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RURAL LIVELIHOODS, POVERTY REDUCTION, AND FOOD SECURITY IN SOUTHERN AFRICA: IS CBNRM THE ANSWER?

March 2007

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ABBREVIATIONS

ADMADE	Administrative Management Design Programme
CAMPFIRE	Communal Area Management Programme for Indigenous Resources
CBNRM	Community-BASED NATURAL RESOURCE MANAGEMENT
CDD	Community-driven development
GOB	Government of Botswana
JVA	Joint venture agreement
JVP	Joint venture partner
HDI	Human Development Index
HPI	Human Poverty Index
IRR	Internal rate of return
NPV	Net present value
PA	Protected areas
RDC	Rural district council
RR	Rate of return
SGL	Single game license
VNRMC	Village natural resource management committee
WMA	Wildlife management area
WWC	Ward wildlife committee
UNCBD	United Nations Convention on Biodiversity
UNCCD	United Nations Convention to Combat Desertification.

EXCHANGE RATES (2.3.2007):

1 US\$ = Pula 6.06

1 US\$ = 134.07 Malawi Kwacha

1 US\$ = 7.11 Rand/ Namibia\$

1 US\$ = 240 Zimbabwe

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I. INTRODUCTION

Community-based natural resource management (CBNRM) was launched in the 1980s as an approach to conserve natural resources, particularly wildlife outside protected areas (PAs) by increasing the resource benefits for the local population. This was done by granting communities conditional resource use rights. Martin (1986) and NASCO (2004) have described the nature of the early initiatives in Zimbabwe and Namibia respectively. Wildlife management had proven to be very difficult outside PAs and private land. The rationale was that people living with wildlife and other resources needed to appreciate the resource value by receiving net benefits. Until then, natural resources, especially wildlife, posed a significant cost to the local population in the form of competition for resources, predation, crop damage, injuries, and even fatalities. Furthermore, CBNRM was an implicit recognition of the failure of governments and parastatals to establish effective resource management in communal areas. Many communal resources suffered from over-utilization, and open access and illegal use was rife.

Initially CBNRM was seen primarily as a conservation approach but later on, the rural development side of CBNRM became more prominent. Botswana launched in 1997 its community-based rural development strategy (GOB 1997) and the World Bank (2000) established the concept of community-driven development or CDD (Jones 2004).

The typical CBNRM tools have been to establish village-based institutions with legal recognition, a constitution, and conditional resource use rights.¹ Such rights had an economic value for subsistence and commercial use. Communities and their institutions were granted exclusive and transferable resource use rights, which they could exploit themselves, lease out, or exploit through joint venture partnerships. Such community resource rights initially mostly referred to wildlife and tourism as well as forestry. Recently, a broader range of natural resources are covered such as veld products, water, and fisheries.

CBNRM programs have mushroomed throughout southern Africa, in part because of lack of alternative development and conservation models and in part stimulated by donors and subsequently governments. It must be stressed that perspectives on CBNRM may differ among stakeholders. Most communities first consider CBNRM as a development approach that should provide tangible benefits and empower communities, whereas many government institutions view it primarily as a conservation model. Such different expectations have led to recent criticism (Turner 2004) on either side of the conservation-development debate that CBNRM has failed as a resource conservation model or that CBNRM has been a ploy by conservationists to protect wildlife resources under the pretext of boosting development.

This paper focuses on three economic aspects of CBNRM approaches in southern Africa:

- *Socioeconomic benefits of CBNRM and contributions to rural livelihoods (section 2)*
- *Impact on poverty and food security (section 3)*
- *Comparison of CBNRM with other land use and development options such as agriculture (section 4).*

This paper is primarily based on a review of the CBNRM literature in southern Africa. Economic aspects have received limited attention in this literature. In the absence of monitoring data and statistics, many gaps emerged from the literature review that need to be filled in order to assess the economic impacts of CBNRM systematically and comprehensively.

¹ Resource *ownership* usually remains with government.

2. CBNRM IN SOUTHERN AFRICA

Informal CBNRM initiatives began in the early 1980s in Namibia and Zimbabwe. CBNRM formally became famous through the Communal Area Management Programme for Indigenous Resources (CAMPFIRE) projects in Zimbabwe. Although Zambia's Administrative Management Design Programme (ADMADDE) was launched before CAMPFIRE, it remained smaller and less well known. Zimbabwe, Botswana, and Namibia have the largest CBNRM programs, which were formally established through appropriate legislative change or specific programs in 1989, 1992, and 1996 respectively. In Namibia for example, CBNRM reaches a significant part of the rural population (some 21,000) and covers a substantial land area (some 105,000 km²).

Countries such as Malawi (1994), Mozambique, and South Africa followed, but the programs are smaller and more project oriented. In South Africa, CBNRM is commonly associated with land restitution claims of communities that lost land for the establishment of parks in the apartheid era.

The programs have been mostly focused on wildlife resources and tourism, although the resource scope is now broadening to include other natural resources. The programs in Zimbabwe, Botswana, and Namibia have strongly depended on wildlife and tourism, whereas in Mozambique and Malawi projects also include forestry and marine ecosystems. The emphasis on wildlife and tourism is based on sound reasons, in that communities had been severely alienated historically from wildlife resources and stood to gain significantly in new income, if given access. On the other hand, most communities were already using forests, grazing, and fish resources, so that large CBNRM gains in income from use of these resources were less likely.

CBNRM is clearly characterized by a large degree of diversity in terms of resources, organizational setup, and support environment. Table 1 summarizes the nature of the CBNRM program and the support environment. Table 2 gives indicators about the size and performance of the programs.

Trends:

- *Most CBNRM programs are growing very fast, reflecting community interest and lack of development and conservation alternatives.*
- *The initial focus on wildlife and tourism is gradually being replaced by coverage of a broader range of natural resources.*
- *Most CBNRM projects are still largely revenue-sharing mechanisms (wildlife), but are moving toward community development and more active management; however, most fall short of establishing common property resource management.*
- *Many communities sublease part of their resource rights through tendering or sometimes auctioning of resource use rights. Communities benefit through revenues and skill sharing. There is a need for constructive joint venture partnerships between communities and the private sector (CPP).*

3. NATURE OF COMMUNITY RESOURCE RIGHTS

Panayotou (1994) makes a useful distinction between resource rights in terms of ownership, development, and use. Most CBNRM projects deal with communal areas and their resources. In South Africa and Malawi, access to and use of protected areas are also part of the CBNRM program (Mauambeta and others, 2007 and Grossman and Holden 2007²). Communities are granted use and development resource rights in southern Africa with governments retaining resource ownership. Jones (2002) points out that the rights are resource specific and do not extend to comprehensive land rights. Land rights would give communities greater security, control and flexibility. Resource rights are limited in some countries, where government determines the hunting quotas for the area (e.g., Botswana and Zimbabwe). Communities may be consulted but do not take part in decision making. In Malawi, people are more eager to plant tree seedlings on their own property than in communally managed forest, as their entitlements for the latter are less certain (Mauambeta and others 2007).

Most rights are granted for exclusive use of certain resources inside a defined geographical area. In most countries, user rights are marketable through tendering, auctioning, or other mechanisms; therefore, communities have the right to determine which resource use is reserved for its own purposes (commercial and subsistence) and which part leased out for commercial purposes, generating community income. Most communities choose commercial subleasing to maximize short-term benefits, but some consciously decide to engage in commercial resource exploitation themselves, either alone or in joint ventures.

The resource use rights are often conditional and can be revoked if communities do not adhere to the conditions. Requirements typically include acceptance of a constitution, establishment of a community organization, approval of a resource management plan, and audits of annual financial accounts.

² In South Africa, this is usually part of the land restitution program that was instituted after 1994 (Grossman and Holden 2007).

The above raises several important questions. First, are these community resource rights sufficiently significant to stimulate community-based resource management and conservation? The preliminary answer appears to be no, even though local natural resource management has improved. Few communities have established a comprehensive common property resource management regime. Some consider the current generation of CBNRM as revenue-sharing mechanisms, rather than as a resource management approach; however, most communities are involved in aspects of resource management and conservation, although the extent varies between and within countries. Namibian communities appear most active in resource management, for example, through restocking, resource monitoring, and other environmental investments. Second, which sanctions will be taken for noncompliant communities? In theory, noncompliant communities can easily be denied resource use rights; in practice, this may be difficult to enforce as community projects would quickly collapse without such resource rights. Sanctions, therefore, are only often used as a last resort. For example, the resource quotas of Khwai community in Botswana were suspended after several warnings and subsequent failure to submit audit reports. Third, how can it be ensured that CBNRM benefits trickle down to local individuals and households and raise their interest in resource management and conservation? This requires a transparent and democratic distribution plan for net revenues, based on the following premises:

- *Nobody should be worse off because of living with natural resources (compensation mechanisms for damage).*
- *Everybody should receive a fair share of the net benefits.*
- *Zimbabwe is the only country with a revenue-sharing formula, ensuring a minimum percentage accrues to communities and a share set aside for resource management.*
- *Clear land and resource use rights and economic benefits to communities and individuals are essential for successful CBNRM (ENCAP 2005).*

Table 1: CBNRM Details and Support Environment

Country	Start	Program	Enabling Legislation-Policy	CBO network and NGO support	Membership	Boundaries
Zimbabwe	1989	CAMPFIRE	Amended Parks and Wildlife Act provides for Appropriate authority (usually district council) Community management of wildlife and forests Communal Land Act			Predetermined by RDC
Zambia	Mid-1980s	ADMADE-LIRDP	Wildlife Management Act 1998 2000 Forest Policy Fisheries legislation Conditional management of wildlife, forests, fisheries, wetlands, and water resources	Limited NGO support and donor services		Pre-determined by government
Botswana	1991	CBNRM; recently also indigenous vegetation program (IVP)	Large part of country is communal land managed by land boards Conditional community wildlife and land use rights for fifteen years (land) Hunting quota determined by government Other community resource rights possible under various laws Draft CBNRM policy to be approved by parliament	BOCOBONET as association of CBOs National CBNRM Forum CBNRM support program coordinated by IUCN Several NGOs assist CBOs, but few provide specialized services Limited donor support	Wildlife-based CBOs: all adult residents Veld product CBOs: approved applicants	Pre-determined by government
Namibia	1996	Conservancy program (LIFE and IDNRC)	Wildlife Conservation Amendment Act 1996 (amended from 1975) Conditional user rights of wildlife and forests	Strong, specialized NGO support network Donor support continues	Applicants that meet criteria; 35% of the population in conservancies are members	Proposed by communities
Mozambique	1994	Multiple programs	Customary rights and commercial use rights of wildlife and forests for community benefits recognized			Proposed by communities
Malawi	1994	COMPASS 1999–2009)	Resource management delegated to village committees 97 Forestry Act provides for village forest areas and formation of village NRM committees and for by-laws	Access and use rights over customary lands; restricted access to protected areas		??
South Africa	1996	Multiple programs	Communal ownership of land, wildlife, and forests Joint management of (parts of) protected areas through established joint management committees and subsequent implementation officer			Proposed by communities

Source: Long 2004.

