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MAKING WILDLIFE ECONOMICALLY VIABLE FOR COMMUNITIES LIVING AROUND THE WESTERN SERENGETI, TANZANIA

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CONTENTS

1. INTRODUCTION TO THE CASE STUDY

Throughout Eastern Africa wildlife numbers and diversity are declining in the face of decreasing government budgets, increasing competition for funding and rapidly rising human needs for land, food and income. Many of these threats to wildlife – and much of the potential to overcome them – are economic in nature. Increasingly it is recognised that unless wildlife populations can generate real economic benefits to governments, the business community and to the people who live in wildlife areas, they are likely to decline still further in the future.

The case of the Serengeti ecosystem illustrates many of the key economic issues facing wildlife conservation in sub-Saharan Africa. Although it is one of Eastern Africa's most important and densely-populated wildlife habitats, and provides one of its major tourist destinations, the Serengeti continues to undergo rapid ecosystem degradation and wild species depletion.

A major reason for ecosystem degradation and wildlife loss in the Serengeti is the negative economic impact of wildlife on landholders. While wildlife generates little income, employment or other benefits at the local level, it gives rise to significant costs and losses. Among the most significant of these costs are the agricultural opportunity costs of reserving protected areas and the damage caused to farm crops and livestock from wild animals. As population has grown and pressure on agricultural land has intensified wildlife has become a less economically viable land use in the Serengeti, despite the fact that conservation – both within protected areas and in the vital dispersal zones which surround them – ultimately depends on the ability of wildlife to generate sufficient benefits to justify its existence.

This case study analyses the economic value of wildlife for agricultural landholders living in western parts of the Serengeti ecosystem. As well as tracing the ways that wildlife costs and benefits have altered under different approaches to conservation and in the light of settlement and land use changes – and conflicts – which have taken place over recent decades, it describes on-going innovations in wildlife management which are beginning to change both the local economic value of wildlife and the way in which it is perceived by human communities. In particular the case study questions the extent to which conventional benefit-sharing arrangements promoted by government – the allocation of a certain proportion of wildlife revenues to community development activities in park-adjacent areas – have provided sufficient local economic incentives for wildlife conservation in the Serengeti ecosystem. It describes how, rather than introducing an additional distortion – and dependency – into an area which is already the subject of multiple distortions and conflicts, conservation efforts in the Serengeti may better be directed towards enabling landholders to profit from the wildlife on their lands on their own terms.

Section 2 of the case study provides an overview of the Serengeti ecosystem and describes the case study area;

Section 3 outlines changing approaches to wildlife conservation and management in the Serengeti over this century;

Section 4 assesses the economic costs and benefits of wildlife for local communities and other groups in the Western Serengeti;

Section 5 describes recent innovations in private sector and community wildlife management and enterprise arrangements;

Section 6 draws conclusions about the economic viability of wildlife within community livelihoods in the Western Serengeti.

This is one of a number of case studies of the *Evaluating Eden Project*, being carried out by IIED, the International Institute for Environment and Development. The project aims to evaluate the environmental, social and economic dimensions and impacts of community wildlife management initiatives in East and Southern Africa.

The case study also forms a component of IUCN Eastern Africa Regional Office's *Biodiversity Economics* activities, and is one in a series of case studies being carried out on the economics of environmental conservation in different Eastern African countries – including financing arrangements for marine conservation in Kenya, wetland economic values and community economic incentives for forest management in Uganda, and economic assessments of biodiversity in Djibouti, Eritrea, Seychelles and Sudan. These case studies aim to document existing conservation efforts from an economic viewpoint, contribute to available biodiversity economics information and methodologies in the Eastern Africa region and provide recommendations for the formulation of conservation policy and practice.

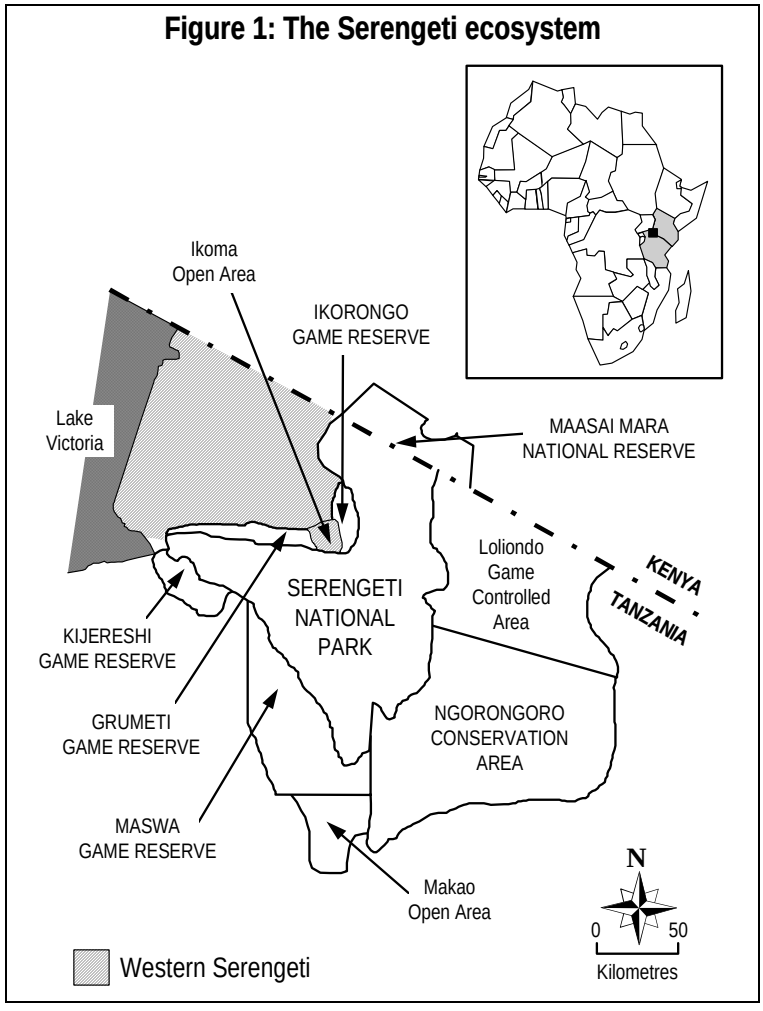
The case study has been carried out in collaboration with the *Serengeti Regional Conservation Strategy*, a joint initiative between the Government of Tanzania Ministry of Natural Resources and Environment's Wildlife Department and NORAD. The Serengeti Regional Conservation Strategy has since 1985 been working in the Districts around the Serengeti National Park to integrate and reconcile conservation and development objectives so that each can be promoted without detriment to the other.

2. BACKGROUND TO THE WESTERN SERENGETI

2.1 The Serengeti ecosystem

The Serengeti ecosystem spans some 25,000 km^2 of north western Tanzania and south western Kenya and, with its natural barriers which effectively prevent the emigration or inmigration of large mammals, is primarily defined by the annual movements of the migratory wildebeest (Sinclair 1995). It is bounded to the north by the rangelands of the dry Loita and Mara plains of Kenya, to the east by the Loita Hills of Kenya and Gol Mountains of Tanzania, to the south by the Eyasi Escarpment of Tanzania and to the west by a band of cultivation extending to Lake Victoria. The Serengeti contains a range of vegetation types. Northern sections are characterised by rolling, wooded savannahs, south eastern parts feature virtually treeless plains, while further to the east the terrain rises steeply to massif highlands and forested areas (MNRT 1985).

Figure 1: The Serengeti ecosystem



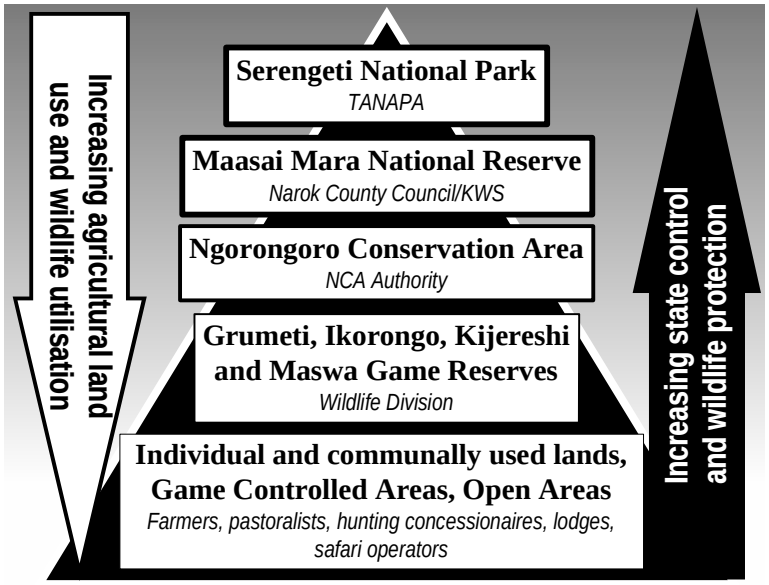
The Serengeti has major conservation significance because of the large and varied wildlife populations it supports. Thirty species of ungulates and 13 species of large carnivores have been recorded in the region (Sinclair 1979), in addition to over 500 species of birds (TANAPA 1992). Savannah areas of the ecosystem are estimated to contain some 1.3 million wildebeest, 0.2 million zebra, 0.5 million gazelles, 7 500 hyena, 2 800 lion and a vast number of other ungulates and their attendant carnivores (Sinclair 1995). These large populations of plains mammals have national economic importance as a source of tourism earnings. The three strict protected areas in the Serengeti ecosystem – Maasai Mara National Reserve in Kenya, and Ngorongoro Conservation Area and Serengeti National Park in Tanzania – account for the majority of wildlife tourism bednights and income in each country.

