

Chapter 2: Community Wildlife Management in Zambia: Testing Indicators of Sustainable Use in a Case Study of South Luangwa

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The study presents a means of evaluating sustainable using a case study from the South Luangwa Area Management Unit in Zambia as an illustration. It builds on the factors suggested in the analytic framework (Appendix 1) giving more emphasis to processes of sustainability, rather than to the achievement of a particular state. Matrixes are presented for most factors (External/Human Population; and Modifiable factors: Economic – Price-Policy and Market Distortions; Proprietorship: Socio-Political Organization, Resource Governance and Tenure; Management: Organizations and Resources) together with indicators of the processes involved. Indicators have been defined from two perspectives: From an overall assessment of a number of programmes in a region, and of this particular programme. Emphasis is put on social, economic, and political systems, with management of the natural resource seen as being a consequence of these.

The study forwards that the key to sustainable use of wildlife lies in promoting its comparative advantage over other types of land use. Proprietorship, correction of market and policy failures, and management of both human and natural resources are seen as the three main pillars leading to sustainable use. The process of converting wildlife from a nationalized resource into a resource that is privately owned either by communities or individual landholders is recognized as paramount. International funding which secures non-use areas would complement this. Wildlife has a comparative advantage in South Luangwa in part because there are few alternatives. This has been supported through the partial de-nationalization of wildlife resources and the consequent devolution of some use rights to locals. Both individuals and communities benefit directly. This has been recognized through changing attitudes among the local people who now report that they value wildlife, where before wildlife was seen as a nuisance. A notable exception to this is found in attitudes to elephants from which the people receive no direct economic benefits because of international sanctions. Supporting the empowerment process are transparent, democratic institutions that are functioning well in five of the six areas included in the project. Potential threats to long-term sustainability include the interest of national officials in maintaining benefits and management rights for themselves, the need for land use planning at the local level to assure that contingent areas are reserved and enhanced for wildlife, and that issues of equity both within this area and between this and adjacent areas are addressed.

1. Introduction

In 1988, the concept of sustainable use was accepted as an initiative for the World Conservation Union (IUCN)¹. Its use was further popularized within the broader concept of sustainable development during the Earth Summit in Rio de Janeiro (UNCED 1992). Inherent in the concept of sustainable use is a recognition that the majority of the world's ecosystems are in some way being used, and that conservation will best be achieved by making this use sustainable. The concept has proved challenging to evaluate given its inherent inter-disciplinarity, the need to consider processes of change over time/space, and the politicized nature of the debate². In 1999, a Technical Advisory Committee (TAC) of the IUCN SSC Sustainable Use Specialist Group³ created an *Analytic Framework for Understanding the Factors Conditioning Sustainability of the Use of Living Natural Resources* (Annex 1). This framework identifies the primary factors influencing the sustainability of use, and develops indicators for them. Although our study stays within the basic guidelines of the framework's factors, we have felt it necessary to suggest a number of alternative indicators to evaluate the process of making use sustainable in our case, the Community-Based Natural Resource Management Programme (CBNRM) adjacent to the South Luangwa National Park in Zambia⁴. We hope in so doing we have been able to capture additional ideas, many of which are presented in the larger discussion of the framework, but which are less explicit in their actual indicators.

The paper, therefore, begins with a presentation of a revised framework for analysis of sustainable use in CBNRM programmes. We develop indicators at two levels. The first is at the level of the particular wildlife project to assess its sustainability. These are the same indicators that might support management-by-objectives or performance management, a cyclical process that conservationists have termed 'adaptive management'. Second, we suggest a brief set of questions to assess programmes at the next level of resolution, for example, a national or regional assessment of the general sustainability of game-ranching of community wildlife programmes. These two levels of resolution provide practical tools to consummate the higher-level conceptual goals implicit in the analytic framework in the field. Following this presentation, the paper turns to the case itself. This begins with a historical background and is followed by a discussion of the role of contextual factors in the analysis. We then apply the indicators to the case. The paper concludes with a discussion about both the case and our conceptual basis for the proposed framework.

2. Measuring Sustainable Use: A Presentation of the Framework to be Used in this Study

The SUSG Technical Advisory Committee have developed an analytic framework for sustainable use at a conceptual level. We strongly endorse their emphasis on the importance of equity for social sustainability, and the shift in emphasis away from technical biological functions and towards human-related factors, namely: Human population, socio-political and cultural, living natural resource, economic, management, and external factors. At the time of our writing, however, the framework was still undergoing revision. We therefore structured our discussion around a modification of SASUSG's (1996) comparative decision-making framework (see Figure 1).

¹ A resolution supporting the development of guidelines for sustainable use was adopted at the General Assembly as an initiative for the IUCN at the meeting of the General Assembly in Perth (Perth; IUCN 1990).

² Although there have been numerous attempts to establish guidelines on sustainable use, such as the attempt made in Buenos Aires by IUCN in 1993, there is still no consensus due to the complexity of the issue. The International Institute for Environment and Development (IIED) has recently published an analysis of a number of case studies (Roe *et. al.* 2000). For a regional example from southern Africa, see Southern Africa Sustainable Use Specialist Group (SASUSG) (1996) '*Sustainable Use Issues and Principles*'.

³ The IUCN Sustainable Use Initiative was established in 1995 to improve understanding about the factors that affect sustainability. Since that time, sustainable use has evolved from being a somewhat controversial notion to being successfully incorporated into mainstream thinking about conservation. In keeping with this conceptual shift, IUCN has re-organized its work, moving away from a special, stand-alone Initiative towards an integrated approach. SUI was disbanded in 2001, but a Sustainable Use Team (SUT) was formed to carry on this work, synthesizing information and findings across IUCN's diverse programmes. SUT's goal is to disseminate information and knowledge about sustainable use, facilitate analytic and policy contributions from IUCN programmes and members, and develop tools and build capacity for understanding sustainability. A key actor in this effort is the IUCN SSC Sustainable Use Specialist Group (SUSG, <http://iucn.org/themes/ssc/susg/>), an international network of experts operating in 17 different regions. SUT acts as the secretariat for the SUSG.

⁴ The programme is managed by the South Luangwa Area Management Unit (SLAMU).

Our framework acknowledges the primacy of contextual factors (historical, attitudinal, political trends) as these often create conditions where it is possible to do something, or one where the problems and uncertainties in society are so large that they preclude action.

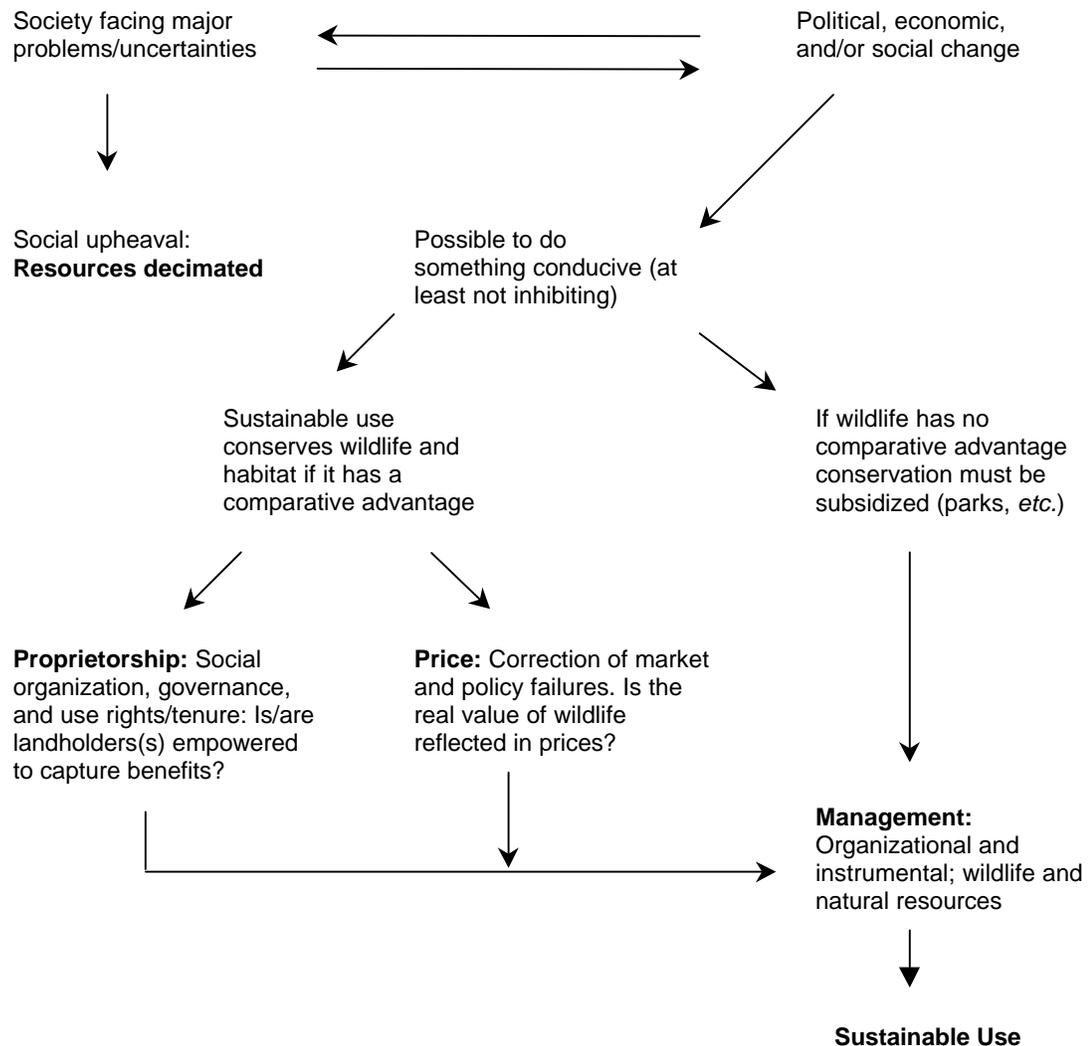


Figure 1: A Decision-making framework for wildlife utilization (adapted from SASUSG 1996).

Referring to biodiversity, Barbier *et. al.* (1994:72) write:

“Market failure occurs if markets fail fully to reflect biodiversity values. This may result from the presence of open access resource exploitation and public environmental goods, externalities (for example, non-market environmental services), incomplete markets, uncertainty, the distribution of income and assets, and imperfect competition. Government or policy failure occurs when the policy interventions necessary to correct market failures are not taken. It also arises when government decisions or policies are themselves responsible for worsening allocation failures that lead to excessive biodiversity loss.”

To distinguish between these two types of failures, our model suggests two possibilities for maintaining wildlife as a land use option: A sustainable use approach and/or a protection approach. The first takes advantage of situations where wildlife has a competitive advantage. Provided economic ‘price’ and social distortions

‘proprietorship’ are corrected, it uses market forces to promote wildlife as a land use option, simultaneously conserving resources and generating economic growth. The second option is where wildlife does not have a competitive advantage, but where outside actors are both willing and able to impose or subsidize their conservation interests. National parks and ‘set-asides’ are often examples of this approach. We endorse the increasing emphasis on the ‘sustainable use approach’ because it helps conserve biodiversity outside the limited number of protected areas, and may also lower the opportunity costs of protected areas (some like South Luangwa National Park could pay for themselves without forgoing biodiversity objectives) thereby releasing resources to protect additional biodiversity. The sustainable use approach has been long neglected, and should be increasingly harnessed to play an important role in conservation. The two approaches should be seen as mutually supportive as they reflect different ways of valuing wildlife by those involved in conservation; those who live in close proximity to the resource, and those removed and appreciating it from afar (see Box 1). While the first approach reflects instrumental, or use values, the second includes non-market economic values such as existence. Often outsiders have tried to impose their values on locals. This may well lead to conflict as the two ways of valuing are often incommensurable. On the other hand, outsiders willing to finance their preservation interest could easily complement local initiatives.

Box 1: Valuing wildlife.

Benefits which are valued:	By whom:	Monetary Value:
Local use of resources	Locals	Low
Hunting concessions	Outsiders	High
Hunting licenses	National, International	Low/High
Tourism	International (Regional)	High
Existence	International	Low

To enhance the highest value of wildlife, there is reason to consider who receives the benefits, and how they can be combined. Although divisions may need to be made in time/space, most of the activities undertaken to capture benefits can be combined. A major problem enters, however, with incommensurate ways of valuing wildlife resources, for example, ‘existence value’ where use is prohibited and ‘instrumental value’ where use defines the value. This is particularly problematic when one group tries to impose its value system on an other – as when the international community imposes ‘no use’ restrictions. This is bound to end in an impasse. High enforcement can be used to impose one’s will, but in the end, the proximity of locals to the resource gives them a great deal of control. Zoning in time and space would allow for all of the types of use to complement one another. A core zone can be set aside for preservation, which may or may not allow for tourism; other areas can be designated for hunting either at all times or only at a particular time of year. Additional tourist activities can have their exclusive areas, too. Depending on the type of tourism, locals may collect resources in these areas, in hunting areas, or in other specially designated areas. Through a meeting of stakeholders, and with careful planning, the land can be divided to allow the highest returns, and the different modes of valuation, to enhance its sustainability.

In approaching sustainable use in this study, we evaluate two sets of factors that govern the economics of resource management: Proprietorship and price. We also emphasise the importance of management, especially the clarification of objectives, regardless of whether we choose a sustainable use or set-aside approach to conservation. This includes management of the resource base, and especially of the actors, institutions, and socio-economic processes involved⁵.

3. Indicators at Field Management Level

Our key indicators are defined from two viewpoints: The first from the perspective of the manager of a specific wildlife use programme, and the second, from the viewpoint of someone responsible for assessing twenty or more

⁵ It is important that ‘management’ be seen in a broad context where it is understood as management of the multi-factor process of establishing institutions and practices that make use more sustainable.

programmes in the region. Using indicators as a management tool rather than for a conceptual framework defined the scope of our analysis and the amount of detail we believed we could afford. Drucker (1973) emphasizes that “...*Too many controls results in loss of control.*” His conclusion from this thought is formulated as a question, “*What is the smallest number of reports and statistics needed to understand a phenomenon and to be able to anticipate it?*” The manager of a particular community programme could probably handle a maximum of five key performance areas each with about five indicators. To provide the manager with some structure, we drew up a matrix for each key performance area roughly corresponding to the analytic framework’s factors, and listed a limited number of indicators chosen from a combined evaluation of efficacy and cost of implementation. For each indicator we added a means of verification, as well as external factors that might effect management. Finally, being cognizant that expensive monitoring would undermine wildlife’s comparative advantage, we estimated the cost of each monitoring instrument where this was possible. The design is a management system to monitor the sustainability of a particular programme. This is described below. The result is a fairly detailed and costly set of indicators that would be impossible to use at the regional level. We return to this broader application in our concluding comments.