Country	Programme	Participation	Economic Size	Revenue Sources	Benefit Distribution	Comments
Zimbabwe	CAMPFIRE	1997: 36 rural district councils 2001: 52 RDCs	1989: Z\$: 04. million 2001: Z\$ 51.4 million More than 80,000 households benefit from small cash dividends	Mostly hunting of high value species	At least 50% to communities/ wards; at most 50% to RDC, incl. 35% for NRM. Av. household income of US\$14 p.a. for an estimated 80,000 households Government has now ruled that local benefits must be used entirely for communal projects	Negative impacts from current economic and political problems; Mostly wildlife based, but diversifying
Zambia	ADMADE-LIRDP	30 game management areas			80% to communities (half of this for wildlife management and half for self-directed development projects); 20% to district and traditional leaders	Mostly revenue sharing scheme for game management areas
Botswana	CBNRM; recently also indigenous vegetation program (IVP)	94 CBOs covering 150 villages, 10 districts and some 135,000 people. 35 CBOs are currently productive. 14 joint venture partners work with CBOs.	CBOs generate P16.3 commercial revenues and P16.2 subsistence revenues. Employment is estimated to be 8,000, but this figure cannot be verified and seems far too high.	Cash-commercial revenues (2002): 60.3% trophy hunting 24.1% photo safaris 11.2% sale of veld products 4.3% sale of crafts	100% to communities; 4% as resource royalties to district council (waived for communities) The proposed CBNRM policy stipulates that a significant portion of JVP revenues benefit a new National Environmental Fund, which may fund projects from all communities.	Mostly run by DWNP with initial support of USAID (1991–1998) Wildlife CBOs form the core, but CBOs are diversifying
Namibia	Conservancy program (LIFE and IDNRC)	2005: 44 conservancies covering more than 78,000 km ² and well over 100–150 000 people 2004: 31 conservancies covering 71,394 km ² (28% of communal land) and 226,080 people	CBNRM benefits are N\$14.1 million. Employment is around 3,800, mostly part time.	36% from community-based tourism enterprises; 26% joint venture income 17% trophy hunting: 7% thatching grass; 4% crafts 3% game meat distribution 7% others	100% to communities 2004: 37,163 members out of population of 226,080. Possibly 20% to 40% of the adult population. Benefits (2004): Half spent on salaries Half accrues to conservancies. Half of the conservancies earn income ranging from N\$65,000 to N\$1.8 million (2003)	
Mozambique	Multiple programs	41 established projects			100% to communities	Mostly forestry with a few wildlife projects (incl. marine)
Malawi	Compass	34 CBOs in 6 districts; 144 village NRM committees and 52 beach village committees	Variety of project raise less than US\$300 000 per annum (mostly noncash benefits).	Mostly from nontimber forest products, fisheries etc. Not wildlife dependent.	100% to communities	
South Africa	Multiple programs	Several (e.g., Madikwe and Makuleke near Kruger), but exact number not known			100% to communities	Mostly linked to land restitution cases. Wildlife outside PA rarely an option.

Sources: Roe and others 2006; Taylor 2004; Jones 2004

Socioeconomic impacts of CBNRM

Significant resources have been invested in CBNRM, and yet the socioeconomic impacts are not well recorded. Baseline assessments (i.e., before CBNRM) are rare, and therefore, the socioeconomic assessment of CBNRM is by necessity patchy and impressionistic. Fortunately, the situation is gradually improving after calls for systematic performance monitoring (e.g., Child 2003; Jones 2004). Impacts should ideally be assessed against the current situation without CBNRM. Obviously, it is difficult to predict how life would have been without CBNRM in older CBOs. Where alternative development options are very limited, life without CBNRM would probably have been similar as life before CBNRM.

The Namibian and to a lesser extent Zimbabwe CBNRM programs are best documented and researched (see, e.g., Long 2004, Jones 2004, and Bond 2003). In contrast, most studies in Botswana deal with individual CBOs, and the CBNRM review is only the more comprehensive review (Arntzen and others 2003). In Namibia, Botswana and, to a lesser extent, Zimbabwe a cost-benefit analysis approach has been applied to measure the returns for government, donors, and communities to their investment in CBNRM initiatives at the level of individual conservancies. These ten year cost-benefit models are partially ex-post evaluations, but also partially ex-ante appraisals, in that they include both empirical records and planned incomes and expenditures. Thus, Barnes (1995), Barnes and others (2001 2003) in Botswana, Barnes and others (2002) in Namibia, and Jansen (1990) for Zimbabwe, found that at community level the investments made by donors government and the communities was financially positive. In particular, the returns on investment experienced by communities are high due to their regular receipt of donor grants.

Table 3 shows some of the community-level financial returns estimated for five conservancies in Namibia. It must be noted that these values tell us nothing of the returns to their involvement in CBNRM that individual households within conservancies receive or can expect. Thus, values given values for dividends to households are potential values only and do not necessarily represent actual payments made.

Table 3: Base Case Financial Returns to Communities Estimated for Five Conservancies In Namibia in 2000 (Namibia \$)

	Torra	#Khoadi //Hôas	Nyae Nyae	Mayuni	Salambala
Community financial values					
Annual community cash income ²	406,544	418,556	204,673	732,704	426,058
Cash income per household	3,388	598	292	1,628	355
Cash income per hectare	1.2	1.1	0.2	26	4.6
Financial rate of return (%)	133	205	23	220	40
Financial net present value ¹	2,133,200	3,350,000	1,364,400	3,696,300	1,347,900
Annual community dividends ³	228,000	207,900	114,400	225,000	168,700
Dividends per household	1,900	297	163	500	141

¹ Measured during ten years at 8 percent discount.

² Includes salaries and wages for conservancy employment, net cash income and dividends.

³ Potential for extraction from annual surplus for distribution to households.

Reviewing the literature shows that the performance of only a few CBNRM projects have been monitored/researched in detail,³ and the results for these few projects are frequently used and recycled in most CBNRM literature. This leaves room for biases and depicting the CBNRM achievements too favorably. There is a clear need to regularly monitor CBNRM progress, achievements, and problems to be resolved.

³ Phase three of the IUCN-USAID FRAME study has selected most of these as case studies. In Botswana, the popular CBOs are Chobe Enclave Trust (CECT), Sankuyo Tshwaragano Management Trust (STMT), and Kgetsya Tsie (KYT). In Namibia: #Khoadi //hoas and Torra Torra. In Zimbabwe: Masoka Ward.

Below, the socioeconomic impacts for local and national development are reviewed. Jones (2004) and Roe and others (2006) suggest the following indicators for measuring socioeconomic impacts of CBNRM projects: income, income diversification, employment, economic well-being, empowerment of communities, social welfare and infrastructure development, future options, and natural resource management. In Namibia, in 2001, a large survey of some 1,100 households in CBNRM areas was conducted to measure some of these indicators. This study provided baseline statistics reported on by Long (2004) and also provided cross-sectional data through conservancies of varying levels of development. This allowed statistical and econometric analysis by Bandyopadhyay and others (2004), in which the impacts of CBNRM on households could be estimated.

This study focused on three key questions:

- *Do conservancies significantly increase household welfare?*
- *How do changes in a household's welfare resulting from conservancies vary by household socioeconomic characteristics?*
- *Does participation in conservancies increase household welfare relative to those who choose not to participate?*

Despite data limitations, the analysis revealed that conservancies have an overall beneficial effect on household welfare. This result was supported by a simple comparison of indicators of welfare as well as multivariate analyses. The majority of household welfare indicators were higher for established conservancies relative to comparator groups.

The results suggest that the improved welfare effects of conservancies are poverty neutral in the arid northwestern Kunene region and pro-poor in the semiarid Caprivi region. There was little evidence to suggest that the better educated or the asset rich were gaining more from conservancies relative to their less-educated or poor counterparts; thus, it was concluded that conservancies, if not pro-poor, are at least not being dominated by the elite. This was an important finding, because a potentially negative effect of decentralized natural resource management is increased power to traditional hierarchies. Community conservancies in Namibia appear to be doing well on this score.

The multivariate analyses suggest that participants in conservancies do not necessarily enjoy higher levels of income or expenditure compared with nonparticipants. This does not mean that individual household-level benefits from conservancy development are small; rather, the analysis suggests that the welfare benefits from conservancy development may be more evenly distributed between participant and nonparticipant households than expected. This may be a reflection of the effect of community-wide benefits, which are significant as Barnes and others (2002) and NACSO (2004, 2006) have shown, on the average household's welfare.

This study has been followed up with a similar survey in 2006, which was intended to answer these questions more completely. The results of this study are not yet available, but will provide a unique insight into the overall performance of CBNRM in a particular country in time.

