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Community-based wildlife management failing to link conservation and financial viability

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Abstract

Given the considerable popularity of community-based wildlife management as a conservation tool, it is of interest to assess the long-run sustainability of this policy not only in conservation terms, but also in financial terms. In this paper, we use cost–benefit analysis to study the social and financial sustainability of a large set of community conservancies in Namibia, one of the few countries where community-based wildlife management policies have been in place long enough to assess their long-term viability. We find that, although the social sustainability is generally good, the financial sustainability is problematic – especially for the younger conservancies: there is no real link between conservation achievements and financial success. This calls into question the long-term sustainability of many of these conservancies: if they are unable to generate enough revenue to pay for their running expenditure, they will eventually fail – even if they are successful from a conservation point of view. Similar problems, linked to the way in which external funders have pushed for additional conservancies to be established regardless of financial considerations, are likely to be present in other countries that have implemented such programmes.

Introduction

Community-based wildlife management and tourism linked to such management came into vogue in southern and eastern Africa in the 1990s (see e.g. Hulme & Murphree, 2001). The Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) Programme in Zimbabwe is the earliest and most well-known example, but a number of other similar programmes were also started in the region from that decade onward. Today, community wildlife conservancies have been set up in most countries in the region. Namibia is one of the few countries where such policies have been in place long enough to assess their long-term viability. This paper studies the social and financial sustainability of a large set of community conservancies there.

Human–wildlife interaction in many African countries has been characterized by conflicts linked to wildlife attacks on humans and livestock as well as conflicts over land use (see e.g. Muchapondwa, 2003; Sutton, 2001). Community-based wildlife management aims to reduce these conflicts: community-based wildlife management and the tourism associated with it have been seen as a means of generating employment and income for communities living in wildlife areas, and of ensuring that benefits from wildlife to local populations are greater than the costs such communities bear (see e.g. Hulme & Murphree, 2001). An increased understanding of the importance of dispersal areas and migration corridors has been part of the rationale for this approach to conservation: many wildlife species need to be able to move outside national parks and protected areas in order to maintain viable populations and viable genetic diversity, and are currently struggling to cope with fragmented habitats (see e.g. Du Toit, 2010; Ellis & Swift, 1988; Saunders, Hobbs & Margules, 1991; Swanepoel *et al*., 2012; Woodroffe & Ginsberg, 1998). Establishing networks of community conservancies adjacent to protected areas is a way of maintaining these dispersal areas (see e.g. Fjeldsa *et al*., 2004; Graham *et al*., 2009; Hackel, 1999; Hulme & Murphree, 1999; Western, Wright & Strumm, 1994).

Numerous studies have been made of the economics of individual conservancies and benefit-sharing programmes, and of individual aspects of community conservation policies. Barnes, MacGregor & Weaver (2002) forecast the private and social viability of three Namibian conservancies, while Sullivan (2002) studied the driving forces behind

the establishment of conservancies in Namibia. Adams & Infield (2003) looked at the impacts of a benefit-sharing programme on the livelihood of communities in Uganda. Humavindu & Barnes (2003) and Novelli & Humavindu (2005) studied revenue from hunting tourism in game farms and communal conservancies in Namibia. Novelli, Barnes & Humavindu (2006) compared the profitability of hunting tourism and wildlife-viewing tourism for selected Botswanan and Namibian conservancies. Samuelsson & Stage (2007) compared livelihood impacts from hunting tourism on private game farms and communal conservancies in Namibia. Muchapondwa, Carlsson & Köhlin (2008) studied how the Zimbabwean CAMPFIRE Programme had changed perceptions of wildlife among rural populations, and found that perceptions had not, in fact, changed very much. Lapeyre (2009, 2010) studied benefit-sharing programmes in Namibia in general, as well as the livelihood impacts and the long-term viability of a specific Namibian conservancy. Naidoo *et al.* (2011) studied the link from species diversity to livelihood impacts in a set of Namibian conservancies, while Snyman (2012) analysed the livelihood impacts of a tourism joint venture in a Namibian conservancy. However, a general problem that has been less well explored is that, even with such community conservancy policies, financial sustainability and conservation needs may not necessarily be correlated.