2.2 Land use and wildlife management

Reflecting variation in climate, rainfall and ecology, land use systems are extremely diverse in the Serengeti and wildlife has an accordingly varied role and status. In general, while western parts of the ecosystem – the focus of this case study – are mainly occupied by dense smallholder agriculturalist and agro-pastoralist populations, the primary production system to the east of the Serengeti is pastoralist livestock production. Small groups of hunter-gatherers also reside in parts of the Serengeti ecosystem including the Hadzabe around Lake Eyasi to the south, and the Wandorobo in eastern and southern areas of the Maasai steppe.

Traditional systems of land use have been undergoing change over recent years. Of particular significance is the spread of cultivation and the establishment of commercial agriculture in formerly subsistence agricultural and pastoralist areas. To the west of the Serengeti both human population and area under arable agriculture has increased rapidly over the three decades since Independence was attained in 1961, accompanied by a sharp decline in farm size and intensification of production (Campbell and Hofer 1995). The rangelands to the north and east of the Serengeti are also gradually coming under crop production, carried out by pastoralist Maasai as well as by immigrant farming communities. Dense agriculture has appeared around the boundaries of the Serengeti and a number of large-scale commercial farming schemes have been proposed or established. Land pressure continues to intensify, and land-based conflicts – especially between commercial and smallholder farmers, between cultivators and pastoralists and between park authorities and local communities – are escalating (MNRT 1985, Norton-Griffiths 1995). As we will describe later in this paper, the spread of arable agriculture has substantially altered the economic viability of wildlife in land use systems.

Figure 2: Wildlife in land use systems in the Serengeti



A range of wildlife conservation regimes overlay agricultural land use systems. In addition to customary forms of wildlife management and utilisation, different parts of the Serengeti have been subject to various degrees of state protection since the early years of this century, as described in the following section. A spectrum of wildlife management regimes currently exist around the Serengeti which range from the strictly protected government-controlled area of Serengeti National Park and Maasai Mara National Reserve through multiple land and wildlife uses in Ngorongoro Conservation Area and Grumeti, Ikorongo and Kijereshi

Game Reserves, to the relatively uncontrolled Loliondo Game Controlled Area and Ikoma Open Area, private and communally used lands (Figure 2).

The Serengeti today includes three types of ***state-administered core protected areas***, all of which were established before Kenyan or Tanzanian independence, and each of which has a different conservation and management status – National Park, National Reserve and Conservation Area. The Serengeti National Park, Maasai Mara National Reserve and Ngorongoro Conservation Area form the core protected areas of the ecosystem. Serengeti National Park, administered by the parastatal Tanzania National Parks Authority (TANAPA), permits no human habitation or extraction of natural resources. A similar management regime applies to the Maasai Mara National Reserve, which is under the jurisdiction of the local Narok County Council, assisted in wildlife management and law enforcement by the parastatal Kenya Wildlife Service. Ngorongoro Conservation Area is also administered by a parastatal authority and, while prohibiting most forms of consumptive wildlife utilisation, has been established as a multiple land-use unit which combines conservation with pastoralist residence and controlled, subsistence-level resource use (Emerton and Ole Kaanto 1996).

A number of ***less strict government-controlled conservation areas*** have been gazetted more recently on the western boundaries of the Serengeti National Park in Tanzania, including Grumeti, Ikorongo and Kijereshi Reserves, which were all established in 1994, and Maswa Game Reserve, declared in 1962. Game Reserves fall under the authority of the Wildlife Department of the Ministry of Environment, Tourism and Natural Resources and, while banning human residence, allow some consumptive utilisation, including tourist hunting and game cropping by wildlife authorities and local communities (Rusumo 1994).

Communally and individually used lands outside the government-controlled protected areas of the Serengeti fall under a variety of conservation and management regimes. In Tanzania the status of Loliondo and Makao – and until recently Grumeti and Ikorongo – as Game Controlled Areas, and Ikoma as an Open Area, denotes the presence of large wildlife populations rather than referring to a specific protection regime, and in common with other lands outside gazetted protected areas permit land and natural resource utilisation activities within the limits of national law. Other land in the Serengeti ecosystem is in Tanzania vested in the State but primarily under the control of Village authorities, and in Kenya combine Trust Lands – communal areas held by County Councils on behalf of the local population, Group Ranches – enterprises in which a group of registered ranchers have a joint freehold title to land while maintaining individual stock ownership, and individually owned and titled lands. Although containing wildlife and comprising important game dispersal areas, these lands have no formal conservation status.

2.3 The Western Serengeti area

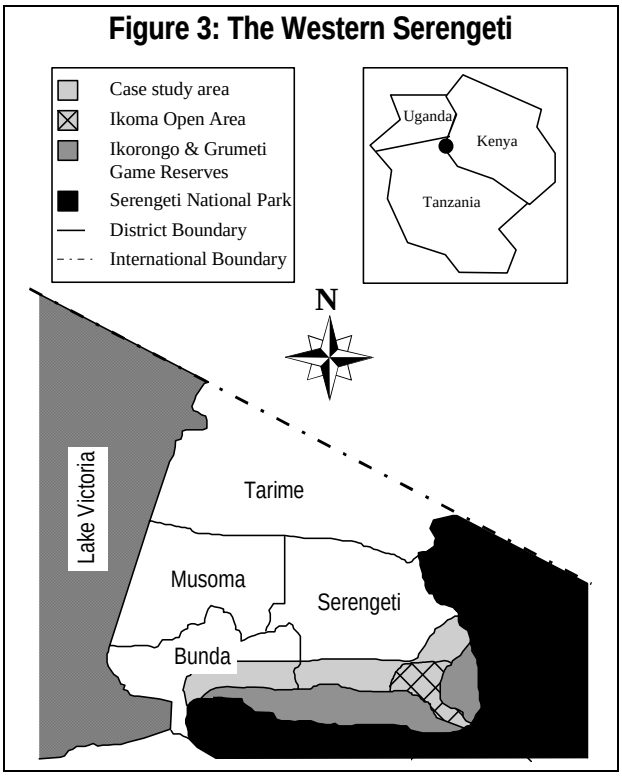
The focus of this case study – the economic value of wildlife for landholders in the face of rapidly growing human population and land pressure – is an important issue throughout the Serengeti ecosystem. The ways in which the presence of wildlife affects local economies however varies around the Serengeti, because of differences in conservation

approaches, land use and livelihood systems. This case study focuses on wildlife-economic interactions in only one part of the ecosystem – the agricultural lands of the Western Serengeti.

Surprisingly, given the relatively high number of studies carried out on economic and community aspects of wildlife management in the Serengeti, little attention has to date been paid to western parts of the ecosystem. The local economic role of wildlife is of however of major concern in the Western Serengeti. As agriculturalists, landholders face greater land use conflicts arising from the presence of wildlife than other parts of the Serengeti ecosystem, while they have arguably gained the least from external interventions aiming to increase local participation in and benefit from wildlife conservation.

The case study area encompasses villages which abut the boundaries of Serengeti National Park, Grumeti and Ikorongo Game Reserves, and are contained within Ikoma Open Area. As illustrated in Figure 3 it forms a V-shaped segment of land in southern Bunda and Serengeti Districts bounded on the east side by Ikorongo Game Reserve and Serengeti National Park and on the south side by Grumeti Game Reserve and Serengeti National Park.

Figure 3: The Western Serengeti



The Western Serengeti lies in agro-ecological zones 1/5 and 1/4 (FINNIDA/GRT 1981), low potential areas which are suitable – although marginal – for arable agriculture. Average annual rainfall ranges between 500-1200 mm, declining towards the Park boundary and increasing towards Lake Victoria (Campbell and Hofer 1995). Western areas are among the most densely settled parts of the Serengeti ecosystem, with population growth rates far exceeding those to the north, east and south of the National Park (Campbell and Hofer 1995, Mfunda 1998). A total of over 74 000 people or some 9 500 households occupy the 23 villages in Bunda and Serengeti Districts which are adjacent to Serengeti National Park, Grumeti and Ikorongo Game Reserves and form the case study area (Table 1). This population is diverse in ethnic terms, composed of over 25 tribes which are dominated by the Ikoma, Ikizu, Kurya, Natta and Sukuma (Evjen Olsen 1998).