There are three factors that need to be assessed when determining if and how positive incentives can be used to promote wildlife conservation. For the sake of simplicity, we code-name these ‘price’, ‘proprietorship’, and ‘management’ (Figure 1). ‘Price’ indicates the potential of wildlife to generate benefits. ‘Proprietorship’ indicates who has the rights to retain these benefits and to manage the resource. ‘Management’ refers to the process of defining and reaching objectives. It includes the responsibilities and techniques for managing resources, and the management and development of the institutions and organizations that control their use. There is a general and growing awareness of the importance of tenure and proprietorship to sustainable use. Less elucidated are the effects of policy and market distortions in under-valuing wildlife. Even more neglected is the aspect of management, possibly reflecting the propensity of conservation skills to coagulate at the policy level.

3.1. Price and Comparative Advantage

This section provides simple indicators to determine if wildlife has a comparative advantage, and how wildlife’s competitiveness can be improved to promote conservation. During the last decade tenure has been a prominent issue, particularly with respect to land ownership. Rights to collect, or otherwise benefit from, resources may or may not be associated with ownership of land. As compared with tenure, recent literature has neglected critical pricing issues. While tenure is about who benefits and has the right to decide about management, pricing reflects market value. In much of southern Africa, for example, the price of beef has been distorted by European economic policy, particularly in the form of subsidies. This directly affects the price of game meat and consequently the interest landholders have in ‘producing’ wildlife rather than cattle. Similarly, agricultural subsidies of such inputs as fertilizer, seed, and machines have promoted this land use option rather wildlife use options. As will be discussed, the historical root of many wildlife pricing problems was the colonial nationalization and centralization of the management responsibility for this resource, but wildlife’s relative competitiveness is also affected by other market and policy distortions that affect prices.

We need first to dispel the impression that a high price is a recipe for disaster for wildlife, and to show instead that it offers an important conservation opportunity provided secure tenure is in place. Incentive-based conservation requires a combination of factors to ensure that (1) wildlife is profitable, (2) this profit benefits the landholder(s), and (3) management decisions – how to manage the resource, who should receive what benefits and how often – are addressed by all of the stakeholders. Problems usually occur when one or more factors are not in place. For example, a high price, without proprietorship, can be catastrophic to wildlife (and represents a lost opportunity for sustainable use-based conservation). This is a major cause of the over-exploitation of Africa’s wildlife where the state’s inability or unwillingness to enforce its legal ownership of wildlife, or to devolve this authority, has resulted in a *de facto* open access resource. Since landholders have no proprietary rights, they have little incentive to manage or conserve wildlife, a result of which is that wildlife is exploited opportunistically and is certainly not protected. The heavy poaching of ivory and rhino horn in Africa has occurred under these

conditions. The fact that poaching losses are rare where landholders have use rights and the incentives to defend their resources suggests that an important condition that allows for poaching is weak proprietorship rather than high prices. Indeed, high prices must be seen as a real opportunity to reverse the long-term decline of wildlife. While banning trade and stopping commercial use may have short-term benefits, in the longer-term such policies will be catastrophic. The majority of wildlife has disappeared because other forms of land use have replaced it, not because it has been poached. Reflecting this magnitude of replacement, some 95% of large herbivore biomass in Africa is livestock. To have a realistic chance of conserving Africa's wildlife, there appears little option but to make it commercially competitive within an institutional framework that ensures landholders have the incentives to husband it.

Kenya provides an illustrative example of a failure to use wildlife's value as an opportunity to conserve it. While private ranchers effectively have proprietorship over wildlife and are allowed to use it under certain conditions, they are restricted to low-value uses such as meat production and are barred from high-value safari hunting. Despite the potential for wildlife to increase profits by an order of magnitude, ranchers prefer cattle: Wildlife remains a minor sideline (Bourne and Blench 1999). Economically, this is neither efficient, nor does it help conservation: Kenya's wildlife resource outside protected areas is dwindling (Bourne and Blench 1999), in marked contrast to areas of southern Africa. With policy changes that encourage rather than bar high-value use (e.g., safari hunting), ranchers could earn more by converting their land to wildlife. Southern Africa's conservation success comes from exactly these types of policy changes, where landholders have been encouraged to maximize the commercial value of their wildlife, provided use is ethical and humane. The primary use is for trophy hunting (Cumming and Bond 1991). Trophy offtake rates are about 1-2% of the species' population compared to growth rates of 10-20%. These conservative offtake rates associated with quality trophy hunting have allowed wildlife populations to increase rapidly. Under these conditions, there have been enough animals for non-consumptive uses⁶ that have been introduced, or added, where they are more profitable⁷. Financial comparative advantage has translated into major increases in the amount of land set aside for wildlife (Jansen *et al.* 1990).

3.1.1. Price Indicators

Table 1 lists four indicators that can be used to determine if the use of wildlife can be economically sustainable. The first indicator is concerned with wildlife's inherent potential to be competitive. The second indicator is concerned with a rough quantification of these market, policy, and institutional failures and their impact on wildlife's ability to fulfill its inherent potential, and suggests how to improve wildlife's competitiveness. Both of these indicators refer to 'financial' values⁸. The third indicator refers to 'economic' or 'social' values, and is a measure of the additional contributions that the use of wildlife can make to society that are not reflected at the level of the landholder. These three indicators reflect the potential of a sustainable use approach to contribute to conservation at a general level. The fourth indicator is more specific. It compares the actual price of wildlife in a specific location to its free-market value, and in doing so provides a measure of net impact of policy and market distortions. To promote sustainable use, it is necessary to unravel and correct these distortions at least to a point where wildlife becomes competitive.

⁶ Ecologically-speaking, the use of the terms 'consumptive' and 'non-consumptive' is misleading, even pernicious. In ecosystems, characterized by the energy flows between trophic levels, these terms even fail to define what is being consumed. In practice, 'consumptive use' such as trophy hunting is far less consumptive of the environment than 'non-consumptive' tourism with its roads, lodges, and tendency to overstock herbivores at the expense of vegetation, soil, and even geological processes. A strong case can be made that trophy hunting is less consumptive and more environmentally friendly than many other forms of ecotourism.

⁷ Murphree (2000), in an example of the Mahenye community in CAMPFIRE, shows how the income from safari hunting has had sufficient impact on this community and its conservation that a tourist lodge could be added after several years, increasing revenues fourfold. However, without safari hunting to start the process, it is unlikely that community conservation would ever have begun.

⁸ We use the term 'financial' in its economic sense to refer to all values, monetary and otherwise, that accrue to private individuals, corporations or communities. 'Economic' or 'social' refer to values that accrue to society. As such, these terms refer to whom these values affect, rather than whether they are monetary or not. These technical uses of these words are rather different from their everyday uses.

Table 1: Price indicators to assess if wildlife has a comparative advantage.

Key Performance Area: Price/ Comparative Advantage					
	Outcome to monitor	Indicator	Means of verification	Cost	Responsibility
General situation in ecosystem of a similar nature (i.e., non-agricultural savannas)					
1	Financial comparative advantage: Does the income from wildlife exceed its opportunity costs?	Financial value.	a. Landholder trends. b. Financial comparisons of wildlife enterprises with alternatives.	Low if the industry is well developed. High if not.	Policy-makers.
2	Magnitude of distortions: If we remove most distortions, does wildlife pay?	Distortions that lower value of wildlife below financial potential.	Research assessments of financial and economic distortion (e.g., policy analysis matrix: Jansen 1990).		
3	Assess who is benefiting from and who is paying for the benefits to wildlife in the area	Social benefits.			Long-term commitments to subsidize protected areas or set-aside arrangements.
Specific situation in a particular case					
4	Assess the price of wildlife and compare it to what it could be in free markets.	Price of wildlife relative to potential in a specific area.	a. Hunting brochures. b. Knowledge of hunting operations. c. Financial appraisal.	Low once price lists are available.	

3.1.1.1. Indicator 1: Financial Comparative Advantage or Value

In affecting land use, we are interested in ‘financial values’ – benefits, monetary and otherwise – that impact the decision-maker(s) who, for the purpose of natural resources, are primarily landholder(s). There is no longer any question that wildlife can be a valuable resource in purely financial terms. This value makes it possible to create long-term sustainable wildlife projects, yet can also contribute to wildlife’s vulnerability where institutions governing use rights are deficient or inequitable. This is the subject of the next section, ‘proprietorship’. Here our concern is ‘price’ or potential relative value of wildlife. Where landholders have the rights to manage, sell and benefit from wildlife, evidence is accumulating to show that it is a competitive form of land use in areas where rainfed agriculture is not viable (i.e., rangeland savannas). The expansion of wildlife populations on game ranches and other agricultural land in southern Africa indicates that landholders are finding this type of land use profitable, a conclusion confirmed by research (Jansen *et. al.* 1990).

3.1.1.2. Indicator 2: Distortions that Lower the Value of Wildlife Below its Financial Potential

In practice, two major distortions lower the price of wildlife. First, when it is managed as a non-commercial asset, it is often taken out of the marketplace, and management is usually overtaken by government agencies. Second, and the subject of the next section on proprietorship, without clear rights of ownership to the wildlife there is no means for those investing their time or resources in wildlife to ensure that it is they (individuals or communities) that can capture the benefits. As a result, exchange of wildlife for other goods is unclear and market prices for wildlife do not evolve. In addition to these primary constraints, the potential for revenue from wildlife to reach landholders is reduced by a variety of policy distortions (Table 2).

The subsidization of other land uses is a significant threat to wildlife. For instance, the growth of the commercial cattle industry in Zimbabwe and South Africa was fueled by large subsidies. Wildlife was eliminated actively and by neglect to make way for livestock. On communal areas, extensive subsidization of non-viable agriculture and settlement had the same effect. For instance, subsidies, in the form of free land for settlement, free schools and health services, free agricultural inputs, roads and other infrastructure, *etc.*, were a major reason for the tenfold increase in human populations in the Zambezi Valley in Zimbabwe, with obvious consequences for wildlife (Bond, pers. comm., Cunliffe 1992). Wildlife was also disadvantaged by a range of legislative actions [for example, health regulations prevented the marketing of game meat; buffalo were eliminated in order to make land available for cattle and to reduce disease risks such that beef could be exported to the European Union, fiscal policies (*e.g.*, over-valued exchange rates), political norms (wildlife misperceived as under-utilization of land where land was a highly political issue) and other factors (Jansen *et al.* 1990; Cumming and Bond 1991)]. Table 2 describes some of these distortions. Despite these many problems, the mere fact of converting wildlife from a nationalized to a privatized resource led to a rapid expansion in Zimbabwe, with the wildlife sector developing from relic wildlife populations on degraded cattle ranches, a far worse situation than that is currently to be found in, for example, Zambia.

Table 2: Price distortions that commonly disadvantage wildlife's competitiveness in southern Africa.

Distortion	Description of distortion
Tenure and use rights	
Tenure and use rights.	Landholder does not have sufficient rights to use and retain the benefits from wildlife so these benefits are either captured elsewhere (<i>e.g.</i> , government; patronage) or are wasted (<i>e.g.</i> , wildlife neither protected nor marketed).
Uses disallowed.	Some uses are disallowed (<i>e.g.</i> , commercial use in mid-Century; most current use of elephants).
Economic distortions from under-valuing of wildlife	
Consumer subsidies.	The provision of cheap access to national park facilities and cheap hunting undercuts landholder initiatives to supply these recreational services by significantly lowering prices (similarities with dumping, for example, of European Union over-production).
Over-valued exchange rates.	Under-price 'exports' such as tourism.
Excessive taxation and fees to government.	Retention of licenses and other fees by central government severely under-prices wildlife. Delays and shortfalls in payments exacerbate this 'taxation'.
Macro-economics	Monopolies, inefficiencies, import tariffs, limited numbers of operators, <i>etc.</i>
Economic distortions from over-valuing or subsidizing alternative land uses	
Rural subsidies.	Cheap health services, education, free land, food relief, free agricultural inputs, <i>etc.</i> , subsidize rural living. This encourages agriculture in unviable areas, to the disadvantage of wildlife.
Subsidized livestock.	Livestock was subsidized for 50 years in much of southern Africa, a major cause of the displacement of wildlife. Removal of these subsidies as white farmers lost power has contributed to the resurgence of wildlife.
Subsidized agriculture.	Subsidized research, extension, marketing, <i>etc.</i> , favor agriculture in areas where it is not viable, displacing wildlife.

3.1.1.3. Indicator 3: Economic and Social Benefits

Many of the values of wildlife are economic, which means they are of value to society as a whole rather than to particular individuals. Existence value is an example. In terms of altering land use practices, these economic values are often inconsequential unless, and until, someone is willing to pay for them. In the past, social or conservation values have been imposed through legislative measures such as the formation of national parks and other restrictions on use, as well as through direct expenditure (*e.g.*, conservation budgets). There is growing concern, however, that the primary beneficiaries are wealthy, powerful, urban people who are not paying for these rights (*e.g.*, of knowing that elephants are safe), and that poor, disempowered, rural people are paying the costs as limited national funds are steered towards conservation budgets rather than towards more valued social uses, such

as education, health, and/or agriculture. We wish to highlight that values that are not of tangible benefit to people living with the resource also have a price. While there are interests looking to benefit at virtually all levels, all do not have the same interest in investing in wildlife. Willingness to pay on the part of those benefiting from non-market conservation values has the potential to increase the competitive advantage of wildlife, but this is seldom manifest in practice. In its absence, solutions are needed which make sense locally. For example, although international agreement is visible through such things as the Convention on Biological Diversity (CBD), it is rarely matched by more than token international commitments to assist in financing these areas, or in compensating the loss of local and national use rights. There is international interest in restricting the rights to use of particular species (such as elephants and crocodile), and in the maintenance of preserved areas in the form of national parks where there are no use rights at all. Despite much rhetoric to the contrary, compensation for the loss of rights is rare. Conservation free-riders benefit from many values of wildlife conservation without paying. While it is fortunate that wildlife is often a competitive resource in financial terms, more wildlife would be conserved if conservation rhetoric were transformed into a willingness to pay. This goes a long way in explaining why a growing number of conservationists, particularly those in the South, support the concept of sustainable use so strongly. In cases where there are discrepancies between costs and benefits of wildlife existence, action will require determining the various stakeholders involved and their means of valuation (see Box 1). Then, through lobbying and international fora, attention can be drawn to the discrepancies in order to bring about policy changes.

