

Restoration Cases Flagship Collection

Case #7:

Reviving traditional land-use practices to restore landscape and livelihoods in Shinyanga, Tanzania



ETH zürich



CROWTHER LAB



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In brief

Overview

During the 1980s, the Miombo woodland and *Acacia* savanna ecosystems of the Shinyanga region in northern Tanzania were well on the path to desertification following 60 years of deforestation and land degradation. Traditional rangeland management using a system of fodder reserves known as *Ngitili* lost ground to commercial crop production, overpopulation, unsustainable grazing practices, and relocation programs. A soil conservation program was initiated in 1986 by the government (HASHI, in Swahili). Slowly things began to turn around, and by 1990, HASHI started to receive financial support from Norway and technical engagement from the World Agroforestry Center. A key early innovation was to revive the traditional practice of *Ngitili* to restore degraded landscapes. HASHI promoted coordination between government, especially at the village level, and traditional institutions by aligning statutory law from the government with customary laws and regulations. The HASHI project helped tens of thousands of smallholders to restore degraded land and significantly improved their incomes and well-being. Restoring the goods and services provided by woodlands through the assisted regeneration and planting of native and non-native trees led to the return of

diverse trees, grasses, herbs, mammals, and birds, improved water supplies, increased farmer income, boosted crop production, and increased availability of firewood and medicinal plants. By 2000, between 378,000 and 472,000 ha of *Ngitili* were restored in 833 villages across the Shinyanga region, reaching an estimated 2.5 million people. Maintaining *Ngitili* enabled some villagers to pay school fees, purchase new farm equipment, and hire agricultural labor. Income generated by communal *Ngitili* has been used to build classrooms, village offices, and healthcare centers. In 2004, The Natural Forest Resources Management and Agroforestry Centre was created to continue this work by promoting the conservation and sustainable management of woodlands in Tanzania.

Exemplary practices

Devolving decision-making to village institutions allowed HASHI to increase local responsibility for managing the *Ngitili* and other natural resources. After the mid-1990s, key responsibilities for forest management were transferred from the central government to village governments, including selection of trees for planting, production of nursery seedlings, and management of forest reserves. *Ngitili* embodied traditional knowledge as well as biological legacies of regional ecosystems. HASHI blended the traditional system of *Ngitili* management with agroforestry practices such as woodlots and fodder banks. Local knowledge was acknowledged, valued, and shared across villages. Numerous local institutions, both traditional and formal, were committed to the protection, development, and use of *Ngitili*, and local people became empowered to make decisions and implement restoration practices.

Key lessons learned

- ▶ *Pilot/demonstration sites were essential for bringing local people, policy makers, and donors on board with activities and promoting their spread*
- ▶ *FLR should be economically sustainable and costs should be recovered.*
- ▶ *Provide continuous support (technical and financial) from beginning stages to when an intervention can be self-sustaining.*
- ▶ *Promote continuous capacity development by “training the trainers” to teach peers.*
- ▶ *Restoration is an iterative process, learning by doing and using applied research to achieve success.*
- ▶ *Interventions should have economic, social, and environmental benefits that go hand-in-hand and should be demonstrated from the beginning.*

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Restoraton narrative



Geography and ecological setting

The Shinyanga Region is in northern Tanzania, south of Lake Victoria (Figure 1). In 2003, the Shinyanga Region included six districts and 833 villages, spanning over 50,000 km². of which 61% is arable land, 24% is grazing land, and 15% is forest reserves (HASHI, 2002). Altitude varies between 1,000 m above sea level in the southeast to 1,500 m in the northeast. Shinyanga is a semi-arid region with an average annual rainfall of 600-800 mm (Barrow and Mainguy, 2014). The wet season is November to May, and the rainfall is poorly distributed with high variability within and between seasons.

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Figure 1. The Shinyanga region of northern Tanzania.
Source: Ghazi et al., 2005

The Shinyanga Region is dominated by the agro-pastoral Sukuma people along with some Sumbwa people, and minorities from neighbouring Mara and Kagera Regions (Monela et al., 2005). The 2012 national census reported a regional population of 1,534,808 with a population density of 81 people/km² (National Bureau of Statistics, 2013). Over 90% of the region's population live in the rural villages. Major livelihood strategies are subsistence farming, growing cash crops, and managing livestock (Monela et al., 2005).

The native vegetation of Shinyanga is Miombo and Acacia woodlands, dominated by *Acacia*, *Brachystegia*, *Albizia*, *Commiphora* and *Dalbergia* trees (Otsyina, 1992). Traditionally, rangelands were managed by Sukuma agro-pastoralists using a traditional system of fodder reserves known as *Ngitili* (Malcolm, 1953). *Ngitili* are enclosures around vegetation for protection from livestock throughout the wet season. The enclosures are opened gradually at the peak of dry season to minimize soil degradation and to alleviate fodder shortages, especially for oxen (Buckingham and Hanson, 2015). *Ngitili* are traditionally governed under customary law (Barrow and Mlenge, 2003).



