

# Chapter 12

## The Development of Payments for Ecosystem Services as a Community-Based Conservation Strategy in East Africa

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### Introduction

Payments for ecosystem services (PES) are increasingly considered an important approach to solving global environmental challenges (Daily 1997; Ferraro and Kiss 2002). PES approaches provide individuals or communities with financial incentives for resource use decisions that increase the provision of ecosystem services such as water purification, flood mitigation, or carbon sequestration (Jack et al. 2008). Intense pressure on ecosystems has catalyzed the development of such market-based tools to seek to influence environmental behavior. The rationale is that incentives reduce costs for ‘producers’ (or stewards) of ecosystem services and prescribe more realistic values to ecosystem services, costs which, in theory, are borne by consumers (Engel et al. 2008).

For millennia, pastoralists have shared landscapes with wildlife throughout much of Africa (Homewood and Rodgers 1991; Little et al. 1999; Pilgram et al. 1990). During the twentieth century, this co-existence has been in decline as conservation policy has excluded people and livestock from protected areas, and demographic growth and expanding agriculture have displaced wildlife populations (Serneels et al. 2001; Ellis and Swift 1988; Pagiola et al. 1998; Little et al. 2001; Western and Gichohi 1993; Ottichilo et al. 2001; Homewood et al. 2001). Furthermore, many pastoral systems across the globe, including those of Maasai pastoralists in northern Tanzania, are under unprecedented pressure to diversify livestock-based economies (Little et al. 2001; Fratkin 1993; Fratkin et al. 1999). Yet, the presence of unfenced and uncultivated rangelands adjacent to PAs is critical for providing the total range of resources needed by wildlife for long-term survival as predicted by island bio-geographic theory (Western and Ssemakula 1981). In Kenya, for example,

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an estimated 70% of wildlife populations are dispersed outside protected areas (PAs) on land which overlaps pastoral land (Western and Gichohi 1993). Thus, the lands outside of protected areas are subject to competing claims due to their importance for multiple uses by people and wildlife.

Significant wildlife population declines have been registered throughout Tanzania and Kenya over the last 20 years, with some notable exceptions: Serengeti National Park (NP) in Tanzania and Laikipia District, Kenya. Wildlife populations are generally stable in Serengeti NP, but there have been major declines of wildlife in surrounding reserves in both Kenya and Tanzania. A significant portion of the land used by Serengeti's migratory wildlife is located within the NP, while much of Laikipia are privately owned, former large-scale cattle ranches that are now managed for conservation. These models have distinct advantages from a wildlife management perspective: they have a sole 'owner' (either the State or a corporate entity), employ dedicated PA management strategies, and usually possess a single mission of conserving wildlife and maximizing its value. Incentivizing conservation on communal land in key wildlife dispersal areas with thousands of human residents, contested land tenure, and multiple land uses is more complicated and requires different approaches in order to balance development needs with those of conservation.

There are few cases where PES schemes have been employed as a strategy for conserving wildlife in developing countries (Nelson et al. 2010). The trade-offs between conservation and development mean that only a small subset of integrated conservation and development project (ICDP) opportunities exist that really achieve environmental, economic, and social sustainability (Inamdar et al. 1999). The economic effectiveness of community-based conservation (CBC) schemes, which compensate rural people for trade-offs, such as the loss of access to resources in return for wildlife utilization revenues, often fail to live up to expectations (Warner 2000; IIED 1994; Rutten 2002; Metcalfe 1995). In addition, conservation interventions in Tanzania need to deal with a historical legacy of pastoral land alienation in the region, and decades of resentment directed at conservation efforts.

This paper explores the development of a pilot PES scheme in the Tarangire ecosystem of Tanzania in response to specific wildlife declines and policy constraints. It charts the development of this initiative from its genesis based on PES experiences in Kenya. This paper specifically explores the questions of whether the utilization of free-market enterprise tools to achieve conservation goals influences Maasai livelihood diversification in ways that are compatible with conservation. If provided with more options for diversifying their income through wildlife and livestock herding, will Tanzanian villagers protect wildlife corridors and exhibit behavior that is more conservation friendly?

The Tarangire ecosystem of northern Tanzania provides fertile ground to examine this. It is renowned for its large-scale seasonal migration of large, grazing ungulates (Kahurananga 1981, 1979; Lamprey 1963b, 1964). Of particular importance are grazing and calving areas in the Simanjiro Plains, where thousands of wildebeest (*Connochaetes taurinus*) and zebra (*Equus burchelli*) congregate during the wet season, driven largely by phosphorous-rich soil, which is deficient in Tarangire

NP. Conservation of the ecosystem's migratory wildlife populations largely depends on maintaining these habitats on communally owned lands (Borner 1982, 1985; Kahurananga 1997; TCP 1998). The progressive conversion of pastoral rangelands to large-scale farming and permanent subsistence agriculture is contributing to the insularization of Tarangire (NP) (Lamprey 1964; Borner 1985; Kahurananga 1981, 1997; TCP 1998; Kajuni et al. 1988; EcoSystems Ltd. 1980b; Peterson 1978). Continued isolation of Tarangire NP is likely to result in increased wildlife declines in the ecosystem (TCP 1998; Voeten 1999), which could threaten tourism revenues.

## **Local Communities and Wildlife Conservation in Simanjiro: The Historical and Institutional Context**

In Tanzania, PAs cover 167,602 km<sup>2</sup> including national parks, the Ngorongoro Conservation Area (NCA), Game Reserves (GR), Game Controlled Areas (GCA), Wildlife Management Areas (WMA), and Forest Reserves (FR). GCA's conservation value as a PA is hazy; people can live and farm in GCA's and it seems to be more of an administrative construct to allocate hunting blocks. Approximately 30% of Tanzania's land surface is strictly protected in which cultivation and settlement are prohibited (Brockington 2006). The global goal of the 1982 World Parks Congress in Bali was to protect 10% of specific habitats (Jepson 2001: 191). Interestingly, approximately 30% of the Tarangire Ecosystem is strictly PA land, in which people are excluded.