In economic terms, wildlife and nature conservation generate several types of values for society as a whole (see Table 1 for a simple schematic typology for the values used in this paper). They generate various forms of *direct use values* linked to viewing and hunting tourism, to meat availability, and *indirect use values* linked to maintenance of dispersal areas, for example, but they also generate *non-use values*: people who do not actually use the wildlife in any tangible fashion may nonetheless experience well-being from knowing that important parts of the world's natural heritage survive and are being maintained for posterity (see e.g. Freeman, 2003; Krutilla, 1967; Munasinghe, 1993; Pascual *et al.*, 2010; Sterner & Coria, 2011). The problem with wildlife conservation is that it also generates costs in the form of the damages discussed above. These costs are typically borne by local populations, who have rarely derived benefits from traditional conservation.

Community conservation ensures that local communities receive a greater share of the benefits linked specifically to the use values of conservation. Involving communities directly in conservation also increases the overall use values linked to the preservation of wildlife by making a wider range of tourism options available to foreign visitors and, thus, potentially generating more tourism. However, one of the main reasons for the policy interest in community conservation is not the direct use values linked to tourism, but the *indirect* use values and non-use values linked to better conservation per se. Policymakers, especially foreign donors, are interested in community conservation at least partly because it is seen as a means of safeguarding the survival of the species involved, and their ecosystems. An important problem, however, is that these indirect use values and non-use values are primarily linked to the ecological importance of the conservation area in question, and not necessarily to the benefits that the local community actually receives from community conservation. Those use values from which conservancies can actually collect revenue will be linked to tourist preferences, which are often closely associated with a few charismatic species (see e.g. Di Minin *et al.*, 2013; Lindsey *et al.*, 2006), and may not map

Table 1 Typology and examples of economic values (positive and negative) generated by community conservation

Total economic value				
Use values				Non-use values
Direct use value		Indirect use value	Option value	Bequest, altruism and existence values
Consumptive use values	Non-consumptive use values			
Hunting tourism, meat, wildlife damages, labour use in conservancies, land use in conservancies	Viewing tourism	Part of larger dispersal area or migration corridor	Potential for use for future tourism or dispersal area	Well-being from knowing that species are preserved for future generations and/or other members of the global community; well-being from living in a world where these species exist

Note: This particular framework is adapted from Pascual *et al.* (2010), but similar frameworks have been used in many economic studies of conservation. Different types of non-use values are often difficult to disentangle in empirical valuation studies; in practice, therefore, they are often valued jointly. These values are nonetheless conceptually distinct and their exact subdivision varies across different theoretical studies. Some authors suggest including option values as a set of non-use values rather than as use values; others argue that the intrinsic rights of non-human species should count as a set of values separate from those perceived by humans, rather than as non-use values. While these theoretical discussions are, of course, important, our main interest here is in emphasizing that conservation generates additional values that are separate from the use values experienced by tourists. However, the exact subdivision of these values into different categories is not crucial for our analysis.

onto overall conservation needs very well. Thus, conservancies that not only have charismatic species, but are also convenient to visit because they are close to transport infrastructure, could conceivably be highly profitable even though their contribution to overall conservation is limited. Conversely, other conservancies that are crucial as habitat or dispersal areas for large numbers of species, but are less convenient to visit or are less well-endowed with charismatic species, could be unprofitable despite their importance for conservation. The latter conservancies would provide important benefits to the world, but would gain few use benefits of their own.

Even when a conservancy does generate use benefits, the distribution of such benefits will matter; the conservancy will only survive in the longer term if it generates revenue that exceeds its expenditure. For example, a conservancy may generate revenue for tourism joint ventures in an area, and may thereby also generate an income for community members employed in such ventures; nonetheless, the conservancy – and, thus, the tourism associated with it – may be in danger of collapse in the longer term if insufficient proceeds from the tourism revenue are allocated to the maintenance costs of the conservancy itself.

Table 2 provides a simple typology of benefits and costs associated with some of the key levels of decision-making about community conservation.

There is a key difference between community conservation and traditional conservation via protected areas. On the one hand, although protected areas typically entail higher opportunity costs because of the loss of all land uses except conservation in such areas (for a discussion of the opportunity costs of conservation in protected areas, see e.g. Adams, Pressey & Naidoo, 2010; Norton-Griffiths & Southey, 1995), these areas are usually maintained as wildlife reserves – even if they do not pay their own way through tourism revenue – because the main decision level is the national one. On the other hand, community conservation uses more decentralized decision-making, leading to a system where each decision level matters. Thus, although the overall cost in the form of reduced land productivity in other uses may be lower in community conservation (because wildlife typically coexists with other land uses) than with traditional protected area conservation, there is a greater need for the conservancy to pay its way through the revenue generated because the support of the local decision level is crucial for the conservancy's continued existence.