Table 1: Population of case study villages

District	Division	Ward	Village	Adjacent protected area	Population	Households
Serengeti	Rogoro	Ikoma	Bwitengi	Ikorongo	5,815	589
			Misseke	Ikorongo	3,637	539
			Robanda	Grumeti, Ikorongo, Serengeti	2,009	191
			Rwamchanga	Ikorongo	1,834	300
		Isenye	Iharara	Grumeti	2,181	231
			Nyiberekera	Grumeti	6,758	962
			Singisi	Grumeti	1,310	151
		Kisangura	Kebosongo	Ikorongo*	4,200	570
		Natta	Motukeri	Ikorongo, Grumeti	3,697	287
			Natta Mbiso	Grumeti	2,917	405
			Nyakitono	Ikorongo	2,023	215
			Nyichoka	Ikorongo	2,544	475
		N/a	Bonchogu	Ikorongo*	2,312	292
Bunda	Serengeti	Hunyari	Hunyari	Grumeti	6,576	499
			Kihumbu	Grumeti	2,464	266
			Mariwanda	Grumeti	3,373	420
		Kunzugu	Bukore	Grumeti, Serengeti	1,755	308
			Kunzugu	Grumeti, Serengeti	2,490	389
		Mcharo	Mihale	Grumeti	3,080	453
			Nyamatoke	Grumeti	2,218	326
		Mugeta	Kyandege	Grumeti	5,572	774
			Mugeta	Grumeti	2,594	360
			Sanzate	Grumeti	2,794	398
Total					**74,155**	**9,398**

(*From 1997 census figures quoted by Bunda and Serengeti District Authorities, *Inside Ikorongo Game Reserve*)

The residents of the Western Serengeti are predominantly smallholder agriculturalists. Food crops – including cassava, maize, millet, sorghum, vegetables and beans – dominate production, while cotton and rice are sometimes grown for sale. Almost 31,000 hectares is under crops in Bunda and Serengeti District, yielding a gross income of between US$ 555 and US$ 679 per household per year (Table 2).

Table 2: Crop production in Bunda and Serengeti Districts

	Bunda	Serengeti	Total
Arable area (ha)	12,578	18,220	**30,798**
Gross value of production (US$ '000/yr)	2,327	3,535	**5,861**
Arable area per household (ha)	3.0	3.5	
Gross income per household (US$/yr)	555	679	
Cassava area (ha)	2,068	3,587	**5,654**
Cassava value (US$ '000/yr)	994.14	1,724	**2,719**
Cotton area (ha)	2,837	-	**2,837**
Cotton value (US$ '000/yr)	349.15	-	**349**
Legumes area (ha)	85	215	**301**
Legumes value (US$ '000/yr)	13.15	33	**46**
Maize area (ha)	5,298	3,084	**8,382**
Maize value (US$ '000/yr)	611.27	356	**967**
Potatoes area (ha)	427	933	**1,360**
Potatoes value (US$ '000/yr)	131.46	287	**418**
Rice area (ha)	171	215	**386**
Rice value (US$ '000/yr)	44.37	56	**100**
Sorghum area (ha)	1,692	9,971	**11,662**
Sorghum value (US$ '000/yr)	183.01	1,079	**1,262**

(Source: District Agricultural Statistics, FINNIDA/GRT 1981 updated to 1998 production and prices)

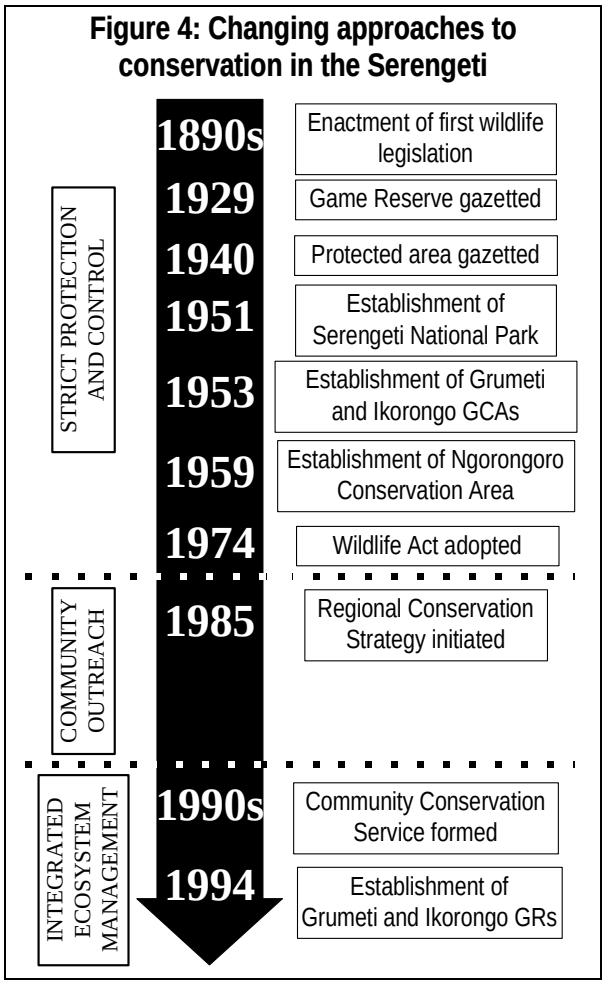
Livestock are also important to the household economy, providing for both household food and income. Although local off-farm income and employment opportunities are extremely limited, both charcoal production and hunting commonly provide supplements to farm income. The western side of Serengeti National Park is subject to intense human pressure, with high rates of illegal resource utilisation and poaching.

These ecological, demographic and livelihood characteristics provide the context for wildlife-human interaction in the case study area. As we will describe in the following sections, for farming villages such as those in the Western Serengeti, wildlife is often perceived as more of an economic burden than an asset because it causes significant losses at the farm level in terms of the opportunity costs of cropland reserved in protected areas and direct damage caused to crops and livestock. As agricultural land becomes more scarce and local sources of income and employment hard to access, community members are often unwilling – and economically unable – to bear the economic costs associated with conserving the wildlife on and around their lands. For the most part the approaches to wildlife management which have been imposed over the course of this century have exacerbated, rather than improved this situation.

3. CHANGING APPROACHES TO CONSERVATION AND COMMUNITY BENEFIT-GENERATION

The Serengeti has been subject to a long and varied history of externally-imposed wildlife management regimes, starting as early as the last century. As illustrated in Figure 4 at least three distinct phases have characterised wildlife management activities in the Serengeti ecosystem. Over time there has been a shift from an authoritarian, state-controlled approach to conservation based on principles of strict protection and exclusion to approaches which recognise and permit at least some degree of community participation and benefit in wildlife management.

Figure 4: Changing approaches to conservation in the Serengeti



3.1 Protection and economic isolation

The first – and longest – phase of conservation activity in the Serengeti commenced with a series of legal instruments which aimed to protect rare wildlife species and habitats, enacted from 1890 onwards by successive German and British colonial administrations. Wildlife management up to Tanzanian Independence in 1961 was based on the expansion of the national wildlife estate and on restrictions on human land and resource utilisation in protected areas. Over this period a number of protected areas were established within the Serengeti ecosystem, including Serengeti National Park and Ngorongoro Conservation Area, and Grumeti and Ikorongo were designated Game Controlled Areas.

After Independence, during the mid and late 1960s, many of the conservation activities initiated under colonial rule were maintained in a similar form and Tanzania's protected area network continued to be expanded. Restrictions were relaxed to allow hunting in Game Reserves, the control of which was passed during the early 1970s from central to regional administration. In 1974 a Wildlife Conservation Act was adopted which still holds today as the principal legislation governing the wildlife sector.

Over this period wildlife conservation approaches were founded on ***strict protection and control***, following a "policy of isolation from surrounding communities – an island mentality" (MNRT 1985). Wildlife management in the Western Serengeti was focused on protection and policing, and interactions between wildlife authorities and local

communities consisted mainly of law enforcement operations such as anti-poaching patrols and the eviction of resident human settlers. As both settlement and agriculture expanded in the case study area this approach to conservation resulted in a increasingly negative, inherently antagonistic attitude by local communities, who perceived few benefits from maintaining wildlife on their lands (Leader-Williams 1996).

3.2 Community outreach

From the mid 1980s approaches to conservation began to undergo change, and to shift away from their previous emphasis on exclusion and isolation. As conflicts between park authorities and adjacent communities intensified it was recognised that any attempt to conserve wildlife was unlikely to succeed unless it engaged the active support of local human populations. As a result of this change in attitude towards wildlife management the Serengeti became the first protected area complex in Tanzania to pilot a ***community-outreach*** approach to conservation (Barrow 1996), aiming to integrate conservation and development objectives so that each could be promoted without detriment to the other, and positive human-wildlife interactions be promulgated (MNRT 1985).

In 1985 a Regional Conservation Strategy for the Serengeti was established, combining conservation and development objectives and working with government authorities both within and outside protected areas. For the next decade wildlife management activities in the Western Serengeti included as major components education and extension activities among landholders. Although consideration of community-level concerns played a part in wildlife planning and decision-making, the main emphasis of this approach to conservation was to establish communication with villages living adjacent to the National Park rather than to increase directly the local value of wildlife on lands outside protected areas.

3.3 Integrated ecosystem conservation and development

From the mid 1990s community-based approaches to wildlife conservation in the Western Serengeti were extended significantly under the Serengeti Regional Conservation Strategy so as to incorporate ***integrated ecosystem conservation and development*** goals. In particular, attempts started to be made to generate economic benefits from wildlife for local communities.