Despite Tanzania's apparent strong record in establishing PAs, there have been some human costs. The Maasai have probably been the most severely affected group of people by PA establishment in East Africa (Neumann 1998) and are wary – even hostile in places – to conservation policies. Tarangire was gazetted as a game reserve (GR) in 1957, which caused unease in Simanjiro, as people had relatives who had recently been evicted from the Serengeti (Igoe 2004: 61). Gazettement of Tarangire NP in 1970 remains a painful memory as people were evicted forcefully by the State (Igoe and Brockington 1999). Access to valuable dry-season water and pasture resources in Tarangire was lost.

Other than exclusion from Tarangire's resources, other factors affected changing pastoral economies in the area: increasing human populations, static livestock populations, and livestock disease all contributed to weakening pastoral food security and encouraged diversification into farming (Sachedina and Trench 2009). Additionally, regional politics fomented the anti-conservation rhetoric. Farming restrictions in the Ngorongoro Conservation Area (NCA) caused some Ngorongoro Maasai to emigrate to Simanjiro District to seek farms and improved livelihoods. They warned that any process termed 'conservation' would weaken and impoverish herders in Simanjiro.

In 1982, the Frankfurt Zoological Society (FZS) proposed a multiple land-use authority covering the entire Simanjiro area modeled after the NCA (Borner 1982: 9).

The proposal for the “Simanjiro Conservation Area” cited threats to conservation from commercial farming and livestock grazing, and called for a total ban on farming within the area (Borner 1985). Subsequent government proposals called for the Simanjiro plains to be strictly protected and farming restricted (Kajuni et al. 1988). District authorities even proposed a new game reserve of 3,822 km<sup>2</sup> in the Simanjiro and Sanya Plains (URT 1993). Herders unsurprisingly opposed these schemes to appropriate more land and resources for conservation in the face of their weakening pastoral economy and declining land base (Igoe 1999, 2000, 2004; Igoe and Brockington 1999). To counter the perceived risk of Simanjiro’s land appropriation, the Simanjiro Maasai became more politically aware and active, with the struggle against conservation interests serving as a rallying cry.

Tension toward conservation was fueled by national policies promoting private investment, including efforts by the Tanzania Investment Centre, to establish district-based “land-banks” comprising village lands earmarked for outside commercial investment. Herders were afraid that rangeland looked like unused “wilderness” to policymakers (WWG 2004). Villages in the Simanjiro Plains decided to sub-divide the plains to individuals to hedge against the potential threat of land appropriation. Poorer pastoralists or enterprising individuals leased land to commercial farmers who ploughed vast swathes of the plains. Villagers were partly motivated by the desire to “brand” the land; land that is ploughed is likely to be seen as owned by someone and it is also less valuable to conservation. Commercial farmers were drawn by the ease of farming in the plains; it had no trees and could be ploughed easily using tractors (Fig. 12.1).

It is important to note how relationships between pastoral communities and conservation non-governmental organizations (NGOs) soured, as it affected the future roll-out of a PES scheme. In 1985, Tanzania National Parks (TANAPA) established a Community Conservation Service (CCS) termed “Ujirani Mwema,” in Kiswahili for “Good neighborliness” (Dembe and Bergin 1996; Bergin 1995). From the Maasai point of view, good neighborliness should mean access for livestock to natural resources inside Tarangire (just as wildlife graze outside the park). A key TANAPA partner was an international conservation NGO, the African Wildlife Foundation (AWF). The intention of CCS and AWF was to engage local people in conservation. AWF subsequently advocated that communities should establish wildlife corridors and limit farming, which was seen as an attempt to block peoples’ herd recovery strategy, and a covert mechanism for extending the park. Community meetings in the late 1990s broke down with the threat of violence, ending with AWF physically withdrawing from the Simanjiro area and local debates over land use. AWF has come under criticism for supporting central interests at the expense of local communities and prioritizing its own organizational growth over community interests (Sachedina 2008; Goldman 2006; Igoe and Croucher 2007). Such tensions most likely contributed to large mammal declines of over 50%, except for buffalo and elephant, during this 15-year period. When local communities felt abandoned by ‘community-based’ organizations that claimed to represent them, they resorted to more aggressive tactics to defend their land, such as defensive farming. Commercial poaching of wildlife was ignored by local people, and in some cases willingly



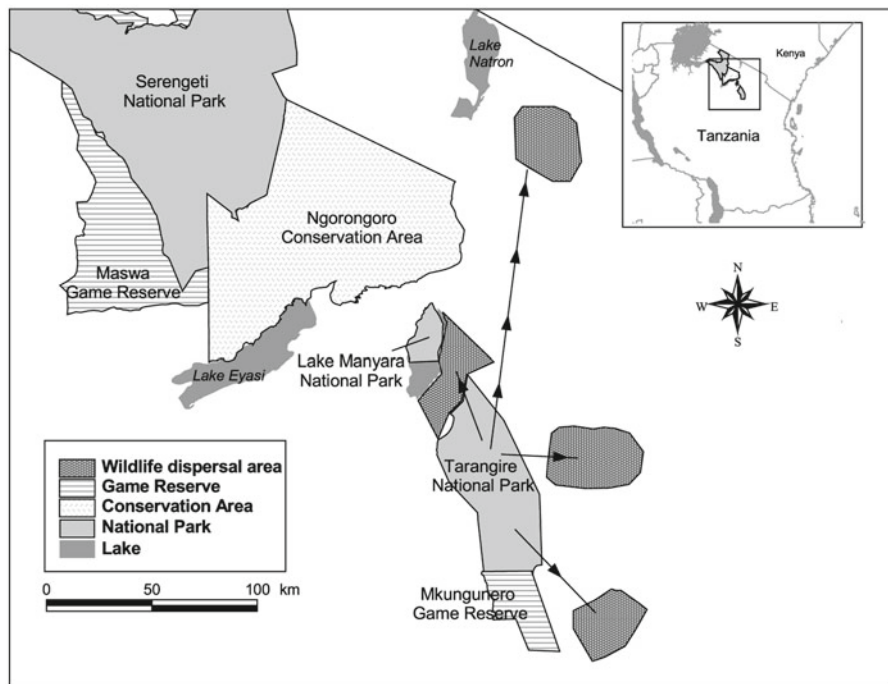
**Fig. 12.1** Aerial view of farms in the Simanjiro Plains

engaged in by villagers, who felt that eradication of wildlife would remove the attraction of their land. Tensions between government, NGOs, and local communities over conservation practices and land-use patterns, combined with the history of pastoralist alienation due to conservation, ultimately created a context in which conservation and development had become starkly polarized.