Thus, community conservation could be successful from the perspective of global society as a whole by generating increases in conservation use and non-use values that are greater than the increased costs of wildlife monitoring, wildlife damage and land availability; however, there is the risk that most of these values accrue to populations outside the host country in the form of increases in indirect use and non-use conservation values. The individual conservancy's members may then experience increased costs from the conservancy's establishment that are not fully compensated for by the increase in local revenue from tourism. If this is the case, the conservancy's long-term survival is in danger because the people actually making day-to-day conservation decisions will see little benefit from maintaining the conservancy. It is important, therefore, to evaluate community conservation by looking not only at overall wildlife numbers and conservation benefits (although these are, of course, important), but also at the financial health of the individual conservancies. Moreover, as conservancies are important for each other as dispersal areas and for maintaining surrounding ecosystems in general, it is not enough to assess the viability of a few selected conservancies – as some of the studies cited above have done: the viability of the entire national system of conservancies needs to be studied in order to assess whether any conservancies are likely to run into financial difficulties in the longer term. However, to the best of the authors' knowledge, no studies to date have done so. In Zimbabwe, for example, the policies cannot be evaluated fairly because of the overall collapse of the economy; in most other countries, the policies have not been in place long enough to permit any assessment of long-term trends. The only country that does provide an example where policies have been in place long

Table 2 Important benefits and costs of community conservancies to various levels of decision-making

Level of decision-making	Examples of benefits	Examples of costs
(1) Conservancy	Tourism revenue to the conservancy itself	Financial costs of the conservancy – labour costs, maintenance costs, etc.
(2) Local community, including conservancy	Tourism revenue to the conservancy itself; game meat; salaries and other income to community members from joint venture activities	Opportunity costs of labour in conservancies and joint ventures (often lower than financial cost to employers); maintenance costs; opportunity costs of reduced agricultural productivity caused by wildlife
(3) Country	Same as (2), but also benefits to other conservancies and conservation areas linked to maintenance of dispersal areas and ecosystem services, as well as indirect use values and non-use values to country as a whole linked to improved conservation	Same as (2), but also additional costs (if any) that the country incurs to support the conservancy
(4) World	Same as (3), but also indirect use values and non-use values to the world as a whole, linked to improved conservation	Same as (3), but also additional costs that the rest of the world incurs to support the conservancy (at present mainly focused on the start-up phase)

enough for their long-term outcomes to be evaluated is Namibia, the focus of our study.

The paper is structured as follows: We provide background on the Namibian case study, followed by a section describing the data and methodology used in our analysis. The subsequent section provides the results from the analysis, and our final section discusses these results in more detail.

Namibian community conservancies

Namibia was ruled by South Africa for almost the entire span of the 20th century, only becoming independent in 1990. Most of Namibia's wildlife either lived in the so-called homelands reserved for black Namibians under apartheid rule, or used these areas as dispersal areas for their main habitats in the national parks (see e.g. Leggett, 2006). Towards the end of the apartheid era in the 1980s, people working on conservation issues in Namibia started trying to establish new conservation areas. Inspired by the Zimbabwean example, attempts were made to bring local inhabitants into the field of conservation as game guards and other staff. After Namibia's independence in 1990, new legislation was passed to regulate wildlife management. The government also established the Community-Based Natural Resource Management (CBNRM) Programme to empower local communities to set up conservancies and to actively manage the local wildlife. These conservancies generate revenue through game-viewing tourism, through selling hunting packages to foreign tourists and through associated activities such as selling crafts and renting out camping grounds to tourists.

The CBNRM Programme struck a chord with local populations and foreign donors alike. Foreign support for CBNRM has been massive: since 1990, donors have spent over US$50 million in total – around US$25 per Namibian – towards the programme. The number of conservancies and the total land area covered by them have increased dramatically (Fig. 1). However, there have been some concerns too (for a critique, see e.g. Sullivan, 2006). Whereas the early conservancies were established where conservation practitioners saw the greatest potential for success, the subsequent establishment of ever more conservancies across the country was primarily driven by foreign funders and donor-funded non-governmental organizations who wanted to be able to list growing areas under conservation and growing numbers of conservancies in their annual reports, regardless of these conservancies' potential for long-term success. Donor spending has typically been oriented towards supporting the establishment phase of new conservancies, rather than supporting conservancies once they are fully operational.

