CRITICAL ANALYSIS OF COMMUNITY-BASED WILDLIFE RESOURCE MANAGEMENT IN SOUTHERN AFRICA: CASE STUDY FROM ZAMBIA

By
Samuel Mulenga Bwalya
Department of Environmental and Natural Resource Economic
University of Rhode Island,
Kingston R02881 USA

Abstract: This paper analyses Zambia's experience with community-base wildlife management (CBWM) system called the administrative and management design (ADMADE), highlights its successes and failures and recommends design and implementation issues to improve community participation and wildlife conservation. The paper first reviews and summarizes the theory and practice of CBWM in selected countries in Southern and identifies the salient features/factors that underlay any successful community natural management system in the developing world. We combine this evidence with experience from the Blue Lagoon Game Management Area in Zambia to recommend design and implementations issues that can improve community likelihood's and lead to sustainable wildlife management in game management areas in Zambia. Evidence suggests that CBWM programs have had little impact on the local behavior, community livelihoods and wildlife conservation. In order to promote the stability, productivity and sustainability of wildlife resources and its ecosystem and contribute to rural development, an integrated portfolio approach to wildlife and ecosystem management needs to be explored as any alternative.

1 Introduction

The general failure of the centralized approach to natural resource management to arrest irretrievable losses of biodiversity around the world during colonial and post independent periods led to a search for an alternative natural resource management (NRM) regime. For such an approach to be widely accepted and adopted it had to be capable of addressing ecological, social and economic concerns. The concept of *community*-based natural resource management (CBNRM) arose specifically to address the goals of environmental, economic and social justice. CBNRM, which integrates wildlife conservation and rural development objectives in a single program package, has been adopted as a win-win approach to wildlife management in several wildlife rich countries in Africa (Getz, et.al, 1999). It attempts to reverse resource degradation and thus at least begin to counteract the long history of impoverishment, political-economic subordination and disenfranchisement of traditional resource users (villagers). In other words, community-based wildlife management (CBWM) emphasizes benefits to natural resource dependant *communities* and/or pursuers of subsistence livelihoods that are closely dependant on wildlife management (Lynch &Talbott, 1995 quoted in Li, 2002).

The community-based wildlife management strategy as a policy tool recognizes that local communities could be motivated to adopt benign and sustainable wildlife management practices. It is based on the assumption that local communities are interested and willing to adopt and implement wildlife conservation programs as long as they are legally entitled to any resultant ownership of resources and to associated benefits. In view of these benefits, CBNRM emphasizes social fencing as a mechanism for conserving the natural resource in question and perpetuating the flow of benefits associated with it. For example, game is traditionally an important source of protein to local communities. If properly managed, targeting smaller mammals as a protein source at subsistence level is unlikely to cause depletion of wildlife stock. However, subsistent hunting as urged by Jachmann (1998) and in more general terms by Baland and Platteau (1996) can have adverse impacts on wildlife population.

There are a number of obvious simplifications in the assumptions, design and implementation of CBWM waiting to be addressed. In fact, some CBWM assumptions are actually flawed (Leach et al, 1999). Failure and success of CBWM stems not from weaknesses in program assumptions alone but from the real priorities of some stakeholders. While, some interest groups are indeed genuine in their participation in CBWM many others have lopsided objectives predicated by their political aspirations or environmental conservation priorities that may or may not be congruent to the needs, belief and expectations of local communities. These imbalances fail to portray clearly the original objectives and assumptions of a successful CBNRM design, thus making local communities increasingly suspicious of program outcomes.

This paper discusses the theory and the practice of CBNRM program in developing countries, with a bias on Africa. We discuss the common elements in CBWM regimes and how these impact wildlife resources and local community livelihoods in southern Africa. This is accomplished by drawing specific lessons and conclusions from the case study of the Blue Lagoon Administrative and Management Design (ADMADE) program in Zambia. We summarize these experiences and propose alternative designs or approaches for enhancing local participation and long-term wildlife management in Africa.

2. The theory, assumption and approaches to CBNRM in Southern Africa

In this section, we explore the assumptions of various natural resource management systems and provide the basis for evaluating the successes and failures of CBNRM for wildlife management in Africa. Three variants to state ownership, control and management of natural resources are controlled open access, regulated common property and private property regimes. Open access regimes involve no salient incentive features for long-term wildlife management. The debate and trade offs in terms of mechanism design involve the choice between the last two or a hybrid of the two management regimes. The private property rights school argues that open access and unregulated common property regimes are inherently inefficient because they fail to produce incentives for individuals to harvest the resources in a socially optimal way (Baland and Platteau, 1996). The counter argument is that privatization of natural resource would not necessarily lead to efficiency, especially if the efficiency of privatization is evaluated in terms of its impacts on the distribution of income. Baland and Platteau (1996) have shown that although privatization can dominate regulated common property regime (CPR) in terms of efficiency and that everybody can potentially gain from privatization, this is however only true if there is full income compensation to those who lose out is paid or if the traditional resource owners are made private resource owners. The practice of resource privatization shows that traditional resource users are disenfranchised, lose their traditional rights to the resource and are never adequately compensated, if at all.

The most cited benefit of privatization and commercialization of natural resources is that although local communities are not compensated, they benefit from by taking advantage of new employment opportunities generated. Weitzmen argued, however that "…[with] the introduction of private property…, unless they get a kickback in one form or the other, former users of the resource still lose out both in terms of employment and on account of reduced individual earning" (Weitzmen, 1974 p234, quoted in Baland and Platteau, 1996). CBWM avoids the pitfalls, particularly in communities that score high on trust, leadership, coordination and group identity (see Ostrom 1992). The community-based approach to wildlife managements is preconditioned on its ability to alter local behavior and practices in ways that conform to the attainment of predetermined conservation and community development goals (Gibson & Mark 1995; Metchalfe, 1994). This expectation takes for granted that local people are interested and ready to shake off

their values and norms in preference for new behavioral norms that guarantee the economic prosperity of rural residents. In other words, CBWM assumes that economic incentives will affect the behavior and interests of individuals and subsequently transform local residents into conservationists. The strong emphasis on conservation, which might not be the immediate interest of residents, sometimes makes residents highly suspicious and pessimistic of whether their livelihood interests will be preserved and enhanced by the CBNRM program. It is sometimes unclear whether community-based management programs involving buffer zones (game management areas in Zambia) built around national parks are designed to offer appreciable economic benefits to local communities or merely to solicit their participation in wildlife conservation programs (Agrawal, 1999). The buffer zone approach is the cornerstone of the CBWM programs in Zambia, Zimbabwe, Mozambique, Botswana and Namibia among others. Given that wildlife stocks are lower in the buffer zones than in protected areas (national parks), the capacity to generate revenue for community development without degrading the resource base is limited. In addition, the revenues generated are spread thinly across a large number of communities and residents making it difficult to appreciate the contribution of buffer zone resources to rural development and welfare. In this regard, economic benefits from wildlife operations in buffer zones (including protected areas) may not be enough to compensate for the losses incurred by the community as a result of the CBWM program. In this case, if financial incentives matter for community participation, then substantial external support (financial and technical) made available to local community is necessary for the conservation program to be sustainable. Local commitment in this case will be hard to sustain in the long term.