Below, we use the concepts of rent and rent-seeking behavior⁴ to understand the socioeconomic impacts and benefit distribution among stakeholders (Arntzen 1999). The economic rent comprises revenues minus the CBNRM costs. The rent can be maximized by increasing revenues and minimizing the CBNRM costs. Current examples of maximizing revenues include joint venture agreements, tendering of community resource rights and development of more community projects. Examples of minimizing CBNRM costs are not common, implying that few communities are currently concerned with the efficiency of their operations. In fact, the opposite might prevail where community organizations expand their costs and employment to increase benefits for employees and Board members. For example, some Board members in Botswana significantly benefit from sitting allowances (Mbaiwa, 2002), such as Sankuyo Tshwaragano Management Trust. This strategy must be countered by the general members. Rent-seeking behavior refers to the tendency of stakeholders to maximize their share of the rent. Current examples include the tendency of rural district councils (RDCs) in Zimbabwe to expand their share of CBNRM benefits. Taylor and Murphree (2007) found that the gross income from Masoka Ward Wildlife Committee (WWC) dropped considerably since 2000, but bounced back from US\$23,372 in 2005 to US\$132,522 after the joint venture partner was allowed to pay the WWC directly. Clearly, the Rural District

⁴ Taylor and Murphree (2007) refer to the same as struggles between communities and external forces, between benefits and costs, and between individual and collective interests.

Council had managed to appropriate an excessive share in earlier years! In Botswana, the new CBNRM policy, which still needs to be approved by Parliament) stipulates that 65% of community benefits from wildlife use rights will be put into an environmental fund, which is meant to fund environmental projects from all communities (not necessarily the ones living with the resource). Government and other communities would thus appropriate a significant part of the rent. Rent-seeking behavior is rarely recognized or controlled. The CAMPFIRE revenue-sharing formula is an attempt to control rent-seeking behavior by the RDCs. The new CBNRM policy sets limits for the operational costs of the communities, preventing cost escalations to the detriment of the local population. Rent-seeking behavior explains why few communities reserve funds for environmental management, as this would affect the short-term individual and community benefits. As will be shown below, most CBNRM projects spend more on community benefits than individual household benefits. Rent-seeking behavior further suggests that the current population will not prioritize investments for future benefits. This is not always the case as some communities appear to save funds or to invest in future projects. Jones and Bergstrom (2001) found for Zambia that communities spend on average 40% of revenues as household dividends, 40% for projects, 10% on wildlife management and the final 10% on organization management. Only 0.8% of the revenues could not be accounted for.

In summary the following strategies may be employed within the CBNRM context:

- *Revenue maximization by communities. It is important that short- and long-term consideration inform community strategy. There may be a conflict of interest where communities are directly responsible for determination of harvesting quotas and try to maximize quotas even if resource conditions do not warrant such an increase.*
- *Cost control of community organizations is currently a serious gap. The opposite is common through cost escalations to benefit staff and Board members.*
- *Balancing community and individual household benefits. At present, community benefits are given priority.*
- *No reservations for environmental funds.*

Although communities usually decide on the distribution of funds, it requires a better understanding of the overall revenues and costs to design and implement an efficient, fair, and sustainable distribution of the rent.

Rent-seeking behavior is most visible during periods of difficulties. In Botswana, the CBNRM Review in Botswana found that the share of trust expenditures increased to almost 100% during hardships periods (e.g., in Kwhai and the western Kgalagadi [Arntzen and others 2003]). In Zimbabwe, RDCs increased “their takings” considerably during the current economic difficulties. Obviously, this rent-seeking behavior needs to be controlled by communities (e.g., through AGM) and government (e.g., revenue-sharing formula).

3.1 SOCIOECONOMIC IMPACTS ON LOCAL DEVELOPMENT

Material benefits (cash, meat, community benefits, and employment)

A significant portion of rural households in southern Africa are unable to meet their basic needs (the majority in some countries!), and they depend on agriculture and local natural resources for their subsistence. Under such conditions, increasing benefits and building assets are vital to improve the level and security of livelihoods. Groups such as women, some of the elderly and youth, ethnic minorities, and low-income groups are particularly vulnerable as their livelihood options and resources are limited.

The literature shows a virtual consensus that the extra livelihood options offered through CBNRM are an *additional* source of livelihood that usually does not replace agriculture (Rutten 2002; Bond 2001; Arntzen 2003; Jones 2004; Roe and others 2006). In other words, CBNRM is rarely an alternative for agriculture or formal employment. Communities tend to distribute the net revenues through cash dividends, community expenditures, including social fund, or village dividends (Long 2004).

The direct cash dividends to households are small and only benefit a small portion of the CBNRM communities; many CBOs do not pay household dividends. In many cases, revenues are simply too modest to become the major livelihood source. Other reasons are the high costs of many community organizations and preference for

community projects. A larger share of revenues goes to operational expenditures of the CBO or communal infrastructure, or is saved for future use (this will be elaborated on later). Different stakeholders, such as the Board, CBO staff, and government agencies, try to maximize their share of the cake. In Zimbabwe, district councils receive a portion for their administrative costs (at most 15% of revenues) and for resource management (35% of revenues). Bond (2003) estimated the average CAMPFIRE earnings per household at US\$14. In other countries, all revenues accrue to the CBO, which can decide on its distribution. Only in areas with abundant high-value wildlife resources, has CBNRM sufficient income-generating potential to replace agriculture. Such areas are usually close to PAs (e.g., Botswana, Zimbabwe, and Namibia). Only those employed by CBOs and their commercial partners enjoy a regular income that may be more attractive than agricultural returns.

CBNRM employment is significant in small villages where most households may have a member employed by the trust or commercial partner (often part time!). CBO employment varies from a few to several tens of staff (e.g., eight in Torra conservancy, Namibia; 59 in STMTM, Botswana; and 15 in Masoka, Zimbabwe). Joint venture partners often generate more employment. In Namibia, CBNRM-related employment is around 3,800 jobs, most of them part-time (3,250). Employment in Botswana is estimated at 1,200–1,500 (Arntzen and others 2003). In Zimbabwe, private companies provide 35 jobs, compared with 15 for the WWC in Masoka (Taylor and Murphree 2007). The Richtersveld CBO in South Africa and its commercial partners provide some 50 jobs (Grossman and Holden 2007). These figures are very modest compared with national employment figures, but locally they are very significant due to the lack of employment opportunities and the small population. A considerable portion of the local households have one of its members in CBNRM employment.

The gross income from CBNRM in Malawi is relatively small. For example, the CBNRM project in Mwanza Boma generated revenues of MK 3.5 in the period 2003–06 (around US\$26,000⁵) from harvesting and processing of nontimber forest products (Mauambeta and others 2007). Revenues are derived mostly from a variety of products, such as guinea fowls, tree seedlings, cane furniture, fruits, wine, poles, and vegetables.

Community benefits

CBOs spend considerable amounts on the expansion and improvement of community facilities. In this way, communities complement government public spending. This is particularly valuable when the government experiences a budget deficit and must cut public expenditures (e.g., Zimbabwe). In 1990–95, Masoka WWC spent more than half of its revenues on community projects, compared with 32.3% on household dividends and drought relief and 15.8% on resource management (Taylor and Murphree 2007). More recent data were not available.

Common community benefits include schools, clinics, community halls, road improvements, crèches, reticulated water, toilets, gardens, nurseries, and community vehicles (Mazambani 2003 and Taylor and Murphree 2007 for Zimbabwe; Arntzen and others 2003 and 2006 and Ogbaharaya 2006 for Namibia). For example, the Sankuyo CBNRM project in Botswana supports the local soccer team and spent more than Pula one million (around US\$167,000) on community projects in 2000–05 (percent of gross revenues). Interestingly, some of these projects benefited people outside the villages. In Namibia, community expenditures of CBOs benefit members and nonmembers alike, offering free riding opportunities for nonmembers.⁶ #Khoadi //hoas conservancy spends 5 to 10 percent of its gross revenues on community benefits, such as support for schools, loans to livestock owners, and development of water points (Jones and Mosimane 2007).

Nonmaterial benefits

Communities may derive significant in-kind benefits such as game meat, fruits, vegetables, and herbal remedies. In Botswana, Namibia, and Zimbabwe, households benefit from game meat hunted by their commercial partners. For example, EGSSA estimates the annual value of game meat in Zimbabwe's CAMPFIRE program at US\$7–10 per household. Taylor and Murphree (2007) estimate the available game meat at 90 kg/household/year in Masoka (meat only during the hunting season). Game meat is valued at NS\$17/conservancy member in

⁵ Exchange rate: 1US\$ = 134 Malawian Kwacha (2.3.2007).

⁶ As the entire community benefits from community facilities, one would expect individuals to become members of conservancies if they have a chance of being employed or receiving cash dividends.

Namibia.⁷ Around 21% of the population in Namibia benefit from game meat (Bandyopadhyay and others 2004). In Botswana, the value of game meat is estimated to be P0.8 million, amounting to a value of around Pula 5/person. The estimated subsistence value of veld products is much higher (P11.6 million [CBNRM Status Report 2002]). An interesting result was that in Sankuyo village on the edge of the Okavango delta, the benefit of game meat was more appreciated than cash dividends and employment (Thakadu and others 2004). Obviously, benefits of traditional lifestyles such as hunting are still greatly appreciated.

The major nonmaterial benefits include:

- *Empowerment of local population, encouraging self-esteem and pride, and reduced dependency on government. This benefit is important and explains some of the seemingly irrational and uneconomic choices of communities. For example, Sankuyo and Khwai CBOs in Botswana decided to operate tourism lodges themselves, instead of entering into joint venture agreements (JVAs). Although the latter would probably yield higher short-term community revenues, communities wish to keep control even at some costs.*
- *Exposure to commercial partners, strategies, and thinking for CBOs that are involved in joint ventures. Evidence from Namibia, Zimbabwe and South Africa suggests that genuine joint venture partnerships offer significant long-term benefits to communities in the areas of business skills and operation and specialized marketing. These are traditional weaknesses of most communities.*
- *Development of a better understanding and working relationships with government, NGOs, and the private sector. A few CBOs are involved in technology and product development (e.g., morula oil and soap; Botswana).*

The literature further shows consensus that nonmaterial benefits of CBNRM are very important (Zimbabwe, Namibia, and Botswana) and may be more important to communities than the current material benefits. A survey among conservancies in Namibia (Bandyopadhyay and others 2004), described above, showed that established conservancies achieved higher welfare levels than those in their infancy. In other words, material and nonmaterial benefits improved the lives of the members. Jones (2004) argues that conservancies in Namibia have achieved higher welfare, but not necessarily high cash incomes for households, due to the importance of in-kind benefits (game meat) and community infrastructure (which also benefits nonconservancy members!). Botswana's CBNRM Review found that in southwestern Botswana, CBNRM communities are aware that their hunting rights have shrunk under the community quota system, but they still prefer the new situation, as it empowers them and gives them choices for development and livelihood improvement (Arntzen and others 2003). In other words, the costs of CBNRM are outweighed by nonmaterial benefits.