3.1.1.4. Indicator 4: Price of Wildlife Relative to Potential in a Specific Area

Differences between the income generated from wildlife in different areas of Africa suggests that severe policy and market distortions are in place. In many countries wildlife resources have been nationalized. This started with colonial governments and extends to the present time. Together with associated patronage, bureaucratization, inefficiency, and politically centralized management, the development of a powerful wildlife-based rural economy has historically been prevented. Other market and policy distortions exist, but are secondary to the pervasive impact of over-centralization and a command-and-control management mentality.

Box 2: First- and second-generation CBNRM projects.

Like many CBNRM programmes, those of the Luangwa Rural Development Project (LIRD; see section 4.1.1.) have evolved from a first-generation to a truly devolved second-generation CBNRM programme.

In a first-generation CBNRM programmes:

- Devolution is only partial.
- People and communities are not trusted to make sensible decisions. There is a middle-level government body that ratifies their choices.
- They invariably evolved in second-generation projects because they do not really work.

Second-generation CBNRM programmes:

- Generate real grass-roots participation and empowerment by devolving revenues to communities.
- Encompass principles that ensure full participation in a democratic, transparent, and accountable system.
- Depend heavily on scale since all members of a community institution should be able to meet face-to-face.

These problems were common to the ex-colonies of southern and eastern Africa. The major breakthrough in expanding wildlife occurred where enlightened bureaucracies recognized that landholders were best placed to manage wildlife. Consequently, some countries and programmes 'privatized' the wildlife resource, catalyzing what can justifiably be called a sustainable process. Game-ranching in southern Africa, and second-generation CBNRM programmes like CAMPFIRE⁹, are examples (for an illustration of first- and second-generation programmes, see Box 2). However, others continue to manage wildlife as a nationalized resource in what is ultimately an unsustainable situation, but with a few well-publicized concessions towards community-management, particularly with references to 'participation'¹⁰. Indicators of sustainable use should be designed to

⁹ The Communal Areas Management Programme for Indigenous Resources (CAMPFIRE), located in Zimbabwe.

¹⁰ The concept of 'participation' has been used by the development community to mean a wide range of different things. Pretty (1997) describes

discern actual from rhetorical differences. Where there are large differences in price, management systems and policies need to be analyzed in order to determine what factors are causing wildlife to be under-valued.

3.2. Proprietorship: Socio-political Organization, Resource Governance and Tenure

The previous section asked the question: Is the real value of wildlife reflected in its price? This section asks: Do the benefits, including rights, reach local landholders? A key factor in the success of sustainable use in southern Africa has been policies that maximize the share of benefits to landholders (not users, although landholders may also be users). This central issue of proprietorship concerns benefits but is also about whether landholders have the necessary authority and rights to use and manage wildlife to generate these benefits. On private land with a single or corporate owner, once owners have received these rights, this analysis does not need to go much further because questions of management and retention of benefits are relatively straight-forward. However, on communal lands with communal management regimes, we still have to assess questions of equity, group decision-making, benefit-sharing, organization and governance of natural resources. These may be further complicated where there are co-management arrangements with government agencies and protected areas. This is not to suggest that single, private landowners are better. On the contrary, characteristics of wildlife as fugitive resources suggest the need for accommodating all these ways of owning, dependent upon both how land is owned and on the particular species and the way that it is valued (see Box 3). These considerations require an analysis of how institutions and organizations translate wildlife benefits to the community, and how this affects the incentives and ability of communities to organize themselves to conserve wildlife.

Box 3: Characteristics and valuation of wildlife suggest the context for how wildlife can be owned and managed.

Characteristics of wildlife as fugitive resources create part of the context determining how animals can be owned. Some animals have limited home ranges and can be associated with a particular area. On the other extreme are highly migratory species which make use of large land areas throughout the year. In addressing questions of use, management and ownership, it is necessary to “...disaggregate resources and ecosystems into categories determined by their managerial requirements” (Murphree 1999:3) as well as by their economic value. The ability of some species to cover large distances means that location is unpredictable, and that while animals may decimate crops in one area they may well have moved to another during tourist or hunting seasons. To distribute both the costs (for management and control) and benefits of migratory, highly valued species more equitably, it is necessary to bring affected actors together in defined groups. Rather than one type of management system for all wildlife, this suggests ‘cascaded institutions’ where the lowest possible management level is the preferred (Martin 2000). This suggests that while relatively low-value animals with a limited range may well be managed/owned by an individual or limited number of landholders, more migratory and higher value species require cooperation among landholders. Given divergent interests among affected actors, highly migratory and/or valued species may well require co-management between national authorities (representing public interests, state owned land and groups of local actors) both because of the size of their range and because of costs of monitoring and enforcement will be relatively high.

3.2.1. Indicators

The indicators proposed to assess institutional and organizational arrangements are fairly straightforward. Does wildlife revenue get back to the communities who generated it? When it is returned, do people have the rights to allocate these benefits to their highest valued uses (including private-individual benefits), and is the organizational and institutional system in place to ensure that their choices are implemented? Finally, we must ask whether communities have the rights not only to benefits (allocating benefits), but also the authority to choose how to use and manage wildlife and who to sell it to in order to optimize these benefits. As can be seen from Table 3, a few

programmes ranging from informing locals of planned objectives through a community defining its own priorities, how projects will be carried out, and how benefits will be distributed. All of the degrees of participation he presents can be found with respect to different wildlife projects. We would argue that second-generation CBNRM projects strive towards being examples of the most developed of these. In addition to local participation in a particular project, is the larger question of nationally recognized rights to representation and development. Often referred to as questions of democratization, these rights also lie at the heart of long-term sustainability as rights to wildlife are often captured at the national level, both with respect to who is to benefit and who is to manage the resources in question.

relatively simple indicators answer these questions. What is more complex, however, is to address the causes lying behind these indicators in circumstances where communities are not benefiting. Since this invariably involves devolution, and the shifting of political and economic power, it entails a process that is fraught with conflict. Good management of CBNRM programmes lies in resolving these conflicts while following the principles of subsidiarity (Handy 1995). This often involves displacing free-riders, people or organizations that are benefiting from wildlife without necessarily being either responsible or accountable for its management.

Table 3: Indicators of ‘proprietorship’.

Key Performance Area: Socio-political organization, resource governance, and tenure				
Key assumption: Benefits captured from wildlife at the level of the local landholder(s) need to exceed the opportunity costs of wildlife or it will be replaced. Benefits include income, products, democracy, empowerment, proprietorship, <i>etc.</i> Landholders include ranchers, communities, <i>etc.</i>				
	Outcome to monitor	Indicator	Means of verification	Assumptions or external factors
Rights to retain benefits				
1	What proportion of the benefits from wildlife goes to landholders?	Socio-political organization, resource governance and tenure.	Hunting records (locations and prices). Records of what is earned (e.g., trophy number and price) and what is received in any one area.	Privatize/de-nationalize wildlife: a. Long-term: National policy, or enabling legislation. b. Short-term: Enabling administrative arrangements.
Sound institutions in place to optimize use of benefits				
2	Communities have the right to choose how to use benefits, including the option of individual dividends.	Percent of revenue allocated as personal cash. Record of decisions made regarding benefit allocation.	External monitoring of revenue distribution meetings.	
3	The system for making decisions is democratic.	Face-to-face community meetings to make decisions and receive reports.	External monitoring of process until rights are entrenched.	Sound community organization and framework conditions
4	Checks-and-balances are in place for communities to ensure that management actions reflect their choices.	Institutions to ensure transparency and accountability so communities can check that their priorities are followed.	Sound procedures (e.g., constitutions, guidelines). External audits of finances and projects. Quarterly report by committee to community.	Monitor US\$15-20,000 annually.
Rights to manage wildlife to best advantage				
5	Communities have the rights to decide how to manage wildlife, including how and to whom to sell it.	Landholder(s) has/have the right to manage (use/sell) wildlife to best advantage.	Landholder(s) controls business plan – including governance of resources. Landholder(s) conducts sales (open, competitive) with government’s role limited to oversight and advice.	
For long term sustainability				
6	Devolution (fiscal empowerment, use rights) is entrenched in law and practice.	General practice.	Legislation and policy. Devolutionary/governance philosophy (visions, values) of lead organizations.	
7	Gradient in devolution cannot greatly differentiate one program from another: Politically (or have insufficient support). Wealth (or obtain influx of people).	Number of areas involved with: a. No CBNRM. b. First-generation CBNRM. c. Second-generation CBNRM. Relative levels of income.	Comparison of policies as in 1-5. Socio-economic assessment and migration trends.	

Table 3 illustrates the indicators for monitoring the progress of the CBNRM programmes. The first four indicators assess whether benefits are getting to people, and whether the management of these benefits is sound and follows the democratic will of the people. There is an underlying assumption that efficiency, democracy,

transparency, accountability, and equity are important components of sound organizational systems essential for sustainable management. The fifth indicator assesses whether landholders have the rights to use wildlife to their best advantage. The sixth and seventh indicators assess whether the system can survive in its broader political and demographic environment. For land managed by a single entity, be it a person or a corporation, this analysis would be much simplified and limited to the first and fourth indicators: The rights to retain revenues and the rights to decide how to use wildlife.

Property rights represent the other side of the comparative advantage coin. As before, the underlying assumption of the sustainable use paradigm is that the more wildlife benefits exceed opportunity costs, the greater the likelihood that land and resources will be set aside for wildlife. Having shown how market and policy distortions devalue wildlife, here we emphasize indicators that measure what proportion of value and rights gets to landholders.

Wildlife's legacy is an economically disastrous tendency to share benefits widely in a pattern unrelated to investment. Sharing benefits amongst a whole district, or using the majority of benefits for social investments, would never be accepted by crop or livestock producers. To make resource allocation more responsive to economic signals, benefit must reflect investment. The first indicator, which reflects the 'principle of producer communities' (Murphree 1988) measures this: What proportion of the revenue earned in an area is returned to that area? Obviously, the greater the rights to retain benefits locally, the stronger the economic signals.

The right to choose how to allocate benefits, and to receive household cash, has important implications for how wildlife revenues are valued (indicator 2). It is not enough to simply allocate revenues back to the producer communities: The way it is done has a critical bearing on its perceived value. For instance, Zimbabwe's WINDFALL programme failed in its main objective of conserving wildlife. Although it returned benefits to District Councils to construct social projects, people were not involved in these decisions and could not differentiate these from other government projects. The link between wildlife and benefits was not clear (Metcalf 1995). The top-down allocation of wildlife revenues devalues them in the communities' eyes. Additionally, many of the pioneering wildlife programmes failed to create the local capacity and institutional evolution associated with more modern approaches. The right to choose how to allocate wildlife revenues, including the choice of personal benefit, is vital both in terms of the magnitude of perceived value and emerging resource governance. The right to choose creates a sense of proprietorship, and allocates benefits to highest valued uses.

The third indicator concerns democratic, transparent, and participatory decision-making. Full, active participation in using wildlife revenues ensures that communities value wildlife benefits as their private-community asset (indicator 3). It is not sufficient that the communities are fully involved in deciding how to use revenues; they must also be included in management. Regular reporting so the community can follow what is being done must support this. For example, the quarterly reporting to general meetings built into the procedures in our case study has been important for ensuring that subsequent use is efficient, transparent and accountable, and for taking corrective actions where necessary (indicator 4). Democratic choice and accountability are important factors in the social sustainability of community organizations. Where people have little influence over prioritization of projects or where choices are imposed on them (indicator 3), and where committees or leaders do not account for money or explain why projects are not being implemented (indicator 4), organizations are apt to break down in suspicion and disinterest.

3.3. Management of Institutions and Organizations, and of Natural Resources

The translation of conceptual progress into field-level change is limited by the tendency to overlook the importance of management, so we again emphasize the centrality of management, the step-by-step process of moving towards agreed objectives. Management is especially important for guiding the dynamic, multi-disciplinary, and complex process of making use more sustainable. And, the management process depends on the use of indicators to measure and control dynamic processes towards objectives. The complexity of transforming

rural poverty into sustainable growth often overwhelms managers with detail, and results in managers becoming responsive to daily crises rather than strategically proactive.

We emphasize the importance of management at several levels, including managing the process of institutional, social, political, economic, and organizational change; managing the team that supports the community programme; and management of organizations and projects within the communities themselves. Management of both the resources and the people that value them is a critical mechanism in any efficient and sustainable system. Progress towards sound CBNRM and sustainable use is enhanced by good process management. It is somewhat surprising, therefore, that the lessons from business management have hardly penetrated the worlds of sustainable use and community-based conservation.

3.3.1. Indicators for Organization and Resource Management

3.3.1.1. Organizational and Institutional Management

Ineffectiveness of conservation is often linked to a determination to control processes through proscriptive legislation and regulation. As Murphree (1999:2) writes: “...*regulation is comprised of a set of incentives, both negative and positive. Incentive is thus the fulcrum of regulation.*” Just as laws are not sufficient to ensure equity or democratization, neither are they sufficient to ensure sustainable use of resources. The dynamic process between the local situation where the resources are, and the national and international levels where rules and policy are often made, is enhanced by positive inducements. Experience shows that mechanisms relying on negative incentives with high enforcement costs are historically unstable. The fact that our case study is to a large extent based on incentives and transparency, and works without a strong legal basis, lends us some confidence in its sustainability. In the same paper, Murphree notes: “*The further down the hierarchy of scale we go the closer we get to hands-on management and use. And it is here that the determinative decisions on use are made. At these levels decisions are personal rather than abstract, they are operational rather than propositional, they emphasize positive effort rather than passive compliance, and their implementation is direct, carried out by those who make them*” (*ibid.*:4).