Songorwa (1999) analyses community interest in community based wildlife management in Tanzania. He concludes that local communities in Selous were not interested in wildlife conservation and the people therefore continued to poach despite the fact that a CBWM program was in place. The assumption that a CBWM program can reestablish harmony between community livelihoods and nature by reestablishing traditional values and community solidarity that existed in the pre-colonial era is difficult to credit especially in the context of the current wave of globalization sweeping across countries and communities in Africa. In fact the whole concept of "community" is illusive and highly contested in the literature (Agarwal, 1995; Asher 1995). Furthermore, the extent to which shared norms exist among rural communities and how these norms impact wildlife conservation outcomes varies in time and space. For instance, some community norms are potentially antithetical to wildlife conservation objectives[1](see Mark, 1984; Agarwal 1999). Similarly, the extent to which external norms can be introduced and embraced as community norms in most village societies may be limited.

Agarwal (1999) proposes that community based wildlife systems should be made to emphasize i) divergent and multiple stakeholder interests and interactions and, ii) how political and institutional factors influence management processes and outcomes in general, and in turn, wildlife conservation outcomes in

particular. For instance, one might be interested in analyzing the reasons behind community participation in wildlife management programs, or why property rights and responsibilities have been assigned to local communities, and so forth. Some of the underlying factors may be historical, political, cultural and/or economic and will vary across countries and communities. In Southern Africa, issues of legitimacy and fairness are just as important as the economic benefits that accompany CBWM programs.

Answering the question of how much power and responsibility should be decentralized to local community structures and determining the optimal role of government in CBWM has not been clearly addressed. These are crucial and interest questions for scholarly and policy debate in Africa and the world over. We attempt to discuss some of these questions, specifically as they relate to the practice of CBWM in southern Africa and particularly in Zambia.

3 The case study of the Blue lagoon ADMADE for wildlife.

3.1 Background

Mumbwa district lies approximately 160 kilometres west of Lusaka along the Mumbwa-Mongu Road. The district has three political constituencies, Mwembeshi, Nangoma and Mumbwa West. The district is further sub-divided into 20 political administrative units called wards. There are approximately seven traditional chiefs in Mumbwa district, with much of the land falling under Chief Shakumbila, Chief Kaindu and Chief Mumba (see table 3 in the appendix).

Figure 1 in the appendix shows the geography of the blue lagoon General Management Area (GMA). The Blue Lagoon GMA surrounds the Blue Lagoon National Park (BLNP). Approximately 80% of its total land area falls under Chief Shakumbila of Mumbwa district. The remaining 20% is under Chief Mwanachingwala of Mazabuka District. Both tribes belong to the Botatwe dialect. Approximately 120,000 people live in the Blue Lagoon GMA. The population growth rate is estimated at 3.4 percent per annum. Most head of household (93%) are male[2]. There are about 5 persons per household. Over 90% of the residents interviewed had attained a primary school education; 27 % and 7% had secondary and college level education respectively.

Figure 2 shows the proliferation of human settlements in and around the Blue Lagoon National Park (BLNP). The GMA is interspersed with human settlements (villages and fishing camps), agricultural fields and rangeland for cattle grazing. Most of the village establishments occupy the entire stretch of Muchabi-Shimuyunji road on the northern edge of the Blue Lagoon GMA, except for fishing camps that are entirely located inside the BLNP[34]. Community livelihoods are dependent on natural resources found in the GMA and the BLNP.

Of great importance for community welfare and tourism development in the area is the state of the transport infrastructure and the availability of common facilities for such purposes as health and education. At the time of the study on which this paper is based, Muchabi-Shibuyunji road was the only maintainable road linking the area to Lusaka either through Nampundwe Mine or Lusaka–Mongu road (see figure 3 above). Maize and cotton marketing depots are located along the Muchabi-Shibuyunji road. There is a motorable track off the Muchabi-Sibuyunji road leading to Nakenda Camp. There are several footpaths linking all settlement areas along Muchabi-Shibuyunji road to all the fishing camps. Residents often use bicycles and scotch-carts to transport people and goods. The Kafue River provides easier access into the national park.

Tourism is perhaps the most important, albeit under-developed, economic activity with potential to employ and generate income for a majority of rural residents of Chief Shakumbila. Managing and preserving biodiversity resources will not be easy given the precarious livelihoods of the local community, lack of non-farm employment and high dependence on natural resources. A successful long-term strategy for natural resources management will have to address the need for land and water for settlement, agriculture, and for raising livestock. The need for enough land and water for grazing cattle is particularly critical given the cultural importance of cattle in the community.

During the dry season residents rely on the Kafue Wetland for pasture and water for their livestock. There are threats both to wildlife and livestock posed by cattle grazing in the national park. There is evidence suggesting disease transmission between wildlife and livestock when land for wildlife is used as rangeland for livestock. The Zambia Wildlife Authority (ZAWA, 2000) documents outbreaks of anthrax associated with livestock-to-wildlife transmission. ZAWA has also documented transmission of rabies, foot and month diseases, heart-water and tuberculosis from wildlife to livestock. Current inequitable and socially insensitive legislation and approaches to land use planning and management will not resolve these issues amicably unless substantial resources and opportunities are generated to provide alternative water and pasture for the local community.

3.3 Natural Resource endowment

The blue lagoon is located on the Kafue Flats. The Kafue Flats is a vast shallow basin of the Kafue River formed on deep floodplain sediments underlain by ancient faulting between the Itezhi-Tezhi Gap and the Kafue Gorge in Southern Central Zambia (Jeffery, 1993). The Blue Lagoon forms part of the Kafue Wetlands as shown in figure 2. It provides habitat to some of Zambia's finest wildlife species. These include the Kafue lechwe *(Kobus leche)* with estimated stocking of 68,000 in 1991; 5,000 zebras (*Equus berchelli*); over 90 species of other mammals (buffaloes, etc.); and 400 species of birds, including the Wattle Crane *(bugeranus carnunculants)*. The Wattle Crane is believed to be extinct in most parts of the

world. Over the years, this area has recorded declines in the population of species such as the aardwolf, cheetah (acinonyx jubatus), wild dogs *(lycaon pictus)*, lions *(panthera leo),* leopards *(panthera pardus)* and eland *(taurotragus orgus oryx)*, now believed to be extinct in the area (Jeffery, 1993). Plans are underway to have some of these species reintroduced into the ecosystem.

Fishing on the Kafue River and particularly on the Blue Lagoon provides livelihoods to residents of Chief Shakumbila and Chief Mwanachingwala. The Kafue wetland is a major source of industrial, municipal supplies (Kafue Town and Lusaka), agriculture, livestock and wildlife. It is also a sink for industrial and agricultural waste. In addition, the Kafue Wetland is rich in minerals such as gypsum and magnetite, which are important inputs in cement and coal production respectively. These mining activities are a threat to wildlife and the Kafue Wetlands ecosystem. Population growth is expected to exert more pressure on land for agriculture and settlement in future and is expected to reduce the size and quality of wildlife corridors[5].