Multivillage CBOs tend to distribute revenues equally among villages. For example, Jones (2002) found that the Chobe Enclave Community Trust (CECT) in Botswana has set a ceiling of 15 percent of gross revenues for running expenditures of the trust, and the remainder is equally shared among the five villages.

⁷ Assuming a conservancy membership of 100,000 (Jones 2004).

CBNRM costs

Although the focus of CBNRM literature has been on the size and distribution of benefits, the costs are often neglected. Where data are available, the project running costs appear high due to over-employment and other inefficiencies. Living with wildlife and other resources and CBNRM carry costs associated with negative socioeconomic impacts. The local costs include the following:

- *Damages inflicted by wildlife (problem animals) and other resources. In Zimbabwe and Botswana, CBOs must compensate for such resource damages before the remaining revenues are distributed. Half of the households in Namibia's conservancies report such damage as a cost of CBNRM (Bandyopadhyay and others 2004). In Caprivi, Namibia, elephants caused frequent crop damage (384 reported cases [Long 1994]). The same study found that in the same district, 658 livestock units were killed in 246 cases, mostly by lions and crocodiles. Wildlife is also known to damage water points (Namibia and Botswana). The #Kboadi / / hoas conservancy annually spends a significant amount (over N\$100,000) on mitigation⁸ and compensation for elephant damage (Jones and Mosimane 2007). Torra conservancy compensated farmers for crop and livestock losses (Ogbaharya 2006). Around the Okavango delta, more than 80% of the households report crop damage by wildlife (Mbatwa 2006).*
- *Costs of lost resource rights prior to CBNRM. This cost is found in Botswana where remote area dwellers used to have special game licenses (SGLs) before community wildlife use quotas were issued. Taylor (2004) argues that those holding an SGL in Khwai could hunt 215 kg per person (pp), compared with 57 kg per person under the community quota system; the game meat entitlements have thus been reduced to more than a quarter of the pre-CBNRM situation.⁹ The community quota system also stops people from legally hunting throughout the year, with its restriction to a six-month hunting season).*
- *Competition for land, grazing, and water resources with other economic activities (opportunity costs). It is important that the natural resources designated for CBNRM yield higher returns than those of other uses. For example, CBNRM should yield higher revenues than crop or livestock production.*
- *CBNRM benefits from free labor and various in-kind inputs from members. Only staff and Board members are compensated. The implicit assumption is that the opportunity costs of these inputs are zero, which is only valid as long as there are no alternatives. For other community members, employment opportunities created through CBNRM can mean less time available for other significant household activities, such as herding and looking after the family (Ashley and others 2002; Jones 2004). Net benefits from CBNRM tourism are sometimes smaller than the benefits from agriculture. Rutten (2002) argues that families in Kenya should be paid US\$10 a year to compensate for lost livestock income.¹⁰*

CBNRM may generate divisions and conflicts within communities.

These costs must be incorporated as negatives in the assessments of livelihood and food security. In recent work, Barnes (2006) and Jones and Barnes (2006) attempted to measure the costs of wildlife-induced damage on livestock and crops in the Okavango Delta in Botswana and the Caprivi region of Namibia. They then incorporated these costs at various levels in the cost-benefit models for CBNRM initiatives of Barnes and others (2001 2002, and 2003). The findings indicate that although wildlife damage to crops can significantly depress net incomes from crops (in Botswana crop production appeared to be halved through elephant damage), these costs are outweighed by the net benefits that communities derive from CBNRM. These findings suggest that the costs of living with wildlife can be successfully internalized in CBNRM if appropriate benefit distribution mechanisms and insurance schemes can be developed.

Livelihood security

CBNRM leads to some diversification of the local economy (away from mere agriculture), and increases livelihood security. CBNRM widens the livelihood options in areas with often a marginal agricultural potential and reduces the exposure to agricultural failures during droughts (see later). A few CBOs offer members insurance schemes and offer a social safety net (e.g., scholarship, income support). Moreover, increased payouts

⁸ A good example is the construction of special water points for elephants away from the village.

⁹ The preference of the communities in the Kgalagadi, Botswana, for the new system is, therefore, impressive. Empowerment and control of the distribution of the (lower) community quota were given as the main reasons for this preference (Arntzen and others 2003).

¹⁰ The household benefits from tourism around parks were estimated at US\$30 a year, compared with US\$2,000 for a high-quality cattle (Rutten 2002).

during droughts have helped households to cope better with droughts. For example, crop failure in 1991–92 led to an increase in household dividends in Masoka Ward (Zimbabwe) to 78 percent of CBNRM revenues: more than double the amount that is spent on average on household support.

The extent of economic diversification through CBNRM is debated. Ashley and others (2002) found for Tanzania that a wildlife-based CBNRM project had limited success in economic diversification. In Botswana, skepticism has recently been growing about the ability of CBOs to develop successful businesses. This is based on disappointing results of some CBO projects.

The potential for improving livelihood security is, however, not fully exploited. In Zambia the program tends to benefit a limited number of community members such as CBO staff and serves the interest of the state as indicated by the distribution of revenue earnings from utilization of the wildlife resource (2005 CBNRM Status Report). Livelihood security is adversely affected by the costs of CBNRM. It is, therefore, good practice that CBOs must compensate households for damages inflicted by wildlife and that people who lost hunting rights are compensated from community hunting rights (Botswana). This prevents livelihood insecurity of the affected parties.

Vulnerable groups

As many CBNRM projects are located in remote areas, vulnerable groups are directly involved and should benefit. CBNRM projects generate *direct* benefits to some vulnerable groups, such as women (Kgetsi ya Tsie, Botswana), ethnic minorities (Nyae Nyae, Namibia, and Khwai, Botswana [Jones, Taylor 2004]). Bandyopadhyay and others (2004) found that most conservancy members are poor, and benefits are distributed in such a way that conservancies are either pro-poor or poor-neutral. This implies that the vulnerable groups are not marginalized in the distribution of benefits. Arntzen and others (2006) found that most members of Kgetsi ya Tsie were relatively old and poor women. CBNRM further generates indirect benefits to vulnerable groups through community infrastructure (most countries) and social expenditures (Botswana).

CBNRM assets and capital

CBNRM projects provide, to varying degrees, assets or capital, both at the household and community levels. Their impact on community assets is most significant through facilities and institutional networks and capital. A few community projects have constructed household facilities, such as toilets. Table 4 below summarizes the assets and capital realized through the CBNRM program.

Table 4: CBNRM Capital Benefits

	Individual/ households	Community
Human capital	Training and skill development in areas such as administration, financial management, marketing, production	Pooling of human resources and skills with commercial partners
Physical capital	Household assets such as toilets	Community halls, clinics, schools, etc.
Environmental assets		Recovery of wildlife (Namibia) Investment in natural resources (Zimbabwe) Replanting of trees (Malawi and Botswana)
Institutional capital		Formation of community institutions
Financial		In some cases, savings (Botswana's high-revenue CBOs)

Sources: Arntzen and others 2003; Mauambeta and others 2007; Jones and Mosimane 2007.

3.2 SOCIOECONOMIC IMPACTS AT NATIONAL LEVEL

Estimation of the socioeconomic impact of CBNRM at the national level has been very limited, even more so than at the local level. First impressions are that the direct impact of CBNRM at the national level is probably

limited, given the revenues and employment generated by CBNRM. Jones and Mosimane (2007) estimate that the contribution to the national economy in the form of revenue generation and an increase in wildlife assets is close to the CBNRM investments of the government and donors (N\$417 and N\$464 million respectively). The situation is probably similar in Botswana and Zimbabwe. The cost-benefit models of investment in CBNRM at the community level developed by Barnes (1995), Barnes and others (2001, 2002, 2003), and described above, all included an element of economic analysis, where the direct impact of CBNRM activities in Namibia and Botswana on the national income was measured. Table 5 shows estimated values for five conservancies in Namibia in 2000, measured in terms of national income. Gross and net annual contributions to national income are positive in all cases and economic internal rates of return are very positive. These results indicate that conservancies in Namibia directly contribute significantly and positively to national economic growth.

Table 5: Base Case Economic Values (Value Added to National Income) for Five Conservancies in Namibia 2000 (Namibia \$)

Conservancy:	Torra	#Khoadi //Hôas	Nyae Nyae	Mayuni	Salambala
Economic values					
Annual gross value added ²	557,600	503,800	501,600	860,200	525,800
Annual net value added ³	487,611	459,551	278,621	820,816	455,368
Net value added per hectare	1.4	1.2	0.3	29	4.9
Economic internal rate of return (percent) ¹	131	66	22	126	31
Economic net present value ¹	3,662,300	4,010,100	4,114,900	4,059,000	2,587,800
Number of jobs created ⁴	8	12	26	22	12
Economic capital cost per job	138,394	67,257	177,955	32,025	127,285

1 Measured during 10 years at 8 percent discount.

2 Gross value added to national income at opportunity cost (economic prices).

3 Net value added is gross value added minus asset depreciation.

4 Permanent formal employment opportunities from conservancy operations, excluding jobs created within revenue sharing and joint venture tourism operations.

Besides these measures of direct impact, attempts have also been made in Namibia to measure the total impact of CBNRM on the national economy. Total impact here would incorporate further net economic benefits associated with the direct ones in table 5. Thus, besides the contribution that conservancies themselves make to national income, there is also the contribution made by the joint venture tourism enterprises in conservancies, the linked expenditures of joint venture tourists outside conservancies, and the backward linkages that result from the direct expenditures made in and out of conservancies. Measuring these impacts made use of conservancy and tourism cost-benefit models, national tourism survey data, and the national social accounting matrix (SAM), an input-output model of the Namibian economy. The results of these studies are described in NACSO (2004 and 2006). The aggregate direct income earned by communities through CBNRM in 2003 and 2005 amounted to N\$13 million and N\$20 million, respectively. The total impact of this direct CBNRM activity on the national income was estimated approximately as N\$77 million and N\$140 million respectively (NACSO 2004, 2006). The primary CBNRM activities in Namibia appear to have a significant impact on the wider national economy, mainly through their links to the broader tourism industry.