Deforestation and land degradation history

Prior to the 1920s, the semi-arid woodland ecosystems of Shinyanga were relatively intact. A combination of policies and practices during and after colonial rule led to extensive land use change and land degradation (Barrow, 2016; Duguma et al., 2019). Between 1925 and 1947, the British colonial government launched a campaign to eradicate tsetse flies, which threaten livestock, and weaver birds (*Quellea quellea*), which threaten crops. The campaign led to extensive clearing of the region's Miombo and Acacia woodlands (Barrow et al., 1988; Barrow and Mlenge, 2003). Beginning in the 1940s, the colonial government encouraged the expansion of cash crops and introduced large-scale cultivation of cotton and tobacco (Wells and Winowiecki, 2017). Little land remained for subsistence farming.

Following World War II, tree planting and contour ridging were implemented to ameliorate the increasingly degraded land. But these efforts failed due to poor planning, high costs, disregard for traditional institutions and lifestyles of the local

people, and rejection of colonialism by local communities (Wells and Winowiecki, 2017). Population pressures increased as more land was cleared for cultivation (Barrow and Mainguy, 2014; Duguma et al., 2019).

When Tanzania gained independence from British colonial rule in 1961, agriculture focused heavily on cash crops, leaving a growing starving population and expanding areas of degraded land. President Julius Nyerere wanted to make rural life more communal by creating cooperative farms and new villages. The 1975 Villagization Act (locally known as “*Ujamaa*”) was intended to promote development through centralization of services and increased efficiency of agricultural production. Although its philosophy was rooted in traditional African values, *Ujamaa* policies undermined traditional land-use practices, governance, and institutions. *Ujamaa* withdrew individual rights to the land and was often implemented using force (Barrow, 2016). Between 1973 and 1976 more than 50% of the rural population was relocated to newly created settlements, and many household assets were abandoned (Enfors and Gordon, 2007). Land was nationalized and people lost rights to forest products, removing incentives to conserve them (Barrow, 2016).

By 1985 only about 600 ha of *Ngitili* remained (Barrow et al., 2002; Barrow and Mlenge, 2003). The loss of *Ngitili* and increased pressure on the land led to tree loss, overgrazing, soil erosion, and deterioration of water resources (Barrow and Mlenge, 2003; Ghazi et al., 2005; Buckingham and Hanson, 2015). Government-led reforestation efforts during 1975-1983 were unsuccessful (Misana, 1988; Barrow et al., 2002). Greater wood demand and insecure tenure rights further exacerbated deforestation (Figure 2). Land degradation heavily impacted the lifestyle of the local Sukuma people, particularly women (Barrow, 2016). Fuelwood collection took up to 4 hours a day, and wild fruits and medicinal plants were difficult to find (Barrow et al., 1983). A high concentration of livestock led to overgrazing far beyond the natural regenerative capacity of the land (Barrow et al., 2002). Soil fertility was poor, water levels low, and forage scarce by the end of dry season, leaving livestock, especially the oxen, hungry, which compromised land cultivation (Barrow and Mainguy, 2014; Buckingham and Hanson, 2015).



Figure 2. A typical Shinyanga landscape without *Ngitili*.
Photo credit: Patricia Wainaina, ICRAF

The turning point

By the 1980s, Shinyanga's ecosystems were well on the path to desertification. In 1984, the president of Tanzania, Julius Nyerere attended a conference on "Environmental Conservation through Tree Growing" held near Shinyanga (Nsokko, 2004). During this visit President Nyerere was shocked at the level of degradation in the region, referring to Shinyanga as the 'Desert of Tanzania' (Ghazi et al., 2005). Recognizing his previous policy failures to alleviate land degradation and improve agricultural productivity, President Nyerere initiated a soil conservation program in Shinyanga that slowly began to turn things around. In 1986, the Shinyanga Soil Conservation Program, or HASHI (Swahili: *Hifadhi Ardhi Shinyanga*), was born as a federal government program.

Actors and arrangements

The primary stakeholders involved in restoring degraded landscapes in the Shinyanga region were the people (individuals, groups and villages), village governments and institutions, and HASHI (Monela et al., 2005). Secondary actors included institutions involved in research and assessment regarding livelihoods, training, and capacity building. District Councils were responsible for integrating afforestation and woodland restoration in annual District Development Plans, and the Shinyanga Regional Secretary and the Ministry of Natural Resources and Tourism were responsible for planning and mobilization of resources. HASHI became rooted in the administrative structures of central and local government.