3.4 Rural livelihoods and natural resources

This section describes livelihoods and strategies of the people living in the Blue Lagoon GMA. The concept of sustainable livelihoods emerged after the Brundtlands Commission in 1987 and was applied to the analysis of resource ownership and access, basic needs and livelihood security in a rural setting. The UN Conference on Environment and Development, in Agenda 2,1 noted that the sustainable livelihoods approach is a powerful integrating concept that offers a way to link socio-economic and ecological considerations in a cohesive policy-relevant structure. The term livelihoods is used here to mean the activities, entitlements, and assets that people draw upon to make a living. In this regard, this study interprets at assets to include the physical, financial and natural resources and entitlements (institutions, participation, empowerment, social networks etc) that people own and utilise to pursue livelihoods. Therefore, sustainable livelihoods for inhabitants around the Blue Lagoon GMA will be used to analyse how households and communities utilise different asset portfolios both in the short term and the long term to secure social, economic and ecological sustainability of natural resources in general and wildlife in particular.

Agriculture is the major livelihood activity of most people living in the Blue Lagoon GMA. Most of the agricultural activities are pursued at small to medium scale level with maize and cotton being the major food and cash crops, respectively. Agricultural mechanization is relatively low, with most farmers using hand-tools and oxen for ploughing. Use of chemical fertilizer and improved seeds is becoming increasingly common, especially among relatively affluent residents. Seed inputs for cotton are distributed to farmers participating in the Lonrho cotton out-growers schemes.[6] On average a household produces eleven (11) 90kg bags of maize, and a maximum of hundred and twelve (112) 90kg bags. About 50% of the

residents grow maize and cotton. They also grow peanuts and other legumes mainly for their own consumption. Most farmers use high proportions of their yield to meet household food requirements. Only 22% of the total maize produced is sold, the rest forms part of household food reserve.

The residents are traditionally cattle herders and grazing land is an important asset to them. They use cattle to plough farms, and as a means of transporting people and goods to and from the markets and fishing camps. Cattle are an important source of proteins (milk and meat), game and cash. Residents also use cow dung as fertilizer and as a source of household energy. Despite its livelihood importance, there are synergies between livestock production and wildlife management at present. Focus group discussions with Chief Shakumbila and Senior Headman Muchabi and the residents indicate that wetlands of the Blue Lagoon National Park is an important source of water and pasture for livestock especially in the dry season[7]. The demand for water and grazing lands for livestock need critical consideration in designing and implementing wildlife conservation strategies in the area. Of great importance in this regard is how to minimize or eliminate the risk of disease transmission between wildlife and livestock. These and other related human/livestock and wildlife interactions and risks need the serious attention of resource managers (government), local community members and tourist operators in the area.

Kafue fisheries provide employment to fishing communities. Most of these communities move from one fishing camp to another depending on the flood regime. The major fish species harvested include the Kafue bream and catfish (barbel). Only subsistence levels of harvest were observed during the study period and these are unlikely to reach levels that can lead to any serious stock depletion. The catch is smoked or sun-dried and packaged in bundles ready for sale to fish traders. Fishers at Namucheche have organized themselves into an association of fishermen. The game scouts manning wildlife in the area recognized the association and some of its members are village scouts/informers. Proliferation of fishing settlements encourages illegal off-take of wild animals from the perspective of wildlife officers and key informants. Nonetheless, these activities are very critical to the livelihoods of local communities and should be made more sustainable. In others, conservation programs that ignore these realities and disenfranchise people from these resources may attract resistance from fishers.

3.5 Institutional structure of the ADMADE program

The ADMADE program started in 1987 following the Lipande Development Project. The ADMADE program has four hierarchical structures. First, the ADMADE directorate is the highest authority committee chaired by senior wildlife officers and is vested with powers to formulate management policy for all programs in the country. The second command layer is the wildlife management authority, which comprises district and local government level officers. The district executive secretary chairs the committee while the wildlife warden (wildlife camp manager) serves as its executive secretary. This

committee is perhaps the most powerful in that it makes decisions on management goals and tasks and develops tools and strategies for their implementation. This may also include decisions on wildlife monitoring strategies, allocation of hunting quotas, and control of revenues and expenditures at the local level, although this function is technically a preserve of the wildlife authority. This committee also approves development projects that can be financed by ADMADE revenues in the area. The wildlife sub-committee headed by a traditional chief is responsible for administering local program and resolving conflicts at the local level. Several village administrative groups fall below this committee.

The ADMADE institutional framework is typically a top-down decision-making structure with some powers decentralized to the district government structure, but not yet still to lower community and traditional level structures. The only difference between the present and previous systems is the financial component for community development in the ADMADE program. The local community through the chief is empowered to decide how it wants to spend its share of wildlife revenues and can inform the government especially if addition support (material and technical support) is needed. This is especially the case with community-based investments in social service provision (building or rehabilitation of clinics and/o schools). In the past, the proportion of revenues set aside for community development (35%) was often erratic and sometimes misappropriated at the district level[8], implying obvious weaknesses in institutional design, channels of communications and the decision-making process in general. This is likely to have impacted the legitimacy of the ADMADE program and the willingness among residents to support and participate in it. Even a substantial and sustained flow of financial resources to the community might not have a significant impact on local behavior if institutional weaknesses are seen as insurmountable and the perceptions of the fairness and legitimacy of the decision making process and of subsequent policy outcomes are negative. In other words, local participation in decision-making is just as important as the financial component of the ADMADE program.

3.6 Successes and failures of Admade in the Blue Lagoon

I assess the successes and failure of the ADMADE program in the study area and identify factors responsible for program outcomes. First, I focus on the extent to which participation and resource ownership rights have been transferred to the local communities by looking at their participation in key decision-making processes. Second, I examine the extent to which local communities benefited (or anticipate benefits). I assess whether these benefits impact local behaviour in a manner consistent with conservation and sustainable livelihood objectives. Lastly, I examine whether or not the ADMADE program has had any significant impact on wildlife conservation and management, particularly in reducing poaching in the Blue Lagoon National Park and GMA.

Community participation and Ownership

The survey data on residents' perceptions together with information summarized from focus group discussions made it possible to analyze community perceptions, participation concerns and ownership issues, as well as to study the importance of wetlands and wildlife resources to the livelihoods of resident in the area. The focus group discussions were held with Chief Shakumbila and Senior Headman Muchabi, with the wildlife officers, and with the association of fishermen at Namucheche fishing camp.

The data suggests that residents have a relatively good understanding of the importance of wetlands and believe they should be conserved [9]. The table below shows community perception about the importance of wetlands in the Blue Lagoon National Park and the surrounding GMA.

Table 3: community perceptions with respect to reasons to conserve wetlands as protected areas

Reasons	Percentage in agreement
Reserves for plants and wild animals	70
Important source of water and pasture for livestock	26.1
Conservation for future generations	7.5

Source: authors own calculation based on survey data collected.

There was no indication to that residents are opposed to managing wetlands as protected areas (although they did indicate that they did not benefit from the ADMADE program). The Chief and Senior Headman Muchabi emphasized that*, "if these areas* [wetland and national park] *are not protected, animals will be driven to extinction and that protected areas for wildlife were created to achieve* [protection from] *this outcome*"(Focus group discussion*)*. This seems to suggest that traditional rulers and their subjects, i) are not necessarily opposed to wildlife conservation and ii) are agreeable to land use plans which address both community livelihoods and biodiversity conservation concerns. Nonetheless, participation and broad based consultation appear be important in convincing communities to support and adhere to land use plans and rules set to achieve development and conservation goals in the area.

