soil conservation” in Swahili, was started. This project has been instrumental in reviving the Sukuma people’s traditional practice of conservation: relying on rich indigenous knowledge, it used a natural resource management system called *Ngitili* – a Sukuma word meaning “enclosure” or “fodder reserve” - to create and restore forests in the region. This system helped protect the environment and improve the livelihoods of communities in the region. By 2002, between 300,000 and 500,000 hectares of *Ngitili* were restored in the 833 villages of the region. At one point, 90% of the 2.25 million people living in those villages had access to a village, family or individual *Ngitili*.

Which ecosystem services were examined? And how?

The multiplicity of goods provided by trees like fuel, fruits, building timber, honey, medicines and fodder and the ecosystem services provided by the forests (water catchment, erosion reduction, cultural meaning) were recognized as critical for the livelihoods of the Sukuma people.

In order to protect and restore those goods and services, participatory planning including women’s groups, youth, village government, and individual farmers, was essential in order to try to ensure equitable forest management and avoid elite capture. Forest restoration

included the planting of trees, fencing, reducing grazing, the natural regeneration of trees in forests and on farmland, as well as agroforestry.

The HASHI program offers refreshing and detailed insights into the real and important reasons for considering biodiversity conservation as a key component of livelihood security and poverty reduction (Table 1):

- The economic value of a restored *Ngitili* is \$14 per person per month, while national average rural consumption is \$8.50 per person per month. The time needed to collect fuelwood, pole, thatch, water and fodder was reduced by several hours (Table 1);
- Sukuma agropastoralists also pointed out that trees and catchment conservation improved water quality in the region, that restored woodlands provide fodder for oxen at the end of dry season - a critical time of the year, and that revenues from the sale of tree products such as honey and poles pay for children's schooling.
- The forest restoration also had an indirect effect that was not part of the original objectives: *Ngitilis* have made a large contribution to carbon sequestration. An estimated 23.2 million tons of carbon were sequestered with a value of approximately \$213 million. The region could therefore be used as a REDD pilot site.

Table 1: Some Outcomes from the Ngitili Study

Issue	Outcome	
Economic value of restored Ngitili	\$14 (national average rural consumption is \$8.50) per month per person	
Costs of wildlife damage due to restored forests	Approximately \$65 per family per year	
Average value of the 16 natural resource products used per annum	Per household	\$1,200 per annum
	Per village	\$700,000 per annum
	Per district	\$89,620,000 per annum
Species of tree, shrub and climbers found	152	
Other flora found (dry season only)	Up to 30 different families of grass, and herbs	
Bird species recorded (dry season only) and mammals	145 bird species and 13 mammals	
Reduction in time for collecting various natural resources	Fuelwood	2 to 6 hours
	Pole	1 to 5 hours
	Thatch	1 to 6 hours
	Water	1-2 hours
	Fodder	3-6 hours
Percentages of households using Ngitili products for various reasons in the 7 districts	Education	36% (10% to 61%)
	Diversify nutrition	22% (7%-55%)
	Fodder and forage	21% (10%-37%)
	Medicinals (over 30 spp)	14% (5%-36%)
	Fuelwood	61% (54% to 63%)
Estimates of Carbon Sequestration (but villages would not be able to trap all the value, and this is averaged over 25 years)	Total Carbon Sequestered	23.21 million tons
	Equivalent in CO ₂	42.6 million tons
	Total Value of Sequestration	\$213 million
	Average value (25 years)	\$10,227 per village per year
	Average value (25 years)	\$3.8 per person per year

Sources: Monela et. al (2005), Otsyina et al. (2008)

What policy uptake resulted from examining the ecosystem services?

The HASHI program recognized the importance of the traditional practices of managing forests with enclosures, the *Ngitili*, and used the traditional knowledge of the Sukuma people as the basis for the restoration. This empowering approach was critical as it increased local people's ownership over, and capacity to manage their own natural resources. It moved forest management from reserved forests to where even the smallest *Ngitili* is recognized as being important for farmers and groups.

This increased local interest in natural resource management for improving their *Ngitilis*. It has also been fostered by the decision to take a long term (now over 20 years) approach which is supported by investments by the Government of Tanzania and the Government of the Kingdom of Norway. The practice of *Ngitili* has now spread to neighbouring regions of Tabora and Mwanza in Tanzania.



Woman selling fuel wood, Photo: E. Barrow



Beehives in Ngitili, Photo: E. Barrow

Lessons learned

Besides the success there are also dangers that need to be acknowledged, understood and mitigated. As the value of *Ngitilis* has risen, the powerful and rich have been trying to consolidate their own rights and benefits at the expense of the less powerful. The poorest have tended to deal with occasional shocks by selling their farm-land to wealthier men who convert it to private forest. The balance between land put under private *Ngitilis* and that set aside for communal *Ngitilis* has also shifted in the direction of the former, so the landless are losing access to communal *Ngitili* products as well as to their own land.

Land allocation in Tanzanian villages is supposed to ensure that nobody can become landless, but since village leaders are usually wealthy men, they have been taking advantage of their power to accumulate land for forest grazing for their cattle. Balance and equity needs to be constantly re-negotiated so that the poorer and less powerful can also improve their livelihoods. But putting in place participatory monitoring that involves all the different groups, as well as evaluation with an external perspective that can help to point out potential problem areas, can only go so far. Ultimately some of the growing inequities will need to be tested in the courts.

The *Ngitili* case is an important example of trends which will become more common as REDD carbon schemes and other kinds of PES schemes come into existence: if resources acquire greater value, there will be greater competition for ownership of them. The response must be improved tenure and improved legal recourse for the poor, or we shall see much injustice and impoverishment as a result of these schemes.

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