Reporting at the national level has also focused on reporting the total amount of revenue generated by the conservancy sector as a whole rather than the revenue generated by individual conservancies, or the net revenue after costs have been deducted. Similarly, reporting has focused on individual success stories – almost always from the conservancies set up first – rather than the success rate of the sector as a whole. Given that the first conservancies were established where the chance for success was seen as greatest, it seems probable that newer conservancies – often established in the same regions, but further from key infrastructure that lets tourists visit – might be less financially successful than the older ones. This probability is particularly acute if one considers that newer conservancies were frequently established without solid ex ante business analyses having been made. The newer conservancies might also compete with their older counterparts for the same client base, rather than creating their own client base by attracting additional tourists to the country. Thus, an analysis of the financial success of the conservancy sector is of considerable interest.

In conservation terms, CBNRM has been a huge success (see e.g. Brown & Bird, 2011; MET, 2012; NACSO, 2008). Local wildlife populations have grown dramatically, and animals that were more or less extinct in some regions have been re-established there. There have also been important successes in terms of individual conservancies and individual livelihood impacts, as shown by Bandyopadhyay *et al.* (2009), Barnes *et al.* (2002), Naidoo *et al.* (2011) and Samuelsson & Stage (2007). However, the conservation policies have also led to local communities being saddled with the responsibility and financial costs for maintaining game guards. These are normally recruited locally, and their salaries are an important benefit to the local population; however, they also represent an important cost to the conservancy. This cost continues throughout the year, not only during the tourist season; it applies in all areas that are important from a conservation viewpoint, not only those conservancy areas that tourists prefer to visit; and it applies in areas that are mainly important for less charismatic species that tourists are not willing to pay much to view or to hunt. Thus, despite the obvious conservation success, whether the policy has also been a financial success for all the local communities involved remains to be examined.

Materials and methods

To evaluate the financial and economic sustainability of the first 59 conservancies set up in Namibia, we used data for the years 2003, 2005, 2007 and 2009 compiled by the Namibian Association of CBNRM Support Organisations (NACSO) from their financial accounts. The evaluation is done using standard financial and social cost–benefit analysis (for a standard treatment of this methodology, see e.g. Campbell & Brown, 2003). *Financial* analysis refers to actual monetary flows to and from the conservancy, while *social* analysis includes non-monetary benefits and costs to all members of the community. The financial sustainability analysis shows whether conservancies are generating enough revenue to cover their costs of operation, while the social sustainability analysis shows whether the value of the benefits generated for the community as a whole is greater than the value of the resources being used. As we only have data for four different years, we determine the net benefits – financial and social, respectively – for each conservancy for

