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Community-based Tourism and Natural Resource Management in Namibia: Local and National Economic Impacts

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Introduction

In this chapter the economic characteristics of Namibian community initiatives in tourism and natural resource management are described. Community-based natural resource management (CBNRM) in Namibia has been developing since before 1990. Legislative change in 1994 made it possible for communities in Namibia's communal lands to acquire limited common property rights to manage and use their wildlife resources. These changes extended similar rights already available to private landholders in Namibia to communal lands, where residents practising traditional agro-pastoral and livestock-based land uses, had had no rights to use wildlife. Thus communities were enabled to register conservancies, through which they could take on rights, and manage and use wildlife resources with the assistance of non-governmental organizations and government. The primary motivation for CBNRM, as described elsewhere in this book, has been to give landholders incentives to invest in their natural resources. With support from donors and government, communities have established some 50 conservancies on large portions of the communal lands. Details on the Namibia's CBNRM programme are given by the Namibian Association of CBNRM Support Organizations (NACSO, 2004, 2006), and Libanda and Blignaut (2007).

Namibia is a large country, embracing some 830,000km^2, with a mostly rural human population of some 1.7 million. It is very dry, with habitats raging from semi-arid savanna woodland in the north-east, through to extremely arid desert in

the west and south. Most land in the country is only suitable for extensive grazing by livestock or wildlife. Forty-three per cent of the country, mostly in central and southern drier parts, contains private, medium scale, commercial ranches, and 45 per cent, mostly in the more remote north, is communal land. Communal land is state-owned, but occupied by rural tribal communities – most of the country's population. Traditionally communities have practised pastoralism in the south and west, and agropastoralism in the north and north-east, but their access to markets and infrastructure has been poor. In the north-east, among San communities, some sedentary hunting and gathering is practised.

Wildlife resources of high value for tourism occur in less densely settled north-western and north-eastern communal lands. Elephant (*Loxodonta africana*), buffalo (*Syncerus caffer*), hippopotamus (*Hippopotamus amphibius*), sable (*Hippotragus niger*), roan (*Hippotragus equinus*), lechwe (*Kobus leche*), sitatunga (*Tragelaphus spekei*), lion (*Panthera leo*), leopard (*Panthera pardus*) and wild dog (*Lycaeon pictus*) are of conservation importance in the north-east. In the north-west, desert-adapted wildlife species such as elephant, black rhinoceros (*Diceros bicornis*), mountain zebra (*Equus zebra*), springbok (*Antidorcas marsupialis*), kudu (*Tragelphus strepsiseros*) and oryx (*Oryx gazella*) occur. Attractive scenery, enhancing tourism value, exists in both places.

By far the most important natural resource uses in CBNRM are non-consumptive wildlife viewing tourism and consumptive trophy-hunting tourism. Conservancies develop their own campsites from which they derive profits, and they also enter into joint ventures with private operators, where wildlife viewing and trophy hunting activities are pursued. Thus, communities offer concessions to operators where lodges and camps are developed, the communities generally contributing the site and possibly capital and the private operator contributing capital, skills, market access and other specialized inputs. Some subsistence and commercial use of natural plant and wildlife resources takes place in conservancies, for example to produce fuelwood, poles, plant foods, meat and raw materials for crafts, but this is relatively minor. Tourism has received priority as it has been able to give communities large injections of new income.

A key policy question associated with CBNRM is whether it can generate viable and sustainable returns. Can the private benefits to communities and households resulting from CBNRM be significant and outweigh the associated costs? Can the massive donor investment that has gone into CBNRM in southern Africa be shown to be justified in terms of sustainable economic growth and rural development? The existence in Namibia of 16 years of quality data on the costs and benefits associated with CBNRM and a programme of ongoing economic analysis provides an unparalleled opportunity to answer these questions.