## **The Ecology of the Tarangire Ecosystem**

The Tarangire ecosystem is considered to have high global biodiversity value; it contains the second highest concentration of large migratory mammals in East Africa, after the Serengeti-Mara ecosystem (Reid et al. 1998). The ecosystem covers an area of approximately 22,200 km<sup>2</sup> in geographic scope. It includes two national parks, Tarangire NP and Lake Manyara NP, National Forest Reserves (Marang and Essimngor), Mkungunero Game Reserve, and the Northern Highland Forest in the NCA. The parks constitute the core resource ‘anchors’ in the ecosystem. TNP is 2,850 km<sup>2</sup> and LMNP covers 330 km<sup>2</sup>.

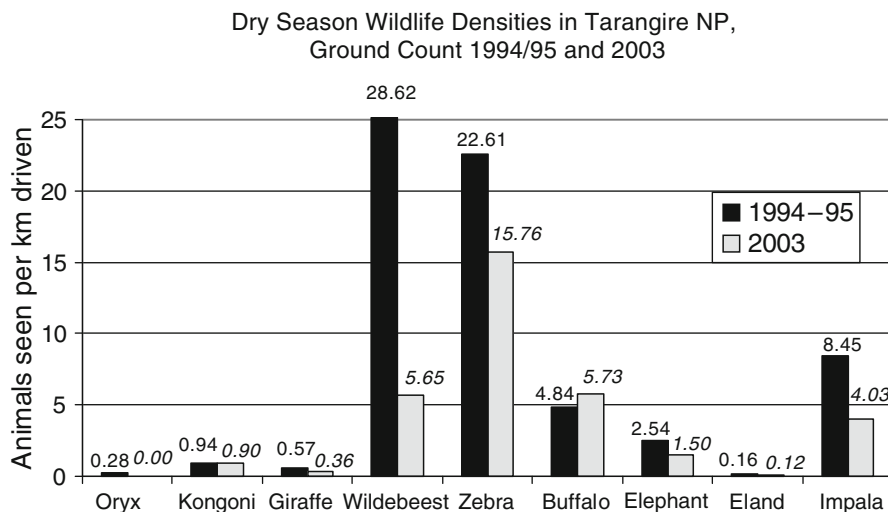
TNP was established in 1970 and was designed to protect a range of African wildlife species such as wildebeest, zebra, elephant, lions, and buffalo. TNP serves



**Fig. 12.2** Geographical overview of the Tarangire ecosystem (From Nelson et al. 2010)

as important dry season wildlife habitat, but the park comprises only 2,850 km<sup>2</sup> out of roughly 22,000 km<sup>2</sup> in the overall ecosystem (Fig. 12.2). For approximately 6 months a year, wildlife disperses into the Simanjiro Plains to the east of Tarangire on lands under the jurisdiction of Maasai pastoral communities. The plains are heavily utilized by zebra and wildebeest as they migrate between wet and dry season pastures, and are shared by pastoralists (Borner 1985; Kahurananga 1997). There are two primary ecological drivers for the migration. TNP's soils are phosphorus deficient (Voeten et al. 1999) while the Simanjiro Plains are higher in phosphorus, an essential mineral needed by lactating wildlife. During the long rains, wildlife move onto the plains to calve for several months, then migrate back into the park during the dry season to access the Tarangire River, the main perennial water source in the ecosystem.

Monitoring of the area's wildlife populations by air and by road has occurred since the 1960s (Lamprey 1963a, 1964; EcoSystems Ltd. 1980a; Kahurananga 1981; Foley 2004; TAWIRI 2004; TCP 1998; TWCM 1999, 2000). Recent data reveal differences in species abundances across species found within the TNP (Fig. 12.3). These data reveal a considerable drop in wildebeest and zebra populations when compared to other species found in TNP, probably related to poaching and habitat change.



**Fig. 12.3** Dry season road counts of wildlife densities in TNP in 1994/1995 and 2003 (Source: Foley and Foley 2005)

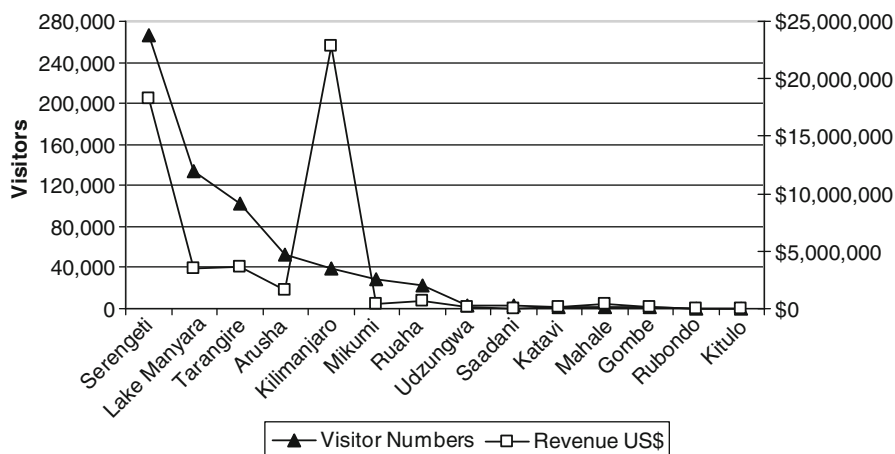
## The Economics of Wildlife in Tanzania

The potential for wildlife to contribute economically and alleviate poverty in Tanzania is significant. Tourism represented 25% of export earnings in Tanzania in 2002; by 2008, this had grown to US\$ 1 billion for the first time in Tanzania's history. In 2006, tourism accounted for 17.5% of GDP, a year in which foreign visitor numbers had increased to 644,000 tourists compared to 583,000 in 2004. Tanzania's 14 NPs generated US\$ 51.7 million in 2006 from 657,000 foreign and local visitors. This suggests that at least 23,000 Tanzanian nationals visited NPs in 2006, which suggests that local value exists for NPs although these 'local' visitors are almost entirely tour guides who pay the entry fee price for nationals. Demand, therefore, is clearly skewed toward foreign visitation.