When we asked the Chief to comment on the present wildlife management system, he indicated that he was satisfied with the way the wildlife agency has been managing protected areas and wildlife in particular in his area: " *I'm happy with how the animals are being protected by game scouts and I have no complaints…I am also happy that when game scouts apprehend poachers, they bring them to me so I can see how these people are and were they come from, except that they (wildlife scouts) do not bring and share the confiscated carcasses with me they take everything...* " (Focus group discussion with Chief Shakumbila and Senior Headman Muchabi). The Chief's comments suggest that traditional rulers are aware of the difficulties wildlife officers encounter in managing wildlife and protected areas. Such meetings with

community leaders help determine a framework for local ownership of resources and for the role and responsibilities that local people expect government agencies to play in resource management. For instance, the local community has neither the technical know-how nor financial and material resources to enforce and manage transboundary resources such as wildlife. The kind of resource ownership rights anticipated by residents and the level of community participation solicited need to be redefined to emphasize joint management with clearly defined roles and responsibilities and commensurable benefits. In fact, one of the shortcomings of the ADMADE program lies in its inability to link the flow of wildlife benefits to community to residents' participation and responsibility in wildlife conservation. As such, wildlife revenues to the community (benefits) are merely seen as windfall and as such are vulnerable to misapplication (Gibson, 1999). When both poachers and non-poachers benefit from community investments in social services, the former have no incentive to stop poaching. In order to minimize the adverse impacts of free-riding, incentives to benefit from community project financed by wildlife revenues need to be made compatible wildlife conservation objectives or achievements. For example, it might help to identify and group residents (beneficiaries) according to common interests. On this basis initiate wildlife-based investment projects, whose sustainability depend on wildlife conservation, to support community livelihoods. Such an approach if properly implemented, can have the most decisive positive impact on local behavior and incentives to participate in wildlife conservation and management in the area.

A second problem confronting management of wildlife in the BLNP in particular is how to deal with fishing activities and associated illegal settlements. We asked the opinion of the Chief on several issues of concern to fishermen and ZAWA. Relocation possibilities were of particular concern. The Chief indicated that fishing was a peripheral activity and his residents were not involved. He actually wondered why the immigrant fishermen were not removed from the national park in the first place[10]. The chief also admitted that some of his subjects were arrested and convicted of poaching, including Senior Headman Muchabi's nephew, who was then serving a six (6) months' prison sentence. Although the chief could not comment on the legitimacy of the punishment, he did indicate that poachers needed to be punished. He also reiterated that commercial poachers from Mazabuka District were the major threat to wildlife conservation in the area. What this suggests is that the program had very little impact on residents' attitudes and practices, especially with respect to incentives to stop poaching.

The chief disclosed that he was unhappy that the government neither consulted nor informed him about foreign (domestic) investors permitted to set up tourism enterprises in his areas. The Chief further explained that he was neither consulted nor informed on allocation of hunting concessions in his area. The decision-making process remained characteristically top-down as before: nobody was consulted. The chief lamented that this lack of consultation once created disagreements and misunderstandings between him and his subjects and investors who repeatedly accused him of failing to control his subjects. " *I have not been*

considered important despite the fact that animals are in my area, I was once summoned for questioning by one of the safari operators who accused me of failing to control my subjects to stop poaching" (Interview with Chief Shakumbila and Senior Headman Muchabi). The Chief remarks pertain to the time when wildlife management was purely government's responsibility. As such the onus was entirely on government to ensure that property rights of foreign investors were secured. The chief had no incentive or commensurable responsibility to stop his subjects' poaching activities.

Other Chiefs have raised similar complaints. The Weekly Post newspaper in March 2002 carried an article reporting that Chief Kasonso of the Kaonde people had stormed into the Office of the Minister of Tourism, Environment and Natural Resources to complain about the manner in which government safari-hunting concessions were allocated in his area. Such complaints are certainly legitimate and indicate increasing awareness, which is positive thing. But this also questions the legitimacy of institutions responsible and the process by which concessions are tendered and allocated. The article further reported that the conditions under the tender for hunting concessions did not favor local participation and that local communities derived no tangible benefits from these operations. Lack of a legitimate and consultative decision-making process explains the current popularity crises facing the ADMADE program in Zambia.

Residents were asked to indicate the actual (anticipated) benefits they derived from the ADMADE revenues. In terms of actual benefits received, 5% said they benefited from the rehabilitation of a primary school for their children, 25% derived benefits from fishing (being allowed to fish) and 15% received no benefit at all. Many (47%) were discontented with the program and had no idea of what was actually going on with the ADMADE program and its revenues. In terms of anticipated future benefits, most residents ranked employment creation and infrastructure development (road network and water supply) highest. Table 2 below shows the actual benefits received and anticipated future benefits from the ADMADE program in the area.

Table 2: Actual and anticipated benefits from wildlife revenues under the ADMADE program

Benefits Received	**Frequency**	**Anticipated Benefits**	**Frequency**
School rehabilitation	5 %	employment generation	30%
Fishing in park	25 %	infrastructure development	15%
Collect Dung	5 %	health service provision	7.5%
No benefits	15 %	recreation	2.5%
No idea	47 %	no idea	45%

Source: Author's own calculation based on survey data collected.

The local community was, however willing to participate in the management of protected areas as informers to wildlife authorities. Economic benefits and incentives were inadequate and did not have any significant effect on local behaviour and poaching in particular. However, residents felt that CBWM program had the potential to improve their livelihoods if the design and implementation issues were streamlined.

Wildlife management: achievements and failures

This section discusses whether or not ADMADE has made significant improvements to wildlife management. The focus here is to assess the extent to which the program has helped to reduce poaching by local communities. One of the achievements reported during focus group discussions with wildlife officers of Naleza Camp was that the number of patrols and arrests increased with the implementation of ADMADE. Most of the poachers arrested came from Kafue, Mazabuka and Monze. This success in reducing poaching and increasing the population of large mammals like elephants has largely been associated with increased enforcement effort and not "social fencing" (Getz et al 1999, Gilson 1999, Wainwright and Wehrmeyer, 1999). In terms of wildlife stocking, the impact of increased enforcement effort varies depending on the size of the mammals involved. While increases in the population of large mammals have been documented, stocking data on smaller mammals is often unavailable for comparison. It is, however, felt by some ecologists that high level of enforcement induced poachers to change their hunting strategies specifically to target smaller species in order to escape detection (Gilson and Marks 1995; Wainwright and Wehrmeyer 1999). It is thus possible that while the population of larger mammals such as elephants increased as a result of the ADMADE program, the population of smaller mammals may have declined.

It is also worthy noting that, culling and professional hunting practices may impact the behavior and genetic stability of targeted species. Wainwright and Wehrmeyer (1999) discuss the issue of genetic disruptions (i.e. heterozygeity) likely to be associated with trough hunting, which exclusively targets larger and older elephant bulls. Trough hunting and poaching for ivory are likely to have similar genetic effects on elephants. For instance Jachmann (1998) reports that, *"in the Luangwa Integrated Rural Development Project area, the fraction of adult tuskless female elephants increased from 10.5% in 1969 to 38.2% in 1989, apparently as a direct result of selective illegal hunting for ivory" (Jachmann, 1998 p.63)*. The relative size and weight of ivory of those elephants carrying tusks has also decreased (ibid p.102). This analysis however does not apply to the blue lagoon national park, which has predominately medium sized wildlife species such as, zebra, lechwe and few buffaloes, mainly targeted for subsistence and commercial hunting for game meat. The point being stressed here is that it is difficult to assess the extent to which conservation objectives have achieved identified goals in the absence of good ecological indicators or stock

inventories. Most studies have concluded that only small improvements in the population of large mammals has been recorded, there is insufficient information to say anything about changes ins stocking levels of smaller mammals. In the aggregate, the emerging evidence suggests only modest improvements in wildlife conservation following ADMADE.