The economics unit of the Ministry of Environment and Tourism has analysed the financial and economic development of selected individual conservancies and the national CBNRM programme as a whole. These analyses have been aimed at determining the financial viability of conservancies and the contribution that these make to the national income (Barnes et al, 2002). They have been carried further at the national level to measure the economic impact that the

CBNRM programme as a whole makes to the national income (NACSO, 2004, 2006). This chapter reports on the findings of these analyses.

The work described here needs to be seen in the context of the 'total economic value' of wildlife and natural resources, as described by Pearce and Turner (1990) and Emerton (2001). Total economic value embraces direct use, indirect use and non-use (option, bequest and existence) values associated with natural resources. Direct use values are derived from actual utilization of the resource. They contribute tangible value in the form of income, and make up the main component of formal economic growth, which is the focus of national development efforts. This chapter deals only with direct use values. Conservation of wildlife and the tourism asset base through CBNRM could enhance the other values.

Methods for measurement of financial and economic values

Conservancy-level analysis

The economics unit of the Ministry of Environment and Tourism has developed a system of empirically-based enterprise models for natural resource use. These are developed, and periodically updated, for typical examples of different land uses. They are detailed budget and cost–benefit spreadsheets, which measure the financial returns to investors in natural resource use and also the contribution that these activities make to the national income. Barnes et al (2002) developed such models for five individual representative conservancies, which had been operating for several years. Empirical data to hand, and conservancy management plans, were used to project costs and benefits for each of the five conservancies over a 10-year life span. The conservancy 'project boundary' was defined as the investment made by donors, government and community in the development and operation of a conservancy. It embraced the investments, capital and recurrent costs, that make the conservancy function, and the benefits in the form of income to the conservancy and its employees, as a result of this investment.

Capital included expenditures by donors, government and communities, on items such as fences boreholes, buildings, vehicles and equipment, initial training workshops, etc. and wildlife stocks, if they were introduced. Excluded from capital were the costs of existing natural stock already on the land and the broader government investments in its conservation (sector conservation budgets, etc.). Recurrent costs were those for conservancy operations, including such items as payment of staff salaries and wages, maintenance and repairs to capital items, ongoing training costs, insurance, feeding and veterinary costs, etc. Included in costs were mitigation requirements for the damage that wildlife in conservancies cause to other community land uses.

Benefits included rentals and royalties paid to the conservancy by joint-venture lodges and joint-venture hunting operations, and any profits from

community-operated enterprises such as campsites, cultural tourism services, guiding, sales of live game and consumption of game for meat, etc. Net benefits accruing to joint-venture tourism enterprises in the conservancies were excluded from the conservancy analysis. The conservancy budget and cost–benefit models estimated both financial and economic values. Financial analysis looked at the returns to stakeholders in the project, while economic analysis looked at the degree to which the conservancy investment affected the national economy.

In financial analysis the models provided annual net profits at stability, as well as 5- and 10-year financial internal rates of return and financial net present values for the project investment. These were done for the project as a whole, to determine the returns to the donor, government and community investment combined, as well as specifically for the community, to determine the returns that the community was getting on its own investment. Wealth accumulation, in terms of residuals for capital assets, was included. Appreciation of wildlife stocks attributable to the conservancy investment was included for the project analysis but not for the community one (since they could not realize this value through sale). In the community analysis, the donor and government contributions were treated as subsidies. This meant that these contributions, treated as costs in the project financial analysis, were treated as benefits in the community analysis.

In the economic analysis, the models measured the incremental change made by each conservancy to the national income. Annual net benefits, internal rates of return, and net present values were measured in terms of net national income. National income was defined here (Gittinger, 1982) as the total net earnings of national labour, and property owned by nationals, employed in the economy over a period. Gross national income is closely similar to the GDP, which is the total of the value added in all activities in the economy. Net national income is gross national income net of asset depreciation. The financial values in the models were converted where necessary to reflect the real costs (opportunity costs) to the nation as a whole. The changes involved use of preliminary shadow pricing criteria developed by Barnes (1994), which have been more rigorously confirmed by Humavindu (2007). In an open economy such as that in Namibia, the only adjustments considered necessary were to labour prices (to reflect unemployment) and to tradable item prices (to reflect excess demand for foreign exchange). Further, some financial costs and benefits, such as taxes and subsidies, which were simply transfers and did not change the national income, were removed from the economic analysis.