By 1995 the Tanzania National Parks Authority (TANAPA) had institutionalised a Community Conservation Service, established a fund to support community-initiated development activities, and begun to write community conservation activities into its policy and planning documents. Over the same period the Wildlife Department began to share hunting revenues from Game Reserves with Bunda and Serengeti District Councils with the aim of increasing the level of funding reaching development activities in wildlife areas. Although this approach to conservation undoubtedly improved park-community relations and to some extent increased the degree to which landholders perceived wildlife to be a positive asset, it had no aspirations to directly compensate for the local costs and opportunity costs of wildlife (Bergin 1998).

3.4 The changing local economic impact of conservation approaches

Shifting conservation approaches have, in the Western Serengeti, done little to change the way in which wildlife impacts on the local economy. Although there has undoubtedly been a growing recognition of the need to involve communities in, and benefit them from, wildlife management, this has led to little real improvement in the level to which landholders gain economically from wildlife. Simultaneously the local economic costs of wildlife in terms of agricultural land uses precluded and interfered with have risen over time as arable farming has expanded and land pressure has intensified in Bunda and Serengeti Districts.

In the light of the high costs, low benefits and decreasing viability of wildlife in local land use and livelihood systems, it is clear that community outreach and extension activities are not a substitute for the generation of real economic benefits from wildlife. Today, both wildlife managers and landholders in the Western Serengeti are faced with a situation where wildlife incurs local costs to a greater level than the benefits it yields. As we will describe in the next section, even under current approaches to wildlife management which attempt to integrate conservation and development goals, there is still a long way to go before wildlife starts to make economic sense to landholders or can compete on economic grounds with resource and land uses which degrade wild habitat and species.

4. DEFINING THE PROBLEM: THE IMBALANCE OF WILDLIFE COSTS AND BENEFITS

Wildlife populations are continuing to decline in the Western Serengeti, both within and outside protected areas (Sinclair 1979, 1995, TANAPA 1995). While poaching and illegal resource utilisation are still being carried out, an increasing area of land is coming under agriculture, to the detriment of wildlife. A major reason for wildlife being lost and wild habitats destroyed is that wildlife has little economic value within the context of local livelihood systems, and that wildlife benefits accrue at an insufficient level and in an inappropriate form to balance the costs it incurs to landholders. This section describes how, despite the growing integration of human concerns into wildlife management around the Western Serengeti, attempts to understand the economic implications of wildlife for local communities have been at best partial and issues relating to local imbalances in wildlife costs and benefits have not yet been adequately addressed.

4.1 Government economic gains from wildlife in the Western Serengeti

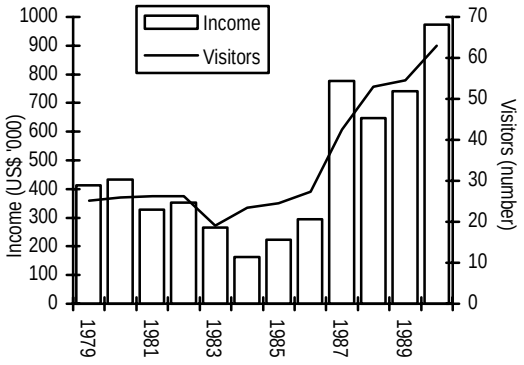
Wildlife provides a major source of revenue for the Tanzanian government. As illustrated in Table 3 wildlife in the Western Serengeti is worth almost US$ 1.4 million a year to TANAPA, Wildlife Department and the District Councils. With the bulk of these revenues subsequently remitted to TANAPA headquarters and the treasury, wildlife also generates substantial profits for central government.

Table 3: Estimates of Western Serengeti direct income to government (US$/year)

	TANAPA	Wildlife Department	District Councils	Total
Park entry fees	> 1 000 000	-	-	**> 1 000 000**
Hunting charges	-	23 000	15 000	**38 000**
Lodge and camp concessions	> 300 000*	-	35 000	**335 000**
Total	**> 1 300 000**	**23 000**	**50 000**	**> 1 373 000**

Government income accrues from three major sources in the Western Serengeti – from park entry fees, wildlife tourism concessions and hunting operations. Although Grumeti and Ikorongo Game Reserves make no charges, fees paid for entry into Serengeti National Park provide one of the most important sources of revenues for TANAPA and have been steadily rising in real terms over much of the 1980s (Figure 5, Table 5 in Data Annex), totalling over US$ 1 million in 1993 (TANAPA 1995).

Figure 5: Serengeti National Park visitor numbers and income 1979-90

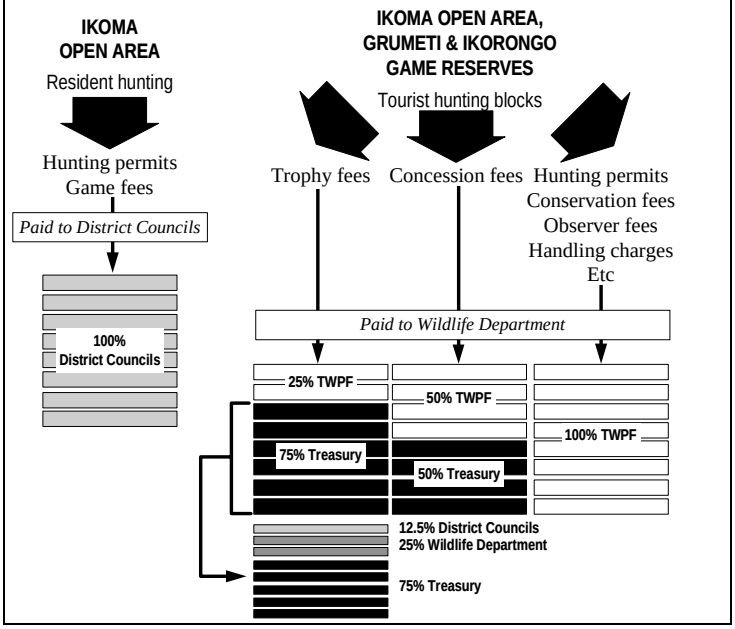


Tourist facilities in the protected areas of the Western Serengeti also generate substantial income for government. There are a total of more than 600 beds in the six lodges and

permanent campsites in and around the Serengeti National Park, and nearly 50 tourist beds in Grumeti and Ikorongo Game Reserves. Each of these lodges remits a concession fee to government equivalent to 10% of bednight fees. With occupancy rates on average 35% (TANAPA 1995), rising as high as 75% in the peak tourist season (Kauzeni and Kiwasila 1994), concession fees paid in Grumeti and Ikorongo Game Reserves generated an average of US$ 35 000 a year income to Serengeti District Council between 1995-98 and in 1993 bednight levies in western parts of the Serengeti National Park may have raised over US$ 300 000 for TANAPA.

Hunting, especially by overseas tourists, also provides a major source of income for government (Figure 6). There are three tourist hunting blocks in Grumeti and Ikorongo Game Reserves and Ikoma Open Area, all held by one concessionaire, and resident hunting is also permitted in Ikoma Open Area. Tourist hunting operations make a number of payments to Wildlife Department including concession fees, trophy fees, hunting permit charges, conservation fees, observer fees and handling charges. The bulk of this income is remitted to central government and divided between the Tanzania Wildlife Protection Fund (TWPF) – a national retention fund which supports the various state agencies involved in wildlife management in Tanzania – and the treasury. The treasury in turn returns 37.5% of trophy fees to the Wildlife Department as managers of Grumeti and Ikorongo Game Reserves and 9.375% to Bunda and Serengeti District Councils. Resident hunters pay a nominal charge for game fees and hunting permits directly to District Councils. In 1998 a total of over US$ 80 000 accrued to government from tourist and resident hunting in the Western Serengeti (Table 7 in Data Annex), of which just under 15% or US$ 15 000 accrued to Bunda and Serengeti District Councils (Tables 6 and 8 in Data Annex) and approximately US$ 23 000 was received by the Wildlife Department in Grumeti and Ikorongo Game Reserves.

Figure 6: Allocation of government hunting revenues



4.2 The role of wildlife in rural livelihoods

While wildlife incurs a range of economic costs on landholders in the Western Serengeti little consumptive utilisation wildlife, and no exploitation of wild resources in protected areas is permitted under current law. Wildlife generates only small indirect development benefits at the whole-community level through the implementation of government-implemented benefit-sharing mechanisms (Table 3). The bulk of direct gain from wildlife is obtained through informal resource use and illegal poaching.

Table 4: Estimates of Western Serengeti economic benefits and costs for landholders (US$/year)

	Value (US$yr)
TANAPA Support to Community Initiated Projects	+ 15 400
SRCS/WD community hunting	+ 3 500
Wildlife crop damage	- 484 000
Agricultural opportunity costs of Grumeti and Ikorongo Game Reserves	- 540 000
Total	-1 005 100

4.2.1 Wildlife utilisation for income and subsistence

Wild plants and animals have long played an important role for agricultural households in the Western Serengeti. Although this role has diminished as livelihoods have undergone change, and with the gazettement of National Parks and Game Reserves and the accompanying imposition of restrictions on wildlife use, wild resources still make an important – albeit largely illegal – contribution to local livelihoods. Little quantitative information is available about the value of plant resources for villages in the case study area. It is however known that the majority of landholders in the Western Serengeti source domestic energy, construction materials, grazing, wild foods and medicines from wild resources, obtained both inside and outside protected areas. Many households lack access to cash and markets, and are unable to access or afford these goods elsewhere.