4. Practice and experiences with CBWM in selected countries: Some discussion:

Centralized ownership and management approaches have been associated with poor conservation record in developing countries. Experience has shown that success in wildlife conservation in a centralized system is only possible with high levels of monitoring and enforcement. Given budgetary shortfalls faced by most wildlife management agencies in Southern Africa, social fencing is considered to be one of the most cost effective approaches to conservation and rural development. These experiences vary by country, community and resource characteristics. Table 3 in the appendix summaries the experiences of CBWM in selected southern African countries. The review shows that CBWM programs in Zimbabwe, Zambia, Tanzania, Mozambique, Botswana and Namibia have recorded limited success in promoting equitable and popular participation and community development. In particular, CBWM programs have not been able to devolve power and ownership rights of wildlife from the State to the traditional owners of the resource—the local communities. Wildlife agencies and lower government structures (at district level) set management tasks, goals and select the policy tools for achieving conservation and revenue targets. Assessment of resource characteristics and execution of tasks is largely carried out by the wildlife agencies. The local communities are only asked to help to enforce these rules. What is also clear in these countries is that decision-making processes do not allow local communities to participate in decision-making; neither are local communities consulted or informed them about policy goals and outcomes. In short, local communities are still disenfranchised from wildlife resources and their livelihoods have not improved much following the introduction of CBWM initiatives. All the case studies reviewed show minimal contribution of wildlife revenues to local livelihoods (see table in appendix). Furthermore, although monitoring and enforcement increased (with donor funding and the help of village scouts) under which CBWM, the incidence of poaching merely shifted from targeting large mammals to targeting smaller species as a way to escape detection. The pressure to raise revenue for the wildlife agency (government) and the community has continued to increase and consequently so has the number of hunting concessions issued. The emerging evidence suggests that constant removal of older elephant bulls mainly through trough hunting (and previously through poaching for tusks) may cause genetic disruptions and adversely impact biodiversity if not properly investigated and controlled.

Similarly, how much revenue goes to local communities in most cases is determined by the wildlife agencies. Local communities make no decisions about revenue allocation beyond determining how to

spend the share the wildlife agencies allot them. The review also shows that CBWM initiatives in Southern Africa are not driven by local interest in wildlife conservation but by the promise of financial returns that accompany these programs. In addition, lack of transparent, legitimate and consultative decision-making processes undermine the effectiveness of CBWM initiatives in southern Africa. The leadership and organizational capabilities of local communities remain low, making it difficult to create and maintain the stability of social capital (village level organizations, networks and group projects). Social capital improves the capacity of the local people to innovate and to adopt new approaches and practices consistent with new rules of sustainable natural resource management.[11] To achieve community development and sustain community interest in wildlife conservation and management, CBWM schemes will need substantial amounts of external investment in community programs aimed at rebuilding social capital in order to restore and improve the harmony between community natural resource dependant livelihoods and wildlife conservation. The later can be achieved by initiating wildlife-based enterprises that are linked to long-terms wildlife and ecosystem conservation. This can also help to circumvent the temptation to convert land for wildlife conservation to other more profitable uses in future.

In Zambia, we observed that social service provisions (health and education) were the most preferred community development projects financed by ADMADE revenues. We attempted to analyze the effects of such investments on residents' incentives to participate in wildlife conservation. We observed that although clinics and schools were built or rehabilitated using ADMADE revenues, the benefits have not influenced on local behavior and incentives to participate in wildlife management, nor particularly affected residents' incentives to poach. We hypothesized that people fail to link wildlife conservation and management to social services provision (clinics and schools) for two key reasons: first, services provision does not distinguish those who comply with the natural resource management rules from those who do not. Secondly, local communities cannot identify the benefits of improved health and education services with wildlife management since government has traditionally provided these services at no expense to the community. It is therefore difficult to explain and convince local communities that the better health services they enjoy have been made possible because of wildlife conservation when government provides the same or better services to other communities not participating in the ADMADE program. Communities should certainly wonder why they ought to give up their land for wildlife and tolerate wildlife damage to crops to a service that benefit everyone and whose provision is entirely a government responsibility. Notwithstanding the foregoing, improvements in access and quality of health care and education services improve the social welfare of rural communities; the problem generally lies in the weak incentive they provide to enhance wildlife conservation[12].

The task ahead of us is to identify features (social, political and economic factors) and resource characteristics that explain successful CBNRM programs. We draw on lessons from the success story of the

Vana Samarakshana Samithi (VSS) Joint Forest Management (JFM) program in India summarized in table 1[13]. First and foremost the 97 families belonging to the Gond and Naikpod people formed a forest protection group, which they called Vana Samarakshana Samithi (VSS), in 1990 and petitioned the forest department for its recognition in 1993. As explained by (), the need to conserve and manage forest extractions was conceived and pushed by the local community in reaction to the increasing scarcity of timber and fuelwood. The Forest Department in India had a supportive and transparent policy and institutional framework for supporting JFM projects at the community level. External support from the Forest Department combined with social cohesion, strong kinship ties, the culture of forest protection and the tradition of popular participation in community affairs among the Gond people worked to the advantage of the VSS. Property rights were clearly specified and exclusive to the local community. The Forest Department provided to local communities substantial financial and technical support specifically targeted towards natural conservation and management. Conservation, social equity and community empowerment and development objectives were achieved in record time.

The important lessons are that the initiative to conserve the forest was started and driven by community interest and participation and supported by external financial and technical assistance from the State Department of Forestry. Decisions regarding how much and on what to spend the funds and subsequent revenues was a joint responsibility of the Forest Department and the VSS, and sanctioned by VSS resolution. Adherence to rules, plans and budgets (which were available for inspection and kept by VSS) contributed to this success. This is an illustration of a case where social fencing functioned well in protecting and managing a common pool forest resource. The important feature of the VSS JFM scheme included, but not was limited to, i) the culture of forest protection; ii) inspiring leadership iii) strict application of three institutional rules (adherence to the micro plan, financial management and village register), iv) provision of an enabling environment by the government through Forest Department, v) generation of employment for the local community (both men and women). In contrast, the evaluation of CBWM programs in Southern Africa scores poorly on a number these features.

5 Conclusion and recommendations

The extent to which CBWM programs have achieved conservation goals in Southern Africa is mixed. The Zambian case study and other case studies reviewed show that populations of large mammals such as elephants increased after the introduction of CBWM programs. This increase has been associated with high levels of monitoring and enforcement. Nonetheless, the CBWM program itself and in particular the benefits associated has not influenced the behavior and resource use among local communities. Most studies reviewed suggest that the conservation and wildlife management record did not improve in aggregate as a result of CBWM programs, at least not in any cost effective way (Carla; 1999; Sangorwa,

1999, Gibson, 1995; Ikubolajeh et al 2002; Getz etal, 1999; Inamdar et al 1999). It is therefore difficult for CBWM programs to demonstrate that biodiversity conservation and sustainable rural development, the most inspired objectives of CBWM, have been achieved in Southern Africa. The basic reason for this lack of clear success partly lies in government's failure to institute and provide secure property rights to local communities, not only with respect to wildlife resources but also to entire ecosystem in coexistence with wildlife resources.

