Private Supply of Protected Land in Southern Africa: A Review of Markets, Approaches, Barriers and Issues

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ABSTRACT

This paper represents a first attempt to assess the role of the private sector in supplying protected land or 'land under wildlife' in southern Africa. Although limited information exists on private conservation initiatives, it is possible to conclude that the private sector plays an indispensable role in the provision of biodiversity in the region. A minimum of 14 million hectares of private land is under some form of wildlife protection or sustainable wildlife management. This equals almost half the size of the United Kingdom, or half the size of all state protected areas in the region. Private reserves, conservancies and game ranches protect critical habitat in various ecosystems and play an important role in the protection of highly endangered species, including black and white rhino. The comparison of public and private conservation reveals that the total area of privately protected land is growing, while there is little scope for enlarging the network of public protected areas. Further, state-managed parks face declining budgets, while an increasing number of private reserves are financially self-sufficient. Private management structures are more effective in capturing the economic value of biodiversity, and thereby turning conservation into a competitive form of land use. Beside the economic benefits accruing to landowners, private reserves and game ranches provide the public good 'biodiversity' at zero cost to the tax-payer. The experience from southern Africa further supports the economic theory that secure property rights to land and wildlife are an essential ingredient in any strategy to conserve and encourage long-term investment in wildlife habitat. It is important to recognise that markets for biological resources are responsible for the private supply of wildlife habitat, and that any policy impairing the relative competitiveness of wildlife as a land use will have a direct impact on the private supply of biodiversity.

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I   Introduction

Most of the world's biodiversity is located in developing countries. But developing countries often find it difficult to maintain their biodiversity due to increasing land use conflicts and insufficient funds for conservation. Ecosystem transformation and fragmentation have reached an alarming scale. Rapidly growing human populations have increased the need to develop land for human settlements, crops and livestock, subsequently reducing the size of natural ecosystems and impairing their integrity. The conversion of natural habitat to agricultural land and other uses is the main reason for the dramatic loss of biological diversity. One response aiming to slow down the rate of biodiversity loss has been to set aside certain areas of land as protected areas. While this has been a fairly successful strategy in developed countries, it often does not work well in poor countries. Governments often lack the capacity or the funds to maintain public parks, let alone to enlarge their system of protected areas. As a result, many protected areas in the developing world are not sufficiently protected and exist only on paper. But even if parks were managed in an optimal manner, the land area covered by public parks is too small to protect biodiversity in the long run, thus making it necessary to conserve additional land in threatened ecosystems.

There is good reason to believe that the public sector is unable to provide a socially desirable level of biodiversity protection. New and innovative approaches are therefore needed to promote biodiversity conservation outside protected areas. Conservation is generally seen as the responsibility of governments and NGOs and both tend to focus primarily on communal and state property regimes (state and community land). Little is known about the private sector's potential role in supplying biodiversity, in managing biological resources and in mobilising financial resources for conservation.

Southern Africa[1] provides a remarkable example of the private sector playing a key role in the provision of the public good 'biodiversity'. Markets for wildlife and wildlife products as well as nature tourism have supported the establishment of private parks and private game ranches to the benefit of conservation and local economies.

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[1] For the purpose of this report the term „southern Africa" refers to Botswana, Namibia, South Africa and Zimbabwe.

This paper attempts to demonstrate and discuss the private supply of protected land in southern Africa and is structured as follows: Section 2 provides a brief introduction to the economic values attached to biodiversity conservation in developing countries and considers reasons contributing to the loss of biodiversity. Section 3 summarises the public supply of protected land and outlines problems associated with state-managed protected areas. In order to understand the underlying economic incentives for private investments in wildlife enterprises, it is necessary to discuss the role of markets for biodiversity resources. Section 4 identifies such markets promoting the private provision of natural habitat. Section 5 provides an overview of private conservation and wildlife management approaches in the region. Section 6 identifies barriers and obstacles to private sector investments in conservation, and Section 7 discusses some critical issues associated with private conservation management.

2　The economics of biodiversity conservation in developing countries

Growing populations and rural poverty lead to an increasing demand for land for agricultural use. Unprotected natural habitat and wilderness areas are being converted at an increasing scale and in some regions even public protected areas are under pressure. The reason for this trend is that land conversion pays off for private farmers. Land use decisions are based on short-term economic grounds and hence favour land use practices that yield products traded in markets. To be successful, biodiversity conservation has to compete with the economic values of converted land (agriculture, infrastructure, urban expansion), values which are expressed in market prices. Conserving natural habitat has a variety of economic benefits, but many of these benefits are not traded in markets and do not yield direct economic returns.

As shown in Figure 1, conservation benefits are measured by the concept of total economic value (TEV). TEV is the sum of all economic values associated with the conservation of biological diversity and comprises direct use values, indirect use values, option values and non-use values (Pearce and Moran, 1994).

Direct use values are a fairly straightforward concept and offer the best chance of being measurable. Direct use incorporates both the consumptive and non-consumptive utilisation of biological resources. The consumptive uses of wildlife (e.g. hunting and

fishing) and non-timber forest products (fruits, nuts, rattan, latex etc.) are of significant value and these values are, in principle, measurable from market and survey data. The value of medicinal plants is more difficult to measure but several attempts have been made (see Pearce *et al.*, 1999). Non-consumptive direct use includes activities such as wildlife viewing and other forms nature tourism.

Figure 1   Total Economic Value

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                    ┌─────────────────────┐
                    │ Total Economic Value │
                    └─────────────────────┘
              ┌──────────────┴───────────────┐
        ┌──────────┐                    ┌──────────────┐
        │ Use values │                    │ Non-use values │
        └──────────┘                    └──────────────┘
      ┌──────┼──────┐                          │
┌───────────┐ ┌──────────────┐ ┌────────────┐  ┌──────────────┐
│ Direct use │ │ Indirect use │ │ Option value │  │ Existence value │
│ value      │ │ value        │ │            │  │ Bequest value   │
└───────────┘ └──────────────┘ └────────────┘  └──────────────┘
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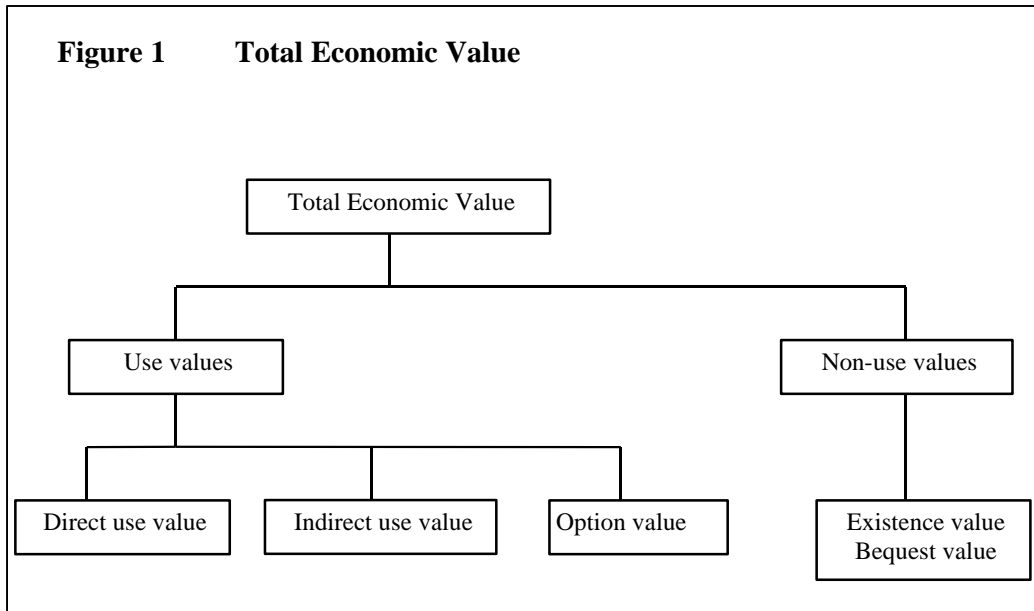
Indirect use values refer to the benefits deriving from ecosystem functions, such as watershed protection, carbon sequestration, flood control, storm protection, nutrient cycles etc.

Option value relates to the amount that individuals would be willing to pay to conserve biodiversity for possible future use. That is, the individual will make no use of it now but may do so in the future. Option value is thus like an insurance premium to ensure the future supply of something which would otherwise be uncertain.

Non-use, or existence, or passive use value relates to the values attached to an environmental asset, unrelated either to current or optional use. The intuitive basis for this is easy to understand because many people actually pay for the existence of environmental assets through wildlife and other environmental charities but without

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taking part in the direct use of the wildlife through, for example, recreation. Empirical measures of non-use value, obtained through questionnaire approaches (e.g. the contingent valuation method), suggest that non-use values can be a substantial component of total economic value.