Wildlife also provides an important source of local economic value through the sale and consumption of bushmeat. A high proportion of the population of the Western Serengeti are involved in hunting – it is estimated that up to 60% of households regularly consume or sell bushmeat (Evjen Olsen 1998). Over time, hunting has expanded in the case study area from a mainly subsistence activity to one with a well-developed commercial market. Bushmeat obtained in the Western Serengeti region supplies markets as far away from the Western Serengeti as Lake Victoria. Yielding an average annual income for hunters of US$ 200 in 1993 (Kauzeni and Kiwasila 1994) bushmeat sales may have a value equivalent to almost a third of average on-farm income, estimated at some US$ 617 per household per year (farm production and prices updated to 1998 levels from FINNIDA/GRT 1981).

4.2.2 Indirect wildlife economic benefits

In addition to the subsistence and cash benefits associated with its utilisation, the presence of wildlife provides a number of indirect benefits to landholders in the Western Serengeti from government-controlled tourism and hunting activities. Two schemes exist which share wildlife revenues generated by government in Serengeti National Park, Grumeti and Ikorongo Game Reserves with villages in the Western Serengeti area. Both, by allocating a proportion of tourist and hunting revenues to rural development activities – mainly the construction, rehabilitation and maintenance of infrastructure such as schools, bridges, roads, dispensaries and water supplies, but also including some support to small enterprise development – aim to ensure that some level of community benefit accrues from wildlife.

Benefit sharing arrangements are effected by TANAPA through ***Support to Community Initiated Projects*** (SCIP), which contributes up to three quarters towards the cost of development projects in villages around Serengeti National Park. In theory this fund comprises 7.5% of National Park revenues, although in practice it has been significantly less than this figure. Since its initiation in 1990, US$ 0.25 million has been channelled through SCIP to construct or maintain community infrastructure in 4 pilot Districts around the Serengeti National Park, including Bunda and Serengeti. This translates into an average of US$ 15 400 per year spent on community development projects in the Western Serengeti area.

The Serengeti Regional Conservation Strategy has since 1993 operated a community hunting scheme in the Western Serengeti. Under these arrangements a quota of wildlife is assigned to participating villages, and cropped by the Wildlife Department. Meat and skins are sold in local markets at prices determined by Village Councils which are deliberately set lower than domestic meat, with income submitted to a ***Village Natural Resource Fund*** (VRNF). This makes available cheap – and legally obtained – bushmeat to villagers, and generates revenues to fund development projects chosen by each Village Council and Village Natural Resource Committee. In 1997 the scheme cropped 150 animals for 10 villages, raising a cash sum of just under US$ 3,500 (Table 8 in Data Annex).

4.2.3 Wildlife economic costs

Wildlife does not give rise to a flow of pure benefits at the local level. It also incurs economic costs on landholders in the Western Serengeti. Of most significance are the costs incurred to farms from wild animal damage to crops, and the opportunity costs of land and resource uses foregone by wildlife and habitat protection. Unlike wildlife benefits which accrue as development activities at the whole-community level, both of these types of costs are felt as direct cash losses by households in the case study area.

Damage caused to crops from wild animals – mainly wild pigs, warthogs and monkeys, but with occasional seasonal destruction by migratory elephants and wildebeest – is particularly severe around western parts of the Serengeti (Kauzeni and Kiwasila 1994, Mfunda 1998). Even though measures are taken to minimise wildlife crop damage including guarding crops at harvest times and reinforcing farm fences, it is estimated that up to one third of households in the case study area regularly lose an average of a quarter of their harvest to wild animals (SRCS, Wildlife Department *pers comm.*). With annual harvests worth between US$ 555-680 per household (farm production and prices updated to 1998 levels from FINNIDA/GRT 1981, Table 2 above), the monetary cost of wildlife crop damage may be as high as US$ 0.5 million a year for the whole Western Serengeti area or some US$ 155 for each of the 3,000 households who regularly lose crops to wildlife.

The gazettement of the Serengeti ecosystem as a series of protected areas involved both the eviction of resident farmers and the contraction of natural resource utilisation and agricultural land uses. Losses in natural resource use, although likely to be high, are unquantifiable on the basis of available information. The opportunity costs of agricultural production foregone are however both quantifiable, and significant in economic terms.

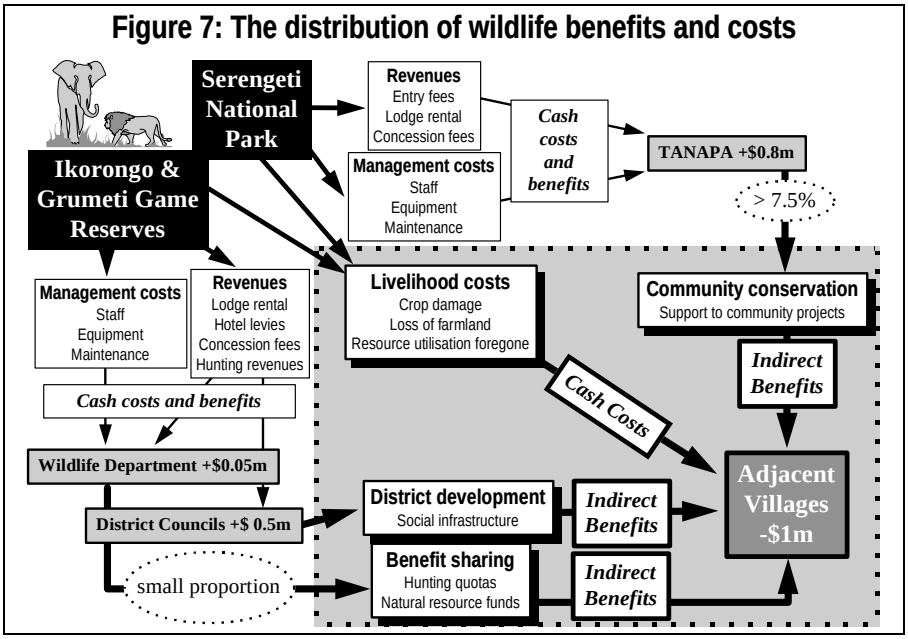
Although most of Serengeti National Park is comprised of dry rangelands and is unsuitable for crop farming, both Grumeti and Ikorongo Game Reserves were until 1994 occupied by arable agriculturalist populations, most of whom were forced to move outside protected area boundaries into the case study area. A significant 'squatter' population is still resident inside the boundaries of Ikorongo Game Reserve today, estimated at 871 households (Mfunda 1999). The loss of land for settlement and agriculture represents a tangible economic cost to villages in the Western Serengeti, because it has effectively taken a large area of land out of agricultural production and simultaneously increased pressure on available farmland outside National Park and Game Reserve boundaries.

Of the total area of Grumeti and Ikorongo Game Reserves of 3 767 km^2 approximately a quarter may be suitable for arable agriculture under farming systems similar to those in adjacent villages. Average farm returns in the Western Serengeti are US$ 190/ha/yr (farm production and prices updated to 1998 levels from FINNIDA/GRT 1981, Table 2 above). The reservation of Grumeti and Ikorongo Game Reserves has resulted in the loss of over 94,000 hectares of potential farmland, with a productive value and ultimate opportunity cost of almost US$ 18 million a year. Of this, some 2,800 hectares is actually under cultivation by remaining 'squatters' in Ikorongo Game Reserve. On-going moves to evict this farming population will result in direct and immediate losses to local agricultural production of some US$ 540,000 a year.

4.3 The local economic impacts of wildlife

Wildlife has varying economic impacts in the Western Serengeti area, simultaneously giving rise to significant benefits and costs. As illustrated in Figure 7, these benefits and costs are unequally distributed between different groups – in terms of overall value and in the form in which they are received. While government agencies gain from the presence of protected areas, the direct economic impact of wildlife is felt largely as a cost by villages in the case study area. While wildlife costs are felt as real, tangible cash losses at the individual household level, wildlife economic benefits reach landholders only indirectly – as limited rural development activities, implemented through government.

Figure 7: The distribution of wildlife benefits and costs



For the government agencies mandated with conservation in the Western Serengeti area, the presence of wildlife constitutes an unambiguous net gain and has a positive economic impact. Not only are high cash revenues generated, but this income is more than enough to cover the direct costs of managing wildlife and protected areas. While TANAPA earns more than US$ 1.3 million from park entry fees and concessions, annual expenditures on the management of Serengeti National Park are less than US$ 0.5 million. Monies returned to Wildlife Department from the central treasury are at US$ 0.25 million more than one third higher than the annual US$ 0.2 million costs of running Grumeti and Ikorongo Game Reserves. Wildlife-related revenues also provide the major source of internally-generated income for both Bunda and Serengeti District Councils, with the approximately US$ 0.5 million a year accruing from protected areas and hunting activities accounting for up to 80% of District revenues (SRCS 1992).