The residual values, associated with capital items and wildlife stocks in the conservancy, were included as benefits in the project financial analysis. The economic analysis included the opportunity cost of the capital used, but excluded those for land, because it was partially aimed at measuring returns to land. All models were tested through sensitivity analysis, by varying key assumptions to determine how robust they were, and the strength of conclusions that can be drawn from the results. Details of the methods used are presented in Barnes et al (2002).

Programme-level analysis

In addition to the analysis of five specific conservancies, a wider economic analysis was done of the overall national CBNRM Programme of which the five are a part. The aggregate impact of the CBNRM programme on the economy is wider than the returns accruing to the communities, as it also includes all the economic activities linked to, and resulting from, the presence of the conservancies. Thus CBNRM programme expenditures generate net national income directly in community areas and this direct income generation indirectly induces generation of further net national income in the wider economy. In as much as the CBNRM Programme results in capital accumulation, such as in wildlife stocks, these form part of the aggregate impact. NACSO (2004, 2006) presented the results of the analysis to measure the aggregate impact that 16 years of CBNRM Programme investment made in the national economy.

The starting point for the aggregation of the direct economic impact was the aggregate financial income derived by communities from natural resource uses, converted to national income as described for conservancies, above. Further, tourism joint-ventures between communities and the private sector in community areas, themselves generate national income and this was included. Joint-venture income was measured from enterprise financial and economic models for tourism lodges and trophy hunting activities (Unpublished data, 2004, Ministry of Environment and Tourism). Besides their expenditures on accommodation in joint-ventures and community campsites in community areas, tourists also make other expenditures in the economy, which can be linked directly to their experience in community areas, such as those for in-country travel, urban accommodation, crafts and retail purchases. These commonly amount to some 60 per cent of their in-country expenditures (SIAPAC, 2003). The national income contribution associated with these expenditures was included in direct benefits.

All the activities that generate direct income, also create demand for inputs in the wider economy. Thus, for example, tourists' expenditures at joint-venture lodges, or with transport providers, stimulate demand for inputs such as food and fuel from food and fuel firms which, in turn, also contribute to national income. These in turn also create demand in a similar way and so on. The initial direct expenditures associated with community areas are thus responsible for indirect contributions to national income through backward linkages. This is termed the multiplier effect, which can be measured using the national social accounting matrix (SAM), an input–output model of the whole Namibian economy, which includes both firms and households. Lange et al. (2004) develop and describe this model. The indirect impact of CBNRM in the Namibian economy was measured using an income or value added multiplier derived from the SAM.

Another economic benefit measured in the programme-level analysis was the increase in wildlife stocks resulting from implementation of the CBNRM programme. The accumulated capital value of increasing wildlife stocks in conservancies is seen by many as a direct consequence of CBNRM activities. These incremental values were valued at their monetary value 'on the hoof', that is, the

value they would fetch if they were to be sold or harvested commercially. The total of all the directly and indirectly generated net national income, plus the accumulated asset value of stock, generated as a result of the CBNRM activities, was measured as the economic impact of the CBNRM programme. This economic impact was compared with the investments made in CBNRM by donors and government, within a cost–benefit framework, over the life to date, of the programme (1990–2005).