The economic value of the wildlife industry in and surrounding the Tarangire and Lake Manyara NPs may exceed US\$ 30 million per year. Seventy-five percent of international tourism to Tanzania is based in the 'northern circuit', which includes TNP, LMNP, Serengeti NP, NCA, Kilimanjaro NP, and, to a lesser extent, Arusha NP (CSF and TANAPA 2004; Woien and Lama 1999), the backbone of a tourism industry valued at US\$ 1.3 billion per year (Sumba et al. 2005: 3) (Fig. 12.4). Revenues from Tarangire and Lake Manyara NPs subsidize several lesser performing parks and are one of the few parks to generate an operational funding surplus, so these parks are of strategic national importance to the Tanzanian State (Otto et al. 1998).

The majority of tourism receipts are generated from photographic tourism. However, an important component of Tanzania's wildlife industry is tourism hunting. In 2006, Tanzania earned US\$ 13 million from wildlife hunting, up from US\$ 9.9





**Fig. 12.4** Number of visitors and revenue to National Parks in 2006 (Source: TANAPA)

million in 2004, (an increase of 32%). Noteworthy successes have occurred in southern Africa, where sport hunting has supported devolvement of management rights and increased local livelihoods (Barnett and Patterson 2005: iii; Murphree 2001; Bond et al. 2004). A substantial portion of tourism hunting concessions are located on village land in Tanzania. This suggests that tourism hunting has the potential to contribute meaningfully to local livelihoods. However, given the market value of the tourism industry in Tanzania, both hunting and photographic tourism have yet to play a significant role in poverty reduction or supporting sustainable land-use outcomes at a local level, although substantial potential exists.

### **Adaptive Innovation: The Emergence of the Terat ‘Easement’**

The underlying barriers to wildlife conservation on community lands in northern Tanzania are not limited to the Tarangire Ecosystem, but reflect governance problems facing wildlife, and natural resource management more generally, throughout Tanzania. By 2004, after close to 15 years of work and international and national investments of approximately US\$ 50 million for wildlife management in the ecosystem and most populations of large mammals in protracted decline, the extant situation suggested a different approach was necessary. Conventional wildlife management that focused on fairly efficient park-based enforcement was not working; Wildlife Division and District Council investments in wildlife management and community outreach outside the parks were sparse, militant, and dogged by rumors of corruption (Sachedina 2008); and community-based tourism operated in a murky legal environment and was constrained by inefficient distribution of revenue at a household level.



The impetus for actually developing an experimental PES scheme on the ground in Simanjiro came from a proposal put forth by the author, who at the time was working for AWF. The proposed project was termed the Enterprise Linkages to Conservation and Development (ELAND). The basic premise was to more directly involve the private sector (photographic and tourism hunting operators) to improve conservation management on lands outside Tarangire and Lake Manyara NPs. The private sector was seen as a funding source that could be more directly linked to supporting conservation on community lands. Realizing its own organizational constraints, AWF saw ELAND as an opportunity to improve its reputation amongst the private sector, harness a new source of funding, and catalyze an innovative community–private sector partnership approach.

Up until that point, the tourism sector had largely paid their fees and taxes but was somewhat powerless in contributing to wildlife conservation. Thus, the challenge was to convince private sector stakeholders that it was rational for them to be more actively involved in conservation, in order to ensure the sustainability of their businesses in the long term.

Tour operators were unlikely to dip into their narrow profit margins to capitalize ELAND; but they had access to clients who could be donors. Key to the strategy of ELAND was getting photographic and tourism hunting operators to collaborate, which had not occurred on any significant scale up until that point. By contrast, photographic tourism and hunting were generally seen as mutually exclusive activities, all the more so complicated by CBT investments in hunting concessions, which hunting operators opposed. In theory, collaboration between these two sectors should have been straightforward since they both depended on the same resource, but the centralized nature of tourism hunting and wildlife policy effectively pitted CBT operators against hunting concessionaires.

The ELAND concept was to create a basket fund from a combination of tourism company contributions (e.g. through a \$1 per night special levy on all clients staying at lodges in Tarangire NP), supplemented by funds raised by international NGOs, such as AWF or WCS. The ELAND proposal led to a meeting of NGOs and private tourism and hunting companies active in the Tarangire ecosystem in July 2004 in Arusha. There was general agreement at this meeting between photographic and hunting operators about the threats to the ecosystem, and to the sustainability of their businesses. A working committee was established to further the conceptual idea of ELAND, which included Ujamaa Community Resource Trust (UCRT), a local NGO with strong Simanjiro community ties, Dorobo Tours, which had long-standing involvement in the area through a CBT concession in Emboreet village, a village which also happened to be responsible for much of the ongoing agricultural expansion onto the Simanjiro plains (Sachedina 2006). UCRT had worked with Emboreet since the late 1990s to develop a land-use plan and village by-laws, and was collaborating with the Sand County Foundation (SCF) on community legal training seminars in Simanjiro and other regions of northern Tanzania. A fourth partner, Wildlife Conservation Society/Tarangire Elephant Project (WCS/TEP), had worked with a private tour operator and villages to the north of the Simanjiro plains, in Lolkisale and Makuyuni villages, to zone areas for wildlife, tourism, and livestock.

Initial discussions amongst these collaborating organizations recognized the fundamental problem in Simanjiro: wildlife needed to generate economic returns to local communities, but the continuation of centralized conservation policies undermined this aim and continued to fuel negative local attitudes toward wildlife conservation. An additional practical problem was that while community-based tourism ventures had enabled the protection by villages of much of the habitat immediately bordering Tarangire National Park, wildlife tourism was not viable on the Simanjiro plains. The main problem on the plains is that during the wet season, when most wildlife is out on the plains, the area becomes difficult to access due to the plains' black cotton soils; during the dry season, access is easier but wildlife more sparse. Alternatives needed to be found, and initial discussions emerged among those collaborators of the possibility of designing a PES-type framework, or a community-based 'conservation concession.' At the time, it was not clear where the financing for such a scheme would come from or what the scale of such an initiative would be.