Pearce and Moran (1994) distinguish two sources of economic failure contributing to the erosion of biodiversity: market failure and government failure. *Market failure* can be characterized as distortions due to missing markets or to the inability of existing markets to capture the 'true' value of biological resources. A great deal of market failure arises from the failure to assign property rights to environmental quality and environmental assets. But even if markets for biological resources exist and property rights are well defined, developing countries may still fail to capture the economic value of their biological assets due to adverse government policies or government failure (see Norton-Griffiths, 1998). *Government failure* can be described as distortions due to governmental actions in intervening in the workings of the market place. Subsidising unsustainable land use practices and banning the sustainable use of biological resources are examples of government policies that promote the conversion of natural habitat (see Section 6).

Market failure can occur at different spatial levels: locally, nationally or globally. A large proportion of non-use values or indirect use values attached to natural habitats, such as wildlife reserves, occur at the global level to the benefit of the world community as a whole. Conserving a wilderness area in Africa, for example, may impose net costs to local people, but can be beneficial in national or global terms. Aggregated global non-use values and ecological benefits of preserving a specific wilderness area may well exceed local costs but often no functioning markets exist to internalise the external effects.

As pressures on natural lands increase, the fate of conservation in developing countries depends increasingly on private land users' ability to capture conservation benefits in monetary terms. Markets in which such benefits are traded serve as a mechanism to internalise the external effects of natural habitat destruction and would allow private land users to sell biodiversity benefits to those who demand it. As will be outlined later in this paper, direct use values (e.g. hunting, fishing and nature

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tourism) are traded in southern Africa to the benefit of conservation and local economies. A market for non-use values is just developing.

3   The public supply of protected land in southern Africa

The first modern conservation area in Africa was established 1898 in South Africa, later to be known as Kruger National Park. Today, Botswana, Namibia, South Africa and Zimbabwe host 313 public protected areas covering 333,070 square kilometres. The total area protected is larger than the United Kingdom. Unfortunately, the high percentage of land in the protected area network probably reflects less the values attached to conservation than the unsuitability of vast areas of land for agriculture. Table 1 shows the number of public protected areas and the total land area protected in southern Africa. Only protected areas falling into the IUCN management categories I-VI are considered. The most recent definition of the IUCN management categories is given in Annex 1.

Table 1   Public protected areas in selected southern African countries

Country	Total area (sq km)	Area protected (sq km)	%	No. of protected areas in IUCN category I-VI
Botswana	575,000	104,968	18.2	8
Namibia	824,300	112,158	13.6	17
South Africa	1,184,800	66,015	5.6	244
Zimbabwe	390,300	49,929	12.8	44
Totals	*2,974,400*	*333,070*	*11.2*	*313*

Note: Minimum size for inclusion is 10 sq km.
Sources: IUCN (1998) and McNeely (1994)

The majority of protected areas in this region were created between 1950-1980. Since then, the growth of the protected area network slowed down significantly. Only South Africa managed to enlarge its system of protected areas significantly in the recent two decades. However, some reductions in protected areas have occurred: for example, Etosha National Park in Namibia was reduced in size from 93,240 km^2 in the early sixties to 22,900 km^2 to provide land for local communities (Barnard *et al.*, 1998).

Traditionally, the main motivation for establishing protected areas in southern Africa has been the protection of charismatic wildlife species and, as in many other regions in the world, protected areas have often been established in places where the fewest problems would be caused to people, for example, in thinly populated regions. The idea of protecting entire ecosystems to preserve biological diversity only developed recently.

Problems of public protected area systems

While acknowledging that state protected areas are important mechanisms for protecting biodiversity (see Dixon and Sherman, 1990; Bruner *et al.*, 2001), park authorities in southern Africa face a range of problems in establishing and managing protected land. These problems are of ecological, financial and/or institutional nature. Cumming (1990a) identifies the following ecological problems associated with public protected areas in the region:

- *Threatened ecosystems*. Not all ecosystems of the region are equally represented in the system of protected areas (see Barnard *et al*., 1998);
- *Incomplete ecosystems*. Park boundaries are often not in line with modern principles of protected area design, leaving key areas of ecological importance unprotected;
- *Park size*. Although many parks in the region are very large by world standards they are nevertheless too small for many migratory wildlife species. Probably no area in the region is large enough to hold a fully protected but unmanaged elephant population;
- *Ecological isolation*. Many protected areas are islands of natural habitat. Isolated and fragmented populations constitute a very real problem for large mammal species. Black rhino numbers, for example, have declined to the level where no single population of the species is large enough to avoid the loss of genetic diversity.

Beside ecological problems, park agencies in the region face declining financial resources for conservation and park management. Macro-economic problems and public pressure to alleviate poverty have caused governments to cut their budgets for

the environment. The lack of financial resources is probably the single greatest threat for protected areas in the region. Most public parks are managed on budgets well below the level required for planned conservation. As a result, an increasing number of protected areas are poorly managed and have insufficient protection systems in place. Perversely, existence values and option values etc. in developed countries are probably high for protected areas in the south, however, there is widespread failure in the flow of these values (as financial resources) to these areas (see also WCPA/IUCN, 2000). In addition, there is evidence of failures in economic capture mechanisms (e.g. optimum pricing) and government disbursement of funds. A review of park pricing policies in eastern and southern Africa shows that large sums of revenue are lost due to inefficient park entry pricing (Krug, 2000)[2].

Nationally managed schemes suffer from a number of difficulties, notably their reliance on state financing which is subject to variations in the face of central budgetary difficulties, and their tendency to become bureaucratised. Public institutions are often inefficient and rely on heavily hierarchical techniques for decision-making and control. By contrast, private enterprises (or semi-privatised institutions) tend to be more flexible and efficient in managing complex systems and in holding down costs. Empirical research shows that private or semi-privatised institutions are also more successful in raising funds for conservation than public agencies. Recent work from James *et al.* (2000) shows that the institutional structure of national parks agencies has a significant impact on the conservation budget. Examining park management budgets across different African countries, they show that government run park agencies have much lower budgets than parastatal or semi-privatised agencies. A parastatal is a semi-autonomous organisation that receives a grant from the government, but can raise and retain revenue. Parastatal park agencies have on average a budget of US$ 556 per square kilometre and government run park agencies of US$ 38 (see Annex 3). Financial independence and semi-privatised management structures seem to create incentives for park managers to optimise tourism revenues and are more successful in raising funds in addition to park fees, including investment and trust income, subscriptions and donations, and foreign assistance (James *et al.,* 2000). In other words, semi-privatised structures are more

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[2] See Annex 2 for an overview park pricing strategies in eastern and southern Africa.

efficient in capturing the direct use values (i.e. recreational value) and non-use values (global willingness to pay) attached to conservation.

Research on recreational demand for parks in Namibia points in the same direction. A survey among visitors to national parks reveals that local and foreign tourists would be willing to pay higher entrance fees if guaranteed that instead of a government agency, an independent organisation such as private company or an NGO would be responsible for managing the park and the park's revenues (Krug, 2001). The results shown in Table 2 can be interpreted as international tourists' demand for an increased private sector involvement in managing state protected areas and reflect a distrust in government institutions - a common phenomenon in many developing and developed countries.

Table 2 **Willingness to pay for entering Sossusvlei and Etosha National Park under different management scenarios (US$/day)**

	Scenario I Private/NGO management		Scenario II Government management	
	Etosha	Sossusvlei	Etosha	Sossusvlei
Local visitors	8	10	3	4
Overseas visitors	15	15	10	11

Source: Krug (2001)

4 Markets for biodiversity resources in southern Africa

Various biodiversity resources and services in Southern Africa are potentially marketable and many resources such as medicinal plants, wildlife, and fish are traded in markets. The two most important markets with goods and services traded nationally and internationally are the consumptive use/trade of wildlife products and the market for wildlife-viewing tourism. Both markets are of great micro- and macroeconomic importance and have a considerable impact on biodiversity conservation. An emerging market is that for global non-use values attached to natural habitats in southern Africa. Trends in each of these three markets are discussed separately in Section 4.1 to 4.3 below.

4.1 The market for consumptive use of wildlife and wildlife products

Beside the subsistence use of wildlife resources at the community level, southern Africa has highly developed markets for live game species and wildlife products. The region has a comparative advantage over other developing regions in terms of its diversity of endemic wildlife species and large wildlife populations. Common forms of consumptive wildlife utilisation are culling/cropping, live game sales, safari hunting and subsistence hunting for meat. Live animals are sold via public auction and products like meat and skins are traded regionally and internationally.