Table 4 shows indicators of sound organizational and institutional management at two levels. In defining indicators, we must consider how they will be used, and what this costs. Monitoring (of indicators) is central to management and is particularly effective if built into institutional checks-and-balances (*e.g.*, community incentives at general meetings). The first set of indicators is concerned with community institutions. Is there an enabling environment for devolved natural resource management? Are democratic, accountable, transparent and equitable community institutions in place? Do they know where they are going? The means of verification suggest the tools for monitoring compliance with these requirements that also assess whether policies and institutions are working as hypothesized, and where changes may be needed to attain agreed objectives. Good indicators of the underlying socio-economic processes are the quality and trends in community capacity to manage finances, projects, democratic organizations, and wildlife. Often progress in particular programmes can be attributed to particular members of the staff responsible for training and monitoring progress. Their effectiveness depends on clearly defined objectives and milestones for community transformation, and management controls to ensure steady progress towards these goals. Because of the usual necessity of external intervention to catalyze change, we have included in Table 4 two indicators by which to judge the effectiveness and efficiency of intervention, namely whether clear goals and performance management systems are in place. For details of the management system and its results, see Child *et. al.* 1999.

Table 4: Indicators of both organizational management and resource management.

Key Performance Area: Organizational management and resource management			
	Outcome to monitor	Indicator	Means of verification
Sound management of organizational change and capacity-building processes			
1	Sound CBNRM policy in place (presupposes we have effective principles).	Policy and related procedural guidelines in place and followed.	Documentation of policies and guidelines. Systems to monitor compliance with principles.
2	Sound community institutions in place (transparent, democratic, participatory, accountable community organizations).	Monitoring of compliance with procedures. Organizational and institutional status and trends.	Financial and project audits. Procedural audits (revenue distribution, participation, elections, <i>etc.</i>). Monitoring of participation, implementation, ability to manage projects and natural resources (POMS).
3	Communities have clear objectives.	Community agreement and monitoring of short- and long-term goals.	Documentation of community decisions on short- and long-term goals. Annual reports or assessments to compare status with plan.
Sound process management system in place (i.e., CBNRM Section of Project)			
4	Community transformation program has clear goals.	Statement of goals available.	Document.
5	Performance management system linked to goals is in place.	Regular work plans. Regular assessment of performance relative to work plans.	Annual work plans. Quarterly/annual reviews.
Sustainable resource management (when primary use is recreational trophy hunting)			
6	Status and trend of wildlife populations.	Number and trends of key species.	Aerial surveys. Ground counts.
7	Status and trend of species and cohorts being used.	Trends in trophy quality.	Measurement of all trophies shot.
8	General size and health of the ecosystem.	Size and fragmentation of the habitat. Status and trend of herbaceous vegetation (indicative of crucial plant-soil-water relationships).	Remote sensing every 5-10 years. Simple, repeatable transects.

3.3.1.2. Managing the Wildlife Resource

Sound ecological management presupposes the existence of a sound management authority, though this has been ignored in the past. Once such authority is in place, we can begin to discuss the intricacies of wildlife management itself. Where the primary use of wildlife is safari hunting it is relatively easy and cheap to monitor the sustainability of the resource base. Monitoring of trophy quality is usually enough, given the robust nature of trophy hunting, and the internal feedback mechanism between trophy quality and client satisfaction. This monitoring is simple. A useful indicator of the net impact of poaching and protection measures is the status and trend of wildlife populations (indicator 1). Where poaching is a problem, wildlife population trends are too crude for day-to-day management. Patrol reports (number of poaching incidents per unit of patrol effort) is a more refined indicator.

The greatest long-term threat to wildlife is loss of habitat. Here a crude indicator suffices (size and integrity of wildlife habitat as measured by remote sensing) though preventing change often requires local level information and action, for instance, persuading a chief from settling new immigrants in an important wildlife area. Where over-population of wildlife, or fire, are suspected to be problematic, simple transects to measure the health of the grass-soil layer are useful since this is indicative of the general health of the ecosystem.

While the indicators in Table 4 will tell us if the system is ultimately sustainable, more complex processes drive its sustainability and, as managers, we need to understand and monitor these. For instance, expanding the resource base requires anti-poaching measures as well as investment in the resource (*e.g.*, provision of water, restocking), in infrastructure to support the wildlife business (*e.g.*, roads, new lodges) and in new business opportunities for using the same resources (*e.g.*, additional tourism outside hunting season).

3.4. Contextual Indicators

The context in which resources can be used, managed, and owned includes historical processes, attitudes, political trends, governance, and the characteristics of the resources themselves. Like the analytic framework, we find these difficult to define to the level of an indicator. We opt instead for a description of the circumstances affecting, but out of the control of, the managers of a particular situation, namely our case study. This allows us to judge whether these managers can achieve progress towards sustainability as measured by the indicators internal to their management, or if certain external conditions make progress unlikely. Examples of these include war, political strife, highly degraded resources, and historical control over particular resources.

3.4.1. *Historical Context of Wildlife: The Beginning of the ‘Nationalization’ Problem*

Historically, wildlife has always been an important resource in Africa, providing meat, skins and other products. Traditionally meat would have been divided between everyone in a village, while use of scarcer, durable, or more sacred skin, such as a leopard’s, was often the exclusive right of leaders/headmen (Dowling 1968:505, Barnard and Woodburn 1988/1997:25). Generally speaking, this was the type of situation colonists encountered upon their arrival in Africa. But they did not recognize it – instead seeing what they believed was a virtual ‘Garden of Eden’ – an abundant wilderness, unregulated and unspoiled by people. With a frontier mentality, colonists treated the wildlife as an open access resource, using it to subsidize their early ventures into agriculture or mining¹¹. As a reaction against the excesses of the period, and in response to general trends in Europe and the United States to preserve wildlife and wilderness beginning in the later part of the nineteenth Century, national parks were created, commercial use was banned, and traditional users of the resources were forced from their land and labeled poachers. (Grove 1996, Naughton-Treves 1999, Neumann 1998). The wildlife resource was effectively ‘nationalized’ and usually taken out of the marketplace, laying the foundation for many of the governance, policy, and market distortions we face today. The state claimed legal ownership of wildlife, removing it from the sphere of private stewardship by individuals and/or groups. Political elites then captured the power and benefits of these resources, leaving only weak, usufructural rights of land to local people (Murphree 1999:7). Parks flourished briefly, but given the pressing needs of newly independent governments, they were soon neglected to the further detriment of wildlife populations. As a cumulative result, in most areas, if the wildlife was not actively eliminated, it disappeared through neglect. Wildlife had effectively become an open access resource, the exclusive property of neither individuals of communities.

Gibson (1999) gives an excellent description of the political economics of this process in Zambia. As happened throughout Africa, wildlife subsidized settlement and other activities during the ‘frontier’ period. And this was followed by European settlers who pursued a ‘protectionist’ philosophy, establishing protected areas and limiting hunting by native Africans, but often not their own. They ‘nationalized’ the wildlife resource, a situation that individuals in weakly accountable post-colonial hierarchies used to their advantage. Wildlife was converted into a ‘patronage resource’ for politicians and officials, and was often used without management responsibilities being met. Wildlife declined through ‘legal’ use by politicians and officials and ‘illegal’ use by local people, with no one having incentives to husband it. Centralized command-and-control management clearly failed. The challenge facing the present generation is to return the authority, responsibility and benefit to landholders, usually local communities, long alienated from their wildlife resource. This de-nationalization and re-valuing of the wildlife resource is hindered by a political-economic system dominated by a small elite which benefits from the *status quo*,

¹¹ See, for example, Beachey (1967) on the history of the ivory trade.

and by an international climate that is reluctant to encourage the commercialization of wildlife. Both of these free-riding beneficiaries resist the emerging paradigm of locally controlled use, regardless of the inexorable decline associated with the present systems.

Zambia's general development and governance problems are important to our case study, though on the positive side is the country's remarkable ability to avoid the civil strife that has affected most neighbors. This stability is important for wildlife tourism, and to a lesser extent safari hunting, which has a clientele sensitive to political unrest, disease, poor safety, and poor management. Both industries are expanding in the region, as well as in Zambia more generally, though Zambia's tourism sector is small despite an exceptional natural endowment of wildlife spectacles. Its huge potential is limited by an uncertain investment climate, a small and relatively expensive economy, and a poor service infrastructure with most areas being difficult and expensive to access. South Luangwa is Zambia's premier destination both because of the quality of the wildlife resource and because of its airport, though the area receives only some 6,000 guests annually. Poor road infrastructure limits tourism, shortens the season (April – November), and raises costs substantially.

Zambia has been criticized for weak governance with little accountability to the people. Corruption, patronage, and vying interests hinder rather than promote the conventionally accepted processes of policy discussion and formulation needed to reform and expand the wildlife sector. Consequently, one cannot expect conventional approaches of policy reform to work. In common with the other case studies in this book, reform is likely to be opportunistic, following the emergence of leadership that may emanate from a number of places, including government itself, communities, non-governmental organizations (NGOs), civil society, and donors. In this respect, South Luangwa is exerting positive pressure by providing working examples both of a well-managed park and of a rapidly evolving community wildlife programme. Yet this also places South Luangwa in a position of some risk, since it breaks with the national, politically accepted *status quo*. The project's outcome is therefore uncertain: It could provide the impetus for more general change, or it could be undermined to stop such change from happening.

This emphasizes the importance of political and policy sustainability. While we agree with the analytic framework in that long-term sustainability requires national policy and legislation that promotes equity, policy change seldom derives from a neat top-down process conceived by policy-makers. In our case study of South Luangwa, a devolutionary wildlife policy was initiated by a mid-level semi-government body (the original LIRD project: See next section for history). The gains this brought to the community provided grass-roots support to defend this devolutionary policy, but because local people are politically marginalized the process had to be supported by people both inside the government system as well as actors from outside. In the absence of political mechanisms accountable to local people, the donor provided an important voice and transparency mechanism for defending community gains against interests that sought to dismantle the progress made. Thus changes in policy and practice have been initiated by pilot examples, and maintained by a coalition of local people, a project, some government officials, and a strong donor. However, long-term sustainability requires that these policies be institutionalized, perhaps even that the governance culture evolves to support them (North 1990).

As we will show, this case study adds to the slowly mounting evidence that the devolution of rights to rural African communities at a scale that allows face-to-face decision-making and accountability, in conjunction with an institutional form that incorporates the principles of democracy, transparency, equity, and accountability, might significantly improve livelihoods and the governance of both development and the environment. In short, were villagers to take over the civil and administrative functions of the state according to principles of subsidiarity¹², things would get better. But here we come across the problem of state failure, whereby institutional structures that result in lower net benefits to society are tenaciously maintained.

¹² Handy (1995) provides a highly accessible and convincing argument of the importance of subsidiarity, or reverse delegation, for improving the performance of organizations and institutions. He soon delves into support of federalism in close support of the theme of this paper: That a nation that devolves much power to communities functions better than one that clings to centrality. Indeed, the general business literature on devolution has much in parallel with our field of community-based management.

We gain hope from the fact that the movement to decentralize and privatize wildlife management through the transfer of use and management rights to landholders is a regional impulse, and that this peer pressure will help to maintain the progress made. This new conservation paradigm was discussed as far back as the 1950s, and first initiated in Zimbabwe and Namibia in the 1960s and 1970s on private land (see, for example, Child, G. 1995 and Child B. 1996). It proved highly successful on large tracts of private land, with the wildlife industry and wildlife populations expanding rapidly. The CBNRM movement is an attempt to transfer and transform similar types of rights to communal lands (Rihoy *et al.* 1999), with the major challenges being the development of institutions and capacity for community management.

It is our belief that the conservation approach, epitomized by current limited interpretations given to implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), is a serious threat to conservation initiatives based on sustainable use programmes. The international community has been restrictive with respect to use rights they believe should be devolved. For example, crocodiles and elephants are the most damaging animals in the case study area, and both can easily support use. The crocodile population is large, and people are regularly wounded or killed. Elephants, although reduced from an ecologically unsustainable 35,000 to 5,000 by poaching in the 1980s, are now at about carrying capacity (10,000 animals) and expanding rapidly. Some US\$400,000 is spent on law-enforcement annually, largely to protect elephants. At the same time, there is considerable pressure from the communities to kill elephants as the expanding population increasingly raids fields (about 10 are killed each year as problem animals, though the demand is far higher than this). Trade restrictions and pressures, however, prevent/greatly hamper the commercial use of both elephants and crocodiles. Taking elephants out of the economic equation, even in our case study where they are relatively unimportant reduces potential community income levels by about 40%. Local people are well aware that, unlike most other animals, the costs of these species exceed their benefits. Given their high international value, protecting elephants requires sound law enforcement. However, maintaining a social base for law enforcement depends on local benefit and proprietorship. In the present inequitable situation, where local people are excluded from benefit and where decisions about elephants and crocodiles that rightfully belong to them are taken in international forums, it is difficult to predict the long-term future of these species. Inequity breeds resentment, which could cause a backlash against all wildlife. The high level of resentment about elephants is a constant feature in otherwise positive community meetings in the case study area. An important external factor, therefore, is the role of international conservation policy in the somewhat arbitrary placement of a community's wildlife resource into worldwide categories, which can have major financial implications for rural people (see Box 4).

As in many other places, the rhetoric of CBNRM was adopted in Zambia, too. Our case study is one of several Zambian programmes, though it is considerably more devolutionary and sophisticated in terms of institutional development. Since the inception of the more national ADMADE¹³ community wildlife programme in the late 1980s, there has been a partial shift towards community benefit. Donors have recognized this and funded community wildlife programmes in Zambia. Assessing our case study's sustainability requires that we understand who gains from wildlife, and the delicate political balance between various stakeholders. Many of the hunting concessions are owned or backed by politically powerful people ('frontbenchers'). Their benefits were threatened by poaching, either by local people or by the abuse of hunting permits by the next tier in the political hierarchy ('backbenchers'). In the late 1980s, the ADMADE programme reversed a situation of total centralization of benefits by returning some money from hunting to local communities. While government still kept most of the money, it provided 20% to employ locally co-opted village scouts to protect hunting concessions and 17.5% for community benefits in the form of projects chosen largely by the chief. ADMADE has been reasonably effective at protecting the resource base and the wildlife through a Village Scout programme and quota monitoring. However, it opposes the distribution of cash to households, thereby avoiding the empowerment and democratizing impulses associated with this. In

¹³ Administrative Design for Game Management Areas (ADMAGE).

short, the ADMADE programme co-opts the traditional chief and improves law enforcement, but without benefiting or empowering the majority of people in the communities. This benefits concession holders (Gibson 1999) without empowering the communities that might question and/or threaten this *status quo*. It is hardly surprising that the official circles that have sanctioned ADMADE are seldom supportive of further devolution, and it will be interesting to see if South Luangwa will succumb to this pressure to recentralize, or will catalyze other community programmes towards greater devolution¹⁴.