HASHI was funded by the Government of Tanzania from its inception in 1986. By 1989 the Government of Norway came on board (UNDP, 2012), and many other donors provided support over the life of the 18-yr program. Four planned funding cycles allowed time for investing in capacity and community engagement (Walters et al., 2021). Another pivotal engagement involved the World Agroforestry Centre (ICRAF) in 1991 (Pye-Smith, 2010). The program was implemented by the Ministry

of Natural Resources and Tourism, Forestry and Beekeeping Division until 2004 (Barrow et al. 1988). Field officers worked closely with staff employed by the regional, district, and village governments. HASHI employed between 60 and 80 full-time government staff concurrently (Pye-Smith, 2010).

After the HASHI project donor support formally ended in 2004, government agency staff continued HASHI's work with villagers on agroforestry, tree planting, and protection of their *Ngitili*. In 2004, the Natural Forest Resources Management and Agroforestry Centre (NAFRAC) was created to promote the conservation and sustainable management of woods in Tanzania, creating a strong institutional base to continue the activities started by HASHI (Mlenge, 2007).

HASHI promoted coordination between government and traditional institutions by aligning statutory law from the government with customary laws and regulations put forth by the *Dagashida*, a community assembly that develops customary laws (Barrow et al., 2002). Devolving decision-making to village institutions allowed the project to increase local responsibility and ownership for managing the *Ngitili* and other natural resources. Regular patrols of *Ngitili* were conducted by traditional village

scouts known as *Sungusungu*, groups of — men over the age of 16. Individuals caught grazing livestock illegally inside a *Ngitili* were sanctioned and fined. Where disputes arise, cases could be referred to the local *Dagashida*, which is led by the Council of Elders (Pye-Smith, 2010) and determines sanctions on individuals caught breaking *Ngitili* management rules (Ghazi et al., 2005).

Decentralizing land management was critical in empowering local leadership to advocate for restoration and promote the success of *Ngitili* conservation in Shinyanga (Barrow and Mlenge, 2003; Monela et al., 2005). The village government, along with the environmental committees, issued specific permits for people to be allowed to graze or cut fodder within the communal *Ngitili*. Under certain circumstances, they also provide permits for people to harvest timber within the communal *Ngitili* or rent a limited section for livestock grazing (Wainaina et al., 2021).

Implementation

HASHI began as a traditional reforestation program involving distribution of thousands of exotic tree seedlings from one centralized government nursery, ignoring the traditional system of land management based on *Ngitili*. Top-down tree planting activities failed because HASHI leaders did not consult or recognize the local people and their institutions meaningfully. Local villagers were not interested in planting the exotic seedlings provided. They wanted to plant trees important for their livelihoods, and they retained their traditional knowledge. In response, the project leader shifted his approach, a pivotal choice that led to the long-term success of the restoration project (Walters et al., 2021). This new approach signaled a shift in Shinyanga (and Tanzania more broadly) away from top-down management and development toward more participatory and community-based approaches.

HASHI staff collaborated closely with district and village government officials (Ghazi et al., 2005). Rather than telling villagers how to restore their land, HASHI leadership developed trust in local knowledge of woodland restoration, ownership rights, and customary laws and institutions governing land management. An early objective of

HASHI was to determine those areas most in need of restoration and work with these villages to set aside degraded land for restoration (Kaale et al., 2002). HASHI worked directly with 426 communities in the region to promote woodland restoration and environmental conservation, prioritizing the most heavily degraded areas (Monela et al., 2005). Under the HASHI program, the *Ngitili* expanded from being a fodder resource for oxen to providing a vast array of forest products and services (Barrow et al., 2002).

HASHI field officers worked to develop capacity and effectiveness of both official and traditional governance institutions (Ghazi et al., 2005), using video, theatre, newsletters, and demonstrations to advertise their restoration goals and empower villagers (Barrow et al., 2002). They were early adopters of Participatory Rural Appraisal tools to help villagers identify and solve local natural resource challenges (Ghazi et al., 2005). In many villages, HASHI field officers used residual natural seed and root stock to restore *Ngitili* enclosures. In others, active tree planting (first of exotic species, later of the indigenous tree species preferred by local people) was carried out, especially around homesteads (Ghazi et al., 2005). Several techniques were employed to ensure that communities were empowered to effectively

participate in restoration and management processes. One strategy was to establish Village Environmental Committees (VECs) that serve as the ‘formal’ local structures entrusted with environmental conservation.