Wildlife utilisation as a form of land use has proven to be more profitable than cattle ranching in marginal areas of southern Africa. Indeed, a single antelope such as a kudu or an oryx to a trophy hunter can earn a farmer three to four times the amount of a cow (Krug, 1996). As a result, many former cattle ranches have been converted into wildlife enterprises. All endemic wildlife species can be found on private game ranches and reserves, but most popular for commercial use are wild ungulates (kudu, oryx, springbuck etc.), crocodiles and ostriches. Generally, those enterprises that combine different forms of wildlife use (culling, live sales and safari hunting) and use free-ranging wildlife populations are more profitable than more capital-intensive farming of single wildlife species (Roth and Merz, 1997).

Krug (1996) analyses the consumptive wildlife market in Namibia and reports that about 80,000 wild animals were utilised in the year 1990. Just three species, namely kudu, oryx and springbok, account for almost 90% of all hunted animals. Culling was the predominant form of use in the 80's due to European Community (EC) and South African import standards for game meat (see Figure 2). This is due to veterinary restrictions in the EC and South Africa that requires that only game meat processed or dried in an approved facility can be imported from Namibia. Only culling fulfils this requirement. Of all animals utilised in 1990, about 19% of the animals have been used for the farmers' and farm employees' own consumption and 26% for the production of biltong (dried meat).

The most prestigious and largest wildlife auction for live game is organised by the KwaZulu Natal Conservation Service in South Africa. Here excess animals from

public parks are sold to private wildlife areas predominantly in southern Africa. This programme has assisted in increasing the wild population of white rhino living outside formal protected areas from a handful to nearly 2000 in 1999 (Damm, 2001). Average auction prices for live game in South Africa are given in Box 1.

Figure 2   Share of different wildlife utilisation forms in Namibia (1990)
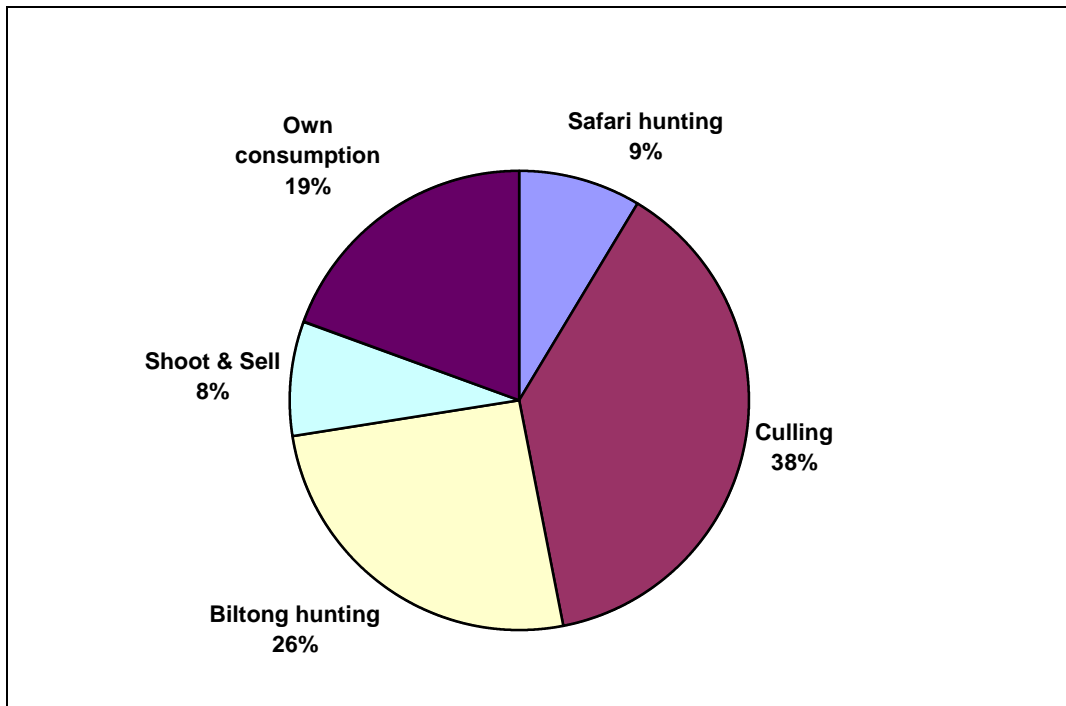
Source: Krug (1996)

Box 1 Average prices from different auctions for live game (2000)*			
Blesbok	$ 142	Livingstone's Eland	$ 2,170
Blue Wildebeest	$ 450	Nyala	$ 1700
Buffalo	$ 16,700	White Rhino	$ 25,000
Bushbuck	$ 1,000	Mountain Reedbuck	$ 500
Eland	$ 830	Impala	$ 150
Grey Duiker	$ 75	Red Hartebeest	$ 700
Gemsbuck	$ 600	Roan	$ 14,200
Giraffe	$ 2,700	Springbuck	$ 670
Hippo	$ 4,000	Sable	$ 10,300
Klippspriner	$ 930	Ostrich	$ 300
Kudu	$ 370	Waterbuck	$ 1,000
		Zebra	$ 580

* Rand 6 = US$ 1
Source: Damm, 2001

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4.2   The market for wildlife viewing

Protected areas, forests, beaches, coral reefs and exotic wildlife species in southern Africa attract several million international tourists every year. In most eastern and southern African countries, nature tourism ranks among the top three contributors to GDP. It supports hundreds of thousands of jobs, earns urgently needed foreign exchange and contributes to economic development. International nature tourism can be interpreted as one component of foreign tourists' demand for biodiversity conservation in Africa and, in turn, biodiversity conservation supplies the essential resources for the survival of the industry. As shown in Table 3, South Africa, Zimbabwe, Botswana and Namibia are popular destinations for international visitors. Tourist numbers increased steadily over the past years, indicating a growing demand for tourism in the region.

Table 3   International tourist arrivals in eastern and southern African countries (,000s)

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998
Botswana	543	592	590	607	625	644	707	734	740
Burundi	109	125	86	75	29	33	27	11	15
Congo (D.R.)	55	33	22	22	18	35	37	30	53
Kenya	814	805	782	826	863	691	717	907	857
Lesotho	171	182	155	130	97	101	108	144	150
Madagascar	53	35	54	55	66	75	83	101	121
Malawi	130	127	150	153	170	192	232	206	178
Namibia		213	234	255	326	399	405	502	560
Rwanda	16	3	5	2	1	1	1	1	2
South Africa	1,029	1,710	2,703	3,093	3,669	4,488	4,944	5,653	5,898
Swaziland	263	264	263	272	336	300	305	340	319
Tanzania	153	187	202	230	250	285	310	347	450
Uganda	69	69	92	116	153	188	205	227	238
Zambia	141	171	159	157	141	163	264	341	362
Zimbabwe	605	667	738	951	1,105	1,529	1,743	1,495	2,090
Total	4,151	5,183	6,235	6,944	7,849	9,124	10,088	11,039	12,033

Source: World Development Indicators 2000.

The tourist numbers in Table 3 indicate the volume of the overall tourism market of which wildlife-viewing tourism is only one part. Exact data on the share of wildlife-based tourism in the market is unavailable because national statistics typically do not

differentiate between different forms of tourism. However, estimates based on surveys indicate that wildlife viewing in eastern and southern Africa appears to account for at least 70% of the overseas visitor market (see Table 4).

Table 4   The importance of wildlife-viewing in the overseas visitor market

Country:	Among all overseas visitors:	Source:
Kenya	80% come to these countries primarily for the wildlife	Filion *et al.*, 1994
Namibia	73 % join a wildlife viewing safari	MET, 1997
South Africa	A range of estimates attribute between 10-90% of all international arrivals to wildlife viewing	Wells, 1996
Zimbabwe	80% come to these countries primarily for the wildlife	Filion *et al.*, 1994

Growing demand for wildlife viewing in southern Africa coupled with high returns have encouraged many private land users to offer wildlife-viewing safaris on private land. A large number of cattle ranches have been converted to private reserves and stocked with endemic wildlife species (see Section 5). Private reserves offer often the same range of species as public parks, including elephants, giraffes, lions and rhinos. The private supply of wildlife-viewing opportunities has created a competitive market out of a former state monopoly. While state owned parks have a comparative advantage in terms of their size, private parks tend to focus on their comparative advantages, including high quality wildlife viewing and accommodation.

4.3   The market for non-use values

Non-use values represent a form of human demand for biological resources or ecosystems that does not involve any current or future use. Such values are of special interest in the context of biodiversity conservation because they are thought to be large in aggregate for biological resources and natural habitats in developing countries (Pearce *et al.*, 1999; Pearce, 1996). The two main non-use values identified by economists are existence value and bequest value. Existence value relates to the amount that individuals would be willing to pay to conserve a biological resource, say a wild species or a natural habitat, unrelated to any current or optional use. In other

words, people interested in the pure existence of species are willing to pay for it even without taking part in the direct use of wildlife through recreation or tourism. Bequest values represent the concern of individuals to pass the asset in question to children, grandchildren, or future generations generally. Donations to elephant or rhino conservation funds are likely to directly reflect such existence and bequest values, while donations to broader-based conservation charities will reflect a composite of values which may reflect some preferences for the conservation of specific species.