In contrast, for the 23 villages and 9,500 households occupying land adjacent to and within Serengeti National Park, Grumeti and Ikorongo Game Reserves, wildlife yields few direct or legal benefits, but incurs high livelihood costs. Overall, the US$ 3,500 earned from community cropping quotas and US$ 15,400 spent on SCIP activities in no way come close to balancing the cash costs associated with wildlife of nearly US$ 0.5 million in crop damage and more than US$ 0.5 million in foregone agricultural lands and production. At an individual level benefit-sharing involves development expenditures of an average of US$ 2.5 per household per year. With wildlife-related costs ranging from US$ 155 per household for farmers living on the boundaries of Serengeti National Park, Grumeti and Ikorongo Game Reserves to more than US$ 770 a year for illegal cultivators in Ikorongo Game Reserve, this figure is far below the costs incurred by wildlife to the majority of landholders. The form in which these benefits are received – indirectly, through development projects implemented at the whole-community level – also fails to offset the direct financial losses incurred at the household level by the presence of wildlife.

Under the *status quo* wildlife conservation is not economically viable for the majority of villagers in the Western Serengeti area, because there are no formal means by which they can increase wildlife values to a sufficient extent or in an appropriate form to balance the costs that it incurs to them. The only option open to most households living adjacent to Serengeti National Park, Grumeti and Ikorongo Game Reserves to increase wildlife economic value is to utilise resources illegally.

5. STEPS FORWARD IN MAKING WILDLIFE ECONOMICALLY VIABLE FOR COMMUNITIES

5.1 Niches for increasing local economic gain from wildlife

There is a clear discrepancy between both the value and the type of wildlife costs and benefits accruing to landholders in the Western Serengeti. Not only is the level of money allocated to benefit sharing low, but the form in which benefits are received – as indirect development activities – fails to compensate for the direct financial losses caused by wildlife. Until this imbalance is redressed, and the gap between wildlife costs and benefits filled, wildlife is unlikely to be considered economically desirable by most landholders. As population density and land pressure grow in the area adjacent to Serengeti National Park, Grumeti and Ikorongo Game Reserves, agricultural opportunity costs and farm losses are becoming more significant and wildlife is becoming less viable. Landholders are increasingly unwilling, and economically unable, to bear the costs that wildlife imposes on them.

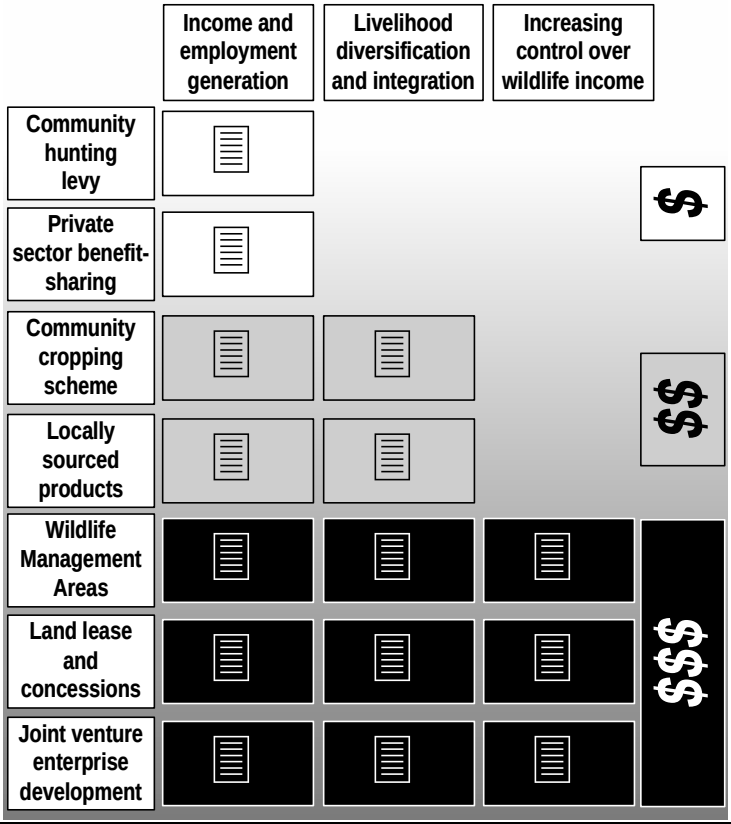
A major conservation challenge in the Western Serengeti is to find ways by which the local economic value of wildlife can be increased, within existing land use and livelihood systems. Government-initiated benefit-sharing schemes, although undoubtedly improving community-park authority relations, have done little to raise the local economic viability of wildlife and have only limited potential to do so. The state authorities concerned with wildlife management in the case study area face pressing budget constraints and find it difficult either to increase revenues from wildlife, or to divert additional funds to community benefit-sharing arrangements. Funds raised in the Western Serengeti are remitted to central government, only a small proportion of which are returned to the park level as budget allocations, and the park-managing authorities in Serengeti National Park, Grumeti and Ikorongo Game Reserves have little power to determine either their budgets or the allocation of revenues. While government benefit-sharing schemes may well provide important conditions for local communities to be willing to conserve wildlife, by themselves they are unlikely to be sufficient. It is necessary to look to additional means of generating community economic benefits and increasing the local value of wildlife.

A number of private sector wildlife enterprises operate in the Western Serengeti. As well as generating significant income – which is far in excess of government wildlife revenues – these operations have a direct interest in conserving wildlife, and actively depend on local support in order to do so. Over recent years several innovations have started to take place in wildlife management and enterprise around the Western Serengeti which are beginning to increase substantially the local economic value of wildlife. Ultimately these arrangements may prove more sustainable, and appropriate, in local terms than a sole strategy of benefit-sharing, and may be able – in combination with existing government support to community development – to generate benefits of a sufficient quantity and appropriate form to tip the local economic balance in favour of wildlife.

5.2 Innovations in wildlife management and enterprise arrangements

A variety of innovative wildlife enterprise and management arrangements between the private sector and local communities operate in the Western Serengeti. These can be ranged on a spectrum from indirect benefit-sharing arrangements, similar to those carried out by government, to direct community participation in wildlife management and income-generation. As illustrated in Figure 8 seven main categories of arrangements exist which together contribute towards local wildlife economic gain in three ways – those which act mainly to increase community wildlife gain from existing and externally-implemented activities, such as community hunting levies and private sector benefit-sharing; those which simultaneously diversify local livelihoods through developing new markets for locally-sourced goods and integrating wildlife into existing land uses, such as local sourcing of labour and agricultural produce and community cropping schemes; and those which also increase the degree to which communities control and manage the wildlife on their lands, including the establishment of wildlife management areas, land leases and concessions and joint venture enterprise development. These are described below.

Figure 8: Innovations in wildlife management and enterprise



5.2.1 Increasing local wildlife income from existing sources

The major, and most lucrative, private sector wildlife-based enterprise in the Western Serengeti is currently tourist hunting. There is demonstrable potential for increasing the level of local income accruing from these existing activities, and private hunting companies are beginning to allocate revenues directly to the villages on whose land they operate. Although these arrangements in general follow a similar model to government benefit-sharing activities both the level of income generated, and the degree to which Village Councils are directly involved in receiving and using these revenues, have proved to far exceed expenditures made under either SCIP or VNRF projects.

The Wildlife Department has recently introduced a recommended levy on all tourist hunting activities in the Western Serengeti, to be paid directly to VNRFs, equivalent to an additional charge equivalent to 10% of trophy fees. Although this fee is not mandatory –

it depends on voluntary compliance by hunting operators and clients – it has the potential to increase substantially locally-generated wildlife income in the case study area. At current levels of tourist hunting such a levy could generate annual revenues of between US$ 10 000-20 000, depending on the extent to which quotas are utilised – a similar amount to that already accruing to each of District Councils and the Wildlife Department each year.

The idea of a voluntary levy on tourist hunting, to be paid to local landholders, has been taken further, on the initiative of two private hunting companies operating in the Serengeti ecosystem. Although such activities, described in Box 1, currently exist only around Maswa Game Reserve, Makao Open Area and Ngorongoro District they provide a model which could be extended to the three hunting blocks in the Western Serengeti. These arrangements solicit voluntary contributions from clients directly and return the resulting revenues to landholders in hunting areas through funding community development and anti-poaching activities. Villagers are also allocated hunting by-products and additional hunting quotas for meat, hides and skins. Analysis of existing schemes around Maswa Game Reserve and Makao Open Area suggest that such community levies could raise revenues in excess of US$ 12 500 per year for each of the four villages that comprise hunting areas of Ikoma Open Area in the Western Serengeti – calculated on the basis of village populations, nearly 19 times more than annual development expenditures per household made under TANAPA's Support to Community Initiated Projects fund.