Follow-up discussions amongst Dorobo, UCRT, TEP, and SCF identified the ELAND concept as having potential for mobilizing financial resources to create a local 'conservation concession' according to PES principles in Simanjiro, based on its novel idea of pooling financial resources from tourism operators whose businesses depended in part on Tarangire NP. Concerns emerged, however, on two key points. The ELAND proposal envisioned creating a new legal trust with a range of trustees representing private sector, government, and NGO representatives. While this might be inclusive, it seemed cumbersome and had the potential to invest large amounts of time and energy in creating new organizational structures rather than focusing efforts at the village level, where local governance structures already existed. ELAND thus seemed in danger of becoming yet another top-heavy initiative in a region where a great deal of money had been spent on community-based conservation with limited on-the-ground impact. Second, there was a fundamental problem with linking any new initiatives in Simanjiro designed to build community incentives for wildlife conservation with international conservation organizations such as AWF, as a result of the locale's historic tensions between external conservation interests and local communities' land rights and livelihood concerns (Igoe 2004; Sachedina 2008).

For these reasons, Dorobo Tours, as the private sector actor with the longest history in Simanjiro and with strong experience both in community negotiations and collaborative conservation processes, took the lead in building support among a core group of private operators for a village-based PES scheme in Simanjiro. At the time (the second half of 2004 and first half of 2005), this included not only tourism operators but also Tanzania Big Game Safaris, a hunting company that leased the hunting concession in Simanjiro that overlapped part of Terat and Sukuro village's lands, as well as other villages to the south.

Dorobo built consensus among the operators for investing a small amount of financial resources into a pilot PES scheme, but the decision was made to de-link the initiative from the original ELAND proposal due to the concerns about costly

bureaucracy and formal links with AWF which might raise concerns about land appropriation by external conservation interests at the village level. Furthermore, in hindsight, the use of a wildlife species name in English for a community-based PES scheme amongst Maa and Kiswahili speakers in an area of conservation conflict was ill-conceived. Few people in the area spoke English, and linking a PES scheme to an animal suggested that wildlife, not people, came first in the initiative; a subtle but important consideration given the conservation history in the area.

By early 2005, momentum was building for an experimental PES scheme in Simanjiro, but it was not yet clear exactly what shape this would take or what its coverage or cost would be. Initial discussions revolved around the seven key villages to the east of Tarangire NP, and later focused on the three – Emboreet, Terat, and Sukuro – which contain virtually all of the short grass plains which are the critical wildlife calving areas.

Finally, a decision was made to initiate a ‘conservation concession’ with Terat village based on set annual payments financed by annual contributions from a small group of tourism operators, with Dorobo Tours taking the lead in presenting the initiative to the village and brokering the deal. In exchange for the payments, the community would protect its portion of the short grass plains. The village of Terat was chosen out of the three as the site to pilot this concession for a few important reasons related to opportunity costs, local land-use preferences, and community capacity to manage natural resources and exclude outsiders, all of which are important ingredients for establishing PES programs.

Emboreet village was the source of much of the agricultural expansion onto the plains from the west, but also had a strongly antagonistic outlook toward wildlife conservation initiatives (see Sachedina 2008). Because so much agricultural conversion was occurring, it seemed like Emboreet would be potentially the most difficult village in which to initiate a PES scheme for protecting the plains, as there would be substantial opportunity costs to villagers and the scheme would likely encounter local political resistance. Both financial and political considerations thus did not favor Emboreet as a place to pilot the PES scheme, although this was where the problem of habitat loss/land-use change was most pronounced. Terat village, by contrast, had a history of excluding agricultural expansion from the short grass plains, which made up roughly a third of their village land area, and maintaining the plains for livestock grazing. In 1997, an incursion of outsiders with high-level regional political connections had invaded the plains in Terat and started cultivating land. The village mobilized rapidly and evicted these settlers, both physically and legally, through a subsequent court case. Farming had been effectively excluded from Terat’s portion of the plains since then, and this incident demonstrated the enduring vitality of Terat’s *collective* land and resource management institutions.

It is important to emphasize that the decision to start with Terat rather than Emboreet was explicitly a ‘thin end of the wedge’ strategy. The aim was to initiate the easement in a village that seemed most conducive to such an agreement, and by

establishing a successful and mutually acceptable pilot initiative, to create the opportunities to later expand to other villages, including the more challenging context of Emboreet.

### *The PES Mechanism*

The basic PES concept was that, although the plains were already protected by Terat as a seasonal livestock grazing reserve (used mainly July–October as a dry season reserve), an added financial payment could serve (a) as an extra incentive to prevent any future moves by individuals or the community to convert the plains to agriculture; and (b) provide incentives for the community to not only tolerate but actually conserve wildlife by protecting it from bushmeat poaching by outsiders. Beyond these direct impacts in Terat, the initiative would hopefully provide a new and locally acceptable PES framework applying community-based conservation linked to private tourism revenues, which could later be scaled up to include other villages in key dispersal areas.

The basic proposal put to Terat was as follows: the tour operators would pay the village an annual fee in exchange for the village agreeing to prevent agricultural cultivation, charcoal production, and illegal hunting on their portion of plains. Dorobo proposed a sum of five million Tshs (roughly \$4,500) – a small enough amount that it would be feasible for the operators to contribute every year, but large enough to provide a meaningful incentive at the village level.

The implementation of the proposed initiative was led by Dorobo Tours and UCRT. Dorobo continued to organize the tour operators, securing pledges of financial support from four other operators. Three of these operators – Sopa Lodges, Tarangire Safari Lodge, and Asilia Lodges – own permanent tourism facilities inside Tarangire National Park. The main initial motivation for them was to contribute resources to an initiative that would improve the status of the wildlife populations in the park that their businesses relied upon, although non-financial conservation motivations were also an important factor. Notably, as the negotiations moved forward, the one hunting company involved, Tanzania Big Game Safaris, dropped out of the operator consortium. The hunting company was concerned about the deal being a mechanism for tourism activities to expand into its hunting block, was concerned about formally recognizing village land rights in its hunting concession, and, lastly, simply did not want to spend the money.