Findings on local and national economic impacts

Inputs and returns in five conservancies

Table 16.1 shows some features of the five conservancies analysed by Barnes et al (2002). They ranged from near desert conditions in the north-west (Torra, =/Khoadi //Hôas), via the northern Kalahari (Nyae Nyae), to semi-arid woodlands/floodplain habitats in the north-east (Mayuni, Salambala). They varied greatly in extent from almost a million hectares in Nyae Nyae, where non-wildlife land uses are relatively unimportant to 28,000 hectares in Mayuni where half the land was used for fairly intensive agro-pastoralism. Some conservancies possessed naturally intact wildlife resources combined with attractive scenery, on at least part of their land (Torra, Mayuni), while in others wildlife resources were depleted and required restocking or investment (Salambala, Nyae Nyae).

The potential for income generating activities varies between the five conservancies. Table 16.1 shows subjective ratings of their potential for different activities. Ratings indicate roughly the amount of income that could be generated, with 'low' signifying up to 10 per cent of income and 'high' indicating up to 80 per cent of income.

All conservancies have conditions more or less suitable for the development of lodges for non-consumptive tourism, as well as for the development of community owned and run campsites. In Nyae Nyae and Salambala the non-consumptive tourism potential is weaker than for the others. The development of trophy hunting tourism is possible in all concessions, but in Mayuni, which makes use of part of a protected area, this would require special permission. All conservancies have potential, albeit limited, for consumptive use of wildlife, including live game sale and hunting for meat. In Mayuni hunting for meat is unlikely. In =/Khoadi //Hôas, preference might be given to live game sale, as it is situated south of the 'red line' veterinary cordon fence. All conservancies have potential for the use of forest and non-timber forest products, as well as grazing for livestock. However the potential for these activities is higher in the higher rainfall conservancies of the north-east.

In the north-west (Torra, =/Khoadi //Hôas, occupied by Damara communities) the traditional land use was pastoralism, that in the northern Kalahari (Nyae Nyae, occupied by San communities) was hunting and gathering with low intensity pastoralism, and that in north-east (Mayuni, Salambala, occupied by Mafwe

Table 16.1 *Comparative physical characteristics of five Namibian conservancies in 2000*

Characteristic	*Conservancy*				
	Torra	*=/Khoadi //Hôas*	*Nyae Nyae*	*Mayuni*	*Salambala*
Land area (ha)	352,200	386,000	900,095	28,400	93,000
Core[a] wildlife area (ha)	108,586	177,650	900,095	13,300	11,000
Households (no.)	120	700	700	450	1200
Mean annual rainfall (mm)	90	150	450	600	650
Rangeland carrying capacity (ha per LSU equivalent)	30	25	15	12	12
Starting wildlife density[b] (ha per LSU equivalent)	427	160	464	43	3875
Expected wildlife density[b] in year 10 (ha per LSU equivalent)	257	119	251	29	85
Non-consumptive tourism potential	High	Mod High	Mod low	High	Mod low
Safari hunting tourism potential	Mod high	Mod	Mod high	Low	Mod
Consumptive wildlife use potential	Low	Low	Low	Low	Low
Other natural resource use potential	Low	Low	Mod low	Mod	Mod
Livestock keeping potential	Very low	Very low	Mod	Mod	Mod

Notes: a Core areas, allocated primarily to wildlife (rest of land shared between wildlife and livestock).

b Density calculated for the total land area, measured in terms of land occupied per unit of stock.

Source: Barnes et al, 2002.

and Masubia communities) was agro-pastoralism. Mayuni was unusual among the five in that it embraces part of a protected area. =/Khoadi //Hôas was unusual in being permitted, by the veterinary authorities, to capture and sell live game animals without quarantine. The numbers of households associated with conservancies varied from 120 in Torra to 1200 in Salambala.