Some of the restored *Ngitili* dated back to pre-*Ujamaa* days, whereas others were newly created by farmers and villages (Figure 3). Two types of *Ngitili* were established: individual (family-governed) and communal (group-governed) *Ngitili*, each with different governance arrangements. Elected village governments officially manage communal *Ngitili*, but the traditional Sukuma institutions also play a significant role in protecting both communal and private *Ngitili* (Figures 4 & 5). Such communal *Ngitili* include those of the whole village, or of a group of women or youth, for example.

In addition to restoring *Ngitili*, villagers were encouraged to plant trees around homesteads (particularly fruit and shade trees), field boundaries, and farm perimeters. This helped improve soil fertility and provide firewood, and also helped farmers to stake out and formalize their land rights within villages (Ghazi et al, 2005). By the early 1990s, restoration efforts began to spread rapidly through the region—more by ‘word of mouth’ from village-to-village than by design.

HASHI blended the traditional system of *Ngitili* management with agroforestry technologies, including the planting of appropriate exotic species (Pye Smith, 2010). When ICRAF scientists became active partners in HASHI in 1991, they encouraged diversifying *Ngitili* and introduced agroforestry practices such as planting multi-species rotational woodlots and fodder banks and the use of nitrogen-fixing trees such as *Gliricidia sepium* and *Leucaena* spp. to increase soil fertility (Pye-Smith, 2010). HASHI and ICRAF technicians provided training for local stakeholders to improve their *Ngitili* management (Barrow et al., 2002; UNDP, 2012).



Figure 3. A restored *Ngitili* in Shinyanga, Tanzania.
Photo credit: Peter A. Minang, ICRAF

Where land was too degraded for natural regeneration in *Ngitili*, woodlots of a few native species were planted to provide local communities with timber and fuelwood. Encouraged by the HASHI project, farmers in Shinyanga planted around 1,500 ha of new woodlots (Pye-Smith, 2010). Although they covered much less area than *Ngitili*, woodlots made an enormous difference to those involved. In nearly every case, farmers decided to plant woodlots because of difficulty obtaining sufficient firewood.

A pilot REDD + project operated in 11 villages in the Kahama and Shinyanga Rural districts of the Shinyanga region from 2010 to 2013, led by Tanzania Traditional Energy Development and Environment Organization in partnership

with Development Associates Ltd. and NAFRAC. The project promoted sustainable natural resource management and reduced carbon emissions from deforestation and forest degradation in *Ngitili* (UNFCCC, n.d.; Putri and Kweka, 2014), but was discontinued after three years, creating considerable disappointment among those communities who received payments for protecting trees and forests in their *Ngitili* (Wainaina et al., 2021).

A major study to quantify the HASHI project's benefits and outcomes was undertaken by a 10-person task force, launched by the Tanzanian government and IUCN in 2004. The study combined detailed field research from 240 households in 12 villages with market surveys and other data analysis (Monela et al., 2005).



Figure 4. A prize-winning private *Ngitili*. Photo credit: Priscilla Wainaina, ICRAF

Outcomes and impacts

When HASHI started in 1986, only 600 ha of land was managed under the *Ngitili* system in Shinyanga (Barrow et al., 2003). Between 1980 and 2001, a survey of 172 villages where the HASHI project was implemented found over 18,000 *Ngitili* covering over 78,000 ha (Barrow et al., 2003). The average village-sized enclosure size was 164 ha and the average individual family enclosure was 2.3 ha; 90% of families owned their own *Ngitili* (Maro 1995). By 2000, between 378,000 and 472,000 ha of *Ngitili* were restored in 833 villages across the Shinyanga region, reaching an estimated 2.5 million people (Monela et al., 2005). *Ngitili* were about evenly divided between villages and individuals (Barrow et al., 2003). Landless people and female heads of households were also allocated lands for restoration, while groups (e.g. women, youth) and villages had much larger areas of restored woodlands. *Ngitili* created a mosaic of woodlands across rich savannahs and agricultural land (Barrow and Mainguy, 2014).



Figure 5. A farmer explains the utility of tree products from his *Ngitili* in Shinyanga, Tanzania.
Photo credit: Obadia Mugassa

By 2010, an estimated 90% of the farmers who keep livestock and 50% of crop growers had their own *Ngitili* (Figure 5; Pye-Smith, 2010). The HASHI project led to a large expansion of tree nurseries to supply trees for use in agroforestry plots and woodlots. From one centrally-managed government tree nursery in 1986, over 1,500 small community and individual tree nurseries were established by 2004 (Barrow, 2014).