CBWM design and implementation seem to ignore social, political and historical and economic factors of the local communities. This contributed to loss of popularity of CBWM programs in some Southern Africa. For instance Hughes (2001) concluded that historical and political factors shaped people's views and resistance to CAMPFIRE initiatives in the Nkanyi and Lupane districts in Zimbabwe. Alexander and McGregor (2000) concluded that the failure to reflect cadastral politics adversely affected the success and sustainability of the wildlife CBNRM programs in Zimbabwe and Mozambique. The great emphasis placed on economic and financial returns does not seem to induce successful community wildlife management programs in Africa. In addition, the capacity of local community to manage low stock and sometimes degraded natural environments in buffer zones and to generate substantial revenues for community development in absence of secure property rights is highly questionable. Moreover, the responsibility of managing wildlife implies managing the entire ecosystem with multiple goods and services. In this context, a more practical management strategy, besides the current CBWM and protected area, which will seek to manage the entire portfolio of natural resources in ways that allow for different conservation and utilization profiles to be achieved and to cross-subsidize each other.

By way of illustration, the Kafue Wetland ecosystem faces serious challenges with respect to its management given its multiple goods and services (wildlife, mineral resources, water, fisheries. waste assimilation, forest resources among others) it provides, and the various highly contested stakeholder interests its management encompasses. Questions regarding whether the entire ecosystem ought to be managed by any one particular agency or whether managing each aspect or set of attributes separately from each other is preferable will have to be addressed. The issue of how the interests of local communities ought to be represented in the wildlife management policy forum/debate and with respect to wetland ecosystem management in general is nontrivial. In addition, given precarious nature of livelihoods activities pursued by local communities, we are left with the quandary of how to motivate community residents to use wildlife resources efficiently and sustainably. To address this in the midst of insufficient financial and technical resources will not be an easy task for most southern African countries and Zambia in particular. Difficulty notwithstanding, these issues need to be resolved through research and policy debate, political will and commitment by all stakeholders to carefully identify and implement a detailed set of measures (regulatory and market-based instruments) that optimize the social and environmental benefits of wildlife

resource use and conservation. Future policy tools and management priorities need to be identified and should address:

i) the need to build capacity of local communities to claim ownership and use the natural resources efficiently and sustainably,

ii) the privatization of those aspects of the ecosystem that can be efficiently through market incentives;

iii) reserve some natural resource or pristine ecosystems (public goods) to be managed by government and;

iv) others by joint venture between local communities, private sector and government.

An integrated approach that allows for cross-subsidization between different ecosystems functions or products is important for ensuring the stability, productivity and sustainability of wildlife resources and the entire ecosystem.

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Appendix

Summary of studies on CBNRM projects in Africa (plus other developing countries)

Study description	Results		Critical factors and funding (Design and implementation issues)
	Contr. Welfare	Sustainable management	
Zambia: evaluated the impact of the LIRDP at community level by Carla wainwright and walter wehrmeyer (1999)	-Little contribution to welfare of local communities -Poaching reduced but not wholly due to the project. -Feeling that smaller species have declined while large mammals have increased		- little awareness and participation by local people - project was seen as of little relevance to local community life - wildlife revenues along insufficient to contribute to welfare without causing resource depletion - gender imbalances and low education attainment - high demand for entrepreneurial activities/projects - Genetic disruption (size and heterozygosity) can threat sustainability of wildlife populations as a result of selective harvesting (game cropping practice) o old males leaving small ones.
Tanzania: Selous wildlife conservation program in Alexander N Songorwa (1999)	-Review CBNRM projects for wildlife in Zambia, Zimbabwe, and Tanzania, Burkina Faso contribution to community welfare was marginal if not negative. -no marked reduction in poaching in Selous conservation project and- Conservation goals not met at least not in any cost effective way.		-local communities not interested and did not genuinely support the project -Decision to joined influenced by promised socio-economic benefits -for 7 yrs the project did not provide substantial revenue to local community -no resource ownership transfer to the local community, hence low co-operation. -decision making still top-down approach
Africa: Clark C Gibson and Stuart a Marks (1995)	-Minimal contribution to welfare recorded -Poaching shifted from harvesting large to small mammals - no marked improvement in cracking down poaching achieved.		-lack adequate technical assistance -low revenue flow to local community -low level community participation -no information flow from to local communities(esp. on revenue issues) -No local participation in decision making (esp. revenue allocation, safari concessions, etc) -Local community not given powers to manage wildlife-local community disenfranchised from wildlife resources

Ikubolajeh Logan and William Moseley (2002)	- Inability of the program to help reduce poverty among local communities. - No Community empowerment and autonomy over the resource questionable -Not evident that the program did make significant improvements in wildlife management.	-Local people don't feel that wildlife management is the best e legal structure of land tenure, and community ownership and empowerment and administrative structures contributed to economic option use of the scarce resource (i.e. Land). -no real devolution of power to local communities(power and ownership concentrated at district level). -Limited participation and basically no participation in decision-making regarding resource allocation and use-top-down approach. -Legal structure of land tenure ,and community ownership and empowerment and administrative structures contributed to poor performance
Wayne M. Getz Etal (1999) policy forum	-" CBNRM provides concrete examples of CBNRM success in raising the income levels of poor rural communities and simultaneously increasing wildlife populations." Pg 1855. -Key species (elephants, lions, leopards, buffalo) increased and cumulative income to villages totalled $4.9 mn btn before 1989 and 1996 (quoted African resource trust, 1997) More to be typed.	-Success depends on value and reliability of resource, cultural, legitimacy of mgt structures, possibly inversely related to donor aid, whether authority given to local community. - More to be typed..
Amar Inamdar etal (1999)	To be typed	**To be typed** (Multi-produced protected areas need integrated mgt plan=wetland (wildlife, biodiversity, waste sinks, habitat for fish, etc) how do we manage these????? See paper.

Alexander J and McGregor nJ (2000) Studied campfire in Gwampa valley in southern Nkayi and Lupane districts in Zimbawe	Program was not workable here and hence produced no benefits to local communities. The programs were not accepted.	Marginalized and removed from their traditional lands in the valleys to less fertile lands, later evidenced several time by the forestry commission, and prohibited any off-take of forest products and small game for their subsistence. Their grazing land was drastically reduced, Views from the councilors and local government executives about campfire were very positive (stressing developmental benefits and conservation. Local residents had completed opposite perspective grounded in their historical experiences. They liked campfire to the disliked colonial interventions they fought against. They strongly felt that they were consulted (p619), prospect of evictions under campfire prg raised grave concerns, and land as goal for liberation was stressed. The issue of movement created a lot of anger and distrust, - Felt councilors supported the prg for own benefits, lacked legitimacy - Livelihoods were threatened - Giving people ownership to resources and benefits to cover-up loses during colonial era, but more to it is the fact that altitudes towards game were shaped by the slaughter of game in the process of tsetse fly clearance (p.625). - Urged that they fought liberation struggles not for animals but for land and freedom to make their own choices about how it is used.
David McDermott Hughes(2001) looked community based resource management in Zimbabwe and Mozambique	To be read and transcribed	- Local community looked at eco-tourism as land0grabbing and therefore sabotaged the prg. “Backers of eco-tourism viewed squatter as an obstacle to both conservation and harmonious political relations. -
Melisa Leach, Robin mearn and Ian scones (1999) “ environmental entitlements: dynamic and institutions in CBNRM.	To be read and transcribed	