Non-use values can have two spatial dimensions: non-use values held by people within a country that possesses the resource (domestic non-use values), and non-use values held by people in other nations. Non-use values held by people in one country for biodiversity conservation in other countries represent global non-use values. In fact, many people in developed countries have a strong interest in preserving endangered species and natural habitats in southern Africa, and may express their preferences in form of contributions to environmental charities. It is thought that global willingness to pay (WTP) for endangered species and habitat conservation in southern Africa is larger than domestic WTP. If this holds true, large financial resources from northern nations could, in principle, be captured to support biodiversity conservation in the region. For this to work, mechanisms are needed that enable the countries providing biological resources to capture such global non-use values. The existing financial flows in the form of private donations or bilateral and multilateral aid reflect global non-use values, but there are strong reasons for supposing that the degree of 'capture' is small. Additional failures include the efficient/optimal targeting of projects to receive benefits from donations.

There are two explanations why actual WTP for conservation is smaller then 'true' ee-riding' and the absence of functioning markets. 'Free-riding' exists when people holding non-use values do not contribute to conservation in the hope that others will pay for it. The second reason is that there are rarely functioning markets for the trade of such values. Global non-use values are expressed in the form of international aid and private donations, but the few institutions facilitating the transactions or the 'trade', namely government agencies and NGOs, do not fulfil market criteria. A functioning market exists when individual and corporate investors demanding biodiversity goods and services can freely choose between different

biodiversity supplying agents, and if these agents can guarantee the 'delivery' of biodiversity conservation. One way to guarantee the implementation of effective conservation management is to give those who pay some form of management or ownership right over biological resources and land. This allows investors to influence decision-making and to control resource management. Further conditions are perfect information about investment opportunities and the providing agent's efficiency in supplying biodiversity. However, in practice individuals from northern countries demanding conservation in the south have to rely on few government institutions and NGOs offering limited flexibility and transparency. Potential investors have usually no information on how efficient these organisations are and little influence on how the money will be spent. More importantly, there are no supply guarantees. In other words, investors do not know what they 'buy' and have no idea about the 'rate of return' (in terms of conservation).

The private sector in southern Africa has developed innovative mechanisms to allow for the trade of non-use values. Although markets are still hampered by unnecessary laws and regulations, private enterprises have managed to capture global non-use values on a large scale. The most successful model has been the establishment of private reserves. Grants from private sources are the second most important source of income for private reserves in the region (see Langholz, 1996).

Private reserves have various advantages over NGO and government run conservation programmes in attracting international financial support. Some of the reasons are:

- Private enterprises have proven to be very *effective* in protecting endangered species (e.g. black rhino, white rhino, roan antelope, sable antelope etc.);
- *Flexibility:* Although natural habitat conservation remains the main conservation achievement, different private reserves focus on the protection of different species depending on investors' demand. Some support rhinos or cheetahs, some others birds or rare antelopes;
- Private investors can, depending on the reserve's institutional structure, receive some form of *management or ownership right* over natural resources or land and therefore influence decision making;

- Private reserves offer investors a high *transparency* in terms of their investment objectives and conservation targets achieved (e.g. through regular consultations with potential investors, annual habitat monitoring and game counts);

- Private reserves often have *low transaction and administration costs* in comparison to NGO and government run programmes;

- The competition between different reserves in attracting international funds forces reserve managers to lay open their accounts and to increase *cost efficiency*;

- Many private or corporate investors support the idea of private reserves having a *commercial focus* (e.g. ecotourism or limited hunting). This helps to cover the running costs and increases financial independence;

- At least in Zimbabwe, tourism companies have been showing increasing interest in investing in new developments on private land rather than on state land owing to the frustrating bureaucracy and fickle policies that pertain to the latter (Du Toit, 1999).

A review of critical issues associated with private wildlife management is presented in Section 7.

5 The private supply of protected land

As indicated from the outset, the private sector in southern Africa plays an important role in the provision of the public good "biodiversity". While this is widely acknowledged among policy-makers and conservationists in the region and abroad, no attempt has been made to date to carry out an in-depth assessment of the private sector's contribution to conservation. Very little information exists on the amount of land protected, the levels of protection applied, the number of species conserved, etc. This section discusses the private sector's role in supplying 'protected land' or 'land under wildlife' based on the limited data available. The following explanations are therefore by no means exhaustive, but represent a first attempt at an assessment. It is assumed that the protection of natural habitat and the conversion of agricultural land

back to land under wildlife are positively correlated with the provision of biodiversity *per se*. Although the focus is on private property, it is worth mentioning that the private sector plays an increasing role in managing wildlife resources on communal and state land including public protected areas. The most prominent examples are the Niassa Game Reserve in northern Mozambique covering 22,000 square kilometres and the famous Masai Mara Game Reserve in Kenya. Both reserves are managed by a private company: the Niassa Game Reserve since 1998 and the Mara triangle within the Masai Mara Game Reserve since 2001[3].

As shown in Table 5, a great proportion of the land area in southern Africa is privately owned. In South Africa private property amounts to 73% of the total area, in Namibia 44%, in Zimbabwe 35% and in Botswana 6%.

Table 5   Land tenure in southern Africa

	Botswana	Namibia	South Africa	Zimbabwe
State land (%)	23	15	5	16
Communal land (%)	71	41	13	49
Private land (%)	6	44	73	35

Source: Cumming and Bond (1991)

All together private land covers a total area of some 1.4 million square kilometres. According to the evidence presented in this paper and expert consultations, it is reasonable to assume that about 10-20% of the private land is dedicated to wildlife protection or wildlife management. Taking 10% as a conservative estimate, this amounts to 14 million hectares or more than half the size of the United Kingdom. This includes private reserves, conservancies[4], game ranches as well as mixed wildlife-cattle ranches. In South Africa's KwaZulu Natal province about a third of the land

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[3] Only the region known as the Mara triangle, which covers 520 square kilometres and accounts for about a third of the Masai Mara Game Reserve in privately managed (The Economist, 2001).

[4] A conservancy consists of a group of farms on which neighbouring landowners or members have pooled resources (natural or financial) for the purpose of conserving and using wildlife sustainably. Often members practise normal farming activities in combination with wildlife conservation. Conservancies are managed and operated by members through a committee.

area is under some form of private conservation management (Nuding, 1996; Damm, 2001).

What are the key factors contributing to this development? With the exception of some South African provinces and conservancies in Namibia, governments have never actively promoted private conservation and wildlife management; to the contrary, various barriers and perverse subsidies exist, undermining private investments in conservation. The most important factors driving private conservation development are:

- Well defined property rights over land and wildlife resources;
- Farmers have the right to use wildlife and are allowed to trade live game and wildlife products (markets for wildlife resources) (see Box 2);
- Wildlife utilisation and wildlife viewing are economically viable due to:
  - Strong international demand for wildlife viewing and safari hunting, and
  - Strong local demand for venison.

Box 2   Change of wildlife utilisation policy

- <u>Botswana</u>: Wildlife is state owned but private land owners have been given the custodial right to use it (Fauna Conservation Act (38:01), 1982)

- <u>Zimbabwe:</u> The Parks and Wildlife Act of 1975 gave private farmers the right to utilise and derive the full benefit of their wildlife resources (Bond, 1993)

- <u>Namibia:</u> The Nature Conservation Ordinance No. 31 from 1967, in the then named Southwest Africa, privatised the ownership of wildlife on privately owned land (Krug, 1996).

Trends in the development and operation of private game ranches, nature reserves and private conservancies are discussed separately in Section 5.1 to 5.3 below.

5.1   Private game ranches

Game ranching can be described as the extensive use of multiple free-ranging wildlife species on extensive tracts of natural range. The size of the game ranches in southern Africa varies from 1,000 – 25,000 hectares, some being fenced and some unfenced. Game ranching is often combined with domestic livestock ranching. The economic returns from various combinations of safari hunting, wildlife-viewing tourism, meat production and live capture of game have made investments in game ranching worthwhile. Most popular is the use of antelope species, but many ranches offering wildlife viewing have also invested in charismatic species such as rhinos, giraffes and zebras. The available information on game ranching in the respective countries is summarized below:

Namibia [5]

- 75% of the farmers hunt wildlife for game meat (own consumption);
- 15-25% of the private farmland is used for commercial game production (game ranching, safari hunting, live game capture and non-consumptive wildlife viewing);
- Game ranching is often combined with domestic livestock;
- There are some 400 registered commercial hunting farms varying in size from 3,000 to 10,000 hectares (MET, 2000);
- Since it became legal to utilise wildlife on private land in 1967, wildlife numbers on private land increased by some 70% and species diversity (large mammals) increased by 44% (Barnes and de Jager, 1996; Krug, 1996);
- Approximately 80% of the numbers of larger game mammals species are found on privately owned commercial farms (Richardson, 1998);
- Private farmland in Namibia hosts the largest cheetah population left in Africa.