Biophysical outcomes of HASHI include improved water and soil quality, easier access to shade, and greater abundance of trees for fuel and fodder (Ghazi et al., 2005; Barrow and Mainguy, 2014) (Figure 6 & 7). The restoration of goods and services provided by woodlands through the natural regeneration and planting of indigenous trees promoted a high diversity of tree species, grasses and herbs. Across the Shinyanga region, 152 different species of trees and shrubs were recorded, many represented as successfully regenerating trees in *Ngitili* (Monela et al., 2005). More than 60 tree species are used by local people for various purposes, including medicines, fruits and vegetables, fuelwood, timber, handicrafts, fodder, fencing, thatch, and shelter (Dery et al., 1999). Thirteen grass genera and twenty-five herb genera are now commonly found in restored areas of vegetation.



Figure 6. A communal *Ngitili* in Busongo, Shinyanga Region. Photo credit: Priscilla Wainaina,



Figure 7. *Ngitili* provide many of the same ecosystem services as native forests. Source: Obadia Mugassa ICRAF

Birds and mammals returned to the region, finding homes in *Ngitili*. In 2004, 145 bird and 13 mammal species were recorded (Ghazi et al., 2005; Monela et al., 2005; Otsyina et al., 2008). Of the 51 mammal species that had disappeared from the Meatu District (Simiyu Region), 21 have returned since re-establishment of *Ngitili*, including aardvark, eland, black-backed jackal, African civet and spotted hyena (Pye-Smith, 2010). Large mammals—elephants, buffalo, zebras—require larger home ranges and have disappeared in all districts except in protected areas (Monela et al., 2005), and the Serengeti system in particular.

Ngitili contributed significantly to carbon sequestration. An estimated 23.2 million tons of carbon were sequestered with a value of approximately US\$213 million (Barrow and Shah, 2011). Woodlots had higher tree densities and stored an average of 12-14 t C/ha in their biomass (Otsyina et al., 2008; Barrow, 2016). A recent study of 11 community *Ngitili* in the Kishapu District found that soil carbon pools were substantially higher than above-ground biomass pools (Malunguja et al., 2020).

The HASHI project helped tens of thousands of smallholders to restore degraded land, and significantly improve their incomes and well-being (Duguma et al., 2019). Tree goods became more abundant and accessible, including fuelwood for cooking, timber for construction, fodder, fruits, and medicines (Figure 8). In 2004, 64% of households reported that they were better off due to the benefits derived from *Ngitili* (Monela et al., 2005). A survey published 9 yrs after HASHI began showed that 90% of farmers reported that restored *Ngitili* were an important source of pasture during critical times of year (Barrow and Mlenge, 2003). However, recovery of wildlife did have its costs. Wildlife predation on livestock as a result of woodland restoration was estimated to cost US\$63 per family per year (Pye-Smith, 2010).

As forest goods and services became more accessible, less time needed to be spent collecting fuelwood, poles, thatch, fodder, and water (Ghazi et al., 2005; Monela et al., 2005; Otsyina et al., 2008). Restoration of *Ngitili* reduced crop failure and enhanced crop resilience, which improved villagers' diets and nutrition (Barrow and Mainguy, 2014). These achievements won HASHI a 2002 United Nations Development Programme (UNDP) Equator Initiative Prize (UNDP, 2012).

Ngitili expansion boosted the adaptive capacity of communities. Water availability for household use and livestock increased, and small dams were constructed by the community to accumulate water for the dry season (Mlenge, 2005). Annual provisions of 534 liters of milk, 14 kg bush meat, 26 kg mushrooms, 33 liters of honey, and 30 kg of fruits were sourced from *Ngitili* (Monela et al., 2005). The products considered of greatest value by villagers were firewood, timber and medicinal plants. The HASHI project played an important role in protecting areas where medicinal plants are collected (Pye-Smith, 2010). Over 25 medicinal plants used to treat over 20 different diseases were also recorded in restored *Ngitili*.

Sale of products from regenerating *Ngitili* earned income for many families. What tree goods and crops villagers didn't need for subsistence, they could sell for their own cash income, particularly honey, wild fruits, edible insects, fodder, medicines, charcoal, and fuelwood. Profits from selling these goods increased families' financial security and funded public services like schools for children and health clinics (Monela et al., 2005; Buckingham and Hanson, 2015). The economic value of restored *Ngitili* was calculated to be US\$14/person/month, approximately 1.4 times that of agriculture income (Monela et al., 2005).

The added value of selling natural resource products per household was estimated to be US\$1,200/yr/household (Ghazi et al., 2005; Monela et al., 2005; Otsyina et al., 2008). Maintaining *Ngitili* enabled some villagers to pay school and university fees, purchase new farm equipment, and hire agricultural labor. Income generated by communal *Ngitili* has been used to build classrooms, village offices, and healthcare centers (Ghazi et al., 2005). The HASHI project and its international partners also trained more than 150 teachers to raise awareness of environmental issues in the region's schools (Pye-Smith, 2010).