The results of the conservancy-level valuation are summarized in Table 16.2. These values provided a wealth of indicative comparative information regarding the project investment, project income, community income and the economic value for conservancies in the various settings. The project financial values reflected the returns to the project investor, i.e., the donors, government and community, viewed as one entity. They provided an indication of the broader financial viability of the initiative. Here, all donor contributions were treated as costs, and so were dividend payments earmarked for conservancy members, but increase in the value of wildlife stocks was treated as a benefit. Project investors do not, themselves, require large positive returns but seek only to ensure that they do not incur losses, which would require subsidization. As seen in Table 16.2, the

Table 16.2 *Base case financial and economic values for the five Namibian conservancies in 2000 (US$[a])*

Value	*Torra*	*Conservancy* =/*Khoadi* //*Hôas*	*Nyae Nyae*	*Mayuni*	*Salambala*
Project financial values					
Initial project capital investment	166,660	121,602	493,153	107,909	198,605
Capital investment per ha	0.48	0.32	0.55	3.78	2.10
Capital investment per household	1389	174	704	240	165
Annual project net profit	13,342	9716	–37,394	46,634	18,732
Project internal rate of return	16%	19%	15%	8%	8%
Project net present value[b]	120,512	199,990	332,836	0	0
Community financial values					
Annual community net income[c]	56,916	58,598	28,654	102,579	59,648
Community net income/household	474	84	41	228	50
Community net income/ha	0.17	0.15	0.03	3.64	0.64
Community internal rate of return	133%	205%	23%	220%	40%
Community net present value[b]	298,648	469,000	191,016	517,482	188,706
Annual community dividends[d]	31,920	29,106	16,016	31,500	23,618
Dividends per household	266	42	23	70	20
Economic values					
Annual gross value added[e]	78,064	70,532	70,224	120,428	73,612
Annual net value added[f]	68,266	64,337	39,007	114,914	63,752
Net value added per ha	0.20	0.17	0.04	4.06	0.69
Economic internal rate of return	131%	66%	22%	126%	31%
Economic net present value[b]	512,722	561,414	576,086	568,260	362,292
Number of jobs created[g]	8	12	26	22	12
Economic capital cost per job	19,375	9416	24,914	4484	17,820

Notes: a In 2000 US$1.00 was equal to N$7.14 (Namibia Dollars); inflation factor to 2007 is 1.65.

b Measured over 10 years at 8% discount.

c Includes salaries and wages for conservancy employment, project profits and dividends.

d Annual surplus extracted for distribution to households.

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

f Gross value added minus asset depreciation.

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

Source: Barnes et al, 2002.

project returns were moderate but generally positive and acceptable. The initial capital investment ranged between some US$100,000 in Mayuni to some US$500,000 in Nyae Nyae. Annual project profits at stability were mostly positive up to US$47,000, but negative for Nyae Nyae. Real project internal rates

of return over 10 years of conservancy development were moderate at between 8 per cent (the discount rate) and 19 per cent.

The community financial values tell us to what extent the communities have an incentive to invest in conservancies. Here the net income accruing to the communities in the form of project profits, salaries and wages, and any dividends paid out to households is presented, ranging from some US$29,000 in Nyae Nyae to some US$103,000 in Mayuni. Community incomes, measured per household, ranged from US$41 in Nyae Nyae to US$474 in Torra. Communities invested that part of the project capital investment that was not donor or government funded and received a flow of net income described above. Community financial rates of return on investment over 10 years were generally very high, and for Mayuni, Torra and =/Khoadi //Hôas were over 100 per cent. Rates of return were attractive but lower for Nyae Nyae and Salambala, the two conservancies with relatively weak non-consumptive tourism potential (Table 16.1).

Generally, in all cases analysed in Table 16.2, the communities could derive very favourable returns on their investments. The Torra and Mayuni conservancies were able to earn the most cash income and dividends per household, while the Mayuni, =/Khoadi //Hôas and Torra conservancies, all showed very high financial rates of return. The Nyae Nyae and Salambala conservancies provided the least attractive returns for communities. The dominant feature of the community analysis was the fact that donors, and not the communities, bore many of the initial capital and recurrent input costs. All conservancies benefited from donor assistance in this way. Another feature of the community analysis is that it does not incorporate the accumulation of wealth in conservancy wildlife stocks, which communities cannot themselves realize through sale.