UCRT worked in their role as a local capacity-building facilitator organization to broach the concept locally. UCRT first reached out to several local elites, including Ilaramatak Lorkonerei, a local development organization based in Terat with a long history of land rights advocacy in Simanjiro, including opposition to wildlife conservation interests. The discussions were gradually expanded in August and September, 2005, from the village leadership to all the sub-village leaders, and finally endorsement by the Village Assembly. In October, the tour operators and village leadership met in Terat, and in December, the final contract was signed.

No significant changes were made to the written contract from the proposal initially brought to the village, with the deal providing five million Tshs. (about \$4,500) paid to the village annually in exchange for the easement area being managed under the following conditions: agricultural cultivation and charcoal production would be prohibited, and the village would seek to prevent illegal hunting as well. All livestock-based uses would continue per the community's traditional practices. The one addition that was made, informally, was that the village requested the operators to also fund four village game scouts who would work to protect the wildlife and other natural resources in the village and, thereby, enforce and monitor the easement's provisions. This was agreed to in principle by the operators, although WCS/TEP later agreed to fund these game scouts, with UCRT administering their salaries and provision of equipment.

Several points need to be emphasized with regards to how the proposal was received at the village level, and the relatively harmonious negotiation over establishment of the easement. First, a key to the easement is that it is based on supporting traditional land-use practices, and that pastoralist communities in Terat and elsewhere face their own internal trade-offs with respect to maintaining land as livestock pasture or allowing land to be converted to agriculture. In Terat, the short-grass plains have always been managed as a dry season grazing reserve for livestock, and agriculture has been excluded and limited to other portions of the village land. For the village, agreeing to a formal contractual prohibition on agriculture in this area bore no immediate costs, and in fact served to reinforce the community's existing land-use practices.

Second, the main potential barrier to the easement agreement was not the potential opportunity costs to the community in adopting it, but rather the entrenched suspicion of wildlife conservation interests as a threat to local land rights and livelihoods throughout Simanjiro. This barrier was addressed strategically, by introducing the proposal first to several elite leaders from Terat, including the director of Ilaramatak Lorkonerei, an organization which had in the past been at the forefront of mobilizing opposition to conservation initiatives. Ilaramatak not only supported the idea, but assisted UCRT in facilitating the village-level meetings to discuss the proposal, which led to its fairly expeditious endorsement.

Third, an important factor in the community's acceptance of the deal was the long-standing existence of the village-operator tourism contracts and concessions in neighboring villages, particularly Emboreet. It was also significant that Dorobo Tours had been practicing tourism in Emboreet for nearly 15 years and was therefore well-known throughout the area. The community's familiarity with these tourism ventures made the easement proposal easily understandable, and helped allay possible fears about hidden wildlife conservation agendas. As Dorobo emphasized during the crafting of the initial easement proposal, a key strategy was to present the easement as a business proposal based on the tour operators' financial stake in the health of the Tarangire-Simanjira wildlife populations, so as to ensure the community understood the rationale of the easement and to dispel fears of hidden conservationist agendas. This was a rationale for limiting the easement fund, at the outset, to contributions from tourism companies only.

Following signing of the easement contract, a management board was established at the village level consisting of five villagers elected by the Village Assembly every 5 years. This is the organizational mechanism for communication between the operators and the village, as well as the village-level institution responsible for overseeing receipt and use of the annual payments. In addition, four village game scouts were selected by the village; two permanent scouts and two who rotate every 6 months. These scouts are paid 60,000 Tshs (~\$50) monthly, using funds provided by WCS/TEP and administered by UCRT. The scouts report to the village easement management board, which in turn reports to the Village Assembly. TEP has recently trained the scouts in the 'event book' system of monitoring wildlife populations used in Namibia's community conservancies (Stuart-Hill et al. 2005). This will provide data on wildlife trends at the village level, which will provide valuable information on the impact of community conservation measures in Terat, and also may help to mitigate human-wildlife conflict. This will also represent the piloting of community-based wildlife monitoring in Tanzania, where almost all data is collected at large spatial scales by government wildlife authorities.

In response to institutionally rooted wildlife governance problems prevalent in northern Tanzania, an informal group of individuals and organizations began working in 2002 on creating a new type of local organization that could integrate conservation, economic development, and governance issues and thereby build the kinds of long-term strategies necessary for addressing such complex institutional problems. This organization evolved into the Tanzania Natural Resource Forum (TNRF) by 2006. Key initial players in creating this organization were Dorobo Tours, Ujamaa-Community Resource Trust (UCRT), Wildlife Conservation Society (WCS) (through the Tarangire Elephant Project- TEP), and Sand County Foundation (SCF). Collaboration amongst these same organizations was also a key to the emergence of the Terat easement.

The Terat easement has been in place for about 6 years now. It has provided a formal mechanism for communities to protect approximately 9,300 ha of critical habitat on the Simanjiro plains and an incentive to work toward preventing illegal use of wildlife in this area (Nelson et al. 2010). It formalizes traditional land-use patterns and rules, which effectively serve as a barrier protecting the Simanjiro plains from the expanding agricultural frontier coming from Arusha to the north. The easement places a remunerative financial value on the ecological services that traditional livestock and land management practices provide in Simanjiro in terms of the maintenance and conservation of wildlife habitats. The easement therefore provides a model for correcting the 'market failure,' which drives wildlife declines in East Africa, in that wildlife valuable over large scales (e.g. the national tourism industry) is not valuable to local communities, which traditionally conserve habitats (Nelson et al. 2010). The impacts of the easement are both in terms of its formally protecting a large area of the Simanjiro plains as well as in providing incentives for communities to improve local protections of wildlife, which is traditionally treated as an 'open access' resource due to the weakness of centralized law enforcement mechanisms and the rule of law in Tanzania more generally. For example, village game scouts have arrested several groups of poachers, and use

mobile phones to communicate with other anti-poaching forces such as hunting companies and Tarangire NP game scouts.