Box 1: The Cullman Rewards and Benefits Scheme

The Cullman Rewards and Benefits Scheme was established in 1990 by a commercial hunting outfitter, Tanzania Game Tracker Safaris, and is today operated in the Serengeti area under Robin Hurt Safaris Tanzania Ltd. The overriding aim of the scheme is to involve and benefit local people in wildlife utilisation and management and to make wildlife a resources which will provide better long-term returns through conservation than through destruction and over-exploitation. The scheme raises money from voluntary fees paid by tourist hunters of 20% over and above government fees which are used to fund village and Wildlife Department anti-poaching teams, to assist with the clear demarcation of wildlife areas, to provide a series of cash rewards for activities and information which lead to the capture of poaching equipment and prosecution of poachers and to make investments into community development projects. Under the scheme participating villages are also issued by the Wildlife Department with game culling licences and provided with a share of game meat from tourist hunting activities. The Cullman Scheme currently operates around Maswa Game Reserve and Makao Open Area, where Robin Hurt Safaris holds a concession. Between 1990-1993 the scheme generated nearly US$ 300 000 in donations, used to fund development activities and anti-poaching operations in 8 villages (Leader-Williams *et al* 1995a).

5.2.2 Integration of new wildlife markets into local livelihoods and land uses

Even where markets for wildlife-related products exist, they are currently undeveloped in the Western Serengeti. Two initiatives have been developed in the Western Serengeti which aim, by adding value to already-existing land uses, to increase the local economic gain accruing from wildlife. Unlike conventional conservation approaches in the case study area both attempt to supplement, rather than to replace or diminish, local income generated from wildlife.

Although direct employment in tourist-related enterprises is negligible in the Western Serengeti because most employees originate from outside the area, some local income is generated from the supply of meat and other foodstuffs to lodges and hotels. It is

estimated that sales of beef, chicken, fruit and vegetables to three tourist establishments in Serengeti National Park is currently worth some US$ 10 000 a year to farmers in the case study area, and provides a major market for farm produce. Calculated on the basis of visitor numbers, extending these arrangements to the six permanent camps and lodges on the west side of Serengeti National Park and in Grumeti and Ikorongo Game Reserves and the two camps under construction in the Western Serengeti could increase local income from the sale of farm products to almost US$ 14 000 a year.

The allocation of community cropping quotas by the Serengeti regional Conservation Strategy and Wildlife Department has introduced a number of new markets for wildlife products into the Western Serengeti. One of its most important impacts has been to legitimise the sale and consumption of game meat, leading both to a decrease in the local price of game meat and a downsurge in poaching. Cropping has simultaneously stimulated the market for other wildlife products, most importantly hides and skins. Although sales of wildlife products generate some income for villages in the case study area, they currently fetch low prices due to a combination of inadequate knowledge of prices, domination of the market by a small number of traders and middlemen and low quality of skins because of poor curing techniques. Community cropping activities have also been limited in their coverage, operating in less than half of villages in the Western Serengeti area. Currently worth some US$ 3 500 a year, cropping activities could more than quadruple their existing annual value to some US$ 13 500 if markets were improved and coverage extended to other villages, calculated on a per household basis.

5.2.3 Increasing local wildlife economic gain and control

The greatest potential for local gain from wildlife, and for the direct participation of landholders in wildlife decision-making, lies in the involvement of community members themselves as wildlife managers and entrepreneurs. Over recent years private sector tourist operators have for the first time started to work directly with villages in the Western Serengeti area, rather than through District Councils and state wildlife authorities. As well as generating significant profits, these arrangements are starting to put landholders in the case study area in a position to determine the terms and conditions under which the wildlife on their land is used and managed for economic gain.

Three types of arrangements currently exist between local communities and the private sector in wildlife enterprise in the Western Serengeti, each with a varying level of local partnership and involvement. One hunting block in the case study area, allocated by Wildlife Department to a commercial operator, has negotiated the use of village land for a five year period at no charge but with some provision for the employment of local residents as casual workers. In the area bounded by Serengeti National Park, Grumeti and Ikorongo Game Reserves a lease agreement has been made between a safari company and the Village Council, described in Box 2. This land lease permits a wildlife viewing camp to use village land as a base for its operations in return for an annual rental fee, the payment of a fixed levy on income from accommodation, and contributions made towards the cost of local infrastructure provision and maintenance. As illustrated in Box 3 a village adjacent to Grumeti Game Reserve has extended this type of arrangement to the development of land for a wildlife viewing camp to be run as a joint venture partnership. In this enterprise the Village Council will hold equity and be paid land rent and bednight levies, and has additionally negotiated for casual staff and management trainees to be provided from local sources and for the funding of a micro-credit scheme from lodge profits. Together these arrangements are projected to generate a minimum of US$ 30 000 a year in direct rental payments and levies for village partners, in addition to other income and employment benefits.

Box 2: Robanda Village-Ikoma Bush Camp land lease

In 1994 a lease was negotiated between a private company and Robanda Village to establish a tourist camp on village land just outside the Ikoma Gate of Serengeti National Park from which to base their wildlife viewing operations. This agreement included a fixed land rental fee of just under US$ 800 a year, bednight levies of US$ 10 per overseas tourist and US$ 1.5 per Tanzanian resident, and the installation of a village water pump also to be used by the camp and contribution to 15% of its annual maintenance and running costs. Since June 1994 nearly US$ 30 000 has been remitted to Robanda Village Council from Ikoma Bush Camp.

Box 3: Iharara Village-Dream Camp joint venture agreement

A new wildlife tourism facility, Dream Camp, is in the process of being developed on land adjacent to Grumeti Game Reserve which falls under the jurisdiction of Iharara Village. This camp will be run as a three-way joint venture between a commercial company, Iharara Village Council and a bilateral donor, who will provide the bulk of investment funds on a soft loan basis. A 40 year lease, to be renewed every 5 years, has been agreed with Iharara Village Council for the construction of the 30 bed camp. The terms of this lease and joint venture agreement include the allocation of equity in safari operations to Iharara Village Council, a re-negotiable annual land rent of US$ 1 500 and bed fees of US$ 5 per visitor. Dream Camp management has also committed to support village income and employment through sourcing foodstuffs locally, drawing staff – including management trainees – from the locality and establishing a micro-credit scheme for villagers. If a similar occupancy rate to other lodges in the Serengeti area is achieved, this may provide rental and bednight fees of some US$ 20 000 a year for Iharara Village, in addition to other local income and employment opportunities associated with the camp.

5.3 The economic impacts of community-private sector wildlife management and enterprise arrangements

The community-private sector arrangements described in this chapter can increase significantly the local economic benefits accruing from wildlife in the Western Serengeti.

Already worth as much as government schemes, a combination of community-private sector activities have the potential if implemented to add up to US$ 121.5 per household in direct income to the current expenditures made under government benefit-sharing schemes on broad, community-level development activities of about US$ 2.5 per household (Table 5 on next page)

Table 5: Actual and potential community wildlife economic benefits from government schemes and private sector arrangements

	Current local income (US$/year)	Potential local income (US$/year)
Government schemes		
Community cropping	3,500	If scheme extended to all villages, could generate US$ 13,500 – approximately US$ 1.5 per household for total area
Support to Community Initiated Projects	15,400	
Community-private arrangements		
Private sector benefit sharing	-	If extended to 4 villages in Ikoma Open Area hunting blocks, could generate US$ 50,000 – approximately US$ 31 per household
Community hunting levy	-	With voluntary levy equivalent to 10% of trophy fees, could generate between US$ 10,000 (with actual offtake) and US$ 20,000 (if maximum quota hunted) – approximately US$ 2 per household for total area
Sales of farm produce	10,000	If all lodges and camps in Western Serengeti sourced meat and vegetables locally, could generate US$ 14,000 – approximately US$ 1.5 per household for total area
Land lease	10,000	
Joint venture	-	If joint venture implemented in Iharara Village, could generate US$ 20,000 a year – approximately US$ 87 per household
Sub-total government	**18,900**	**28,900**
Sub-total private	**20,000**	**104,000-114,000**
TOTAL	**38,900**	**132,900-133,900**

6. COMMUNITY-PRIVATE SECTOR PARTNERSHIPS IN THE WESTERN SERENGETI: THE WAY AHEAD IN WILDLIFE CONSERVATION?

6.1 Changing the local economic balance of wildlife

This paper has described how most approaches to wildlife conservation implemented over the last century in the Western Serengeti have marginalised local communities in economic terms. This economic marginalisation has undoubtedly acted to the detriment of wildlife, both within and outside protected areas. It is clear that until wildlife becomes an economically viable livelihood and land use option, landholders will continue to engage in activities which deplete wildlife, including unsustainable resource utilisation, poaching and the clearing of natural habitat for agriculture. As long as wildlife continues to incur economic costs which are greater than its local benefits, communities are likely to be unwilling – and often economically unable – to support its conservation.

Although little can be done to diminish the agricultural costs of wildlife, action can be taken to increase economic benefits to a level, and in a form, which balances these negative economic impacts. The case of the Western Serengeti illustrates a number of ways forward in local benefit generation from wildlife. A clear lesson arising from experiences in the Western Serengeti is that the role of government in increasing the local value of wildlife is limited. In their current form state implemented benefit-sharing arrangements have proved unable to make any substantial difference to the economic balance of wildlife for landholders, although have undoubtedly contributed to more positive perceptions of protected areas. Alone, they do not provide sufficient economic incentives for local communities to conserve wildlife. Rather, the role of government in cases such as the Western Serengeti may be more to facilitate, require or enforce more innovative mechanisms for generating community-level economic gain from other sources.