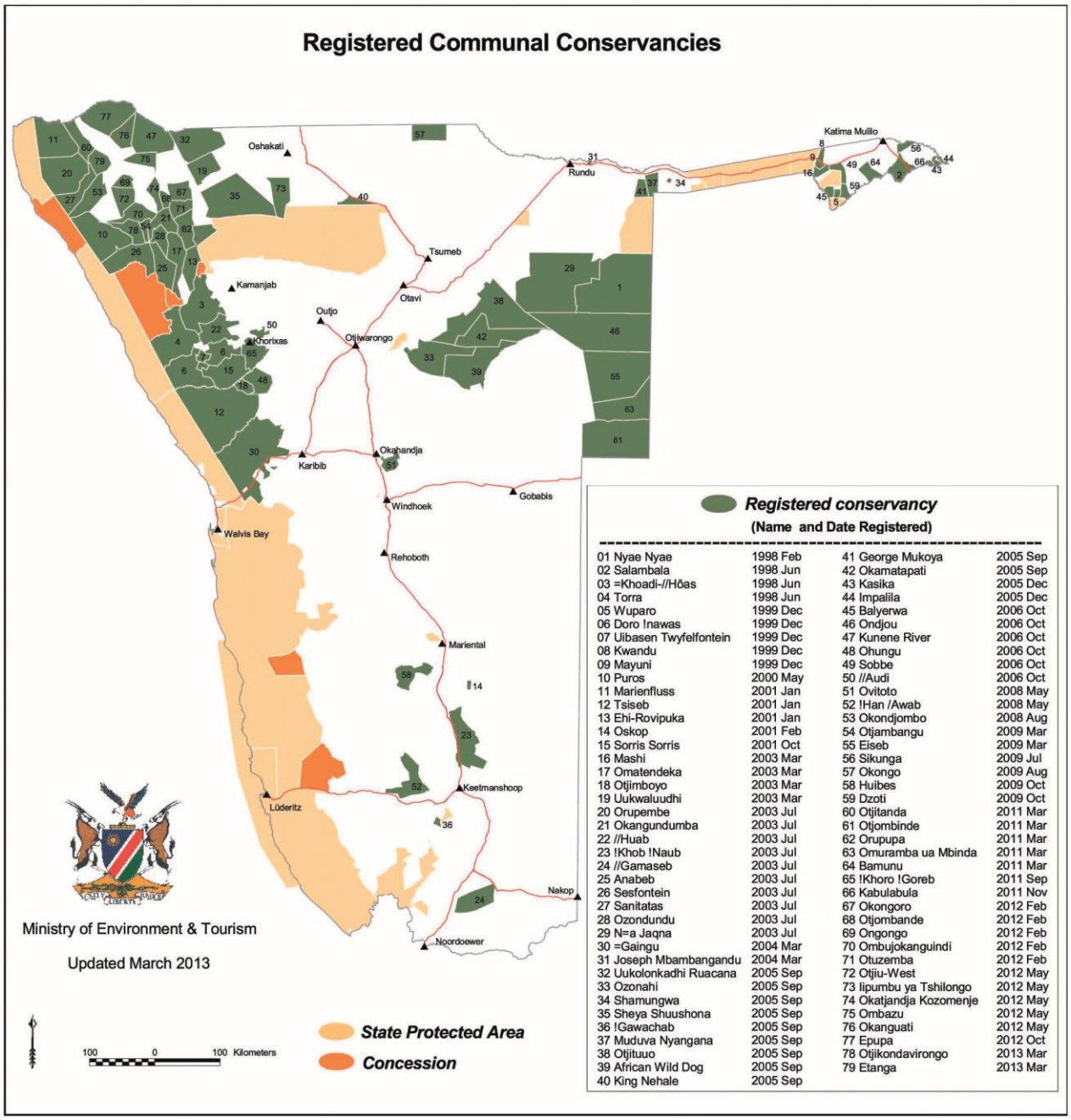

Figure 1 Namibian conservation areas.
Note: The green areas are communal conservancies, which are listed in the key alongside in the order in which they were established; conservancies 60 through 79 were established after the period studied here.
Source: NACSO.

each of those four years. The types of data provided in the conservancies' financial statements, and adjustments made to these data in the social analysis, are detailed in Table 3.

Financial net revenue is defined as monetary revenue accruing to the conservancies, minus monetary expenditure incurred; we exclude capital expenditure in order to reduce the effects of one-off investment costs. *Social net benefit* is defined here as the overall social benefits generated by the conservancy, minus the economic opportunity costs linked to those benefits. Apart from the financial flows discussed above, appropriately adjusted to account for social opportunity costs rather than financial costs, the social benefits include the value of meat harvested from wildlife and distributed among conservancy members. This meat would not

Table 3 Types of financial data used and adjustments to these in the social analysis

Financial benefits	Social benefits: adjustments compared with financial benefits
Revenue from hunting tourism received by conservancy	Same figure as in financial analysis
Campsite revenue received by conservancy	Additional revenue received directly by community members
Revenue from sales of crafts received by conservancy	Additional revenue received directly by community members
Revenue to conservancy-run enterprises	Additional revenue received directly by community members
Revenue from joint venture enterprises received by conservancy	Additional revenue received directly by community members, including salaries to members employed in these enterprises
Revenue from sales of live animals received by conservancy	Additional revenue received directly by community members
Revenue from sales of game meat received by conservancy	Estimated value of additional game meat given to community members
Minor revenue items (interest on bank accounts, film fees, etc.) received by conservancy	Same figure as in financial analysis
Financial costs	**Social costs: adjustments compared with financial costs**
Salaries from conservancy	Opportunity cost of labour used in conservancy Opportunity cost of labour used in joint ventures and other work related to existence of conservancy
Other cash payments from conservancy to households (not linked to work provided)	Not included in social analysis
Other running conservancy expenditure	Same figure as in financial analysis

have been available if the conservancy had not existed; so, if the conservancy had not existed, the households would have been forced to purchase or produce other food instead. On the other hand, the social analysis excludes pure cash transfers to households, as pure redistributions that are not linked to production or consumption of goods or services do not entail any opportunity cost for society.