As demonstrated in Table 6, the net value added to national income from the commercial use of wildlife in Namibia is estimated at US$78 million for 1996. Wildlife use activities on private land (ranching, farming and non-consumptive tourism) make up 24% of this value. About 87% of the economic value are tourism-based activities such as wildlife

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[5] Adapted from Krug (1996)

viewing and safari hunting. This shows to what extent the industry depends on international demand for wildlife resources.

Table 6   Estimates of the net value added to national income from wildlife use activities in Namibia (U$'000, 1996)

Wildlife use	Parks & resorts	Communal land	Private land	Total
Tourism activities				
Wildlife viewing	53,181	1,376	3,221	57,778
Trophy/safari hunting	215	681	3,655	4,551
Recreational hunting[1]	0	0	2,229	2,229
Shore and river angling	3,391	91	0	3482
Non-tourism activities				
Venison production[2]	0	24	1,299	1,323
Live game sales	138	46	378	562
Own game consumption[3]	0	28	3,978	4,006
Ostrich farming	0	0	3,556	3,556
Crocodile farming	0	0	265	265
Artisanal fishery	0	344	0	344
Totals	**56,925**	**2,590**	**18,581**	**78,096**
	73%	3%	24%	100%

Notes: Excludes commercial marine fisheries and product processing; 1) Biltong hunting and "grants" to family and friends; 2) Licensed under "night culling" and "shoot and sell" permits; 3) Non-market subsistence use of game meat. *Source:* Barnes & Ashley (1996)

South Africa [6]

- Wildlife utilisation on private farms is almost invariably a secondary activity to livestock production with farmers deriving, on average, 14% of their gross farm income from game;

- In 1990 wildlife utilisation was undertaken by some 8,000 to 8,500 farmers (17% of farmers);

- Estimates of the land area involved in game ranching vary from 18-24% of the private land (160,000-207,500 sq km).

A survey among farmers stocking game in South Africa exhibits the main sources of revenue from wildlife in 1984: 36% venison production, 29% biltong production,

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[6] Adapted from Cumming, 1990b

13% live game sales, 12% safari hunting and 10% wildlife viewing (Behr and Groenewald, 1990). It is estimated that there are almost 10,000 game ranches in South Africa today (Damm, 2001).

Zimbabwe

- 75% of ranches in drought-prone areas incorporate wildlife as a farming enterprise (Child *et al.*, 1997)
- The Wildlife Producers' Association has currently some 1,200 members, 800 of which are preservationists, leaving 400 actively engaged in some sort of consumptive wildlife operations such as hunting, non-hunting or both (White, J., 2001, pers. comm.);
- There are over 200 commercial game ranches covering more than 27,000 sq km or about 20% of the private farm land (7% of the total land area).

As demonstrated in Table 7, private land under wildlife increased from 300 sq km in 1960 to 30,000 sq km in 1980. This is a direct result of the Parks and Wildlife Act in 1975 that gave private farmers the right to utilise and derive the full benefit from their wildlife resources (see Box 2). Subsequent revisions to the Parks and Wildlife Act were responsible for the sharp increase in communal land supporting wildlife between 1980 and 1990. This included amendments that gave local communities the right to manage wildlife on their land for revenue-generating purposes under the CAMFIRE programme (see Child *et al.*, 1997).

Table 7   **Land areas used for wildlife conservation and utilisation in Zimbabwe (sq km)**

Year	National parks	Safari areas	Forest areas	Communal lands	Private farm land	Total	% of Zimbabwe
1930	17,500	0	0	0	?	17,500	4.5
1960	11,800	0	0	0	350	12,150	3.1
1980	22,799	18,576	5,541	3,356	30,000	80,272	20.5
1990	22,799	18,576	4,963	12,806	27,000	86,144	22.0

Source: Cumming (1990c)

5.2 Private nature reserves

Private nature reserves are gaining increasing popularity in southern Africa and play a significant role for biodiversity conservation in the region. In contrast to many game ranches and conservancies, private reserves have completely abandoned livestock from the land. The main intention is to preserve wildlife and natural habitat. While management objectives vary from strict preservation (no consumptive use) to the sustainable use of wildlife, the main focus is typically on wildlife-viewing tourism. However, some private reserves such as the NamibRand Nature Reserve in Namibia have more ambitious conservation objectives than state managed national parks, such as strict guidelines on tourism carrying capacity. The size of private reserves varies from a few hundred to 175,000 hectares[7]. Some are extremely rich in endemic species, unique landscape features or both. In some areas private nature reserves represent the last fragments of natural vegetation and refuges for endemic species. While the benefits of fragmented pieces of natural habitat are debatable from a conservation perspective (e.g. variable population sizes), private reserves have effectively protected many endemic species such as butterflies, birds, flowering plant species as well as populations of mammals such as gazelles, antelopes and predators. In some areas private reserves and game ranches serve as corridors between state parks, enabling wild species to migrate.

In South Africa and Namibia collaborative nature reserves are common. A collaborative nature reserve is an area where adjoining landowners have pooled resources to create large units. Individual ownership within the reserves is still retained, but each unit is managed as a single entity (Lambrechts, 1995). Though most reserves have been established during the last twenty years on land previously used for livestock ranching, - the oldest private reserves (the Sabi Sand and Timbavati reserves in South Africa) were created in the 1950s. A growing number of private reserves have developed partnerships with government parks. The most famous of these is the partnership between Kruger National Park and some collaborative nature reserves adjoining the park to the west. This led to the removal of fences between the national park and private reserves in 1994. Park authorities in South Africa have relocated several thousand rhinos onto private land in recent years (mostly white

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[7] For a discussion on the optimal size of private reserves see Langholz (2000).

rhinos), acknowledging that private reserves offer a better protection of endangered species[8].

Studies by Alderman (1991) and Langholz (1996), surveying private reserves in Sub-Saharan Africa and Latin America in the early 1990s, conclude that private reserves are motivated primarily by conservation objectives, generate substantial employment and depend on tourism as the main source of income. Almost 60% of the reserves surveyed by Langholz are profitable enterprises. The available information on private nature reserves in the respective countries is summarized below:

Namibia

Namibia's legislation provides for private landowners to proclaim their land as private nature reserves, with about 148 being registered by 1995, covering 760,000 ha or 2% of all private lands (MET, 2000). However, there are strong disincentives which impede the registration of nature reserves on private lands. Barriers include the necessity for the Ministry of Environment and Tourism to clear many rangeland management initiatives (e.g. culling) through a complicated bureaucratic process. Indeed, the government recognised these impediments to private reserve management, but has so far not altered the process. As a result, many private reserves are not officially registered and are hence not captured in official statistics. Therefore, the figure above grossly underestimates the total land area of private reserves.

The country's largest private reserve is NamibRand Nature Reserve bordering ea Namib Naukluft Park[9]. The reserve, covering 175,000 hectares (1,750 sq km), is owned by an association of nine landowners/investors and was created through the acquisition of 13 sheep farms (see Table 8). All livestock, farm infrastructure and over 1,500 km of fences have been removed. Negotiations with the government are currently under way aiming to pull down the 100 km fence between the reserve and the state-managed Namib Naukluft Park. The main reason for establishing the reserve was to provide critical habitat for migrating

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[8] Reasons for the success of private reserves in protecting endangered species are efficient monitoring of wildlife stocks, well-trained staff and high investments in anti-poaching measures.
[9] Namib Naukluft Park is located in the Namib Desert in west Namibia and covers 50,000 sq km.

desert populations of oryx antelopes (*Oryx gazella*) and mountain zebras (*Equus zebra hartmannae*)[10] during dry season. The private reserve's association has granted five exclusive concessions to tourist operators, who conduct their own businesses and pay a levy of 10-15% of their turnover into the reserve[11]. The code of practice specifies that visitors have to be accompanied by game rangers at all times – no self-driving or self-trekking is permitted. Tourist carrying capacity is set at a maximum of one guest bed per 2,000 hectares, with no more than 20 guest beds in any one location. The reserve's outstanding reputation and economic success have attracted some of the country's most experienced game rangers.