The case study illustrates that innovations in the way that communities and the private sector interact in wildlife use and management have great potential to alter the local economic balance of wildlife. Extremely high levels of private sector income are generated from wildlife, worth far more than government revenues. Both the operation of private sector wildlife enterprises outside protected areas, and the conservation of wildlife they depend on, rely on local co-operation and support. It is in the direct interests of the private sector to ensure that landholders benefit from wildlife to a sufficient level and in an appropriate form. Experiences in the Western Serengeti suggest that community-private sector arrangements such as the direct payment of fees for conservation and wildlife-based land uses, the promotion and improvement of wildlife-related markets and the development of joint management and enterprise arrangements have the capacity not to raise substantially the tangible value of wildlife at the local level.

6.2 The limits of benefit-sharing

Despite – or perhaps because of – the innovations described in this case study, wildlife will continue to incur costs on landholders in the Western Serengeti. It may never be

possible to fully balance these costs. Experiences in generating local value from wildlife documented in this case study, although useful and undoubtedly comprising a major step forward in the way in which conservation is conceptualised and implemented, provide only one of the necessary conditions for communities to gain economically from, or to conserve, wildlife. While community-private sector arrangements provide a number of niches for increasing local gain from wildlife, and clearly contribute to landholders perceiving wildlife as an economic asset, by themselves they may not to be sufficient to tip the economic balance in favour of wildlife. Even with the large increases in local income accruing from community-private sector arrangements, local wildlife earnings in no way come close to compensating for the opportunity costs of agricultural land foregone by reserving protected areas in the Western Serengeti.

A major concern is also the extent to which the type of arrangements documented in this case study merely serve to replace one type of top-down conservation approach – that implemented by government – with another form of externally imposed wildlife and land management which is not motivated primarily either by conservation or local economic goals. Most private sector-community wildlife activities in the Western Serengeti depend on voluntary actions. Although private sector operators have a strong incentive to co-operate with communities because their activities rely on wildlife being conserved, there is no guarantee that they will always act in the best interests of either landholders or wildlife conservation, as illustrated by the example in Box 4. Landholders in wildlife areas also generally have a weak bargaining position and poor knowledge and experience of the potential gains from new wildlife markets and enterprise opportunities. Private sector-community arrangements, although economically valuable, do not self-evidently increase the degree to which landholders control and participate in the management of wildlife on their lands. Like government benefit-sharing activities, they run the risk of putting communities in a position where they remain wholly dependent on external agencies to manage, use and share the revenues from wildlife on their lands.

Box 4: Failures in private sector-community co-operation in wildlife management

A 5 000 ha hunting block lies on Village lands which abut Ikorongo Game Reserve. After negotiations with the concession holder, Nyakitono Village Council decided to allow this land to be used by a tourist hunting operator at no charge, envisaging that while hunting activities would give rise to little inference to local livelihoods, tourist development could provide a valuable source of income and employment for villagers. Having obtained the use of this land, the concessionaire proceeded to close off his concession and bar village access. There is little interaction between the hunting company and the local economy, with such limited temporary employment opportunities as are occasionally offered to villagers being paid at well below the minimum national wage rate. The use of village land for wildlife hunting is widely perceived in the village of Natta Mbiso to have caused more local problems than it has generated benefits.

Another important consideration is the extent to which private sector-community arrangements will provide lasting conservation solutions. As population grows and land use and livelihood opportunities diversify in the Western Serengeti, a changing set of trade-offs and circumstances will determine whether wildlife is economically viable at the local level. Conservation approaches, and methods for generating economic benefits from wildlife, must also be dynamic and responsive to these changing circumstances.

The challenge in the Western Serengeti area is ensure that there are multiple opportunities, from state agencies such as TANAPA and Wildlife Department, from joint donor-government projects such as the Serengeti Regional Conservation Strategy and from various private sector operations, for landholders to gain from wildlife which may together provide sufficient conditions for them to be willing and able conserve wildlife. Ultimately, unless these innovations are flexible enough to respond to local changes in land use and livelihoods and lead to a situation where landholders are genuinely empowered to make decisions about the way in which wildlife is used and managed for economic gain, the wildlife in the Western Serengeti will stand little chance of survival over the long-term.

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8. DATA ANNEX

Table 6: Serengeti National Park income from entry fees

	Resident visitors	Overseas visitors	Income (US$)
1979	16,106	9,102	413,033
1980	18,333	7,648	432,943
1981	16,930	9,263	327,305
1982	16,307	9,963	352,377
1983	10,728	8,329	264,916
1984	14,521	8,979	161,911
1985	13,324	11,273	223,007
1986	15,697	11,628	294,700
1987	24,616	17,862	776,862
1988	29,914	23,098	648,376
1989	28,799	25,699	741,590
1990	31,371	31,557	972,581

Table 7: District Council income from hunting

	Grumeti/Ikorongo tourist hunting (US$)	Serengeti District resident hunting (US$)	Bunda District resident hunting (US$)
1990	6,064	na	2,780
1991	3,874	749	1,307
1992	11,751	1,122	2,257
1993	8,879	809	1,318
1994	10,308	na	na
1995	9,970	na	na
1996	4,863	na	na
1997	11,397+	na	na
1998	7,671+	2,521	4,411*

*No data available for Bunda District 1998, so calculated on the basis of income shares to Bunda and Serengeti Districts 1990-1993 and Serengeti District income 1998)

Table 8: Trophy fees, quotas and income from tourist hunting in Ikoma Open Area, Grumeti and Ikorongo Game Reserves 1998

	Trophy fee (US$)	Ikorongo (Quota)	Grumeti (Quota)	Ikoma (Quota)	Revenues (US$)
Baboon	90	6	6	10	1,980
Buffalo	620	15	15	12	26,040
Bush pig	190	4	4	5	2,470
Bushbuck	340	6	6	5	5,780
Civet	140	3	3	3	1,260
Crocodile	840	2	0	0	1,680
Dik dik	170	6	5	5	2,720
Dove	5	10	10	10	150
Duck	5	10	10	10	150
Duiker	175	6	6	5	2,975
Eland	840	5	5	2	10,080
Francolin	5	20	20	100	700
Genet	180	2	2	3	1,260
Goose	5	10	10	10	150
Grants gazelle	220	10	10	10	6,600
Guinea fowl/quail	5	10	10	100	600
Hartebeest	370	6	6	2	5,180
Hyena	190	6	6	5	3,230
Impala	240	12	12	10	8,160
Klipspringer	720	5	5	5	10,800
Leopard	2000	3	3	2	16,000
Lion	2000	2	2	2	12,000
Oribi	120	5	5	0	1,200
Ostrich	740	4	4	5	9,620
Porcupine	10	3	3	5	110
Ratel	70	2	3	0	350
Reedbuck	290	6	6	5	4,930
Serval cat	180	3	3	0	1,080
Thomsons gazelle	190	16	16	10	7,980
Topi	350	8	9	10	9,450
Warthog	320	10	9	5	7,680
Waterbuck	440	7	7	3	7,480
Wildcat	150	3	3	3	1,350
Wildebeest	320	12	12	15	12,480
Zebra	590	10	10	10	17,700
Total					**201,375**
Offtake					**81,825**

Table 9: Permit fees, quotas and income from resident hunting in Serengeti District 1998

	Quota (No)	Fee (TSh)	Fee (US$)	Revenues (US$)
Buffalo	20	6,000	9.23	185
Bush pig	5	1,500	2.31	12
Bushbuck	5	1,200	1.85	9
Dik dik	5	400	0.62	3
Duck	10	300	0.46	5
Duiker	10	400	0.62	6
Eland	10	10,000	15.38	154
Grants gazelle	60	1500	2.31	138
Guinea fowl/quail	100	300	0.46	46
Impala	80	2,000	3.08	246
Reedbuck	10	1,200	1.85	18
Sandgrouse/pigeon	40	300	0.46	18
Thomsons gazelle	80	1,200	1.85	148
Topi	180	3,000	4.62	831
Warthog	30	1,200	1.85	55
Wildebeest	210	2,000	3.08	646
Total	**855**			**2 521**

Table 10: Community cropping quotas and income, Bunda and Serengeti Districts

	1994		1995		1996		1997	
	Quota (No)	Income (US$)	Quota (No)	Income (US$)	Quota (No)	Income (US$)	Quota (No)	Income (US$)
Hunyari	-	-	24	599	15	573	11	247
Iharara	8	207	23	574	21	505	13	292
Kyandege	-	-	24	599	18	255	17	382
Mariwanda	-	-	22	549	18	595	15	337
Mugeta	-	-	26	649	16	579	12	270
Natta Mbisso	7	182	18	450	25	565	19	427
Nyakitono	6	156	19	474	20	375	13	292
Nyamatoke	-	-	22	549	13	458	11	247
Robanda	7	182	22	549	62	1,142	25	562
Singisi	8	207	19	474	18	83	14	315
Total	**36**	**934**	**219**	**5,469**	**226**	**5,128**	**150**	**3,371**