Figure 8. Children hold Tamarind seeds harvested from the *Ngitili* near their school. Photo credit: Obadia Mugassa

Land law and policy in Tanzania recognizes customary land tenure arrangements (Monela et al., 2005). The Land Act (1999) and the Village Land Act (1999) state that all land in Tanzania is public land, which the president holds in trust for all citizens (Winrock International, 2006). The HASHI program enhanced traditional forms of land ownership, clarifying and helping to secure land and tree tenure (Buckingham and Hanson, 2015), contributing to policy changes in Tanzania that facilitated community management of natural resources (UNDP, 2012). In 1998, Tanzania revised its forest policy, increasing emphasis on participatory management and decentralization. This policy was subsequently reinforced in the 2002 Forest Act, which formalized strong community management of woodlands by enabling individuals and local communities to jointly manage government forest reserves through joint forest management agreements, and to have their own gazetted village forest reserves (Barrow, 2016). Five different categories of land tenure were recognized, enabling a diversity of land ownership approaches to suit local needs (Buckingham and Hanson, 2015).

Although the HASHI project formally ended in 2004, many of its core activities continue. The woodlots have proved profitable; the *Ngitili* have yielded tangible benefits; and the introduction of agroforestry technologies

such as fodder banks and grafted fruit trees has increased family incomes. Communities receive and value benefits of *Ngitili* over many years, incentivizing their continued work on restoration and sustainable management. These benefits include increased provision of ecosystem services, strengthening of land property rights, and an increase in land value due to regreening of the landscape (Wainaina et al., 2021). Many *Ngitili* remain standing after more than 30 years. “One of the reasons why farmers have carried on doing what they were doing during the HASHI project is because they are making good money,” observed Robert Otsyina, an ICRAF scientist involved in HASHI management (Pye-Smith, 2010). Once villagers became engaged, project staff and infrastructure were not needed. The government of Tanzania has encouraged management of communal and individual *Ngitili* through giving awards to people and communities for exemplary restoration efforts (Wainaina et al., 2021; Figure 4). Furthermore, local government staff have continued to promote agroforestry and sustainable land management. In the Shinyanga District, to give one example, they have identified ‘champion farmers’ in each ward and provided them with technical advice and materials.

Key challenges

During the initial phase, HASHI staff faced a major challenge of mistrust of the government. For restoration to succeed, engagement and trust by the local people was required (Winrock International, 2006). In response to this challenge, the HASHI program became strongly people-centered and community-based, and was built upon a respect for local and traditional knowledge and empowerment of village institutions. To gain the trust of villagers in Shinyanga, HASHI needed to demonstrate that the Sukuma people had autonomy to manage the land according to their own practices (e.g., *Ngitili*) and could profit economically off of the land.

Differences in land and cattle ownership affected the scale of benefits received from *Ngitili*; well-off people bought additional land from poorer households (a form of elite capture), thus exacerbating local inequity (Monela et al., 2005). Land use patterns in the region are strongly influenced by Sukuma traditions, with women controlling low-income crops while men control higher-earning livestock and cash crops. Even during the practice of *Ngitili* restoration, married women rarely own individual *Ngitili* or contribute to their management (Monela et al., 2005). All women have access rights to communal *Ngitili*, so they can acquire essential household



Figure 9. Members of the Upendo Women's Group at one of the farmer nurseries.
Photo credit: Charlie Pye-Smith

needs such as fuelwood, thatch, and food, and can save time on chores. In communities where women and youth were engaged in the restoration activities, the *Ngitili* were better managed and more successful (Wainaina et al., 2021). In some cases, certain actors were excluded from *Ngitili* management and village governance including agricultural and forest extension officers, traditional healers, groups of women, youth, pastoralists, and charcoal traders (Nzyoka et al., 2021; Figure 9).

Uncertainty over land tenure and ownership further challenged the success of the HASHI model (Mlenge, 2007). Private landowners who lacked secure rights to their land were reluctant to establish or expand *Ngitili* for fear of triggering disputes within the community. Pressures on land from rising human and livestock populations increased the likelihood of land tenure disputes and conflicts over grazing rights (UNDP, 2012). Indeed, it was found in 2007 that the wealthy were acquiring land for private *Ngitili* forests, underscoring the need for farmers, especially the poor, to be able to claim their rights and seek redress when just rights are denied (Shepherd, 2008). As a result, many private households and communities are advocating for registration of their rights to land tenure of their restoration areas because they have successfully managed the land for over 30 years in some cases without state management intervention (FTA Communications, 2020).