Table 8   Comparison of two private reserves in Namibia and Zimbabwe

Reserve Name	**Malilangwe Wildlife Reserve**	**NamibRand Nature Reserve**
Country	Zimbabwe	Namibia
Size (ha)	40,000	175,000
Motivation for establishing the reserve	Wildlife conservation	Wildlife and landscape conservation
Land ownership	Non-profit trust of charitable nature	Holding company owned by shareholders (former landowners)
Legal status of land	Private farmland	Private farmland
Sources of funding for land purchase and infrastructure	Donations from private conservation foundations	Private investors
Major sources of income	Tourism, hunting, culling and life sale	Ecotourism (tourism concessionaires pay up to 15% of their turnover into the reserve)
Do economic activities cover running costs?	Budget presently subsidised by private charitable foundation. It is intended that the reserve will become self-financing. *)	Landowners subsidised the budget for many years but the reserve is presently self-financing
Profitability in comparison to farming	Cattle ranching and farming had proven non-viable	Sheep farming had proven non-viable
Major conservation achievements	Restocking with 28 black rhino (cost 1US$ million), wild dog, roan antelope, white rhino.	Preservation of a unique desert ecosystem, restocking with cheetah, 1500 km of commercial farm fences removed to allow for oryx migration.

*) Regrettably the current political situation in Zimbabwe has set this target back considerably.

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[10] Listed in CITES Appendix II
[11] For information on tourism activities and pictures see www.wolwedans.com

Other well-known private reserves in Namibia are Erindi Game Reserve (80,000 ha), Fisher's Pan Game Reserve (7,000 ha), Gondwana Canon Park (102,000 ha) and Huab Nature Reserve (8,060 ha) (see Brückner *et al.*, 2001).

South Africa [12]

There are almost a thousand private reserves in South Africa. Lambrechts (1995) provides an excellent overview of private reserves in the former Transvaal province. Transvaal alone hosts some 450 private reserves covering 5.6% of the total land area. As shown in Table 9 almost 30% of the surface area in Transvaal is dedicated to the conservation of natural resources. This figure is impressive, especially considering that private conservation accounts for 61% of this area.

Table 9 **Private and public supply of protected land in the former Transvaal province, South Africa (1993)**

Ownership	Size (ha)	No.	%
State			
National Parks	2,016,674	2	8.77
Provincial Parks	423,289	67	1.84
Protected Natural environment	37,627	1	0.16
Forestry Reserves	57,940	-	0.25
Military Reserves	111,338	23	0.48
Totals	*2,646,868*	*93*	*11.50*
Private sector			
Private Reserves	1,277,900	450	5.60
Game Ranches	2,653,315	1763	11.50
Heritage Sites	150,000	78	0.70
Totals	*4,081,215*	*2291*	*17.80*

Source: Lambrechts (1995)

Well known are the collaborative nature reserves Sabi Sands, Timbavati and Klaserie to the west of Kruger National Park (see Table 10). Covering an area of 185,000 hectares, they provide habitat for some 500 elephants, 3000 buffalos, 250 white rhinos and 2000 giraffes[13].

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[12] Adapted from Lambrechts (1995)
[13] Wildlife numbers before the removal of the fence to Kruger National Park.

Table 10   **Size and number of selected game species on 3 collaborative private nature reserves in the former Transvaal province**

Name of reserve	Size (ha)	Elephant	Buffalo	White Rhino	Giraffe
Sabi Sand	59,700	71	1,070	160	290
Timbavati	63,000	280	960	56	1,084
Klaserie	62,800	140	1,100	36	820
Totals	*185,500*	*492*	*3,130*	*252*	*2,194*

Source: Lambrechts (1995)

Some collaborative nature reserves to the west of Kruger National Park have entered a mutually beneficial partnership with the national park. As a result, national park authorities have agreed to remove the fence bordering the private reserves. According to Lambrechts (1995), collaborative reserves bordering public parks in Transvaal have 5 characteristics: 1) individual ownership is retained, 2) all internal fences between participating landowners are removed to form a single management unit, 3) individual shareholding is permitted, 4) an elected executive committee is responsible for the management of the reserves within the parameters laid down by a mutually agreed and legally binding constitution, and 5) conservation through sustainable utilisation is the underlying principle, and means that the collaborative reserves will be utilized and managed as a viable economic enterprise. Wildlife viewing or limited numbers of trophy hunting safaris generate funds to cover the overall management costs.

To ensure a high level of statutory protection, and at the same time to safeguard the interests of all partners, conservation authorities have gone as far as granting collaborative reserves the legal status 'Protected Natural Environment'. This involves a set of legally binding directions regulating the land use practices, thereby ensuring the continued existence of the reserves.

The profitability of wildlife as a land use and the considerable amount of prestige attached to owning a private reserve or game ranch have increased the prices of land dramatically. The value of privately owned wildlife habitat in the Transvaal Lowveld has increased by as much as 2,500% in 20 years (Lambrechts, 1995). Similar developments in the value of land have been witnessed in Namibia and Zimbabwe.

Zimbabwe

Little is known about the number and size of private reserves in Zimbabwe. However, one well-known example is the Malilangwe Wildlife Reserve in southeast Zimbabwe. Malilangwe covers some 40,000 hectares and is owned by a non-profit trust (see Table 8). The reserve provides habitat for elephants, white rhinos, lions, buffalos, roan antelopes, wild dogs and over 400 bird species. A major investment was the acquisition of 28 black rhinos at a cost of US$ 1 million. The reserve is currently financed by donations from private charitable foundations, but it is intended that the reserve will become self-financing through the sustainable use of wildlife and non-consumptive tourism.

5.3   Private Conservancies

A private conservancy consists of a group of commercial farms, either livestock farms, mixed wildlife-cattle ranches or game ranches, where neighbouring landowners have pooled natural and financial resources for the purpose of conserving and sustainably utilising wildlife. Members practise normal farming activities and operations in combination with wildlife conservation. Conservancies aim at managing wildlife jointly and are operated by members through a committee. Each conservancy has its own constitution containing a set of legally binding wildlife management and conservation objectives. Benefits from the consumptive and non-consumptive utilisation of wildlife are distributed among members. Joint management of wildlife resources has proven to prevent over-exploitation of species and to increase economic returns (Swanson *et al.*, 1996). The establishment of conservancies is gaining increasing popularity throughout southern Africa and is, at least in South Africa and Namibia, supported by the government.

Table 11 demonstrates the key differences among private reserves, private game ranches and conservancies. Traditionally, the main difference between private reserves and conservancies in southern Africa is that private reserves have completely abandoned conventional agricultural practices, while conventional farming remains an

important source of revenue for members of a conservancy[14]. However, the trend in recent years has been towards an increasing number of conservancy members abandoning livestock rearing in favour of new economic activities, such as the sustainable use of wildlife. As a result, the obvious differences between private nature reserves and conservancies are eroding.

Table 11   A comparison of different private wildlife conservation vehicles

	Private Nature Reserves	Private Game Ranches/Farms	Private Conservancies
Ownership structure	Various forms of ownership: single land owner; group of individual land owners; foundations; corporations, NGOs.	In most cases private ownership	Collaborative agreement between individual ranch owners (game ranches and/or livestock ranches)
Main motivation for establishment	Usually conservation but sometimes economic returns from tourism	Economic returns from wildlife utilisation	Enhancing wildlife management and conservation alongside conventional agricultural and rangeland practices
Size	1,000 - 175,000 ha	Usually between 1,000 and 20,000 ha	Usually larger than 100,000 ha (largest: 326,000 ha)
Main sources of income	Wildlife-viewing tourism, donations and sometimes live game sales or hunting	Consumptive use of wildlife (sometimes in combination with livestock ranching)	Conventional agricultural practices (sometimes in combination with wildlife-viewing tourism or hunting)
Legislation governing wildlife and rangeland management	National policy on wildlife conservation and management; Additional restrictions on land use in Namibia and South Africa if registered as a private reserve	National policy on wildlife conservation and management	National policy on wildlife conservation and management; Additional restrictions on land use in Namibia and South Africa if registered as a conservancy
Additional legally binding conservation objectives	Often in form of a constitution regarding land use and conservation management	-	Usually in form of a constitution regarding land use and conservation management. The South African and Namibian government actively support landowners in developing a constitution

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[14] In contrast to East Africa where livestock ranching is often used as a means to finance private reserves.

Müller-Berghaus (1996), providing an overview of conservancies in South Africa, counts 335 conservancies in 1996 covering a total area of 4 million hectares. In mid-2000, 22 private conservancies were registered in Namibia covering some 450 commercial farms and more than 2 million hectares (MET, 2000).