Opportunity costs of labour – reflecting the cost to society of losing the goods and services that this labour would otherwise have produced in other economic activities – are lower than the financial cost of the salaries paid to the labour, owing to the high unemployment in most of the areas where conservancies have been set up. This lower opportunity cost of labour effectively means that employment generation is regarded as a net positive for the economy. These opportunity costs are calculated using two different sets of local estimates: Barnes (1994) estimated a value of 35%, while Humavindu (2013) estimated a value of 54%. The results are similar for both sets of estimates; we report only the results that use the more recent set of opportunity cost estimates. The social analysis also includes social benefits and costs linked to conservancy tourism (specifically, salaries from tourism-related joint ventures, minus opportunity costs of the employed labour).

Some important values are not included in the social analysis owing to a lack of data. These are the indirect use value and non-use value of the increased wildlife numbers, and the cost to community members of reduced agricultural productivity because of damages caused by wildlife. The positive wildlife values are likely to be higher than the negative agricultural productivity losses, so excluding both sets of values produces a downward bias in the estimates of net social benefits from the conservancies. However, neither of these two categories affects the financial analysis, which is our main focus of interest here as the financial analysis determines the long-run viability of the conservancies themselves.

Results

Almost all revenue to the conservancies is related to tourism in one way or another. Sales of game meat and non-animal products also generate revenue, but are negligible by comparison. As the social analyses use lower labour costs than the financial analyses, include more monetary and non-monetary benefits, and exclude some of the financial costs, the social net benefit is consistently higher than the financial one for all conservancies studied. In Fig. 2 we show, for clusters of conservancies started in the same 3-year periods, the share of conservancies in each cluster that operate with a social and financial surplus, respectively.

We see that social sustainability is generally lower for the newer conservancies. Almost all the conservancies established prior to 2004 are profitable from a social standpoint, at least currently; some have been socially viable throughout most of their existence. Conservancies established after 2003 are less viable from a social viewpoint.

The picture is considerably bleaker for the financial analysis. The newer conservancies are consistently less profitable than the older ones: even after several years in operation, the share running an operating surplus remains lower than what it was for the older ones even at the beginning of the period studied. Most of the revenue generated by conservancies is from hunting tourism or from campsite visits, with the other revenue sources normally being correlated with these income sources. For those conservancies which do not generate enough revenue to pay for their costs, this outcome is largely attributable to low tourism revenue rather than unusually high costs. Related to this, we also see that profitability in the conservancy sector dropped at the time of the 2008 financial crisis (and its associated drop in tourism). Even some of the older, more established conservancies were affected by the crisis.

The main source of revenue for the conservancies is tourism: hunting tourism, campsite fees from hunters or

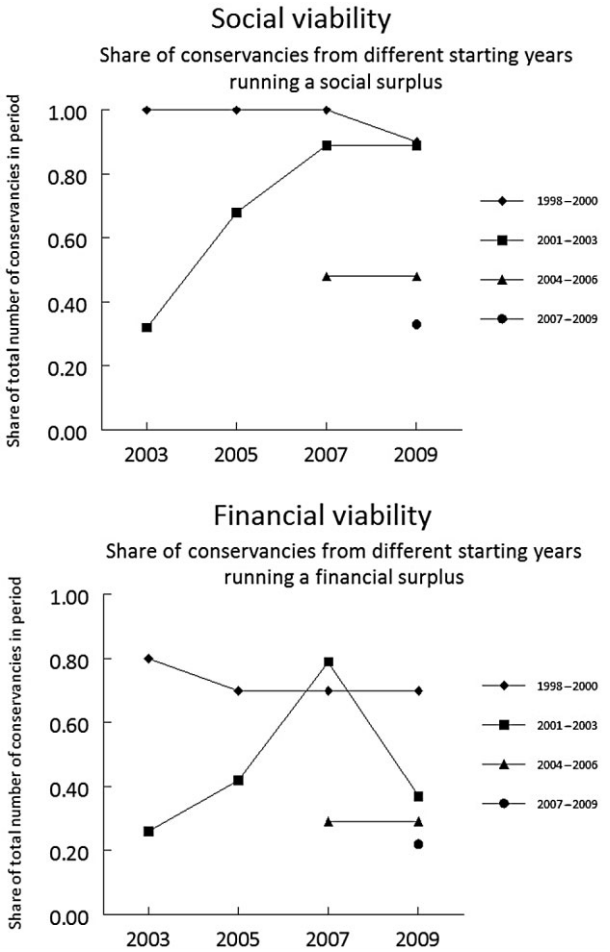

Figure 2 Social and financial sustainability of the oldest 59 Namibian conservancies, clustered by 3-year periods of establishment.
Note: The 1998–2000 group contains 10 conservancies, the 2001–2003 group contains 19, the 2004–2006 group contains 21 and the 2007–2009 group contains nine. For each of the years on the x axis, we provide the shares of each conservancy cohort which ran operating social or financial surpluses in that year. For each cohort, values are only included for those years where all conservancies in the cohort had already been set up.
Source: Authors' calculations based on data collected by NACSO.