Box 4. Elephants: Whose right to decide?

The human-elephant conflict has been shown to be a growing problem in Africa (Hoare 2000). In 1998, locals in South Luangwa marched on the Park Warden's office demanding that more elephants be shot. Elephants, they claim, are the animals that cause the most damage, yet they are the only species that the local people cannot use. Locals have expanded the definition of a problem animal to be a problem species. Elephants are perceived of as both a potential threat and a burden. And this threat is not offset by economic benefits derived from hunting licenses as it is with buffalo, lion or leopard.

The general position of the Zambia Wildlife Department is similar. It recognizes that the elephant has the potential to be a large money-earner, as licenses to hunt them generate high trophy prices. Allowing locals to capture this value may actually increase the area where elephants are allowed to roam. But national policy in Zambia proclaims the opposite view. Politicians at the national level appear to be more influenced by, and accountable to, international NGOs than they are to local communities.

Africa is split with respect to the question of lifting the ban on commercial ivory. In areas where there are sustainable populations of elephants, there is a potential for trade which could provide substantial funds for conservation through trophy hunting and the sale of elephant products. At the 1998 CITES meeting, Zimbabwe, Namibia, and Botswana met conditions necessary for moving elephants in their respective countries from Appendix I (threatened with extinction) to Appendix II (potentially threatened) with the result that they were allowed a one-time sale of ivory resources to Japan (Mofson 1997). Zambia and Kenya, both with decimated elephant and rhino populations, continued to argue for the ban – in part to ensure continuance of donor funding to conservation projects and wildlife departments (these positions were seldom supported by grass-roots communities). International tourists, many of whom support international environmental groups, have on occasion threatened to boycott countries that allow hunting of elephant. Ironically these are the countries that have managed to successfully conserve sound elephant populations. Safari hunters are unlikely to follow suit. Given the lack of benefits and the substantial costs, locally there is little support for elephants. Similarities can be drawn to the debates about wolves in America and Europe (See, for example, Sharpe *et. al.* 2001).

At the CITES meeting (COP11) held in Nairobi, Kenya (10-20 April 2000), the focus was again on elephants. Many looked to this meeting as a test of the political support for the concept of sustainable use – whether the argument is swung by scientific and economic arguments or by the preferences of international preservationists' interests for particular species. (See, for example, Hutton and Dickson 2000a,b.) Significantly, during the meeting, the CITES Secretariat publicly rejected extreme animal rights groups' claims that legal trade in wildlife leads to poaching and illegal trade. The outcome of the meeting, with respect to elephants, was again a compromise. The elephants of Botswana, Namibia, Zimbabwe, and now South Africa, have been retained/listed on Appendix II, with trade now allowed for all elephant products except ivory. While sustainable use supporters celebrated a foundation laid for the future possibility of renewed trade in ivory, preservationists claimed that they have gained increased time to prepare their continuing fight against the ivory trade.

4. The Case of South Luangwa

4.1. Historical Development

¹⁴ While we note that the beneficiaries of the *status quo* will be a strong constituency against reform because they fear the loss of their special advantages, we see corruption as a symptom that something has gone wrong in the management of the state (Rose-Ackerman 1999), and not an indictment of the people who have little option but to conform to the system to survive. What we lament is the entrapment of the system in a corruption-inefficiency loop. The majority of the people in the system would far rather work in open, transparent systems, and would be better off doing so, but the transaction costs of converting from a corrupt and inefficient system to a performing one appear insurmountable. The LIRD project is a microcosm of this large change, and confirms the advantages of making this transition. But there are questions as to whether it can survive unless the whole system changes, and as we have just noted there are serious worries about the nation doing so.

4.1.1. *The Luangwa Integrated Rural Development Project (LIRDP)*

The Luangwa Integrated Rural Development Project (LIRDP) was initiated in the mid-1980s as a response to heavy poaching which reduced elephants from 90,000 in 1975 to 5,000 by 1988. LIRDP linked poaching to the impoverished circumstances of people residing near national parks, noting that these people were used by outsiders to poach or trade in wildlife products for token payments. The rationale of the project was the belief that natural resources (especially wildlife) could only survive if the livelihoods of local people could be improved. Acting as a mini-government, LIRDP set out to manage the 9,050km² South Luangwa National Park and to provide a range of services to the 50,000 people in the Lupande Game Management Area. Law enforcement expenditure of about US\$500,000 annually allowed over 20,000 patrol days, and brought rampant poaching under control such that elephant populations recovered from 5,000 to 10,000 by the turn of the Century¹⁵. Rhino, however, were eliminated before the LIRDP intervention.

Within its US\$2.5 million annual budget (1988-1992) financed by the Norwegian Agency for Development Cooperation (NORAD), LIRDP also attempted to improve agriculture and food sufficiency through on-farm research, agricultural extension, credit, and the provision of food relief. In addition, it was involved in road building and transport services. By 1995, LIRDP recognized that it could never meet its goal of financial self-sufficiency if it remained primarily a provider of social services, since NORAD funding was not indefinite. It therefore restructured, defining its core business as wildlife management. Since that time, the annual donor contribution has fallen from US\$2,000,000 to US\$500,000 and continues to be reduced by approximately US\$100,000 each year. As a consequence, the project is under considerable financial pressure to become sustainable as the donor (NORAD) phases out its funding. The project has responded well, cutting costs to US\$1,300,000 and raising income to US\$600,000, mainly from tourism, while improving performance as measured by progress in law enforcement, roads, tourism, administration, individual output, reporting, *etc.*¹⁶ Performance management has been introduced, increasing output substantially despite financial and staffing cuts.

The programme follows two conservation paradigms according to the primary purposes of the land. In the South Luangwa National Park, the aim is to use tourism to fund self-sufficient conservation through activities such as anti-poaching, ecological monitoring, road maintenance, *etc.* In the people-dominated environment of the 4,500km² Lupande Game Management Area, the objectives are defined as using wildlife (primarily the proceeds of safari hunting) to fuel grass roots economic empowerment, with the hope that by making wildlife valuable to people they will conserve it. While the park programme is also a success story, this assessment of sustainable use focuses on the community wildlife programme outside the park. Throughout this paper, we refer to this part of the programme as 'South Luangwa'. The Game Management Area has both prime habitat for wildlife, and limited land use alternatives due to tsetse, soils and climate. It currently includes six Area Development Committees, each comprised of between 3 and 11 Village Action Groups (approximately 500 members). The total budget to manage this programme is US\$80,000 per year for a community of some 50,000 people. At the core of this CBNRM programme is a belief that in certain rural areas it is possible to capture the value of wildlife as a basis for development, and that this is essential for the future existence of wildlife. Sustainable utilization of megafauna is dependent upon sustainable utilization of the habitat itself, and therefore upon sustainable use of natural resources in the area more generally.

4.1.2. *First-generation CBNRM*

¹⁵ Despite the commonly held belief that the ivory ban was fundamental with respect to its contribution to increasing populations of elephants, Jachmann's (1998:75) analysis of law enforcement data shows that poaching in the Luangwa area was brought under control two years *prior* to the ivory ban. Subsequent poaching has been shown to have a direct correlation with levels of law enforcement used. The effects of the ban have not been measurable.

¹⁶ Indeed, performance has increased, the reason being careful restructuring, decentralization of responsibilities and finances, and the introduction of objective-orientated performance management. There are general lessons here for the management of national parks and donor-funded projects.

The primary purpose of the initial integrated rural development project was general development. Typical of first-generation CBNRM projects, the wildlife in the communal area was managed and sold by government in the guise of LIRDP, and a portion (40-60%) of the benefits returned to the community through mid-level government structures, in this case the traditional chiefs¹⁷. This money was used to provide social services and infrastructure. As elsewhere¹⁸, although the intention was good, benefits were captured at the district level and often used inefficiently. The net result was that ordinary people saw little, if any, gain. Not surprisingly, despite information and education programmes, attitudes towards wildlife remained negative¹⁹. Clearly, the initiative was unsustainable in the long run: It required substantial outside funding and, more to the point, locals had no incentive to either conserve or manage wildlife resources. On the contrary, wildlife was perceived as a threat to crops and property, and sometimes to the people themselves.

4.1.3. Second-generation CBNRM

From 1996, the CBNRM policy changed towards a second-generation project (See Box 2). Three layers of institutions were developed: Village Action Groups, each comprising 200-300 households; Area Development Committees composed of 3 to 11 Village Action Groups and identical with a particular chief's land area; and the Local Leaders Sub-Committee, comprised of chiefs and their appointed advisors (in addition to the chief's main advisor 'induna', an additional woman is included in the Sub-committee), plus five elected persons in the form of four councilors and the MP. All wildlife revenues²⁰ generated in the GMA are now returned to the community, following the principle that it reflects their production and they are the rightful beneficiaries.

The programme is designed to empower the grassroots. Eighty percent of revenues are channeled to Village Action Groups where communities decide how to use this money provided they followed democratic procedures involving the entire community. These principles are enshrined in project-level CBNRM policy and procedural guidelines for financial distribution. Thus decisions about revenues are made at general meetings, and there is a requirement for quarterly reporting to the community. Village Action Groups are the primary institutions for project development and participation, and their success validates the effectiveness of devolution. The choice of Village Action Groups as the primary vehicle for the programme is important because it dropped the decision-making one level below the more autocratic and less transparent Area Development Committees where the chief has greater influence, and because it involves all people and not just a select set of leaders. In 1999, for instance, 19,500 people got benefits, out of a population of about 50,000. The issue of scale is critical: Too often projects opt for the next level up for logistical reasons, and sacrifice a great deal of participation and democracy in the process. This project clearly shows that lower levels tend to perform well, in fact in most cases better than higher levels. Revenue flows were designed in accordance with this understanding. Consequently, Action Development Committee's, whose functions are largely communication and co-ordination, receive 4% of wildlife revenues. The six chiefs get an honorarium of almost 9% [1% plus Zambian Kwacha 1.5m each (over US\$2,500)] for personal use. The structure of the Local Leaders Sub-Committee (the third and central tier) precluded accountability, and proved ineffective and divisive. The 10% originally earmarked for a central, more democratic institution has, therefore, simply been carried over for re-allocation in subsequent years or used for contingencies.

4.2. Present Situation for South Luangwa

¹⁷ Chiefs are hereditary rulers who reign for life, acquiring their position through matrilineal lines.

¹⁸ Examples of other first-generation projects include ADMADE in Zambia, WINDFALL in Zimbabwe, and projects in the Queen Elizabeth National Park in Uganda.

¹⁹ Information targeted to those who have already formed an opinion rarely leads to a transformation/shift in meaning. "...greater knowledge is often more a basis for reinforcing and rationalizing attitudes than a cause for attitudinal convergence or change." (Kellert 1994:4) Changes in attitude are instead linked with changes in experience/circumstances (Reading and Kellert 1993).

²⁰ Revenues are generated through the sale of hunting licenses in the Game Management Area and through culling of hippo. The sale of two hunting concessions is lucrative and forms the primary source of income generating US\$200,000-250,000 annually. As the river where hippo are found forms the shared border between the Park and the GMA, the community receives half of these benefits.

The South Luangwa budget has been cut from US\$95,000 to US\$80,000, enough to monitor and maintain one local person in each area, but insufficient for the workshops and capacity building that characterize similar programmes in the region. The initiation of the community programme, which included full-time technical assistance, cost US\$4 per household for two years, after which it was maintained at a cost of US\$2 per household. The question that emerges at every budget meeting is whether the project can afford to provide the social service of developing community management systems, and how soon these community institutions can become self-regulating and sustainable. Economically speaking, the community programme is highly beneficial, and financially, it is likely to reduce the costs of managing the park. However, from the perspective of annual budgets that are necessitating staffing cuts, its funding is more questionable. The related conservation education programme, which targeted schools, did not survive the budget knife, partly because benefits were hard to quantify. Financial pressures have undoubtedly improved park management, and have also increased the efficiency of the community support programme, but there are some questions about whether social transformation can occur without higher and sustained levels of capacity-building.

Analysis of sustainable use requires consideration of both a short- and a long-term perspective. Many of the indicators discussed in this paper reflect the short-term. One of the problems facing many community programmes is the tendency to collapse after the withdrawal of donor funding. The South Luangwa programme is less prone to this since it is linked to a larger park management programme that has financial sustainability as its purpose. The same people responsible for managing the park are also responsible for managing the community programme. This creates important linkages, and also contributes to sustainability: Unlike donor-funded programmes, the financial sustainability of the park provides a way of supporting the community programme long after the donor moves on (this likelihood would be enhanced with a small, long-term grant of US\$50-100,000 annually). There is also a close connection between the viability of the national park, and the neighboring game management area, since the park provides a source of additional animals and a center for tourism growth.

We have now had an introduction to the history of South Luangwa and seen the greater context of wildlife management and policy in the area more generally. In the following section we consider the programme more specifically using the indicators discussed in the earlier sections on price, proprietorship, and management. Before doing so, however, we begin with the local contextual factor of human population.

4.2.1. Human Population Factor

People affect long-term sustainability not only with respect to their changing numbers, but also with respect to changes in other social conditions. The analytic framework's Human Population Factor describes the relationship between the demands placed on natural resources by people and the natural system's ability to supply products and services, summarizing the net outcome of human impact. In South Luangwa, the relatively low human population leaves extensive areas for wildlife management. However, the population that is growing rapidly, is highly dependent on natural resources, with some 30% of household needs being met by products from the environment (Chipeta 2000). These demographic changes are driven by intrinsic growth and in-migration in response to improving economic conditions. The rate of growth is influenced by cultural norms, income levels, women's education, and the HIV pandemic, while its impact is determined by the degree of dependence on natural resources relative to off-land livelihoods and the way in which land-based livelihoods are organized. These are complex issues.