Several indirect benefits of CBNRM also appear to be very significant to the national economy. First, CBNRM creates and enhances local institutions, conservation, and development management capacities and skills. The benefits could spill over to other sectors, such as agriculture and local business development. They can also be used to combat desertification (by linking to the livestock sector as is happening in Botswana and Namibia) and promote biodiversity conservation. In this way, CBNRM could enhance rural development and resource conservation, which have shown themselves to be persistent areas of concern for government. Few governments have developed successful rural development strategies, and state-led resource conservation has been largely ineffective. Further strengthening of CBNRM could ultimately reduce government expenditures on resource management and rural development.

Second, CBNRM proves to be an essential component of the tourism sector, as overseas tourists appreciate exposure to local populations and ways of life. They do not merely come for wildlife resources or the scenery. CBNRM, therefore, boosts tourism at large and thus indirectly the national economy, as described above.

Third, CBNRM is popular among donors and offers opportunities to access foreign funding. This can be seen as reflecting the existence value (Barnes and others 2002) or other reasons, but it is particularly important for countries that have difficulties accessing donor funds (e.g., Botswana). Barnes and others (2002) in their cost-benefit analysis models of conservancies, described above, investigated the impact of donor grants on the financial and economic returns of conservancies. Table 6 shows the effect of the donor grants on the returns (10-year internal rate of return) enjoyed by the communities in five conservancies. Donor contributions clearly raise the returns significantly; however, all conservancies, except one (Nyae Nyae), appear able to provide positive and attractive returns for communities (in excess of the assumed real discount rate of 8%).

Table 6: The Effect of Donor Grants on the Financial Rate of Return to Communities in Five Conservancies in Namibia in 2000 (Namibia \$)

Community financial rate of return (%) ¹	Torra	#Khoadi //Hôas	Nyae Nyae	Mayuni	Salambala
With donor grants	133	205	23	220	40
Without donor grants	39	28	1	20	11

1 Internal rate of return to community investment in conservancy measured during 10 years, excluding the residual value of wildlife stock.

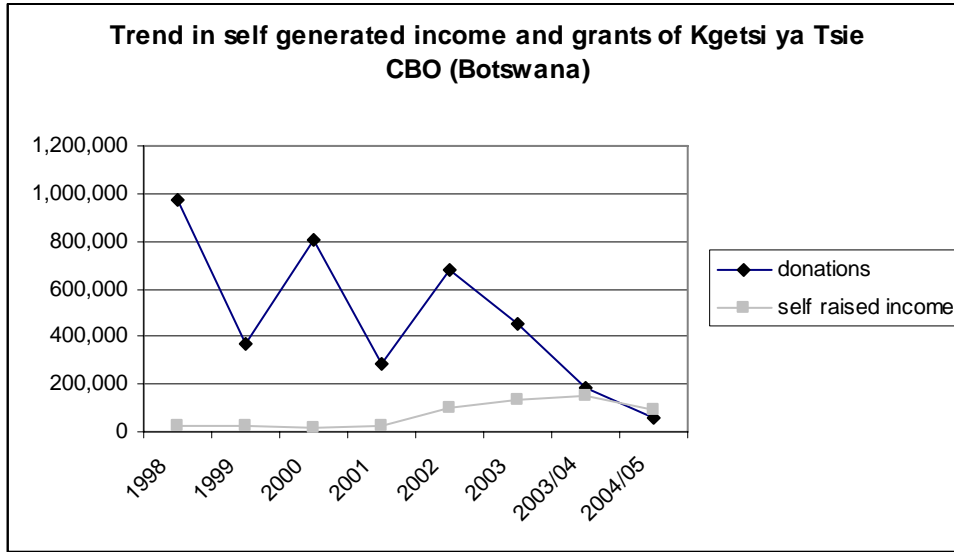
Fourth, the partnership between communities and private sectors in many CBNRM projects could form an important development model for communal areas. This only works if communities and commercial companies develop a mutually beneficial relationship, which appears the case in most countries except for Botswana. Private sector investment in communal areas is generally very low in southern Africa, and CBNRM has been successful in attracting investment to communal areas through joint ventures and donor contributions. .

The link between CBNRM and national development goes two ways. Macroeconomic conditions and governance also have a large impact on local CBNRM projects. For example, current political difficulties of Zimbabwe and the economic collapse there have affected tourism (especially photographic safaris); reduced the support of government, NGOs, and donors; and stimulated RDCs to acquire a larger share of CBNRM revenues. They have also led to a government ruling that local revenues must be spent on community projects, probably to compensate for government’s decreased capability to deliver and maintain public infrastructure and facilities. It is, therefore, remarkable that Masoka CBO appears to be surviving and even growing under such difficult circumstance. It is expected that younger, less well-established CBOs could be hard hit by the country’s difficulties.¹¹ In Kenya, the poor were hardest hit in the communities by the decline in tourism in the 1990s, because they had few coping mechanisms (Kareithi 2003).

Positive economic achievements may also influence CBNRM projects. The attainment of lower middle-income status has formed a reason for most donors to quit Botswana. Consequently, donor grants and technical assistance have dropped significantly. The Botswana case studies (Arntzen and others 2007) show that this has seriously affected Kgetsy ya Tsie, which is a women’s CBO focusing on collection and processing of veld products. Figure 1 shows the dramatic decline in grants, which could not be compensated by an increase in self-generated income. Inadequate measures were put in place by the CBO, NGOs, and government to adjust for “life without foreign donors.” As a result, the CBO is currently struggling to escape the poverty trap that has caught the organization.

¹¹ Older CBOs tend to perform better and be more resilient than younger ones (e.g., Arntzen and others 2003).

Figure 1:



Source: Amtzen and others 2007.

4. IMPACT ON POVERTY AND FOOD SECURITY

There is considerable overlap between socioeconomic impact at the household level and impacts on poverty and food security. Several pieces of literature attempt to define poverty. According to the World Bank (2001), poverty refers to “a lack of the resources required to participate in activities and to enjoy living standards that are customary or widely accepted in the society in which poverty is measured.” The UNDP International Poverty Centre (2006) suggests that poverty exists when some people in the community have such little income that they cannot satisfy socially defined basic needs. On a general note, this source refers to being unable to meet one’s basic needs (income poverty) and lack of choices (income poverty), and lack of resources, skills, and assets (capability poverty) or to marginalization (participation poverty).

Income poverty measures income (in kind and cash) against the poverty datum line, that is, the income necessary to meet basic needs. The impact of CBNRM on income poverty is poorly measured and documented. Very few studies measure household incomes. Most studies are restricted to the extra revenues from CBNRM and do not compare this with the household income let alone with the poverty datum line (PDL). The available evidence suggests that in cash households income is small in most projects (not more than Pula 500/household or member/year), except for CBO staff and in some cases Board members. Other mechanisms that may alleviate poverty are social expenditures of the CBO, game meat provision and revenues set up from micro lending schemes supported by CBOs.

Poverty is rife in rural southern Africa. Table 7 indicates the percentage of people who live below the national and international PDL. In most countries, more than half of the population lives in poverty and in rural areas, up to 80 percent are poor. Significant differences occur within southern Africa. South Africa, Namibia, and Botswana have relatively low poverty rates. Under such conditions, a rural development and conservation program like CBNRM is extremely valuable in the fight against poverty.

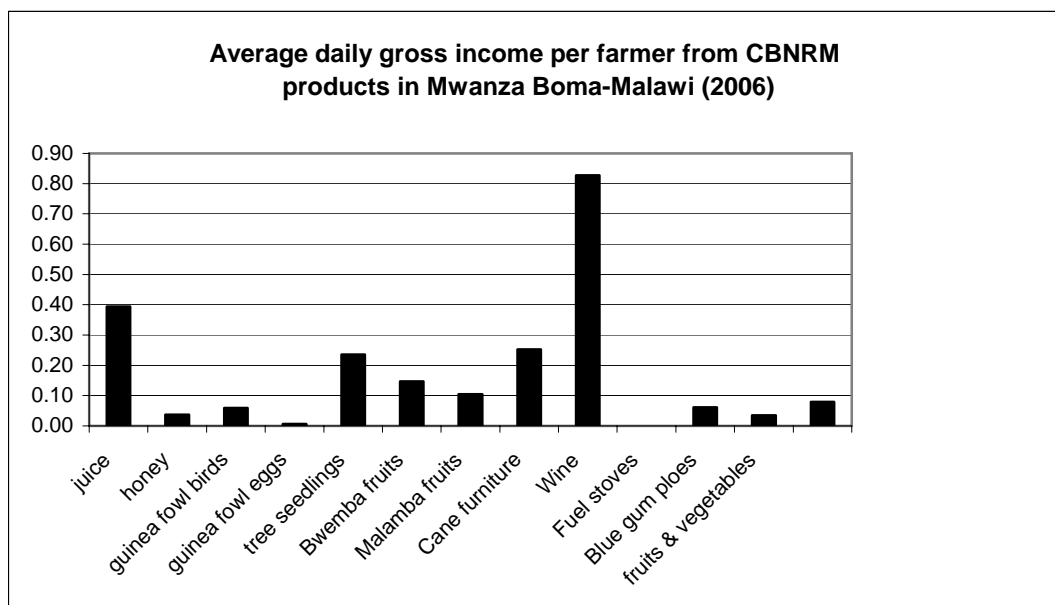
Table 7: Population Living Below the PDL (%)

	Year	National PDL			International PDL	
		Rural	Urban	National	Population below \$1/day	Population below \$2/day
Mozambique	1996–97	71.3	62	69.4	37.9	78.4
Namibia	1993				34.9	55.8
Zimbabwe	1995–96	48	7.9	34.9	56.1	83
Zambia	1998	83.1	56	72.9	63.7	87.4
Malawi	1997–98	66.5	54.9	65.3	41.7	76.1
South Africa	2000				10.7	34.1
Botswana				30.1		

Source: World Bank 2006.