***Resource*)**Emmanuel D'B Naghath (2002) Economic and political weekly -97 families belonging to the Gond na d Naikpod formed a forest protection group in 1990, which they called Vana Samarakshana Samithi (VSS) and were regonised by the state forest dept in 1993 as a JFM in Andhra pradesh	-Benefits first in 1998 Rs 359,500, good firewood and NTFP. -Employment generation: coppicing shoots and singling works in the forest kept most villagers busy for most of the year. The wages offered by the forest dept for these works of Rs 40-50 > agric wage of Rs25 for women and Rs30 for men. -Alternative fuels: improved fuelwood technology through subsidized fuel wood stoves "Chulla" to half the villages reduced fuelwood cons by 25%. -Employment creation ended out-migration. - Silviculture treatment and regrowth - Protection and enforcement by patrols by local community (groups of five) and by nov 1998, 51 cases had be booked with timber worth Rs 234,311 seized and penalties totaling Rs 63,643. - soil conservation by building conservation bunds across streams and excavating percolating tanks, soil moisture had been conserved. - Standing stock improved, but noted that in 1998, there were more trees in untreated areas 1,064 per ha than in treated areas 715/ha. Regeneration of seedlings were higher in treated than untreated areas. More teak trees (61%) in treated areas and non-teak trees inn untreated areas (53%). - Re-emergence of non-timber benefits worth Rs145, 000 harvested each year.	-Started by the villagers in recognition of the scarcity of timber and firewood, organized and resolved to protect the forest at any cost… -In 1993, timber thieves from neighboring had not taken kindly to this and wedged a war against the behroonguda inhabitants. Intruders were thrashed and peace returned. Villagers elected there own management committees (with gender balance, PRA was conducted by villages and forest dept, and help from an NGO. The plan assigned 250 ha of degraded forest to VSS for silviculture treatment, beginning with 25ha in 1994, and ending with 250 ha. -in 1998, Rs 359,500 and were the first to get benefits in the state. The cut was only 3.75 %of the resource. -Rich tradition of participation in village affairs, both religious and secular. -Resident have an obligation to attend meetings and help the headman implement plans of the councils and contribute in kind etc - External assistance from forest dept in form of TA and financial; also assistance from NGO - 29% of the people are literate in the VSS (national average 52%) *does literacy matters?* - Household income is Rs 9665; of which 45% is from agriculture, NTFB and disbursement from forest work account for 43%. - Local demography favor women and at least half of the committee comprised women - Where the return sufficient to sustain people's interest in forest protection in VSS? The financial value of the forest was Rs 67 million, which is Rs692,048 per family in 1998, but by 2034 when the teak mature, the total vale will rise to R1,000 million in 1998 prices. The answer is certainly YES. The VSS vision;" the forest should become our backyard/the fruits of the forest should ours". There is more than enough for the current generation and future ones. - Conclusion is that social fencing is thus a very effective to improve the growth of the forest, protect the resource, and involve the people in natural resource management pg255-6. - Important institutional issue: separate joint account between VSS and forest dept, and accounts records kept by the villagers to ensure transparency; all works

Table4: Number of Chiefdoms and their respective sizes (Mumbwa District)

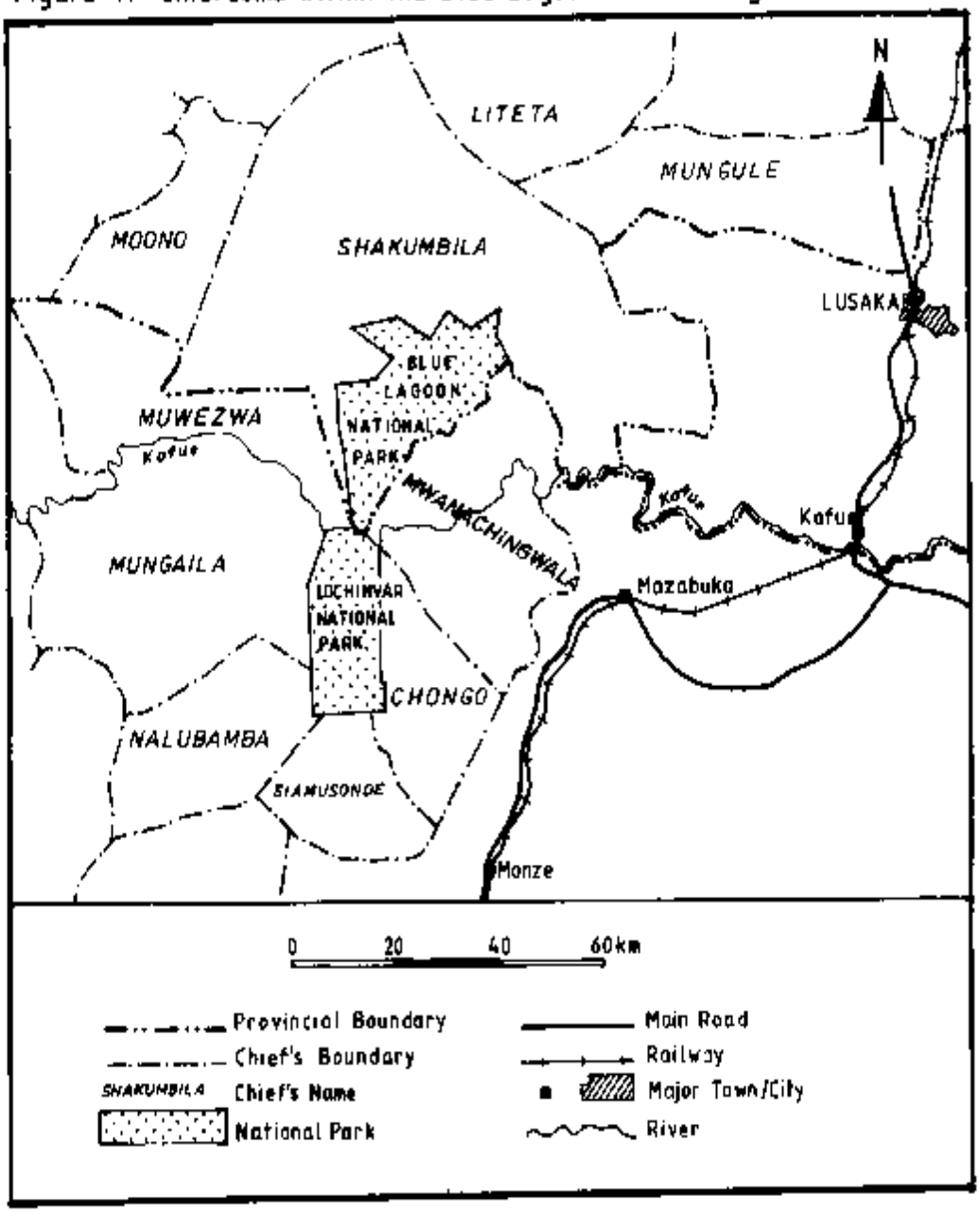
Chief	Number of Villages
Chief Chibuluma	28
Chief Kabulwebulwe	14
Chief Kaindu	231
Chief Moono	65
Chief Mulendema	80
Chief Mumba	138
Chief Shakumbila	484