The economic values, in Table 16.2, are very useful in that they tell us whether the conservancy contributed positively to national development or not. Here the investment consists of project capital measured at its real cost to the nation, (its opportunity cost), and the benefits include the net national income generated directly within the conservancy, as well as any capital gains in stock value within the conservancy. In all cases the conservancies did, with positive annual contributions to gross and net national income, positive net present values, and generally very favourable internal rates of return. The 8 per cent real discount rate used in the cost–benefit analysis is essentially the opportunity cost for the capital used in the conservancies. It serves as a cut-off rate, in that if projects generate rates of return lower than this, their capital should be diverted and used for something else. All conservancy returns were significantly higher than the 8 per cent cut-off rate, making these investments highly desirable economically.

Conservancies with most favourable returns were found in different settings, including both the semi-desert (Torra) and the more humid north east (Mayuni). The main determinants of high investment value for conservancies appeared to be the potential of their natural resources for non-consumptive tourism (Table 16.1). The low returns for Nyae Nyae were specifically related to an artificially high costs structure, as well as low initial wildlife densities and relatively low non-consumptive tourism potential. The low returns for Salambala were also related to

the low initial wildlife densities and the consequent effect this had on tourism potential.

The financial and economic values in Table 16.2 were from base-case models, and it was important to determine the degree to which these values were robust in the face of changes in model parameters. Sensitivity analysis was needed to provide an indication of the validity of the conclusions drawn from the results, as well as to provide further information on the financial and economic characteristics of the investments. Barnes et al (2002) carried out extensive sensitivity analysis on the models, assessing the effects of variation in capital expenditure, tourism development, wildlife stock densities, stock off-take rates and the inclusion, or not, of live game sales and stock purchase/acquisition. Generally the sensitivity analyses confirmed the robustness of the analytical results. Barnes et al (2002) provide a more detailed interpretation of these findings.

Community tourism development through CBNRM has involved significant donor support in southern Africa (Infield, 2001; Barnes et al, 2002). The question arises as to whether, without this support, these initiatives might be viable financially for communities. Table 16.3 shows the effects that the removal of donor grants would have on the community financial rates of return in the conservancies analysed. Thus the first row of the table shows the community financial rates of return from Table 16.2 while the next two rows show how these change if communities would have to bear all the project capital costs themselves. These effects are shown with and without the inclusion of the residual value of wildlife stocks which, because they cannot actually realize this value through sale, is only an intangible benefit for communities. Only in one conservancy (Nyae Nyae) did the community rate of return drop below the cut-off real discount rate of 8 per cent. The findings suggest that receipt, by conservancies, of donor grants very significantly enhances community returns. They also provide at least an indication that, in some conservancies, communities might have incentives to invest even without

Table 16.3 *The effect of donor grants (non-use values) on the financial rate of return to communities in the five Namibian conservancies in 2000*

	Conservancy				
Community financial rate of return (%)	*Torra*	*=/Khoadi //Hôas*	*Nyae Nyae*	*Mayuni*	*Salambala*
With donor grants without stock[a]	133	205	23	220	40
Without donor grants with stock[b]	44	39	18	24	17
Without donor grants without stock[c]	39	28	1	20	11

Notes: a Includes income to the conservancy from donor grants, but excludes residual value of wildlife stock appreciation (an intangible value for communities) in benefits.

b Excludes income to the conservancy from donor grants, but includes residual value of wildlife stock appreciation (an intangible value for communities) in benefits.

c Excludes income to the conservancy from donor grants, and excludes residual value of wildlife stock appreciation (an intangible value for communities) in benefits.

Source: Barnes et al, 2002

donor and government grants. In at least three of the five conservancies studied, direct use values alone might remain sufficient to attract community investment in CBNRM.