The four largest conservancies in Zimbabwe are Save Valley, Chiredzi River (80,000 ha), Bubiana (127,000 ha) and Bubye. The Save Valley Conservancy was established in southeast Zimbabwe in 1991, when 21 landowners joined together. The conservancy comprises 326,000 hectares and is the world's largest privately owned conservancy (Swanson *et al*., 1996). It is roughly equivalent in size to the two of the country's largest national reserves (Mana Pools National Park and Gonarezhou). All 21 landowners still hold title to their own property and carry out their own economic activities within the objectives of the conservancy. Meanwhile livestock has been completely abandoned, leaving wildlife as the only source of revenue. A study from Price Waterhouse (1994) concludes that wildlife utilisation is capable of returning 11% return on capital while cattle ranching was only providing a 1% return. The conservancy has entered into a loan agreement with the International Finance Corporation (IFC) for the purpose of funding a wildlife-restocking programme. Save Valley holds meanwhile more than 300 buffaloes, 500 elephants and over 60 black rhinos. In contrast to the nearby Gonarezhou National Park, Save Valley has brought poaching under control and wildlife population show high growth rates (no rhino was poached since 1991). In response to the abundance of prey such as impala antelopes, wild dogs have moved into the conservancy. The population of this critically endangered species has build up to a viable size of over 70, which is a larger number than the one now remaining in Gonarezhou National Park (Du Toit, 1999). The conservancy works closely with the World Wide Fund for Nature (WWF) who gives advice and technical input on conservation aspects.

6   Barriers to private sector investments in conservation

Alongside typical market and political risks in southern Africa, private individuals or corporations willing to invest in wildlife related enterprises face various economic, institutional and legal barriers. In all cases, risks and barriers reduce the effective rate of return to private investment. Some of these are:

- *Perverse economic incentives*. Direct and indirect subsidies to cattle ranching (e.g. drought relief, animal health, extension and research services, veterinary cordon fences, subsidies for slaughterhouses and tax write-offs) distort the market and promote investments in cattle production. Some subsidies are a direct result of EU policy (see Box 3);

- *Lack of an appropriate legal framework* that gives private reserves legitimate status. In Namibia, for example, private reserves are regarded as tourism or agricultural enterprises and hence are treated as such in terms of taxation and macroeconomic policy;

- *Lack of government support* for wildlife enterprises. There is a general tendency among members of southern African governments to view land which is being used for wildlife production or tourism as under-utilised or unutilised;

- *Lack of comprehensive land policies* that include wildlife as a land use alongside cattle and sheep farming;

- *Gaps and overlaps in the institutional responsibilities* regarding private reserves and game ranches (Ministry of Agriculture *versus* Ministry of Environment and Tourism);

- *International trade restrictions for wildlife products*. A good example is the ban on ivory trade which prevents southern African countries from fully capturing the economic value of their elephant populations;

- *EU and North American import restrictions* for wildlife products from southern Africa (e.g. meat, skins, hunting trophies);

- *Insecure property rights over land.* Recent developments in Zimbabwe give rise to the concern that private land might be nationalised or redistributed.

> **Box 3 European community beef and range degradation in southern Africa**
>
> The European Community (EC) imports a guaranteed quantity of beef from several southern African countries each year through the various rounds of the Lome Convention, which govern EC's relations with the developing world. High agricultural support prices in the EC mean that these countries secure more revenue from this arrangement than if the beef were sold at world prices. In Botswana, for example, about 85% of the national beef production is exported, half to EC countries. Ranching in Botswana has expanded considerably in recent years, and as a result vast areas of natural habitat have been converted displacing indigenous wildlife populations. Botswana's national herd probably doubled in size between 1964 and 1984; overgrazing is widespread and range degradation is common. Much of the land conversion is encouraged by fiscal incentives and subsidised services. Livestock owners receive various benefits from the government: animal health, extension and research services; veterinary cordon fences; subsidies for slaughterhouses; and tax write-offs whereby agricultural investments and running losses can be offset against income from other sources. Having the EC as a guaranteed market simply adds to the list of existing domestic policy distortions that encourage increased stocking rates and natural habitat conversion. According to Veenendaal and Opschor (1986), a relatively small number of large-scale producers receives the greatest benefits from this multiple subsidy.
>
> *Source:* Pearce and Warford (1993)

7   A review of critical issues

While the focus of this paper is on the private provision of 'protected lan
mentioning some critical issues associated with private wildlife management.

Do markets supply biodiversity per se?

Biodiversity is a complex mixture of private, quasi-private and public goods. Biological resources such as meat, fish, timber etc. are generally regarded as private goods; access to reserves, hunting permits etc. as quasi-private goods; and biodiversity *per se* as a public good (see Pearce, 1997 for a discussion of private and public goods in the context of biodiversity). The private sector is essentially providing private or quasi-private goods (game species, wildlife products, hunting, viewing opportunities) and these goods are exchanged in markets. The public good 'biological diversity' is not traded but is being supplied 'f   -users. The question is whether there is a conflict. Are private and public goods complements or do markets for private goods result in less diversity? Is biodiversity a by-product of the supply of biological resources? Taking a closer look at mammal and plant diversity on private land in southern Africa, it is possible to conclude that wildlife production systems vary in the extent that they supply biodiversity *per se.* Surprisingly, and counter to

general beliefs, wildlife enterprises based on non-consumptive utilisation do not necessarily perform better than enterprises based on consumptive utilisation. As stated earlier in this paper, biodiversity is closely linked with the provision of large, coherent areas of natural habitat. Wildlife utilisation schemes that conserve/use multiple free-ranging wildlife populations (species) and contribute to the preservation of natural habitat, can be considered as supplying biodiversity. Private reserves and most game ranches fulfil these criteria. Single-species production systems, however, such as intensive farming of crocodiles probably do not.

An additional issue is whether demand for wildlife-viewing tourism is biodiversity or key-species oriented (high diversity *versus* low diversity), as this is likely to have an impact on private supply in the long-run. Critics argue that some private reserves focus on the provision of key species such rhinos, elephants and large predators. Some others argue that private conservation enterprises should be seen as an additional tool to conservation alongside state parks and should focus on their comparative advantages. A recent survey of tourists in Namibia's Etosha National park examining preferences for wildlife viewing, gives reason for some hope. At least 1/3 of visitors have been identified as demanding diversity *per se* (Krug, 2001). However, the issue of whether markets for biological resources supply biodiversity as a complement is not entirely clear and is worth further investigation.

Is private wildlife management a long-term conservation mechanism?

Critics argue that private conservation is based on markets and since markets are volatile long-term conservation cannot be guaranteed. In fact, falling market prices for wildlife products can in principle lead to the conversion of wildlife habitat back to livestock ranching or farming. It all depends on the relative competitiveness of wildlife as a form of land use. However, experience so far shows that markets have supported the private supply of wildlife habitat over a period of more than four decades. To the contrary, macroeconomic policy and government regulation has often been the main obstacle to private conservation and not markets *per se.* Further, most wildlife enterprises tend to rely on several different species and different markets (e.g. venison production, live game sales, viewing tourism, hunting safaris, non-use values) thereby reducing the overall risk. They are therefore far less at risk than conventional

cattle or sheep farms, relying on a single species and a single market! Additional evidence counter to the belief that private conservation initiatives are short-term measures is the establishment of collaborative nature reserves and conservancies in the region. Both have legally binding constitutions with regulations regarding land use practises, thereby ensuring long-term conservation.

Community involvement, rural development and local employment

Little is known about the contribution of private wildlife enterprises to surrounding communities. It would be a worthwhile exercise to examine to what extent private conservation management contributes to rural development or whether there are potential conflicts. A cursory examination indicates that the impact on local employment is substantial (see Langholz, 1996; Alderman, 1991). Lambrechts (1995) reports that the Mala Mala properties (18,600 ha) within the Sabi Sands Reserve in South Africa employed 220 staff in the early 1990s, 190 of whom came from nearby local communities. These workers have an estimated 2,000 dependents. He further estimates that the number of individuals employed in the private wildlife industry in the former Transvaal province at 12,000 with 100,000 dependants. Experts from the South African Tourism Board estimate that every 11 tourists to a private reserve or ranch, results in the creation of one job.

The Save Valley Conservancy in Zimbabwe provides a good example of the private sector developing a comprehensive community participation and development programme. At the basis of the programme is a Memorandum of Understanding between the conservancy and local communities that sets out mutual obligations to develop tourism in the area in such a way as to maximise the benefits to local communities. As outlined by Du Toit (1999), one initiative that is currently being pursued is the creation of a "community wildlife endowment" to provide a sustainable source for development funds. Through this scheme, the conservancy would use donor funding to purchase wildlife and these would be released within the conservancy, which would provide the land and management required for this stock to grow. The conservancy would then buy the progeny annually at prevailing market prices, with these prices and the annual recruitment being arbitrated by WWF. Thus the initial donor funds would be converted into a kind of biodiversity endowment

which would yield an indefinite and significant annual return for surrounding communities. For those, the concept of an endowment in wildlife is analogous to a heard of breeding cattle being grazed on neighbouring ranchland.

Another important issue worth further investigation and associated with private conservation is how the general population views large-scale private ownership of land and whether there are potential social or ethical conflicts.