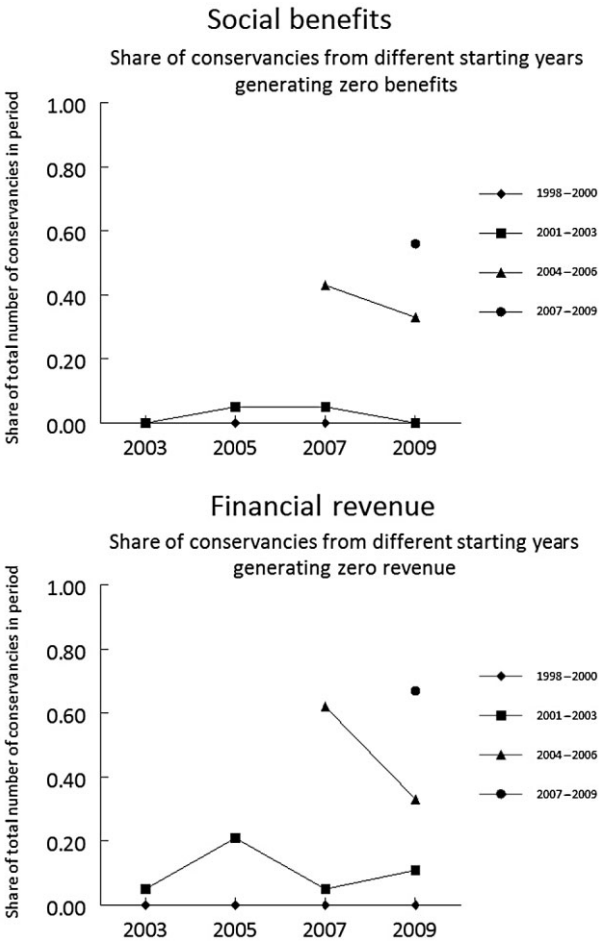

Figure 3 Shares of the oldest 59 Namibian conservancies generating zero social and financial benefits, respectively, clustered by 3-year periods of establishment.
Note: The 1998–2000 group contains 10 conservancies, the 2001–2003 group contains 19, the 2004–2006 group contains 21 and the 2007–2009 group contains nine. For each of the years on the x axis, we provide the shares of each conservancy cohort which generated zero social or financial benefits in that year. For each cohort, values are only included for those years where all conservancies in the cohort were established.
Source: Authors' calculations based on data collected by NACSO.

camping tourists and crafts sales. Thus, for the conservancies that do not generate a surplus, the underlying problem is that tourist numbers and tourism revenue are not high enough to pay for the costs of maintaining the conservancy. The more positive picture for the social surpluses generated indicates that, when employment generation in high-unemployment areas and ancillary benefits from for example game meat are taken into account, many of the conservancies make positive contributions to the local economy. However, the ancillary benefits to the local economy depend on the continued survival of the local conservancy. If the conservancy continuously loses money, it will eventually cease functioning – and the ancillary benefits associated with it will cease as well.

The picture is similar (Fig. 3) if we look at the shares in different cohorts of conservancies that generate no revenue (in the financial analysis) or benefits (in the social analysis). These are conservancies that are either not yet operational or that have, effectively, ceased being operational. The earliest cohort was operational from the beginning, and all conservancies in this group generated revenue in all the years for which we have data. However, the share of conservancies that do not generate revenue (and/or are not operational) grows steadily the younger the cohort is. Obviously, new conservancies might need a year or two before they start generating revenue; however, what these figures suggest is that some never do. Again, the main source of