Inputs and returns in the national CBNRM Programme

Table 16.4 and Figure 16.1, derived from own calculations, NACSO (2004, 2006) and unpublished data (Unpublished data, 2007, Ministry of Environment and Tourism) show the total CBNRM programme spending in the 16 years between 1990 and 2005. This was made up predominantly of donor contributions in the provision of technical assistance for facilitation, capital developments in conservancies, and some conservancy operating costs such as payments for community game guards. Approximately 25 per cent of the total spending was made up of government matched contributions in support of the sector, and CBNRM in particular.

Similarly, Table 16.4 and Figure 16.1 show the total economic benefits attributable to the CBNRM Programme as a whole in Namibia. These benefits include the broader impacts of CBNRM on the economy as a whole, described above, including the direct on-site income generation as well as the indirect income resulting from the multiplier effect and the appreciation in the capital value of wildlife stocks. The cost–benefit analysis weighed the CBNRM programme expenditures made between 1990 and 2005, against the economic benefits arising from CBNRM activities during the same period. It can be seen from Table 16.4 and Figure 16.1, that considerable programme investments made through the period have begun to bear fruit in recent years. In 1995 there were no registered conservancies, while in 2005 there were 44, and economic impacts have been growing exponentially.

The programme analysis allows us to see whether the donor and government investments in CBNRM are contributing positively to the development of Namibia or not. The internal rate of return for the programme investment over the 16 year period was close to 15 per cent and the net present value of the investment over the period after discounting at 8 per cent was some US$7.8 million. The 8 per cent discount rate is considered to be the opportunity cost for public and donor funding, which means that if invested elsewhere these funds could be expected to provide an 8 per cent rate of return. The fact that investment in the CBNRM programme generated a higher return (15 per cent) and a positive net present value, means that it was economically efficient and contributed positively to development. After a long period, during which the economic returns to investment in the CBNRM programme were negative, the benefits generated began to rise steeply. The early significant investments appear to have borne fruit in later years.

As pointed out by Emerton (2001), Adams and Infield (2001) and Hulme and Infield (2001), costs associated with wildlife include investments in protection, costs of damage caused by wildlife and land use opportunity costs. Wildlife damage costs were considered in the conservancy models above, since they

Table 16.4 *Economic cost–benefit analysis of Namibia's CBNRM programme (US$[a], constant 2005 values, rounded)*

Year	*Total programme spending*[b]	*Total economic benefits*[c]	*Benefit/cost stream*
1990	478,740	0	(478,740)
1991	605,550	935,810	330,260
1992	920,390	1,099,670	179,280
1993	1,838,730	1,261,710	(577,020)
1994	5,674,010	1,451,600	(4,222,410)
1995	4,370,790	1,926,150	(2,444,640)
1996	5,298,980	2,750,870	(2,548,130)
1997	9,025,190	3,840,260	(5,184,920)
1998	9,047,180	5,309,790	(3,737,390)
1999	8,941,890	6,245,750	(2,696,150)
2000	9,451,850	6,977,820	(2,474,030)
2001	11,318,600	13,000,100	1,681,500
2002	14,449,470	21,443,570	6,994,100
2003	9,291,450	25,064,190	15,772,740
2004	6,520,820	24,851,340	18,330,510
2005	4,920,750	27,981,050	23,060,300
Total	102,154,350	144,139,640	0
Cost–benefit analysis:			
Economic internal rate of return over 16 years			14.91%
Economic net present value over 16 years @ 8% discount rate			7,795,340

Notes: a In 2005 US$1.00 was equal to N$6.67 (Namibia Dollars); inflation factor to 2007 is 1.11.

b Donor and government spending specifically on CBNRM programme.

c Total direct and indirect contribution to net national income, attributable to CBNRM activities, including impact through the value added multiplier, plus appreciation of game stocks in CBNRM areas

Sources: Unpublished Data, 2007, Ministry of Environment and Tourism; NACSO, 2006

included investments in wildlife damage mitigation. More recent work on the costs of wildlife damage in the CBNRM context in Namibia's north-east (Jones and Barnes, 2007) indicates that the benefits of CBNRM tourism at community level can outweigh the costs of damage borne by households. The economic analyses, above, do not include the opportunity costs of land, but as pointed out by Barnes et al (2002) the opportunity costs of land in the arid and semi-arid lands of Namibia are low. Barnes et al (2001) analysed alternative land uses in semi-arid northern Botswana and confirmed this.