8 Conclusions

This paper represents a first attempt to assess the role of the private sector in supplying protected land or 'land under wildlife' in southern Africa. Although only limited information exists on private conservation initiatives, it is possible to conclude that the private sector plays an indispensable role in the provision of biodiversity in the region. A minimum of 14 million hectares of private land is under some form of wildlife protection or sustainable wildlife management. This equals almost half the size of the United Kingdom, or half the size of all state protected areas in the region. Private reserves, conservancies and game ranches protect critical habitat in various regions and play an important role in the protection of highly endangered species including black and white rhino. Consumptive and non-consumptive wildlife utilisation have proved to be economically competitive and environmentally sound forms of land use and have displaced livestock farming on a large scale. In addition, wildlife utilisation as a complementary land use alongside livestock is proving a sound differentiation from pure livestock ranching. Beside the economic benefits accruing to landowners, private reserves and game ranches provide the public good 'biodiversity' at zero cost to the tax-payer. The experience from southern Africa further supports the economic theory that secure property rights to land and wildlife are an essential ingredient in any strategy to conserve and encourage long-term investment in wildlife habitat. It is important to recognise that markets for biological resources are responsible for the private supply of wildlife habitat, and that any policy impairing the relative competitiveness of wildlife as a land use will have a direct impact on the private supply of biodiversity.

The comparison of public and private conservation reveals that the total area of privately protected land is growing, while there is little scope for enlarging the network of public protected areas. Further, state-managed parks face declining budgets, while an increasing number of private reserves are financially self-sufficient. It can be concluded that private management structures are more effective in capturing the economic value of biodiversity, and thereby turning conservation into a competitive from of land use. An issue that will imminently be of importance is whether to pass management of public parks to the private sector or indeed, as is successfully witnessed in South African parks and in Namibia, to form public-private partnerships with biodiversity conservation as its goal and economic capture mechanisms as the conduit.

Considering that much of the economic benefits resulting from wildlife viewing and hunting safaris are based on foreign demand, it can be concluded that the international community is paying for the private supply of biodiversity in southern Africa. The same applies to non-use values, as most donations to private reserves originate from northern countries. This important distinction helps to counter negative domestic incentives for under-investment in biodiversity by the state.

If private conservation continues to prove successful, the role of government in the regulation of the public good 'biodiversity' should be to target the removal of market distortions and barriers to further enhance the private supply of wildlife habitat. Governments should further aim to collect, analyse and disseminate information on the pros and cons of different wildlife production systems and develop comprehensive land policies that include the sustainable use of biological resources as a land use alongside conventional farming.

Annex 1

The modified system of protected area categories agreed at the IV World Congress on National Parks and Protected Areas in 1992

I. *Strict Nature Reserve/Wilderness Area*
Areas of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring; or large areas of unmodified or slightly modified land, and/or sea, retaining their natural character and influence, without permanent or significant habitation, which are protected and managed so as to preserve their natural condition.

II. *National Park*
Protected areas managed mainly for ecosystem conservation and recreation. Natural areas of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for this and future generations, (b) exclude exploitation or occupation inimical to the purpose of designation of the area and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible.

III. *Natural Monument*
Protected areas managed mainly for conservation of specific features. Areas containing one, or more, specific natural or natural/cultural feature which is of outstanding or unique value because of its inherent rarity, representative or aesthetic qualities or cultural significance.

IV. *Habitat/Species Management Area*
Protected areas managed mainly for conservation through management intervention. Areas of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species.

V. *Protected Landscape/Seascape*
Protected areas managed mainly for landscape/seascape conservation and recreation. Areas of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, cultural and/or ecological value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area.

VI. *Managed Resource Protected Area*
Protected areas managed mainly for the sustainable use of natural ecosystems. Areas containing predominantly unmodified natural systems, managed to ensure long term protection and maintenance of biological diversity, while providing at the same time a sustainable flow of natural products and services to meet community needs.

Source: IUCN (1994)

Annex 2   Daily park fees for African protected areas in Nov. 1998 (in $US)*

Country	Non-residents	Non-national residents	Citizens	Fee for a car (once per entry)**
Eastern Africa				
Kenya	15; 20; 23; 27 [5[1)]]	1.7; 2.6; 3.4; 4.3 [1.7[1)]]	1.7 [1.7[1)]]	L&F 3.5
Malawi	15	?	?	F 15 <u>per day</u>
Tanzania	15; 25 [50[2)]; 100[3)]]	15; 25 [20[2)]; 40[3)]]	1.5; 2.2 [2.2[2)]; 2.2[3)]]	L 1.5, F 30 <u>per day</u>
Uganda	7; 15 [175[4)]; 250[5)]]	3.6; 7.3 [150[4)]; 180[5)]]	1.5 [40[4)]; 50[5)]]	L 3.7, F 20
Southern Africa				
Botswana	11.5	2.3	0.5	L 0.5, F 2.3
Namibia[6)]	2.2; 4.4; 6.6	2.2; 4.4; 6.6	1.1; 2.2; 3.3	L&F 2.2
South Africa <u>(once per entry)</u>:				
- Kwazulu-N. NCS[7)]	1.5	1.5	1.5	L&F 6.6
- SA National Parks[8)]	1.8; 2.7; 6.6; 8	1.8; 2.7; 6.6; 8	1.8; 2.7; 6.6; 8	L&F 5.3
Zambia	15; 20	2	2	L 5; F 10
Zimbabwe[9)]	5	5	0.3	L&F 0.3

Notes:
*   - Park fees for adult visitors on a privately organised safari (some countries offer commercial tour
          operators price reductions for their clients)
        - Several park fees are reported for countries with a multiple park pricing policy
        - Fees in local currency are converted at November 1998 exchange rates
**   L = locally registered vehicle, F = foreign registered vehicle
1)   Marine Parks
2)   Mahale NP
3)   Chimpanzee trekking in Gombe Stream NP
4)   Gorilla trekking in Mgahinga Gorilla NP
5)   Gorilla trekking in Bwindi Impenetrable NP (lower fees are charged for stand-by tickets).
6)   Day visitors only - overnight visitors pay no park fees (1997 exchange rate).
7)   <u>Kwazulu-Natal Nature Conservation Service:</u> On top of the park fee, visitors to protected areas in
        Kwazulu-Natal have to pay a community levy. Depending on the site, this levy ranges from $0.2 - $2.2 per
        entry and is used to support development in neighbouring communities. (1997 exchange rate)
8)   <u>South African National Parks:</u> Day visitors pay a daily park fee (for each day they enter). Overnight
        visitors to Kruger NP, Kalahari Gemsbok NP and Richtersveld NP pay the park fee only once when
        entering a park. At all other parks overnight visitors pay no park fee (1997 exchange rate).
9)   Visitors have also the option to pay a park fee covering a period of seven days. This weekly fee is $10 for
        foreigners and $0.6 for citizens.

Source: Krug (2000)

Annex 3   Protected area budgets in Africa

Country	Agency	Budget (US$ 1996)	Protected Area (km^2)	Budget US$/km^2	Mean Area Protected	Per Capita Income
Lower income						
Parastatal						
Tanzania	Tanzania National Parks Association	6,865,081	40,300	170	3,358	140
Government						
Ethiopia	Ethiopian Wildlife Conservation Org.	2,010,326	32,403	62	2,315	100
Zaire	Institute of Zairian Nature Conservation	439,451	100,262	4	5,898	NA
Sudan	Wildlife and National Park Forces	1,087,600	93,467	12	6,676	NA
Total		3,537,378	226,132	16	5,025	100
Intermediate income						
Parastatal						
Kenya	Kenya Wildlife Service	10,159,569	32,726	310	839	250
Government						
Uganda	Uganda National Parks	388,496	8,336	47	1,389	190
Zambia	National Parks and Wildlife Service	1,818,198	80,740	23	1,468	350
Malawi	Dept. National Parks, Wildlife, Tourism	730,684	10,585	69	1,176	170
Total		2,937,379	99,661	29	1,424	237
Higher income						
Parastatal						
South Africa	National Parks Board	46,275,329	34,244	1,351	2,140	3,040
Zimbabwe	Dept of Nat. Parks & Wildlife Mgmt	13,104,074	30,089	436	1,433	500
Total		59,379,403	64,333	923	1,739	1,770
Government						
Botswana	Dept of Wildlife and National Parks	5,590,133	100,250	56	11,139	2,800
Namibia	Ministry of Environment and Tourism	8,562,095	112,159	76	5,608	1,970
Total		14,152,228	212,409	67	7,324	2,385
Africa Summary						
Parastatals total		76,404,053	137,359	556	1,561	983
Government total		20,626,985	538,202	38	3,738	930

Source: James *et al.* (2000)

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