From the perspective of wildlife conservation, the main priority is to maintain large intact areas of habitat. Changes can be estimated using aerial surveys, satellite imagery, ground checking, and local knowledge. As long as the amount of contingent land for wildlife is positive or stable, further analysis of this factor for overall sustainability may not be necessary. However, it is usually necessary to manage changes in land use in order to maintain such areas. Some communities have already demarcated wildlife areas. Economic planning is also critical where the centralization and intensification of settlement and agricultural production would be seen as positive, and the unplanned dispersal of subsistence cultivation into blocks of wildlife habitat would not. In

economic terms, shifting livelihoods away from direct extraction of the resource into value-adding or service industries would also reduce the relative impact of people on wildlife. Thus improvements to infrastructure are generally seen as positive, as are increases in tourism, provided that these developments are located carefully and do not excessively damage wildlife habitat. The recognition of clear and secure property rights is also important before scarcity problems become critical²¹. In Zimbabwe, for instance, a massive migration from the overcrowded and devastated southeast of the country swamped the original residents, completely changing the ethnic composition of the Zambezi Valley and converting wilderness into cotton fields in only a decade (Derman 1990).

Increased populations reflect improved health, lower infant mortality, and longer lives, and must be seen as a positive sign of development. Similarly, the high rate of in-migration to an area is often an indicator of success. Both, however, also give rise to a number of challenges to sustainability. In the project area, many in-migrants are attracted to improved services such as clinics, schools, electricity, roads, and clean water, to job opportunities related to tourism, and to the other opportunities related to this peri-urban growth, including shops and safety. This exaggerates intrinsic growth and pressures on resources immediately outside the park, for instance firewood fuel supplies. It also creates social problems, with new settlers from a variety of ethnic backgrounds moving into an area that was neglected, marginal and culturally homogenous at the outset of the project with a single tribal group (the Kunda) under six related chiefs. Heterogeneous communities have additional tensions, with more difficulty in achieving consensus about project objectives and distribution of benefits. For example, the programme is currently designed to ensure a direct linkage between benefits and the wildlife utilization. Cash dividends deriving from wildlife are distributed to each adult living in the area. If one chooses to exclude new residents from this scheme, they will not have the same incentives to protect wildlife. If they are included, and the area continues to attract large numbers of people, the benefits per individual will decrease, reducing the incentive to protect wildlife. The present constitutions include rules governing both membership and benefits. Population growth also induces additional investment in the area, including shops, services, and the tourism industry. This can be damaging or positive, depending on how they are planned and controlled. Consequently, the question of long-term sustainability is dependent upon how these challenges are addressed in the short- to medium-term.

The present tentative plans to establish an urban area at the airport, rather than on the border to the park (a difference of about 20km), could draw people out of economically and environmentally valuable wildlife areas. In this way, sound urbanization would improve the rural environment while also improving the quality of life for the people. At present, however, people choose to settle close to the park entrance, near existing lodges. Similarly, coveted areas for lodges are those nearest to the park. These are also prime habitat areas for the wildlife. Over time, if not checked, building and settlement will detract from the general appeal of the park and adjacent Game Management Areas as both a tourist attraction and safari location. Thus sustainability is threatened because there is no planning mechanism for the areas bordering the park, or indeed rural areas in general. While the idea of planning for an urban center has been forwarded, it requires a voluntary loss of power and potential income on the part of the chiefs that may be difficult to overcome²². On the other hand, given the authority of the chief, if he is cooperative, planning is entirely possible.

4.2.2. Price

As compared to similar land elsewhere in the subcontinent, wildlife in Luangwa earns far less. It generates US\$250,000 from some 250,000 hectares, or US\$1/ha, compared to up to US\$16/ha in Zimbabwe and far higher in South Africa. Fortunately wildlife is still relatively competitive because of the low opportunity costs involved: Sound park management to maintain the resource costs about US\$1/ha, of which the law-enforcement component comprises about US\$0.40/ha. Looking again at the table presented on price (Table 2), we can see the extent to which distortions apply to South Luangwa (Table 5).

²¹ Research on community-owned resources indicates that long-term sustainability is enhanced through clear rules and limits on who can own and how benefits will be distributed (Ostrom 1990; Ostrom and Schlager 1996).

²² It is the chief that has the right to decide if newcomers (families or businesses) can settle. He is compensated when he extends this right.

The difference between the income from wildlife in Luangwa (US\$1/ha) and elsewhere in southern Africa (*e.g.*, US\$16/ha on Corsten Block near Bulawayo, Zimbabwe) suggests that there are severe policy and market distortions. Gibson (1999) is highly critical of the management of wildlife in Zambia. As a description he writes, “*Policies driven by a system characterized by patronage politics, clientism, bureaucratism, nepotism, mismanagement, corruption and intolerance of dissent.*” Zambia has the potential to create a powerful wildlife-based rural economy, but the ‘nationalization’ of the wildlife resource prevent this happening. This is exacerbated by the ineffectiveness of government structures at commercial management.

Table 5: Factors that commonly disadvantage wildlife’s competitiveness in South Luangwa.

Distortion	Does the distortion apply to South Luangwa?
Tenure and use rights	
Tenure and use rights.	Yes (+++).
Uses disallowed.	Yes (++)
Economic distortions from under-valuing of wildlife	
Consumer subsidies.	Yes (+).
Over-valued exchange rates.	No. This was a major factor in under-pricing wildlife in Zimbabwe (by 50%), but has less impact in Zambia because of its free market in foreign exchange.
Excessive taxation and fees to government.	ADMADE, Yes (+++). In ADMADE areas, government retains 50% for general revenues, 12.5% to subsidize wildlife department, 20% to fund scouts in community area, leaving only 17.5% for community projects (managed as a first-generation CBNRM program). Delays and shortfalls in payments exacerbate this ‘taxation’. South Luangwa, No. In South Luangwa, this problem has been avoided by allocating 100% of wildlife revenues to communities.
Macro-economics.	Yes (++) . Monopolies, inefficiencies, import tariffs, limited numbers of operators, <i>etc.</i> , make operating in Zambia more expensive than elsewhere in the region. Higher costs reduce profits from wildlife.
Economic distortions from over-valuing or subsidizing alternative land uses	
Rural subsidies.	Yes (+).
Subsidized livestock.	Not a major issue in Luangwa because tsetse fly preclude livestock.
Subsidized agriculture.	Yes (+). Less of a distortion in Zambia than elsewhere, especially with the privatization of these functions.

As we are about to explain, the centralized and unaccountable management of a nationalized wildlife resource is the primary cause of the under-pricing of wildlife in Zambia. In most communal areas, the community cannot obtain more than 17½% of the money paid for wildlife, with central government and the wildlife department getting the rest. After passing through various funds and offices, it is unlikely that they get even this much, especially as records and transparency are extremely poor (Gibson 1999). South Luangwa is in the fortunate position of being able to return all the revenue earned from wildlife to communities. Nonetheless, administrative distortions seriously under-price wildlife²³:

- The sale of hunting concessions is not open and competitive. In the past, all Zambia’s concessions were sold at the same time, and although wildlife officials and some chiefs made recommendations, the final decisions were made at cabinet level. They were sold only to Zambian nationals, a very small sector, undoubtedly driving down both prices and the quality of investors. Sales are also insufficiently transparent, further reducing prices and creating suspicion and uncertainty from one period to the next. Communities are not involved in the sale of their wildlife. This lack of control over sales is a major blow to the proprietary impulse

²³ As a result of the NORAD-funded LIRD/SLAMU project, use of wildlife in South Luangwa, although greatly under-valued, is considerably more efficient than in other GMAs in Zambia where distortions are far worse.

in any CBNRM programme, and also disempowers communities with respect to their safari outfitters, who are responsive to Lusaka-based officials and politicians rather than to the local people. By contrast, the devolution of marketing to communities in the CAMPFIRE programme in Zimbabwe increased both revenues and community participation significantly (Child, B. 1995).

- South Luangwa and its wildlife are used inefficiently and unimaginatively, reflecting a bureaucratic reluctance to change what has never been a commercially conceived strategy. Hunting is concentrated on only 70,000ha immediately outside the park. A further 200,000ha remains unused, despite reasonable wildlife populations and a high potential for growth. Commercial contracts for wildlife concessions are short-term (five years), uses are narrowly defined by officials, and agreements do not reward concessionaires for performance. Officials feel threatened by greater levels of involvement, or suggestions to improve the system. Therefore, the wildlife businesses have no permanent presence in the area, and do not develop relationships with the communities. There is little incentive to invest in the management of the resource base (long-term), or to take care of wildlife. There is also little innovation, although by diversifying and improving the quality of the business, owners could earn far more.
- While the quota is set professionally, it is allocated inefficiently. The example of buffalo is illustrative. When sold to clients for trophy hunting, a buffalo earns about US\$1,500 for the community. Clients are willing to donate their meat to communities, who therefore get double benefit – meat and money. However, a number of buffalo are sold on district licenses (US\$40) and hunted for meat, which is retained by the hunter, often an outsider. The low price of these licenses means that while the hunters profit, the community effectively pays an opportunity cost of US\$1,460 plus 300kg meat. Politicians and officials in Lusaka also have the power to allocate buffalo for free, using special licenses. This is done with scant regard to a buffalo's real value, and the meat is invariably sold in urban areas for as much as a civil servant's monthly salary. Local people receive no benefit. This is used as an important source of political collateral in collecting and financing favors and is unlikely to be devolved in the near future (Gibson 1999). Not having local control over the licenses means not only a loss of income, but also the lost possibility to regulate and manage the resource. Although the community is aware of this wastage, and wants all high-value animals sold as trophies, they have few channels by which to voice their opinions, let alone to achieve their will. Consequently, quotas earn but a fraction of their value.

In addition to the under-valuation of wildlife that results from its being a patronage resource managed by a government agency (*ibid.* 1999), the macro-economic system is also biased against wildlife. The net result is that communities cannot sell the hunting concessions for what they are worth, and government retains a substantial proportion of even this limited value. The demise of wildlife in Zambia is a result of policy and market failure. Extrapolation of the experience in Zimbabwe and South Africa suggests that the superior Zambian wildlife resource must have an even greater relative advantage given Zambia's large areas of wilderness and the absence of many alternative land uses that are possible in more sophisticated economies. This conclusion is confirmed in South Luangwa where even a much under-valued wildlife resource is still able to cover its opportunity costs.

South Luangwa satisfies the first major criteria for use-based conservation: Wildlife can generate a large enough economic pie to be competitive. However, it has also been shown that there is considerable scope for further improving wildlife's competitive position. Wildlife will probably survive under the present circumstances, but without improvements in policy and market distortions, especially the devolution of management and marketing, an opportunity to turn wildlife into a major economic driving force will be lost.

4.2.3. Proprietorship

With respect to proprietorship, the South Luangwa programme does well with respect to the first four indicators presented earlier in Table 3 and here again with specific comments to South Luangwa as Table 6. The consolidation and long-term sustainability of the programme are put at risk by weakness illustrated by indicators

5 to 7.

In the first-generation phase of the programme in South Luangwa, chiefs and officials decided which projects to invest in. Subsequent discussion with local people indicated that most investments were perceived to be of little value to most people (for instance, grain-storage sheds in areas with few agricultural surpluses), and financial mismanagement was a common accusation. Within South Luangwa, the Kakumbi community is an example of this. The chief imposes his wishes on the people without due consultation, and money allocated for project use is not properly accounted for. In marked contrast with the other five areas, few projects have been constructed, community participation at meetings is low, communities are fractious, and poaching has increased.

Table 6: Indicators of 'proprietorship' in South Luangwa.

Key Performance Area: Socio-political organization, resource governance, and tenure		
Key assumption: Benefits captured from wildlife at the level of the local landholder(s) need to exceed the opportunity costs of wildlife or it will be replaced. Benefits include income, products, democracy, empowerment, proprietorship, <i>etc.</i> Landholders include ranchers, communities, <i>etc.</i>		
Outcome to monitor		
Rights to retain benefits		
1.	What proportion of the benefits from wildlife goes to landholders?	<u>Mostly.</u> The communities get all money. However, to maintain the cohesion of the 'Kunda people', the chiefs have decreed that benefits are shared equally amongst the six areas. This maintains social cohesion but violates the concept of 'producer communities' (which would return benefits in direct correlation to where wildlife is found or used) and has some economic costs. However, the important point is that the issue is regularly debated and is therefore likely to evolve.
Sound institutions in place to optimize use of benefits		
2.	Communities have the right to choose how to use benefits, including the option of individual dividends.	<u>Yes.</u> Communities choose how to use their money.
3.	The system for making decisions is democratic.	<u>Yes,</u> with the partial exception of Kakumbi chieftainship where progress is much slower.
4.	Checks-and-balances are in place for communities to ensure that management actions reflect their choices.	<u>Yes,</u> constitutions, policy, and guidelines are in place. <u>Yes,</u> finances are audited every six months (only 0.8% of money missing) as are projects (150 initiated or completed). <u>Yes,</u> committees are expected to report to communities regularly.
Rights to manage wildlife to best advantage		
5.	Communities have the rights to decide how to manage wildlife, including how and to whom to sell it.	<u>No.</u> This power is retained by central government (but this could change, see 6).
For long-term sustainability		
6.	Devolution (fiscal empowerment, use rights) is entrenched in law and practice.	<u>Partial.</u> One interpretation of the new Zambia Wildlife Authority Act of 1998 is that it provides strong community use rights, but this will be determined by the practical actions of implementation taken by the Zambia Wildlife Authority, which is not yet in place.
7.	Gradient in devolution cannot greatly differentiate one program from another: Politically (or have insufficient support). Wealth (or get influx of people).	<u>Problematic.</u> There are still large differences between areas. Consequently the advocates of ADMAD regularly undermine the LIRDP project. Population in-migration is another consequence.