The Mwanza Boma CBNRM project in Malawi can illustrate the impact on poverty reduction. Although the overall revenues of the project are low, the average daily income is significant compared with the international PDL (figure 2). Those involved in wine making (two farmers) would be able to escape extreme poverty (less than US\$1/day). Juice making is also effective in poverty reduction. Assuming that most other farmers are involved in other economic activities too, the nontimber products offer an important opportunity to reduce poverty. Around 400 farmers in 14 villages participated in the activities.

Figure 2:



Source: Adapted from Mauambeta and others 2007.

Data was also derived for human development in the region (table 8). This has been measured using the Human Development Index (HDI), which indicates or measures the average achievements in a country in three dimensions of human development (UNDP 2006). These include a long and healthy life (life expectancy), knowledge (educational attainment), and a decent standard of living (per capita income). The HDI and Human Poverty Index (HPI) are captured in the following table.

Table 8: Human Development and Human Poverty Indices

	HDI	HPI
South Africa	0.650	30.9
Botswana	0.570	48.3??
Namibia	0.630	32.5
Malawi	0.400	43.0
Mozambique	0.390	48.9
Zambia	0.410	45.6
Zimbabwe	0.490	46.0

Source: UNDP 2006.

An HDI figure of between 0.500 and 0.799 is considered to be “medium human development,” whereas an HDI of below 0.5 represents low human development. Most southern African countries are categorized as having low and medium human development.

Some evidence for the older and more established CBOs suggests that the impact on poverty reduction may be significant:

- *The cash dividend of N\$630 in Torra Conservancy (Namibia) was adequate for three months of basic grocery shopping.*
- *In the case of Kgetsi ya Tsie's veld products CBO (Botswana), members income could be Pula 150–350/month/member (assuming members are involved in all trust activities). Assuming an average household size of five, the revenues from veld products and microcredit projects could contribute 15 to 40 percent of the poverty datum line for that area. Particularly for households without access to formal employment and government support, this income is significant and very valuable.*

In contrast, Bond found that in Zimbabwe the median benefits per household were USD4.50, less than 10 percent of the agricultural income and less than an illegally killed antelope (ENCAP 2005). Although significant amounts of revenues are earned by the Sankuyo Tshwaragano Management Trust in northern Botswana, direct household cash dividends are significantly low. For instance, the trust earned more than P2 million in 2005 and only P500 was disbursed to each household (STMT files 2006). This amount is rather small, and its impact on poverty alleviation is unlikely to be realized. Household cash flows are minor supplements to other household benefits, such as agricultural activities and nonagricultural income activities as well as game meat, as is the case in Tanzania (Ashley and others 2002). Income in Malawi is small and unlikely to alleviate poverty of a significant number of people. The same applies to the Zambian CBNRM program where the direct household benefits have been negligible due to their small magnitude and size. Most households prefer a household dividend to investments in social infrastructure to reduce poverty (Zambia CBNRM Status report 2005). Jones (2004) argues that new CBOs such as Nyae Nyae have the potential of raising their revenues significantly in the future, suggesting that CBOs may enhance their poverty reduction potential in future.

CBNRM has generally improved food security, directly and indirectly. Income may be used to purchase food, and CBNRM projects have provided game meat, vegetables, fruits, and fish. CBNRM activities have the potential of providing food when one's own agricultural produce is low, thereby ensuring a more stable food supply.

The main poverty-reducing mechanisms of CBNRM include (Arntzen and others 2003; Jones and Mosimane 2007): employment creation, reducing wildlife-human conflicts, household dividends, training in various areas, provision of loans, and development and maintenance of community infrastructure.

5. ALTERNATIVE LAND USES AND COMPARATIVE ADVANTAGES

To be widely accepted, CBNRM needs to generate more benefits for the local population than alternatives, such as agriculture. Subsidies and other forms of government support may distort household returns so that they do not reflect comparative advantages (see, e.g., Barnes 1998 and 2001). The primary alternative land uses are communal area livestock and crop farming as well as privatization of resource management and development through private hunting, tourism, and agriculture. We found in section 4 that CBNRM is usually an additional income source, and it is not (yet) able to replace agriculture.¹²

Rural economies have diversified away from agriculture toward game ranching and tourism in the region, particularly on private land in South Africa, Namibia, and Zimbabwe. CBNRM is now promoting the same trend on communal land.

5.1 COMPARATIVE ADVANTAGES

5.1.1 WILDLIFE AND LIVESTOCK PRODUCTION

It is often assumed that wildlife resources perform better than domestic livestock, as they are better adapted to local environmental conditions, but the reality is more complicated. Table 9 shows that wildlife and domesticated animals have different strengths and weaknesses that determine their comparative advantages in different parts of southern Africa.

¹² Some exceptions exist, such as the Sankuyo CBNRM project in Botswana. Due to veterinary control, cattle rearing is not permitted, and CBNRM has more than compensated this lost livelihood opportunity.

Table 9: A Comparison of Wildlife and Cattle Production

CATTLE	WILDLIFE
Resource use	
Not efficient at using water	Exhibit physiological and behavioral water conservation mechanisms
Bulk-roughage grazers suited to good grassland and pasture conditions	Diverse species with varied diets suited to environments with less food but more varied and high-quality food
Suited to high-rainfall areas (>700 mm)	Suited to diverse environments, including arid areas
Narrow spectrum of food selection resulting in more inefficient usage of rangeland	Diversity of feeding habits leads to efficient use of available vegetation
Have to be managed to distribute grazing pressure	Usually mobile populations distribute grazing pressure
Slow recovery from drought	Rapid recovery from drought
High stocking rates stress environment; decline in environmental capital and declining returns	Possibility of biomass reduction for veld recovery, while maintaining/increasing income
Species dynamics and performance	
Much greater ease of herd management for domesticated stock	Difficult and expensive herd management (e.g., counting, transport, and harvesting)
Calving intervals for cattle range from 591–759 days	The African buffalo has a reproductive efficiency of 75%, despite the fact that the gestation period of 11.5 months far exceeds that of cattle.
More intensive management generally required	Overall husbandry and management of game is cheaper and less demanding
Wide base of germ plasm for breeding purposes	Important custodian of genetic diversity
Specifically bred for meat or milk production	No selection for productivity
Technology for production already well advanced	Technologies for production and marketing are yet to be developed
Good response to improved feeding	Response to improved feeding unknown, but appears to be low except in extreme drought
Susceptible to many diseases; can be vaccinated against and treated for diseases	Indigenous species are hardy and resistant to some endemic diseases
Feeding strategies remain essentially the same regardless of conditions	Change in feeding strategy with season
Uses and products	
Widely accepted and preferred food	Cultural resistance to various animals
Have little potential for tourism	Significant value as an asset for consumptive and nonconsumptive tourism
Important source of draught power, manure, savings in peasant communities	Provides by-products for rural craft industries, but can be crop pests and possible source of danger
Well-established and subsidized research on development, management, disease control	Virtually no investment in research for utilization, production, or marketing
Use is mainly consumptive	Consumptive and nonconsumptive uses
Have ritual and prestige values in some	International aesthetic value, important gene pools;

communities	sociocultural and religious values in Africa
Economic returns related primarily to biomass	Economic returns less dependent on biomass
Export to European Economic Community heavily subsidized under Lome Convention	Exports penalized by veterinary controls and conservation lobbies
Easily tradable for cash, goods, and other services	
May be a threat to other livelihoods, e.g., direct competition and disease transmission	May be a threat to other livelihoods, e.g., direct competition and disease transmission
Support policies	
Accepted form of land use	Not widely recognized as productive land use system
Individual ownership and control possible	Migratory habits make ownership, control, distribution of costs, and benefits difficult unless on fenced ranches with associated problems
Production/consumption often subsidized	No direct or indirect subsidies to production
Harvesting is simple, cheap, and predictable for producer	Off-take is difficult and expensive, results in inconsistent supplies
High-fat content reduces shrinkage	High dressing out percentage and lower in cholesterol and intracellular fat content than domestic livestock and in the modern market are regarded as “organic” products
Livestock has not been exploited for community projects such as the CBNRM.	The overall society can benefit from the resource due to the income-generating potential it possesses, e.g., through the CBNRM program.

Sources: Adapted from Muir 1989; Murphree 2003; and Amtzen and others 2006.

5.1.2 VELD PRODUCTS AND CROPS

Similar to wildlife, it is often assumed that veld products have a comparative advantage over crops, as the former are indigenous and adapted to climatic conditions of southern Africa. Table 10 compares some of the advantages and disadvantages of each species.

Table 10: Comparative Advantages of Veld Products and Crops

	Veld products	Crops
Resource use	Adapted to local climatic and soil conditions (e.g., drought resistant) No or little cash required for use	Some staple crops stressed by heat and low, variable rainfall; must to be bought or cultivated
Species dynamics	Mostly traditional gathering; little cultivation	Mostly grown in designated areas (fields)
Products	Mostly for own use; poor markets	Preferred by modern customers; well-developed markets
Support policies	Hardly recognized in policies and land use planning; little research and data	Mainstream development and land use; extensive research and support

5.2 EMPIRICAL EVIDENCE ON COMPARATIVE ADVANTAGES

Most studies focus on wildlife and livestock; very few deal with crops and veld products.

5.2.1 BOTSWANA

CBNRM is concentrated in western and northern Botswana. Several studies have reviewed the advantages and disadvantages of different cattle and wildlife production systems in these areas.

Coneybeare and Rozemejer (1991) assessed the economic feasibility of game ranching in wildlife management areas. Barnes (1998, 2001, and 2002) compared the returns of livestock and wildlife production systems in western and northwestern Botswana and reviewed the impact of livestock subsidies. These studies used financial and economic cost-benefit analysis.

Coneybeare and Rozemejer (1991) examined the feasibility of game ranching in wildlife management areas¹³ (WMAs) in western and northern Botswana. Initial screening of WMAs suggested that game ranching could be viable in 51 WMAs (a third of the total); eight of these areas were selected for detailed ecological and economic analysis. The economic analysis showed that game ranching was not feasible in six of the eight areas and only marginally feasible in the other two. The viability was determined by higher wildlife densities and the presence of valuable wildlife species. The high costs of fencing and game restocking made game ranching uneconomic in the other six WMAs.