Tenure issues also affect the lands used for communal *Ngitili*. Village governments and assemblies are sometimes wary of officially designating *Ngitili* as “protected areas,” because they fear the state may appropriate these lands and manage them as public lands at the district or national levels (Ghazi et al., 2005). In 2018, a government directive began to shift some of the land rights back to the

state. This directive had good intentions as the state naturally has better resources (e.g., labor, finances) to manage restoration, but this decision was not well-communicated to local communities, making the directive appear as top-down rather than participatory. The growing ambiguity in who has or will have tenure rights to communal land is slowing restoration efforts (FTA Communications, 2020).

Effective monitoring and evaluation systems currently are not in place in Tanzania, hampering adaptive management and tracking of restoration progress and opportunities. National monitoring would have helped HASHI officials understand the macro-scale impact of its activities and better target their aid (Buckingham and Hanson, 2015). By using satellite imagery, which was not readily available early on, the state could track nationwide changes in land use and biodiversity related to *Ngitili* restoration, which would help to share successes and communicate early wins (Winrock International, 2006).

The long-term implementation of HASHI and its succession through NAFRAC face several key challenges. Population growth and increase in cattle are threatening to undo much of the good that has been done in recent years (Pye-Smith, 2010) and exacerbate scarcity

of land. Further, the increasing expansion of *Ngitili* competes with the land available for crop and livestock production (Duguma et al., 2019). Since HASHI began, Shinyanga's population has grown by 70%. This resource demand places pressure on the restored *Ngitili* and decreases availability of land for *Ngitili* or restoration expansion. Simultaneously, the success of *Ngitili* has more wildlife returning to the area, which increases damage to crops and livestock (Ghazi et al., 2005; Buckingham and Hanson, 2015). A lack of institutional coordination to avoid conflicts has threatened *Ngitili* in some villages (Ghazi et al., 2005). Likewise, conflicts have arisen due to overlapping and competing mandates of different community-led groups, indicating the need for more integrated management at the local level (Winrock International, 2006).

As HASHI proved successful in restoring woodlands, previously degraded and undesirable land soon became valuable. In response, governance became important as the population grew and lands previously ignored needed protection from elite capture (Barrow, 2016). The agroforestry practices supported by NAFRAC depend on good working relations between district authorities and local communities. Capacity building at the district level is a long-term process that is important to the success of the model (Mlenge, 2007). Despite its long-term track record, continued success of HASHI is fragile and can be quickly reversed if the government fails to respond adequately to population growth and novel pressures being introduced.

Enabling factors and innovations

A combination of enabling factors brought lasting success to the HASHI effort; they fall into three general categories: (1) baseline social, cultural, and ecological conditions; (2) policy shifts at national and forestry sector levels in Tanzania; and (3) the philosophy and approach of project implementers. Also critical were the tangible benefits that restoration of *Ngitili* provided to communities (villages) and individual families across the Shinyanga region—benefits that were the fruits of their own labor, knowledge, and institutions. The long-term continuation of Shinyanga’s restoration after the end of the HASHI program is largely due to the direct and indirect benefits accrued from the profitable gains, incentives and understanding of the importance of restoration by the community (Nzyoka et al., 2021).

The congruence of specific social, ecological, and cultural conditions at the initiation of HASHI drove the restoration of *Ngitili* and delivered early successes. The Sukuma and other peoples held a wealth of traditional knowledge regarding uses and values of trees and fodder enclosures. Traditional governance mechanisms and institutional

structures and rules were well established within villages. Despite extreme deforestation and degradation, seeds and rootstocks of native trees persisted across the landscape. And, critically, local people felt an urgent and united need for restoration and wanted to become actively engaged in improving their livelihoods and access to ecosystem services provided by restoration. The locally driven need for restoration, combined with an increasingly liberalized economy, and the initiation of the government-led HASHI project, provided the right incentives for local ownership of efforts to revitalise the indigenous *Ngitili* system (Barrow et al., 2002).

Policy shifts at the national level and within government ministries that devolved control and responsibility of forest management to the village level were key enabling factors. When HASHI began, policy shifts were underway in Tanzania toward decentralizing forest management (Local Government Act 1982) (Winrock International, 2006). The forestry sector at both the national and local levels strongly supported the *Ngitili* approach (Barrow and Mlenge, 2003; Pye-Smith, 2010). Allowing traditional Sukuma institutions and village governments to oversee restoration efforts helped to ensure their region-wide success. Elected village governments officially manage communal *Ngitili*, and also

mediate disputes regarding individually owned *Ngitili* (Ghazi et al. 2005). The Forest Policy revision (1998) and the Forest Act (2002) fostered community involvement in *Ngitili* management. Acknowledging secure tenure of both private and communal *Ngitili* in national law was essential to the success of HASHI (Winrock International, 2006).