The progress of the South Luangwa programme has been achieved despite the lack of both clear national policies and a general enabling framework environment for CBNRM. The project had to develop this environment itself, including having to obtain the authority to shift from a first- to a second-generation CBNRM programme, the first in Zambia. It also faced the usual challenges and conflicts inherent in the devolutionary process. The chiefs were considerably empowered in the first-generation CBNRM phase when they received the majority of benefits and were the primary conduit for discussion and decision-making, a position that paradoxically required little accountability or responsibility of them. Empowering and democratized grass-roots communities caused three years of conflicts with the traditional leadership, who lost benefits and the freedom to act without accountability. Despite lacking a history of democracy, communities rapidly accepted and understood its strengths, to the extent that even feudal chiefs now go along with the system. This progress is becoming entrenched through practice. Its

sustainability depends on the continued emergence of a democratic national culture, the major threat being an alliance between chiefs and politicians to revert to command-and-control governance.

The fourth indicator with respect to ‘proprietorship’ measures the efficacy of control systems, and gets into the details of performance management. Attention to these details is essential. While the concept of CBNRM is inspiring, it only works if management and control systems are in place. The systems used in South Luangwa are described in detail in Child *et. al.* (1999), and are described only in general terms here.

- The programme is built around a project policy statement (not legislation) that incorporates principles of democracy, accountability, transparency and equity, and lays out the income and its uses for each organizational level (chiefs, Area Development Committees, Village Action Groups). It is also designed with triple checks-and-balances. Each organization is accountable to a constituency but also monitored by the next body up, with the project providing a second layer of checks-and-balances.
- Each community is organized around a constitution that entrenches democratic principles and clear operational procedures.
- Revenue is distributed according to guidelines that reflect the intent of the policy statement.
- All choices regarding wildlife benefits are made in a forum attended by all community members.
- Implementation is delegated to the Village Action Group Committee, which is accountable to the community through quarterly reporting and annual elections.
- The project conducts regular procedural, financial, project, and institutional audits or assessments.

Generally, these controlling mechanisms function well, although there is differentiation between areas.

A valuable lesson of this case study is that lower-tier institutions have been able to implement projects far more effectively than higher-level organizations or government agencies, despite the latter having strong opinions to the contrary. Our experience in community organizations reflect the same lessons emerging from corporate management. They confirm that most decisions are improved by devolving them to the lowest possible level (Handy 1995), a principle that is transforming global businesses into flatter organizations, self-managed teams, *etc.* The common argument that communities lack skills does not appear important in practice, or is overshadowed by the power of proprietorship and of transparency and social controls to prevent misuse or inefficiencies. Devolution also captures the energy and ideas of the larger number of people at lower levels, and their better understanding of local conditions.

The retention by central agencies of the rights to organize and sell hunting concessions (indicator 5), and the agencies’ unresponsiveness to community requests to modify such things as quotas and boundaries, are major limiting factors. The rights to decide how to use wildlife, and to whom to market it, are important components of proprietorship with a high impact on value. Devolving these rights to communities has been shown to increase revenues significantly compared to systems managed by wildlife departments²⁴. Rights also empower communities to build longer-lasting and more favorable commercial relationships while at the same time presenting fewer bureaucratic impediments to the entrepreneurial spirit. For instance, responsive investors might set up butcheries to supply meat, or develop joint wildlife management systems with the communities. It is likely that South Luangwa could increase wildlife revenues from US\$250,000 to US\$1,000,000 fairly quickly with good private-sector partnerships, which would conceivably contribute to significantly increasing wildlife populations on the unused 200,000ha. Devolution of commercial rights would provide a range of additional benefits, including a greater sense of empowerment and proprietorship, and a better framework for the development of mutually beneficial arrangements between investors and the community.

The South Luangwa community programme is progressing towards more socially, economically, and environmentally sustainable development. It has an innovative and successful policy framework that is rapidly

²⁴ Child and Bond (1995) show that devolving marketing to communities more than doubled the income in CAMPFIRE areas in Zimbabwe, in circumstances where the marketing done by the wildlife department was relatively efficient.

improving resource governance. However, this framework is based on project policy and a donor agreement, and although community rights are referred to in policy documents²⁵, they have yet to be entrenched in legislation or actively applied (indicator 6).

With respect to long-term sustainability (indicator 7), the local success of South Luangwa needs to spread. Unless there are similar opportunities in other areas, the pressure from outsiders coming into the area will continue to threaten sustainability. Therefore, an indicator of sustainability becomes the spreading of the idea beyond the project boundaries – something which is being hampered by the presence of competing first-generation programmes in the area, and by political opposition to the spreading of these ideas. Nationally, several donors have indicated interest in establishing programmes based on similar principles to those of South Luangwa in other areas of the country. While not under-estimating the risks of local political economy, our confidence in the sustainability of the programme is strengthened by devolutionary winds of change that are blowing through the region and resource management in general. Internationally, similar programmes (*e.g.*, CAMPFIRE) continue to generate interest and influence funding.

Within the South Luangwa programme, the concept of equity will continue to be addressed, and at times can raise conflicts. Currently, equity means an equal sharing of proceeds between all six areas. But, there are large differences between the areas with respect to area size, the number of people living there, and distance to the park. The three areas that border the park have the most wildlife, and also the most damage caused by wildlife. With respect to the CAMPFIRE programme, Thomas (1995) has raised the question, “*Does equity imply reimbursement according to costs incurred or an equal size benefit to all involved?*” Thomas suggests the need for there to be a direct correlation between costs and benefits to further encourage investments in wildlife. Questions of equity between individuals, areas, and regions have the potential to be divisive or to bring people together. They need to be taken seriously.

Implementation of the South Luangwa CBNRM programme is based on the CBNRM principles developed by the Southern Africa Network. The project’s policy reflects these principles, and implements them through a management system. The activities necessary to achieve policy objectives are defined as targets and implementation is guided by a performance management system. South Luangwa is a good example of the importance of a combination of sound management and policy for implementing CBNRM programmes. Considerable progress has been made within four years of introducing a new policy reflecting second-generation community wildlife management: A democratic sub-district structure consisting of 43 Village Action Groups with sound financial management (less than 0.8% misuse of income); and good project management (150 projects in four years). Within only three years, the combination of community incentives and community organization allowed active wildlife management to emerge, including the employment of 76 community-based scouts (see Box 5).

4.2.4. Management

The category of management has been divided into two: Management of the wildlife resource and management of the programme. With respect to the wildlife resource, a major impact in the project area is from illegal use by poachers. A useful indicator of the net impact of poaching and protection measures is the status and trend of wildlife populations. The results of this monitoring suggest that the status of wildlife populations is moderate (as a consequence of past poaching), but most are either stable or increasing as poaching levels are reduced. If poaching is a problem, as it is in much of Zambia, wildlife population trends are too crude for day-to-day management. The project uses patrol reports, especially the number of poaching incidences per unit of patrol effort, as a more refined indicator to measure the impact and monitor the efficiency of its major wildlife conservation activity, namely law enforcement.

²⁵ The 1995 Lands Act and the Wildlife Policy of 1998 both promote decentralization with wildlife authority devolving limited rights over wildlife within Game Management Areas to community resource boards. The new Zambian Wildlife Act (1998) could be used to entrench additional community rights, but it remains to be seen if will happen in practice.

Box 5: Local scouts.

In local prioritization of community projects in the Msoro area, the decision was made to train and employ local scouts. While this initiative is still in its infancy and has yet to be established throughout the whole project area, it appears that the scouts are beginning to have a visible effect locally. In a recent press release (Nyirenda 2000), it was reported that Msoro Community-Based Scouts (CBS) had apprehended and convicted nine poachers and confiscated 16 muzzle loading guns from local villagers. These weapons would have been used for subsistence poaching. Mr. Mukumbi, a tourism ranger for South Luangwa, is reported to have said, *"I saw some Bush bucks near the village in Msoro which was a rare case before. For a long time animals have not been seen in the community due to uncontrolled subsistence poaching that took place in the area by individuals whose illegal activities have been frozen by the coming of the CBS."*

As many poachers are outsiders, and because the resource is valuable, it is highly doubtful that social pressure alone will ever be sufficient to stop poaching. The training and employment of local scouts is an important step towards active co-management, shared between the local communities and the wildlife department. It indicates a recognition and acceptance of the responsibility involved in the management of wildlife resources.

While changes in land use pose the largest and most direct threat to the general sustainability of wildlife, increases in wildlife populations may also lead to increased poaching for local meat consumption and sale. This is being addressed by a combination of national and local scouts in and outside the park.

Conserving wildlife requires that habitat be available and that anti-poaching be enforced. With grass-roots organizations functioning, the CBNRM programme is now in the process of experimenting with the transfer of some law enforcement activities to communities. The community appears to have the organizational capacity to initiate law enforcement through the employment of community-based scouts, though it still requires improved technical capacity (training) and some clarification of its legal powers. For instance, the question of whether community-based scouts are permitted to carry weapons has not been finalized, and will to a great extent define their potential role in law enforcement. Our case study is at the cutting edge of this process, and while the current experimentation appears positive, and the long-term ability of communities to protect their resources appears likely, we cannot categorically state that it will be sustainable. Records show that trophy quality is being maintained. This monitoring is simple and is presently done by the project, with some collaboration from communities who are eager to play a greater role, especially in monitoring safari hunting and wildlife populations, since this affects their revenues.

Turning to the management of the programme, much of the progress of the South Luangwa programme can be attributed to the twelve CBNRM staff who train communities and monitor their progress. The role of charismatic and dedicated individuals on the staff is difficult to overestimate.

The change in the project's approach from a first to a second-generation CBNRM arose from a determination on the part of the project to transform its management, an aim that was strongly supported by the donor, NORAD. The impending financial collapse of the project, and the loss of jobs this would entail, was used to create dissatisfaction with the *status quo* and therefore a social platform for change. A series of workshops then developed a common understanding of the issues and a new vision for the project, as well as a guiding coalition for the necessary changes. This understanding was visualized using cause-and-effect situational analyses, which identified key problem areas such as finances, staff salaries and performance, law enforcement, biodiversity, tourism, and community development. Challenges were prioritized and defined as a set of objectives, activities and milestones²⁶. The indicators in the resulting 'Project Matrix' were then translated into management targets, and monitored regularly as part of an adaptive performance management system. By making planning as participatory and visual as possible, a common vision was developed. Similarly, though considerably simplified, planning and management systems were developed in communities. The rapid progress made by the community

²⁶ The reader may correctly recognize a Logical Framework Approach.

project, and its relatively low cost, validate the importance of management, especially the development of common visions and the codification of objectives as measurable indicators of progress. Defining objectives more clearly, keeping costs to a minimum, and ensuring a rapid process are all critical parts of making use sustainable. Their efficacy is reflected in the relatively rapid progress made in the community programme. In this we agree with Peter Drucker (1974), who contends that:

“Development, in other words, is a matter of human energies rather than of economic wealth. And the generation and direction of human energies is the task of management. Management is the mover and development is the consequence....Management is fast becoming the central resource of the developed countries and the basic need of the developing ones.”

In common with the other case studies in this book, the results of the South Luangwa case show that the devolution of wildlife management and its benefits to communities improves management considerably and is the key to the devolutionary and democratizing character of second-generation CBNRM programmes. Giving people direct benefits from wildlife and the right to use these benefits as they see fit, provides certain economic and democratic rules are followed, goes some way towards creating proprietorship for wildlife.²⁷ Revenue distribution is not simply handing out money to communities, although derided as such by some critics who are often those at the losing end of the rural empowerment process. Revenue distribution involves the management of this money using a carefully thought-through set of principles and procedures, and the gradual uptake of responsibility. As it is usually the first time such rural communities have had any real economic independence, fiscal devolution also leads to wide-ranging improvements in their institutions, management capacity and self-confidence, and to real empowerment (with political and economic consequences). We go so far as to speculate that if village level communities were given full proprietorship over their land, wildlife and other resources, many conservation and development problems would dissipate, and where they did not there would nonetheless be a far sounder framework for tackling them.

Within the South Luangwa project we find that finances are managed effectively. All communities have bank accounts, committees report at community meetings every quarter, and by the fourth year of the programme, auditing shows that accounts are well maintained and only 0.8% (Zambian Kwacha 3.5m) of the revenue had not been accounted for. In general, communities hand out 40% of revenues as cash to members, use 40% for projects, and spend 10% on wildlife and 10% on organizational management. The loss of less than 0.8% of revenues confirms that the checks-and-balances built into these village-level institutions are inherently stronger than those at the ADC level where, by comparison, ten times as much money was not accounted for, almost entirely as a result of ‘confusion’ on the part of the chief. Given the rights to do so, communities have also proved far more efficient at managing projects than government-style bodies. Compared to the first-generation phase, when fewer than ten projects were completed between 1988 and 1995, 150 construction projects (schools, teacher’s houses, wells, clinics, *etc.*) have been undertaken since 1996.

There are strong arguments that where communities themselves decide how to spend money, it is allocated to higher-valued uses than when this decision is made on their behalf by chiefs or officials. In addition to the tangible benefits of household cash and projects, the process of revenue distribution has considerable value. It creates institutional development and economic empowerment, benefits whose importance probably exceeds that of the tangible gains. Within the South Luangwa the double-gain from wildlife revenues has caused a large and important shift in community attitudes toward wildlife conservation (and undoubtedly also in their own sense of self-worth).

²⁷ It also embodies many of the elements/conditions or ‘design principles’ suggested by Ostrom (1990) as characterizing ‘robust’ institutions. These include: Clearly defined boundaries; congruence between appropriation and provision rules and local conditions; collective choice arrangements; monitoring; gradual sanctions; conflict resolution mechanisms; minimal recognition of right to organize; and nested enterprises (*ibid.*:90-102). This is evident through a comparison of Ostrom’s and CBNRM’s principles (see, for example, Child *et al.* 1990).

The shift in perception among local people toward wildlife reflects a shift in attitude commensurate with this new approach which has convinced local people that wildlife is valuable and that it is (at least partially) ‘theirs’. It is central to communities’ initiating their own active wildlife management, including the employment of 76 community-based scouts, construction of dams to supply water for wildlife, electric fencing for crop protection, tree and fish protection measures, and the sale of natural resources including grass, timber, poles, and sand. Through its properly managed use, communities have begun to care for and manage wildlife.

5. Conclusion

The study initially set out to use indicators from the analytic framework to assess the sustainability of the community programme in South Luangwa. While we agree that the major factors identified by them are central to sustainable use, we were unable to use the specific indicators to assess the community programme. On reflection, this is because their indicators are set at a different level of resolution from our own. Therefore, where we felt it necessary for improved clarity we introduced our own indicators within the general framework of these six factors.