The village has received roughly 20 million Tshs to date (about \$17,000), investing the bulk of these funds in primary school construction in one sub-village, as well as supporting a new secondary school in Terat village center. Although the total annual communal revenues from the easement, at about \$4,500, are relatively small in relation to the total support for social services that the village receives from other sources such as the District Council and charitable NGOs, the easement funds are one of the few sources of discretionary revenues received by the village government. This small amount of village revenue gives community governance institutions greater flexibility in terms of supporting new or existing development projects. It also contributes to the development of local governance institutions as the community must collectively decide how to allocate and spend these revenues. Individual benefits are received by the four village game scouts, whose salaries of \$50 per month, while modest, are nevertheless significant in a context where monthly per household cash expenditure is only around \$10, and opportunities for employment are highly limited.

The initiative enjoys broad local support although it has faced one notable obstacle, revolving around a conflict between Terat village and one farmer who is also a former village council member. This farmer, an Iraqw (Mbulu ethnic group) immigrant to the area but a long-time resident, has a large farm (several hundred acres) in the northern part of the easement area, along the Terat-Loiborsoit border. The farmer claims that he was given the land by neighboring Loiborsoit village, and therefore Terat has no authority to remove him. Terat has since re-affirmed their village boundaries and obtained a Certificate of Village Land (as required by the Village Land Act of 1999), and involved government land officers in clarifying the location of the surveyed boundaries. Terat has also since removed the farmer from membership of the village council and successfully prosecuted a court case, using some of the funds from the easement payments, to remove this individual from the village's land. This demonstrates the additionality of the easement beyond existing land-use practices in terms of providing formal incentives for the village to secure the boundaries of the easement area and effectively confront sources of encroachment.

Beyond the immediate conservation and financial impacts at the village level, an equally important outcome of the Terat easement is the emergence of a new, locally acceptable, and cost-effective (approximately \$.48/ha) framework for wildlife conservation on village lands in Simanjiro (Nelson et al. 2010). While the Terat easement is, to a large degree, identical to the framework for village-private tour operator, wildlife tourism concessions in nearby parts of Simanjiro, the structure of the Terat agreement is quite different since the tourists do not actually use the lands of the Terat easement. The plains are conserved to enhance the wildlife value of the park. As a result of the generally good reputation of the easement agreement in Simanjiro, in 2008, neighboring Sukuro village expressed interest in adopting a similar arrangement to cover its portion of the Simanjiro plains. In addition, Emboreet, while not yet embracing an easement on its portion of the plains, has appointed six village game scouts, which UCRT is overseeing and TEP is funding.



The potential for these easements or 'conservation concessions' to spread throughout the system in the next few years suggests that PES arrangements may provide a realistic framework for reconciling community interests with conservation objectives and providing local-level incentives for conservation of the wildlife in the Tarangire Ecosystem.

## **Lessons Learned**

### ***Creative Collaboration***

The Terat easement arose from a collaborative effort among a diverse set of conservation, tourism, and rural development interests, all of whom were searching for solutions to wildlife population decline and continued conflicts between various stakeholder groups (e.g. between tourism and hunting companies, and villages and central government) over land and natural resource management in Simanjiro. The easement emerged because those collaborators recognized that existing institutional constraints, such as the reticence of the Tanzanian government to implement the 1998 wildlife policy and decentralize management to the local level, demanded creative new mechanisms for channeling benefits to communities if the decline of wildlife outside protected areas was to be halted. The collaborators also recognized that existing community-based conservation efforts in Simanjiro were fundamentally top-down and not sufficiently based on local livelihood interests and land tenure concerns.

The impact of the Terat easement cannot be fully measured by the area set aside by the village or the financial returns to the community. An additional and important impact of the easement is its establishment of a framework for community-based conservation that brings together local community, private sector, and conservation interests. The easement has forged common ground and produced a working example of community-based conservation in an environment that has been characterized by conflict between local communities and wildlife conservation for much of the past 30 years. The easement has resulted in new organizational relationships and common aims, which provide essential human and organizational capital for scaling up further collaborations and community-based conservation efforts throughout the Tarangire Ecosystem. The establishment of collaborative relationships and mutual understanding is a key outcome of the easement experiment, and potentially more important than its immediate ecological and economic impacts.

The easement has also resulted in leveraging other forms of external support for community-based conservation in Simanjiro, mainly in the form of collaboration between TEP and UCRT. TEP not only funds the village game scout salaries, equipment, and monitoring training, but also additional activities carried out by UCRT to support natural resource management in Terat, such as the surveying and formalization of village land rights. In 2007, the resources invested in the area by TEP amounted to about \$11,000, and is expected to increase to \$30,000 in 2008 as the program potentially expands to Sukuro village and land-use planning will be carried

out as a precursor to an easement there. Thus, the operators' financing of the easement contract itself has been able to leverage additional resources to further support community-level natural resource conservation activities in Simanjiro, and also helped cement the collaboration between TEP and UCRT, which, in turn, provides a range of services supporting the easement itself and absorbs most of the transaction costs associated with the deal.

### ***Local Champions***

It is worth emphasizing that in the case of the Terat easement, as in so many other innovative conservation or development projects, businesses, or social movements, a handful of key individuals and organizations played a pivotal role. In particular, the long-term experience of Dorobo Tours and its directors in Emboreet village and the Tarangire Ecosystem more generally, was critical. Dorobo brought extensive experience with community-level negotiations, collaborative processes, and deep social and ecological knowledge of the region to the initiative. Equally, UCRT is a uniquely skilled facilitator of community-based natural resource management in Simanjiro and northern Tanzania more broadly. The organization had key contacts with local political elites in Terat, which were vital to introducing the idea of the easement in a suitable manner and ensuring it was not perceived as a conservationist 'land grab.' Without these two unique organizations, the easement idea would not have gotten off of the ground, and scaling it up further in Simanjiro is heavily dependent on their skills, relationships, commitment, and resources.

### ***PES on the Margin***

Wunder (2007) notes that PES arrangements will often be "best suited to scenarios of moderate conservation opportunity costs on marginal lands and in settings with emerging, not-yet-realized threats" (Wunder 2007). These conditions apply in Terat, where the key to the easement's successful implementation is the fact that it builds on traditional livestock-based livelihoods, and the incentives the community already possessed for limiting the expansion of agriculture into grazing lands (Nelson et al. 2010). Because the community had already worked to limit agriculture's spread onto the plains, adoption of the easement incurred very low opportunity costs. The easement serves to bolster the incentives the community possesses for limiting the future spread of agriculture into the plains and restricting agricultural cultivation to other parts of the village, which are less important habitats for wildlife and for livestock. The easement therefore serves to increase the marginal benefits of livestock versus agriculture as a local land-use choice on the plains, by enabling the community to capture additional economic benefits from wildlife as a complement to pastoralist livestock production.