Barnes (2002) compared the economic performance of cattle and game farms in the Kgalagadi in southwestern Botswana (table 11). He concluded that neither cattle nor game farms were financially profitable using the net present value due to the harsh environment, distance to markets, and high transport costs. From an economic perspective, game farming was found to be marginally viable (returns of P59 000 in 10 years). Barnes gave several reasons for this: lack of high value species, low wildlife density, and small domestic market and export barriers that make it impossible for farmers to directly export to neighboring countries.

Using the internal rate of return, cattle farming was found to be more attractive than game farming *with* the existing subsidies. Removal of subsidies would make game farming more attractive (financially and economically), reflecting the comparative advantage of wildlife in these remote areas.

Table 11: Economic Viability of Game and Cattle Farming in the Kgalagadi (Pula)

	Cattle farm with subsidies	Cattle farm without subsidies	Game farm without subsidies
Financial NPV	- 159,000	-512,000	- 399,999
Economic NPV	- 272,000	-272,000	+ 59,000
Financial rate of return	+ 8.8%	+ 2.0%	+ 5.9%
Economic rate of return	+ 2.3%	+ 2.3%	+ 6.6%

Note: NPV is calculated for 10 years; the financial discount rate is 12%; economic discount rate is 6%.

Source: Barnes 2002.

Barnes and others (2001, 2003) further assessed the economic returns of different livestock and wildlife production systems in Ngamiland, northern Botswana. Three livestock systems were assessed (traditional small-scale livestock production, large-scale cattle post-production, and commercial livestock production) as well as two wildlife utilization systems (CBNRM in low and high quality areas and commercial tourism). The assessment showed that commercial livestock production is not economically viable in Ngamiland (IRR and NPV) due to poor herd performance and the long distance to the main markets that reduces the real product value to 68 percent of the national average (Barnes and others 2001, p. 39). The main results for the other production options are summarized in table 12.

¹³ Wildlife use is the primary form of land use in WMAs. Agriculture is of secondary importance.

Table 12: Economic Returns of Livestock and Wildlife Systems in Ngamiland (Pula 2000)

	Small-scale traditional livestock production	Large-scale cattle post livestock production	CBNRM in low wildlife quality areas	CBNRM in high wildlife quality areas	Commercial tourism
I. Financial analysis					
Rate of return (%)	11.5	6.8	8.0	8.1	9.6
NPV (Pula)	381	-52,846	3,466	20,302	229,517
NPV/ha (P/ha)	52	-8	0.00	0.25	15.94
II. Economic analysis					
Rate of return (%)	10.1	2.0	24.8	54.1	64.0
NPV (Pula)	4,679	-235,621	1.8 million	2.9 million	6.6 million
NPV (P/ha)	26	-37	3.00	36	457

Source: Barnes and others 2001 and 2003.

The economic returns of wildlife use systems are generally higher than those of livestock production. The comparative advantage of wildlife is derived from the available wildlife resources as well as the long distance to livestock markets. Small-scale traditional livestock production has the highest economic returns in Ngamiland, presumably because of its emphasis on multiple products and limited reliance on sales. There is a big gap between wildlife performance from the *financial* (investor's) and *economic* (society's) perspective. Both are positive, but the economic analysis shows considerably higher returns. Community benefits are highest for commercial tourism, mostly in the form of local wages and royalty payments. Communities are able to augment their benefits by entering into JVAs.

In view of these results, Barnes advises wildlife operations to restrict capital expenditures and to concentrate efforts on "high potential zones" with: sufficient high-value species; sufficient wildlife density; low population and cattle density; and good accessibility to the main tourism markets. Livestock production should concentrate on areas with proper market access and limited/less attractive wildlife resources. In other words, wildlife and livestock in Botswana are complementary in nature, and each has comparative advantage in certain areas. Economically efficient land allocation should take this into account.

The Livestock Sector Review Study compared livestock and alternative land uses, such as game ranching, concession use, and CBNRM. Based on fieldwork in eastern Botswana (freehold) and southern Botswana (leasehold and communal land), the study showed that only village area farming had positive economic returns in each situation (table 13). The returns for cattle post-farming were negative and those of ranching variable (Arntzen and others 2006).

Table 13 : Estimated Gross and Net Margin for Different Production Systems

	Eastern Botswana (freehold and communal)	Mid-south Botswana (communal area and leasehold)
Gross margin		
Village area farmer	+4150	+3550
Cattle post farmer	-6665	-4900
Cattle ranch	-72000	74432.5
Game ranch	+242000	
Net margin	Tuli-central	Kang-Jwaneng
Village area farmer	+3493	+3430
Cattle post farmer	-10731	-36721.2
Cattle ranch	-217467.07	+313.30
Game ranch	+88 042.42	
Gross margin/ha	Tuli-central	Kang-Jwaneng
Village area farmer	<i>Pos.</i>	<i>Pos.</i>
Cattle post farmer	-6.25	-4.60
Cattle ranch	-18.00	+11.63
Game ranch	+48.40	
Net margin/ha	Tuli-central	Kang-Jwaneng
VA livestock farmer	<i>Pos</i>	<i>Pos</i>
CP livestock farmer	-10.07	-34.45
Cattle ranch	-54.37	+0.05
Game ranch	+17.61	

Note: Gross margin = annual revenues – annual variable costs; net margin = annual revenues – annualized fixed costs – annual variable costs. The VA livestock production assumes that a full-time herder is used for each small herd (based on FGD). Figures in italics are positive results.

Source: Arntzen and others 2006.

This study concluded that commercial wildlife utilization and CBNRM have excellent potential near protected areas. Commercial wildlife utilization, including game ranching, is problematic in WMAs with low wildlife densities and species variety and without scenic attractions. It is economically attractive to convert cattle ranches into game ranches, as farmers become the owners of the on-site wildlife resources and do not have to invest heavily in fencing and stocking. In many communal areas, returns from traditional livestock production systems remains attractive.

5.2.2 ZIMBABWE

Before the current resettlement program, the area under wildlife production had risen from approximately 35,000 ha in 1960 to 2.7 million ha in 2000, representing nearly 7 percent of the country. Twelve hundred of the 4,100 commercial farmers were actively engaged in wildlife production. The country had at least three large conservancies (Save Valley, 326,000 ha; Chiredzi River, 80,000 ha; Bubianna, 127,000 ha) for the management of wildlife, which indicates its scale and importance. Hunting offtake data suggest that wildlife populations quadrupled between 1984 and 2000.

Jansen and others (1992) estimated returns to investment and the comparative advantage of 89 cattle ranches, wildlife ranches, and combined cattle/wildlife ranches in 1989–90. Their analysis indicated that in general wildlife had higher economic returns than cattle; however the advantages of wildlife and cattle systems varied depending on the area. "Cattle-only" enterprises had an average 1.8 percent financial (private) return on investment, the return to cattle on ranches combining cattle and wildlife, was 2.6 percent. The weighted average return of game enterprises was Z\$2.78 per ha. Only four out of the 77 ranches producing beef had a greater than 10 percent return on investment, and only three cattle enterprises had returns greater than Z\$25.00/ha. The speculative return on holding land was excluded from all analyses. Thirty-nine percent of the cattle enterprises had negative adjusted net revenue, and to continue in operation most of the ranches were de-stocking or borrowing. Wildlife-only ranches were the most financially viable with average returns on investment of 10.5 percent. More than half of the wildlife enterprises had a greater than 10 percent return on investment and only four had negative adjusted net revenue. The weighted average return of wildlife enterprises was Z\$5.8 per hectare. Studies by Martin (1985) of the wildlife industry in Zimbabwe confirm the profitability of wildlife ventures and indicate that the net financial returns from land under wildlife significantly exceed what is possible from land under cattle (US\$1.11 per ha for wildlife as against US\$0.60 for cattle). There are also indications that the potential for increasing revenue from wildlife (up to US\$5 per ha for sport hunting and US\$25 per ha for ecotourism) is far greater than for cattle.

High returns on investment are only likely where high-value species, such as buffalo and elephant are available to trophy hunters. The economic advantages gained from wildlife systems stem partly from the added value of marketing various recreational and aesthetic opportunities associated with hunting and tourism. In certain environments, mixed operations may be more financially viable and the most rational for maximizing profit while minimizing risk (Kreuter and Workman 1997). The viability of both cattle and wildlife are extremely sensitive to government pricing, marketing, and exchange rate policies. The efficiency in both cattle and wildlife operations depends on *where* you are (e.g., ecological considerations, access), *who* you are (i.e., level of management and experience), *what* you do with your cattle or wildlife enterprise (i.e., cattle production system and marketing options and sources of wildlife revenue); and *how* you are likely to be affected by macroeconomic and sector specific policies (Jansen and others 1992).

Bond (1994) found that for the period 1989–92, sport hunting concessions generated 90 percent of the revenues, particularly hunting of elephants, which contributed 62.6 percent of the revenues in eight districts (followed by buffalo with a share of 16.8 percent).

As in Botswana, market access, costs, wildlife resources, and the local environment are determinants of comparative advantages of wildlife and livestock operations.

5.2.3 SOUTH AFRICA

The wildlife sector has rapidly grown in the past few decades, but there are signs of market saturation and stabilization of the sector. The market for game sales has more than doubled in the period 1991–2004. Although in 1991, 8291 animals were auctioned, the figure rose to more than 21,101 in 2004. The value of sales increased almost tenfold from Rand 9 million in 1991 to Rand 104.5 million in 2004; sales have hardly increased since 2001. No detailed comparisons of game and livestock operations were found for South Africa.

An ABSA study (2003) assessed the profitability of game ranching in South Africa and compared it with cattle ranching. The study concluded that game ranching is economically viable, but requires huge capital investment and the returns are realized after some time. The capital investments and operational expenditures (ecotourism) are, however, much higher than for cattle ranching. This would imply for CBNRM that communities or—more likely—joint venture partners have to invest heavily before they can reap the expected higher benefits. The comparative values are summarized in Table 14. Cattle and livestock ranching are affected by too high land prices and too low game prices. “Game ranching is not really an activity one does exclusively for profit” (p.16). Very small game ranches struggle to break even, and larger ranches have to work hard to obtain a return of some 10 percent a year on capital invested. For hunting farms, the profitability cutoff point appears to be around 350 large stock units.