Table 5: Some descriptive statistics on agriculture and fishing activities

	Mean	Std Dev	Min	Max
Maize output (90 kg bag)	11.18	23.9	0	112.0
Maize sales (90 kg bag)	2.47	7.95	0	40
Cotton output (90 kg bag)	2.34	6.08	0	25
Cattle	2.60	5.33	0	22
Goats	0.82	1.22	0	14
Chicken	5.03	0.56	0	45
Fish output (bundle*)	0.28	1.85	0	6
Fish sales (%)	40	49.61	0	100

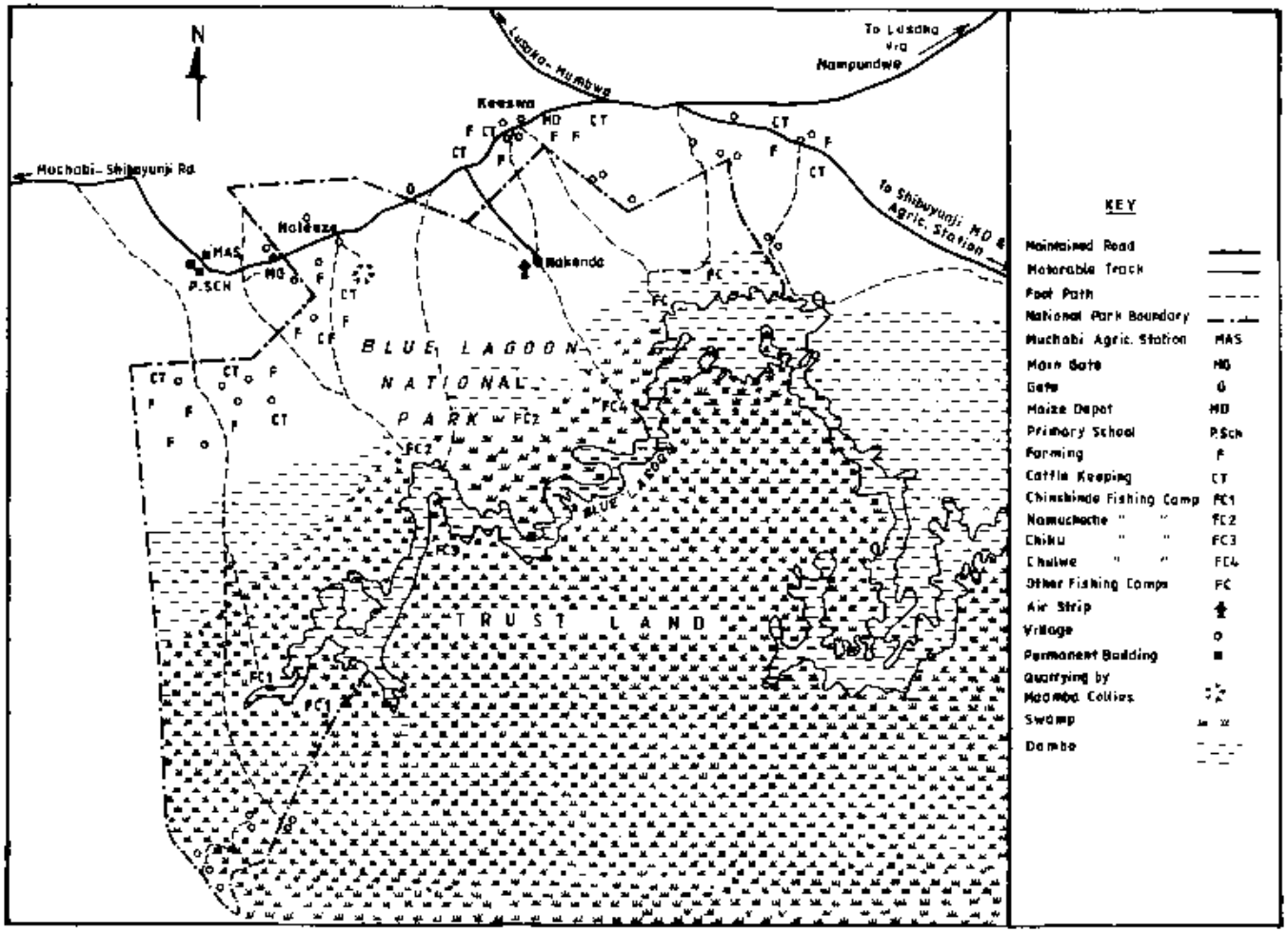
Note: On average a bundle of fish contains 1000 fish.

Figure 1. Chiefdoms within the Blue Lagoon Game Management Area.



Area A and B is the Blue Lagoon GMA

Figure 2. BLUE LAGOON NATIONAL PARK : Settlements and Road network.



[1] In some communities in Zambia, carnivorous animals (Lions, leopards, snakes) and animals that destroy crops are not seen as wealth conserving. In addition, some traditional practices or norms that utilize animal hides may lead to depletion of certain wildlife species, but the use of these is less emphasized at present in most cultural societies.

[2] Regardless of whether the husband provides the means of livelihoods for family or not, or has migrated into town in search of employment and the wife (spouse) provides for the family, the husband still remains the household head.

[3] The major fishing camps in the BLNP include those near Naleza wildlife camp. Some of these fishing camps include Chinshinde (FC1), Namucheche[3] (FC2), Chiku (FC3) Chulwe (FC4) and two other fishing camps (FC) located on the north-banks of the lagoon inside the Blue Lagoon National Part. The other fishing camps are located in chief Mwanachingwala's area on the south-bank of the lagoon and along the Kafue Rivers.

[4]

[5] Residents indicated that in the rainy season when the wetland is waterlogged, animals move to the wooded parts of the national park. At this time, illegal harvesting of wild animals is high since is easy for poachers to escape detection. There are also life threats from buffaloes taking sanctuary in the woodlands near people's homes.

[6] Cotton out growers schemes are contractual arrangements between the small scale cotton farmers and cotton merchants, where the latter supplies inputs to former to grow cotton which is purchase purchased by the merchant. Input cost is then factored out in determining the purchase price. This helped farmers diversify crop production but somehow compromised food security as people grew less food crops.

[7] This was the second major reason given in favor of wetland and the national park resource protection and conservation as well as being the single major use of the wetland and park resources by the community.

[8] Low wildlife revenues can also be attributed to wildlife resources characteristics and species diversity. The blue lagoon is basically rich in small and medium sized animals, which are less targeted for trophy hunting like the case is for other areas with abundant stocks of large and highly priced mammals such as elephants, hippos, etc.

[9] Similar results have been documented by Lupikisha J M C, (1993).

[10] The results of the survey substantiated these claims as legitimate. Most fishermen were not from chief Shakumbila.

[11] Pretty and ward (2001) provided additional case studies in which collective action (social capital) have significantly improved natural management in developing and developed countries, and highlights the conditions for success.

[12] The perception, values, community norms and social dialogue and kin factors are important for mobilizing local participation and imparting new wildlife management values. In addition, the feeling of fairness might not necessary be denominated by how the outcomes are distribution but on the legitimacy of the procedures and processes that generate these outcomes.

[13] In drawing these lessons, we emphasis the fact forests are stationary and easy to monitor while wildlife is mobile and tranboundary in nature.