The participatory approaches of HASHI encouraged local ownership (both individual and collective) and strongly motivated the engagement and investment of the people, who became the owners of the restoration process. Community members were involved in selection of tree species and locations of *Ngitili*. HASHI focused heavily on capacity development of villagers through extension, training, and technical support. Implementers had a 25+ year horizon for funding and planning, accompanied by a long-term commitment to building capacity and securing rights for local people. From the beginning, HASHI was built to last, on a strong foundation of trust, respect for local knowledge and traditions, and powered by the people who had the greatest need to receive benefits.

HASHI embodied several innovative (or even radical) features, such as deferring to traditional knowledge and practices of local authorities. Other innovative steps were the early adoption of Participatory Rural Appraisal approaches, unusual at the time (Barrow and

Mainguy, 2014), and re-establishment of and respect for traditional village institutions (e.g., *Dagashida*, *Sungusungu*) and *Ngitili* practices (Barrow and Mlenge, 2003). Demonstrative of their thinking outside the box, HASHI staff would train villagers through song and dance, which was popular amongst Sukuma people (Figure 10). In a departure from historical top-down interventions, HASHI served as a liaison between local communities and the centralized government, catalyzing efforts to allow local communities to manage the land as they had before colonial control and encouraging them to become self-reliant again. HASHI facilitated dialogues across government levels and throughout districts to make the market fair and accessible to more people (Barrow et al., 2016).



Figure 10. Villagers use dance to teach about and celebrate local traditions and practices such as *Ngitili*. Screenshot from the video: *Ngitili for Everything*

Parting shot

“The HASHI project transformed my life. The profits from my woodlots and orchards meant I could buy extra land, pay school fees for my children and renovate our house.”

- Deoscory Msoma
(quoted in Pye-Smith, 2010)



Figure 11. Deoscory Msoma is among tens of thousands of smallholders whose lives were improved as a result of the HASHI project. Photo credit: Pye-Smith, 2010

A landscape photograph showing a dry, hilly terrain with sparse vegetation. In the background, a large volcano is visible, partially obscured by thick, white and grey clouds. The sky is blue with scattered clouds. The foreground consists of dry, yellowish-brown grass and small shrubs. A single, larger tree stands on a small rise to the left.

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Key lessons learned

- ▶ Listen to the people first, and build on their local and traditional knowledge and institutions. Recognizing and valuing existing local knowledge in Shinyanga was key to HASHI's successes. *Ngitili* contributed significantly to the production of many ecosystem services that are important for risk management and enhancement of resilience.
- ▶ Decentralization of land management from the national level to local villages is critical in empowering local and traditional leadership to support and advocate for restoration. Decentralized policies allowed communities to willingly participate in restoration and enjoy the benefits of land rights (Wells and Winowiecki, 2017).
- ▶ Aligning policies and laws with traditional local institutions and rules promotes restoration success and builds trust between government authorities and local communities. The firm establishment of HASHI within local and central government administration was highly advantageous (Duguma et al., 2014), and pre-existing social coherence, strong social structures, and functional institutions within the communities were major assets of social capital (Barrow and Mlenge, 2003).
- ▶ Rural farmers are motivated to restore significant areas of woodland if they have the right incentives that lead to secure and rewarding livelihoods. Intrinsic incentives deriving from direct benefits of restoration activities can be more important than external incentives provided by cash payments for carbon through REDD+ programs (Wainaina et al., 2021).
- ▶ Long-term planning enables continued financial support and builds strong relationships among all stakeholders involved, including local institutions, district governments, government agencies, and the private sector. These relationships provide favorable conditions for the private sector to generate markets, supply chains, and diversify economic opportunities and livelihoods for local people (Winrock International, 2006).
- ▶ As restored land increases in value, competing interests can jeopardize social and environmental restoration gains. Governance mechanisms need to focus on avoiding elite capture or state appropriation of increasingly valuable land (Barrow et al., 2016).
- ▶ Women were particularly important beneficiaries. They no longer had to walk nearly as far to collect water and fuelwood, and they benefited from the tree products of the *Ngitili* (e.g., food, fruit, firewood, and medicines).



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Learn
more

Further information and resources

Video, UNESCO PACE Project, Tusk and Siren Conservation Education:
<https://www.unesco.org/archives/multimedia/producer/nafrac,+tanzania>

Video, Shinyanga Soil Conservation Programme (HASHI), Tanzania -
 Equator Prize 2002 Winner: <https://vimeo.com/36989655>; same video
 on YouTube: https://www.youtube.com/watch?v=sw7z1vVZO_M&t=12s)

Video, IUCN, “Forests for the 21st Century”: <https://www.youtube.com/watch?v=cnth0SouJrA>

Video, “Ngitili for Everything” : <https://youtu.be/ty0Xomtv6J4>

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