In this concluding section we evaluate the South Luangwa community programme to determine whether it is sustainable and provide the beginnings of a conceptual framework for understanding sustainable use, especially its economic incentives and the factors that influence these.

5.1. The South Luangwa Community Programme: An Example of Sustainable Use?

5.1.1. External Factors and Human Population

The net effect of these two over-arching factors is difficult to predict. While the country appears to be both politically and economically stable, general difficulties of development abound, not least with respect to the politicization, patronage, and centralization of the wildlife sector. This makes progress, and maintaining progress, difficult, and there is always the risk that good work will be undone on a personal whim or for personal gain. The effect of the expanding human population near the park gate also needs to be addressed. Developing a planned urban center could draw people away from the key wildlife areas and simultaneously favor economic development, but there are institutional difficulties (*i.e.*, the absence of accountable planning institutions) that make sensible planning and enforcement of land use difficult. Solving the conflicts and achieving the potentials arising out of tourism-driven economic growth is being discussed, but as of yet, nothing is happening.

5.1.2. Economic Factors

Wildlife has a competitive advantage in South Luangwa because of the outstanding wildlife resource and the limited alternatives for using this land. Nonetheless, there are numerous ways that the economic potential of wildlife could be augmented. Insufficient devolution of benefits, and especially the rights to manage wildlife (including selling it), to local communities are among the most important limiting factors. As these rights are currently captured by powerful elites, it is somewhat doubtful they will be devolved completely, but improvements may come through combined pressure from the bottom and from outside actors.

5.1.3. Proprietorship

In the recent changes to a second-generation CBNRM project, there has been a major improvement in the perception of wildlife, and in people’s ability to organize themselves. People recognize the benefits of wildlife and identify it as theirs. Transparent, democratic institutions are functioning well, and are yielding visible benefits to both individuals and the community. This is clearly the strength of the project.

Long-term sustainability can be affected by problems of equity. This applies within the project between most and least affected areas, and between the project area and neighboring areas. Sustainability would be enhanced should the programme be allowed to spread throughout the country. Long-term sustainability would also be enhanced by national legislation and policy. Political signals on this remain fuzzy. In fact, the whole wildlife industry is going through a process of change that is dominated by uncertainty, with entrenched interests resisting progress.

5.1.4. Management

The status of wildlife populations is favorable and improving both within and outside the park, including the number of elephants. As populations increase, habitat destruction needs to be controlled, as do the conflicts with humans—for example, an excessive number of hippos are already causing damage, and elephants have had a major impact on woodlands in the past. Both species damage people's fields.

The project uses incentives, and enforcement of compliance to a set of principles, to encourage the evolution of community management, institutions, and capacity. Incentive-driven, community-based management is believed to be far more sustainable than law enforcement alone, where people are cast as criminals. The results bear this out. Improving attitudes, in addition to improved organizational, financial, and managerial capacity, are leading to efforts by local people to begin to take responsibility for wildlife on their own land.

The interrelationship between the park and the community programme outside the park has advantages that should be further explored. The two complement one another, and would gain where all stakeholders (park staff, government officials, lodge operators, concession holders, local businesses, and local people) agreed and supported common management objectives.

5.1.5. Long-term Sustainability

Long-term sustainability, reflecting processes of change, is difficult to predict. With respect to South Luangwa we have indicated processes that are strengthening the capacity of local actors to respond and plan for change, and to manage wildlife and other natural resources. Progress is hampered, however, because of weak formal rights to manage the resources, and difficulties in capturing all of the benefits. Success would further be enhanced by an active national policy that devolved rights for natural resources to local communities that were organized like Village Action Groups. The area has considerable potential for enhancing both wildlife populations and development given its relatively low human populations, a good wildlife resource, and the limited land use alternatives. Nonetheless, without management and planning, the very success of the project may also be to its detriment as overcrowding near the park reduces its desirability to tourists looking for a 'wilderness' experience. It also degrades and may fragment prime wildlife habitat and leads to an increased use of natural resources.

We suggest that a primary contribution of this programme to community-based natural resource management is its system of managed change to convert an unsustainable system into a sustainable one (Dalal-Clayton and Child 2001). Given the ever-increasing complexity and pressures on resources, it is the management system itself (rather than the status of people and resources at any particular point in time) that creates the mechanism which allows/promotes adaptation to changing circumstances. A good management system, by definition, is one that measures performance against objectives, and includes a mechanism to respond to any challenges and to change in pursuit of these goals. Sustainability is more likely with proactive, informed management systems and good managers.

5.2. The Conceptual Basis of the Indicators Developed to Assess the Sustainability of the Community Programme in South Luangwa

The logic behind the indicators used to assess the sustainability of community programmes such as the one in

South Luangwa would apply to wildlife programmes throughout savanna Africa, be they on communal or private land, or even in protected areas. It also seems to differ little from that underlying the use of other cases in this volume including forests, inshore fisheries, palm trees, and other natural resources that we desire to use more sustainably. These are resources threatened with replacement by more ‘profitable’ competitors, or by over-use in situations of open access, where the underlying economic and tenurial problems are gross. The indicators are less applicable to, for example, cattle ranching or agriculture, where markets and tenure exist, and over-use is often insidious and impacts the trophic tier below the used organisms (the herbaceous layer and soil, respectively, in our examples).

Our argument is that much biodiversity is lost through conversion to agriculture and livestock, but that it is possible to revert to more ‘natural’ systems of production (*i.e.*, sustainable use) if wild species have a comparative advantage that can be converted into private-individual and private-community (including non-monetary) incentives. This raises the probability that a wild resource will be husbanded. As we have shown, there is a high probability that wildlife will be managed sustainably if it has a comparative advantage, if use is permitted or preferably encouraged so as to increase price, if landholders have a significant degree of proprietorship, and if there are no major restrictive external factors (wars, political instability).

Below we discuss the logic of the indicators, presenting how potential sustainability of use can be improved (and assessed), and what factors prevent wildlife being the chosen use for land. The emphasis differs from bio-centric assessments of sustainable use, as the focus is primarily on the social, economic and political systems that determine the incentives to favor wildlife. The management of the use itself is a consequence of these.

5.2.1. Assessment of Price: Comparative Advantage

The opportunity cost of wildlife, or the threshold value that wildlife must exceed if it is to compete for resources, is the sum of the marginal value of alternative land uses plus the damage and other costs imposed by wildlife (*e.g.*, loss of crops, livestock, or life, personal danger, *etc.*). In the national park, income needs to cover the costs of protecting the resource base. This threshold value is relatively low in human dominated landscapes is South Luangwa both because tsetse flies preclude livestock and rural subsidies are low.

In contrast to opportunity cost is wildlife’s economic potential. Economic potential includes both values that can be internalized to the landholder(s) (financial values) and the additional values that benefit society (economic values). Financial values directly affect land use choices. Where the net value of wildlife exceeds its opportunity costs, wildlife has a comparative (financial) advantage and landholder(s) gain by husbanding it. Game ranches in southern Africa and South Luangwa are both examples of situations where wildlife can provide more ‘profits’ and jobs than alternatives. The alternative is where wildlife earns less than its alternatives, and is replaced unless conservation or protection is explicitly paid for (*i.e.*, subsidized). In southern Africa, land with sufficient rainfall for rainfed agriculture earns more from farming, and wildlife will compete only on areas explicitly taken out of production and/or subsidized for this purpose.

Action: Before considering sustainable use as a conservation (and development) tool, determine if it has a comparative advantage. If it does, proceed with the analysis. If not, find an alternative way of paying for biodiversity conservation.

5.2.2. Assessment of Price: Market and Policy Distortions

When wildlife use is legally prevented or prohibited, as in the colonial period, landholder(s) can realize little of wildlife’s potential benefit to offset the costs it imposes. Wildlife is consequently replaced by other land uses and/or eradicated. In addition to this, other policy distortions also contribute to reducing the earning potential of wildlife. As discussed above, the primary reason in Zambia for under-valuation is the unresponsive, bureaucratic and centralized administration of wildlife. However, policy and market distortions generally reduce its value,

while they tend to increase the value of alternatives (see Jansen *et. al.* 1990). The net impact of these factors is area-, country-, and species-specific.

Action: Assess the major factors contributing to the under-valuation of wildlife. Address these in turn, beginning with user rights and the right to use wildlife commercially. These gains can be further increased by removing lesser distortions.

5.2.3. Assessment of Proprietorship: Socio-political, Tenurial, and Organizational Effects

Distinction is drawn between first- and second-generation CBNRM programmes with respect to assessing proprietorship.

First-generation CBNRM programmes tend to under-value wildlife at the community level. Reasons for this may include: The government retaining various fees and licenses, benefits being captured at the District or chief level, benefits being limited to projects chosen and/or approved by District-level officials and a general absence of transparency, participation and accountability. While the rhetoric is to give benefits from wildlife to communities, the reality is that intermediate levels of government capture most benefits. Communities have little or no authority to manage the resource or influence decisions of how it can be used. In addition, they are seldom informed about what is happening. Consequently, they have little reason to value wildlife.

Second-generation CBNRM programmes devolve benefits to the local level. In South Luangwa, two types of tangible benefits are provided: Private-individual benefit (cash dividends) and private-community benefit (cash used for social projects and services). Over and above tangible benefits, the 'participatory process' creates value in the form of institutions, proprietorship, self-sufficiency, and dignity. Formerly dependent communities can be freed from having to plead with officials for help to develop their societies: They can do it themselves. In many ways this economic empowerment encourages people to make the transition from being subjects to being citizens in charge of their own lives. The growth of community institutions and managerial capacity must be considered an important benefit, with effects reaching well beyond wildlife. For instance, the fact that communities in the project are relatively well organized allows them to attract additional funding from various matching-fund donors, often to construct schools, clinics, and water supplies.

Actions: Remove the factors that prevent wildlife benefits getting to landholders. This requires the devolution of rights for receiving and allocating wildlife benefits, as well as the rights to manage and market wildlife. The impact of benefits, including democratization and transformation, is related to the design of institutions, especially revenue distribution and management procedures.

5.2.4. Assessment of Management

A social and organizational platform allows sound management to increase the productivity of the resource. While it is usually desirable to increase wildlife populations, often the quickest route to increasing value is to use, or market, animals better. We can then divide management objectives. Ecologically the challenge is to maintain habitat and enforce protection. In South Luangwa, for example, there has been an increase in availability of wildlife areas and in water availability through the creation of dams. Emphasis has also been put on anti-poaching activities and monitoring of wildlife numbers. Economic gains require transparent imaginative marketing, and investments in infrastructure such as lodges and roads.

Action: Monitor compliance to agreed-upon rules and regulations with institutional principles and procedures. Establish capacity to facilitate the growth of grassroots technical and organizational capacity. Monitor status of resources. Ensure people benefit directly from wildlife. Wait for attitudes to improve. If and when a social impetus for conservation emerges, facilitate the implementation of active management and investment in wildlife by communities.

5.3. Broad-scale Indicators

The management indicators described earlier are too detailed to assess the sustainability of, for example, game ranching in Namibia, CBNRM in southern Africa, or a national wildlife utilization policy in Zambia. To do this we can use six relatively simple indicators to measure the likelihood of sustainability.

The first two indicators describe human systems that affect the incentives for environmental management:

1. The price of wildlife relative to its potential, and relative to alternative land uses. This answers the question: Can wildlife earn enough money to compete (does it have a comparative advantage)? It is also a summation of the net effect of policy and market distortions on this potential.
2. The proportion of wildlife benefits that get to the landholders who make land-use decisions. These may be communities, private ranchers or park managers. This indicator summarizes many of the issues related to property rights, resource governance and organization.

The second set of two indicators summarizes the output of institutional and management systems in terms of the status of the natural resources themselves. They assess whether the benefit-flows are actually promoting wildlife and habitat conservation.

3. Is the size and integrity of wildlife habitat being maintained?
4. Within this habitat, are wildlife numbers and quality (*e.g.*, trophy quality) being maintained?

The fifth indicator recognizes that sustainable use is a process, and follows the assumption that a planned, managed and controlled process is likely to improve the speed and likelihood of successful implementation.

5. Have institutional and land use objectives been clearly defined, and is a system for monitoring and controlling performance in place?

The sixth indicator relates to the political sustainability of the system, and is more difficult to quantify.

6. Is the programme generally accepted politically? This includes issues such as governance, equity, democracy, human rights, *etc.*, which should be assessed from the perspective of several key stakeholders.

5.4. Concluding Comments

The experience of South Luangwa confirms that we have the expertise to put a community-based wildlife management system into place with a high degree of confidence. We have a good conceptual framework for the sustainable use of wildlife²⁸. As the indicators show, we are now developing the tools to manage the process of change to convert unsustainable, disenfranchised communities on degrading land to empowered communities benefiting from and managing their wildlife. The fact that southern Africa has the conceptual and managerial tools to begin to make this transition lends credence to the concept of sustainable use and to the analytic framework's emphasis on equity, economics and society. At the cutting edge of this progress is the South Luangwa community programme that has confirmed the principles of community management and contributed new techniques for managing the process of devolution. An essential part of managing this programme has been the use of objectives and indicators to guide management towards these goals. Thus, we can claim that the

²⁸ See, for example, the CAMPFIRE principles (Murphree 1991, Metcalfe 1993, Child B. 1996) and the IUCN Southern African Sustainable Use Specialist Group's (August 1996) analysis of sustainable use.

indicators suggested in this paper have been tested in a real-life situation and, judging from the progress of this community programme, are useful.

The end point of community programmes has been defined conceptually in reasonable detail, suggesting that the new challenge lies in managing the process of moving towards it. This can be done with some degree of certainty provided two factors are in place. First, the resource in question must have the potential to generate benefits that exceed both its opportunity costs and the transaction costs of implementing the new system of community-based management. This is influenced by the ratio of human populations to the output potential of the resource. The second major constraint lies within the field of political economics. We can only proceed towards sustainable wildlife use where the political circumstances accept devolution and democratization of management, and the commercialization of the resource. Tenurial reform is at the foundation of such changes: If political circumstances allow wild resources to be delineated to small communities or individual landholders, the probability of the resources' conservation and benefits to improving human livelihoods is increased, possibly substantially. If, in addition to this, the international community is willing to pay for the benefits it derives from the existence of wildlife in southern Africa, the goals of sustainable use in the area will be further enhanced.

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