**Table 14: Profitability of Game Ranching and Cattle Farming
(1,000 LSU capacity; Rands)**

	Grassland	Bushveld	Grassland
	Hunting ranches (1,000 LSU)	Ecotourism	Cattle farming (1,000 LSU)
Gross operating income per annum	2,286,822	9,123,125	1,280,000
Gross operating expenditure p.a.	734,809	2,841,840	845,625
Capital investment	15,018,909	84,129,603	9,015,631
Net operating profit before tax p.a.	1,552,013	9,155,660	434,375
Total investment	15,018,909	84,129,603	9,015,631
Net operating margin	67.9%	76.30%	33.90%
Return on capital	10.3%	10.90%	4.80%

Source: ABSA Group Limited 2003.

The study looked at areas in the grassland, bushveld, and lowveld regions. Game ranching on grassland region is more profitable than cattle ranching; ecotourism has good margins in the bushveld. Although hunting ranches have generally higher margins and capital returns than cattle ranches, returns on grassland are highest followed by the bushveld and finally the lowveld. Cattle ranching only has reasonably moderate returns on capital in the grassland. Profitability of game ranches is determined by factors such as stock levels, composition and critical mass, land size and economies of scale, uses (hunting or tourism), and land prices (ABSA 2003). Applied to CBNRM projects these factors imply that:

- *As most communities have large areas under their control, they can benefit from economies of scale.*
- *Communities in wildlife-rich areas have a considerable advantage. Others have to take into account the limited revenue-generating potential of their area.*
- *Land prices or rentals are usually low, not impeding communities' returns.*
- *Communities must try to increase the size of their operations to benefit from economies of scale, either by their own effort or through joint venture partnerships.*
- *Communities need to analyze and exploit both the hunting and tourism potential.*

The above indicates that game ranching is economically viable on a large scale coupled with full-time intensive management by the investor or the owner. Cattle farming is in this case not a viable farming option, as it yields low returns on capital. The study concluded that profitability is mostly obtained when the two activities are combined (ecotourism and hunting).

5.2.4 ZAMBIA

The game ranching sector in Zambia is relatively small and similar in size to Botswana. Hachileka (2003) estimated that there are a total of 30 registered game ranches covering a total of approximately 73,000 hectares. Most established game ranches are currently situated on communal lands under leasehold-title within the commercial farming sector, particularly in pockets considered marginal for arable or domestic livestock production. Few of these have been operating long enough to be profitable, but a broad base of commercial activities has been developed, including culling for game-meat and skins, trophy hunting, bird shooting, tourism, as well as some cattle production. Game ranches are recording net increases of wildlife stocks.

5.2.5 NAMIBIA

Barnes and others (2001) showed, as described above, that CBNRM in Namibia can and does generate significant positive financial returns for communities at conservancy level and that it can contribute positively to the national economy. Other work has compared the economic values associated with wildlife use and tourism land uses with those associated with livestock land uses.

Barnes and de Jager (1996) used empirically derived budget/cost-benefit models to show that livestock and wildlife-based land uses in Namibian commercial land both have generally low returns on investment, but that returns to wildlife uses can in suitable sites be more favorable. Barnes and Humavindu (2003) similarly did a detailed empirical analysis, which highlighted the strong comparative advantage of tourism and wildlife as a land use in certain arid areas; however, the primary conclusion, as elucidated by Barnes 2002, is the same as that for Botswana, that is, that wildlife and livestock land uses are complementary, rather than directly competitive. Economically efficient land use and development planning includes both.

5.2.6 CONCLUSION

The above portrays the rapid growth in commercial wildlife production in southern Africa. As a result, the area of land under wildlife management has grown significantly. Growth has been fastest on private land, where a response to shifting comparative advantages is easiest and fastest. There is no reason to assume why the comparative advantages of livestock and wildlife would be fundamentally different in communal areas. CBNRM may work as a catalyst to increased wildlife management and development in communal areas.

6. DISCUSSION AND CONCLUSIONS

CBNRM in southern Africa is strongly associated with exploiting wildlife resources, and the program has made most progress in Namibia, Zimbabwe, and Botswana; other country programs are smaller. Emphasis on wildlife has allowed communities to benefit from significant new income, offsetting the transaction costs of developing CBNRM institutions. Donor contributions appear also to have given significant impetus to CBNRM development. CBNRM covers a significant part of the rural areas and population and can be expected to make an impact on rural development and resource conservation.

CBNRM is economically efficient, but has unclear household income and welfare impacts.

Evidence indicates that CBNRM is economically efficient, contributing positively to national income and employment. It also appears to generate significant positive financial benefits at community level. This is so, even considering the costs of living with wildlife (human-wildlife conflict). The picture is less clear regarding the impact of CBNRM on the income and welfare of individual households.

Mostly community benefits; too little individual benefits.

The socioeconomic impacts are locally significant, but remain limited on a regional or national scale. The local impacts are mostly associated with community benefits: infrastructure, sometimes support for the vulnerable groups, some employment, and game meat. Benefits to individual households are modest and take the form of jobs and household dividends. This policy choice reduces the poverty reduction capacity of CBNRM. Instead, community benefits are favored creating the risk that individual households do not develop strong interest in CBNRM and revert back to or keep their stake in agriculture. Furthermore, people may not appreciate short-term benefits that are needed to reduce the prevalence of poverty. There is a need for further study of the impacts of CBNRM on individual households and the development of mechanisms whereby community-level costs and benefits can be more closely linked with those of private individual households.

Benefit distribution

Few CBOs have a comprehensive benefit distribution strategy or control the running expenditures of the trust. The actual revenue distribution varies tremendously. For example, in Zambia 40 percent of the revenues are passed on to individuals, whereas in some CBOs in Botswana, most benefits stay with the trust (for running and project expenditures). In principle, the annual general meetings control the financial expenditures and benefit distribution, but cases of very high trust expenditures occur that remain unchecked by the AGM. There is a need to reconsider the share of communal and individual benefits based on the needs of the local community and households. Communities also need to consider investing in natural resource management. Jones and Bergstrom (2001, p. 41) argue that revenue distribution needs to be based on “a careful thought through set of principles and procedures, and the gradual uptake of responsibility” (by the community). Muir (1993) argues that it is critically important to CBNRM that the link between resource costs and benefit is maintained. Funding of social services and infrastructure with natural resource revenues weakens such a link.

Communities and desertification

Stimulating wildlife and other resource uses contributes to greater biodiversity and prevents agriculture-induced land degradation. In Namibia, wildlife resources have recovered in northern CBNRM areas, while poaching has reportedly decreased in other countries. Unlike their European counterparts the local population does not receive payments for this NRM function, even though it is valuable at the national level and increases the option value of rangelands.

Loan schemes and purchases from members are good means to stimulate individual benefits.

CBNRM projects based on veld and forest products (e.g., Malawi and Botswana) have the advantage that members are rewarded proportional to their inputs. This offers strong incentives for production. Several CBNRM projects have established loan schemes for members, which enables the members to develop their own activities and become less dependent on the CBO. This requires careful financial management and discipline, but is a good method of economic empowerment.

Livelihood diversification and increased security

CBNRM has emerged as largely complementary to other established land and resource uses in communal areas. CBNRM contributes to rural economic diversification and greater livelihood security through provision of additional livelihood sources, which are less susceptible to droughts than agriculture. The option to increase household dividends during drought years (as done in Zimbabwe) can dramatically increase livelihood and food security. It must be appreciated that CBNRM projects often operate in a harsh arid to semiarid environment and in remote areas with high market costs and few livelihood alternatives. The diversification has, however, been limited, as few communities have developed enterprises.

Focus on few CBNRM projects

Although the number of CBNRM project has grown tremendously, the literature focuses on a few well-researched projects. This implies that the CBNRM achievements may be misrepresented and that biases may emerge. There is need to monitor and evaluate all CBNRM projects regularly.

Focus on gross revenues and neglect of costs

CBNRM stakeholders and communities tend to focus on revenues and pay much less attention to the costs of running CBNRM projects and other social costs. This is typical for rent-seeking behavior. Where data are available, the running costs appear to be fairly high, limiting the rent available for distribution and development. Sometimes, government attempts to appropriate a share of the CBNRM revenues (e.g., Zimbabwe and Botswana). Although a few CBNRM projects recognize the need to compensate people for damages incurred by wildlife resources, it is not clear whether this is standard practice (as it should be). Furthermore, communities do not reserve funds for resource management as they should. Although joint venture agreements may assist communities, it is unclear who benefits most: the company or the community, as the benefits to the commercial sector are not documented.

Lack of contextualization of the impacts

The socioeconomic impacts are rarely analyzed in their broader context. For example, household dividends can be compared with the poverty datum line or agricultural income. Employment creation can be compared with the number of local households. Revenues can be expressed as per capita revenues. Where the figures are put in a broader context, CBNRM appears to make a modest but important contribution to local employment and income generation. It also appears to have a significant impact on the broader economy through lateral and backward linkages. More research is needed on the wider macro impacts of CBNRM as well as the micro impacts of CBNRM at individual household level.

Community entrepreneurial capabilities and joint ventures

There is strong evidence that joint venture partnerships benefit communities and that most communities have limited entrepreneurial capabilities. Joint venture partners are also necessary to invest the required capital for ecotourism and hunting ventures. Communities then have the choice to establish partnerships with the commercial sector and/or stimulate local persons to become entrepreneurs. A Malawi community has established a company to process juice and fruits as a joint venture between a private company and the community trust.

Limited local investment opportunities

Most CBOs struggle to identify viable local investment opportunities. Combined with the limited entrepreneurial skills, this creates the risk of investing in uneconomic projects that will collapse. CBOs need to consider external investment opportunities and use of credit schemes to utilize small local business opportunities.

Long-term perspective

CBNRM requires a long-term perspective and support. Most CBOs take time to develop the required skills and experience and require support for 10 to 15 years. Some have managed to become economically sustainable, especially those close to rich wildlife resources.

Market access and potential

CBOs must consider market access and potential right from the start. The commercial sector has considerable market knowledge and contacts, which can be used. Although the hunting market is smaller, it is more stable than the photo safari market.

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