Conclusion

The findings described above help us to answer the key policy questions about CBNRM posed in the introduction.

Can the private benefits to communities and households resulting from CBNRM be significant and outweigh the associated costs?

The cost–benefit analysis of five conservancies, which represent conditions in the communal lands of the dry north-west and the more humid north-east of Namibia, indicates that the communities in these conservancies derive positive net returns to their investments in tourism-driven CBNRM. They confirm other findings, made by Barnes (1995) and Barnes et al (2001), for similar community wildlife use initiatives in Botswana. They contradict arguments made by Barrett and Arcese (1995) and Infield (2001), among others, which suggest that CBNRM initiatives in Africa are financially unsound for communities. In arid and semi-arid Namibia and Botswana, the opportunity costs for land are low, and the non-consumptive tourism potential is high. These characteristics may help to explain CBNRM's viability there.

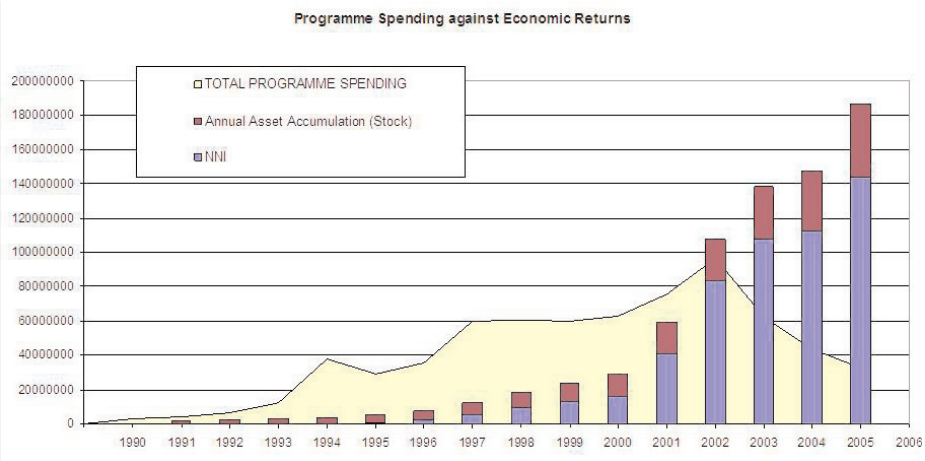
The positive returns at community level, however, do not necessarily translate into positive returns at household level within these communities, and this analysis cannot show whether this happens. The distribution of income within conservancies is a subject requiring further research.

Donor and government grants have significantly enhanced the returns communities derive from tourism-driven CBNRM. These have no doubt been important in providing strong incentives for communities to invest in land use change and adopt CBNRM. But there are indications that CBNRM investments could be fundamentally viable for some communities even without grants.

Can the massive donor investment that has gone into CBNRM in southern Africa be shown to be justified in terms of sustainable economic growth and rural development?

At local level the cost–benefit analysis of five conservancies in Namibia indicates that community conservancy investments, in which tourism is the dominant land use, are economically efficient and contribute positively to national economic well-being.

At national level, considerable investments have been made by donors and government in the development of tourism within a CBNRM context in Namibia. The economic cost–benefit analysis of the Namibian national CBNRM Programme, described above, indicates that these donor and government investments are economically efficient and have contributed positively to national economic development. This appears to be the first evidence for the economic viability of CBNRM.



Source: NACSO, 2006.

Figure 16.1 *Total CBNRM programme spending compared with total economic benefits between 1990 and 2005 (N$, 2005*)

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