In Emboreet, by contrast, land farmed on the plains is estimated to be bought and sold for up to \$350/ha. However, as Sachedina (2006) describes, cultivation of the plains in Emboreet is also driven by the fears in that village that their land will be taken over by conservation interests – hence the ‘defensive’ strategy to cultivate and displace wildlife. A key lesson that emerges is that the local economic opportunity costs upon which PES agreements need to be negotiated are shaped not only by theoretical land values or productive potentials, but by social and political factors as well. The short-grass plains in Emboreet and Terat have the same nominal productive potential for agriculture, but different social and political contexts in the two communities result in very different relative land-use patterns and valuations at the village level.

### *Adaptive Strategies*

The social, institutional, and ecological complexity of a large and variable ecosystem such as the Tarangire Ecosystem is considerable. Conservation strategies and interventions can only be effectively developed by (a) improving practitioners’ understanding over time of how and why social and ecological change is occurring and (b) experimenting with new approaches that can be monitored and themselves used as opportunities for learning. Such an adaptive approach – or as Lindblom (1959) called it, ‘muddling through’ – focuses on gradually making iterative progress toward an ultimate goal, but recognizes that strategies to reach that goal must be altered as both surprises and learning occur (Lindblom 1959).

The ‘muddling through’ or adaptive management approach aptly describes the process that led to the emergence of the Terat easement. By 2004/2005, there was a nascent effort among a core group of experienced collaborators to devise alternative strategies toward the ultimate goal of creating community-level incentives to conserve wildlife on the Simanjiro plains. However, it was not until the unforeseen ELAND proposal that the impetus was given to crafting and implementing an operational land easement initiative. The ELAND initiative produced both a danger – the threat of increased suspicion of external conservation interests at the local level – and an opportunity by bringing a group of tour operators together to begin a collective dialogue among this group of conservation challenges in the ecosystem. Thus, both threat and opportunity catalyzed the core group of collaborators to re-shape the ELAND proposal into an operational PES scheme, which was experimentally piloted in Terat village.

### *PES as a Model for Community-Based Conservation*

A key lesson from the experience of the easement is that PES can provide a simple and highly cost-effective model for community-based conservation of wildlife and

wildlife habitats outside state protected areas (Nelson et al. 2010). In savannah ecosystems where wildlife regularly ranges far outside protected area boundaries, finding effective mechanisms and incentives for communities to promote wildlife conservation as a form of land use outside of protected areas is a critical issue affecting the long-term persistence of many species. In eastern Africa, wildlife populations are widely declining as a result of the lack of local economic incentives for conservation (Norton-Griffiths 2007). For example, the Loita plains wildebeest population of Kenya's Maasai Mara system declined by over 80% from the mid-1970s to mid-1990s, largely as a result of conversion of communal rangelands to farming and fenced individual properties (Homewood et al. 2001). PES arrangements such as the Simanjiro easement may provide an alternative framework for creating local incentives for wildlife conservation in contexts where alternative sources of economic incentives (e.g. tourism revenues) are not sufficient and in many cases non-existent.

In Tanzania, the easement model appears to be widely suitable for protecting key dispersal areas and migration corridors outside state-protected areas. It is important to emphasize the cost effectiveness of the easement framework in Simanjiro, in a context where millions of dollars have been spent on promoting community-based conservation to limited effect. This supports arguments that PES may be more efficient and effective than alternative methods for integrating conservation with rural development such as so-called integrated conservation-and-development projects (ICDPs) (see Ferraro and Kiss 2002). However, it is also important to highlight the complimentary nature of the Simanjiro easement and other community-based conservation models such as village-private ecotourism ventures. These different models are not zero-sum options nor are they mutually exclusive, but should be promoted according to context and practical challenges and opportunities.

### ***Future Challenges***

Several notable challenges face the Terat easement moving forward. The easement arose because Tanzanian wildlife management institutions have failed to put in place a legal and policy framework that encourages community-based conservation, based on local capture of wildlife's economic value, on village lands. Conflicts between central wildlife authorities and local communities, particularly over the matter of hunting concession allocations on village lands, continue in Simanjiro. The Terat easement has operated as a direct contract between private operators and the village, supported by a range of NGOs. Conflicts between the village and higher levels of government over land tenure and resource use remain a challenge for conservation practitioners in the Simanjiro area. The easement could be undermined by central appropriation of village lands in the Simanjiro plains, which has been a threat to the communities for over 20 years, or by continued inflammation of local attitudes toward wildlife by top-down conservation initiatives by government or external NGOs. Although communities have clear rights

to their land, the rule of law in Tanzania remains weak and central and external appropriation of communities' resources, either through de jure or de facto measures, is common.

Another challenge is financial. The tour operators who are the contracting parties to the easement are, in a way, subsidizing the benefits captured from Tarangire's wildlife for other groups with a broad range of interests. These include other private operators, but particularly government agencies such as TANAPA, which earns millions of dollars from park gate fees and lodge concessions in Tarangire NP. The operators note that an underlying assumption of the Terat initiative since its inception has been that by catalyzing a successful model for conservation on village lands, their financial contributions to the easement would be able to leverage external conservation funding to expand the model to other villages, or even perhaps take over the financial support of the Terat easement. While the operators' investment has been able to leverage significant additional resources, mainly through the TEP support to UCRT, which underpins the easement's administrative costs and the village game scouts' activities, it remains unclear how willing the operators will be to scale up their existing level of financial contributions. Mechanisms for scaling up the easement model using other sources of funding, such as a long-term endowment raised by conservation interests, have not been delineated, and the overall financial strategy for scaling up the easement to other villages has not been clearly articulated. This will be a key area for future collaborative efforts in the ecosystem in order to successfully build off of the catalytic experiences of Terat for conserving wildlife populations.

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