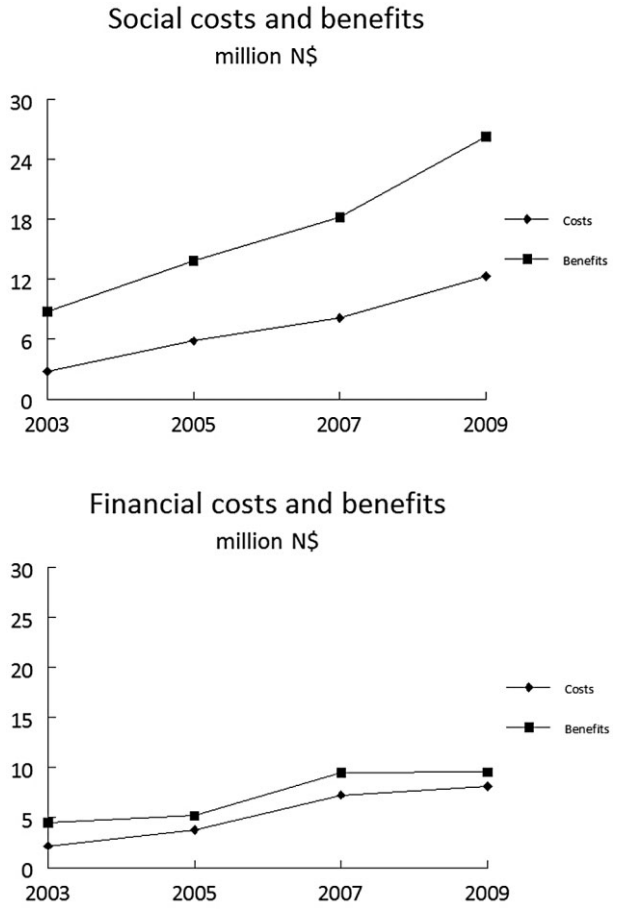

Figure 4 Overall social and financial costs and benefits for the oldest 59 Namibian conservancies in aggregate, deflated to 2005 N$.
Note: Costs exclude one-time capital costs, as discussed in the main text.
Source: Authors' calculations based on data collected by NACSO.

revenue is tourism; if a conservancy receives no tourists at all, and thus generates no revenue, it is difficult to see how the conservancy will survive in the longer term.

Looking at aggregate numbers for the entire conservancy sector (Fig. 4), the sector as a whole is profitable both financially and socially. The benefits generated by the sector as a whole are greater than the costs, but financial net benefits for the sector as a whole have stagnated over the period, whereas social net benefits for the sector as a whole have improved. Overall financial costs have increased faster than overall revenue, but a large share of these new costs are linked to salaries with a relative low social opportunity cost.

Discussion

Namibian community conservation has been a tremendous success from a conservation point of view (see e.g. Brown & Bird, 2011; MET, 2012; NACSO, 2008). Our analysis indicates that community conservation is also, mostly, a success from a social point of view. However, a large share of the revenue that is generated by the conservancies as a whole accrues to the older ones that were established where the potential for success was initially perceived to be greatest. With improved wildlife numbers and increased tourism, visitors have continued to focus on conservancies that are easily accessible and, therefore, convenient to visit, and that have the greatest number of charismatic species. Newer conservancies further from the main roads, which are important as dispersal areas for the wildlife in the older conservancies, receive far fewer tourists or, in some cases, none at all – with far less revenue as a result.

Net social benefits are generally lower for more recently established conservancies, but as our analysis understates the overall social benefits, this is probably not great cause for concern: even with such understated benefits, social profitability for the sector as a whole increased steadily from 2003 through 2009. However, the financial picture is more worrisome. Numerous Namibian community conservancies, especially those established during the latter stages of the CBNRM expansion, are losing money on a regular basis and will probably need continuous outside support to survive.

For many of the conservancies, the social benefits linked to employment generation are important, and cause the social net benefits to be higher than the financial net benefits to the conservancy itself. As the existence of the conservancy contributes to overall Namibian conservation and has permitted the Namibian government to draw down the number of state-employed game guards, the government should perhaps consider paying part of the conservancy staffing costs as a continuous support activity; this would help maintain the conservation activity and the associated employment.

Even when ancillary benefits to the local economy are taken into account, however, many of the conservancies can only be justified through the conservation benefits that they generate. These conservancies ensure the survival of important wildlife species, thereby providing tourism benefits for the rest of the country and enormous conservation benefits for the global community as a whole. Despite this, our results indicate that revenue from foreign tourists is not enough to pay for the costs of maintaining these benefits; indeed, some conservancies have not generated any revenue at all that would at least help pay for the benefits that they generate.

As even the unprofitable conservancies help maintain dispersal areas for species that contribute to tourism revenue in other conservancies, revenue-sharing systems should perhaps be put in place among the conservancies. Through such systems, the more profitable conservancies could help pay for the dispersal areas provided by other, otherwise non-profitable, conservancies. However, an obvious problem is that this would reduce net revenue for the conservancies that are currently profitable and, thus, make conservation relatively less attractive to the rural communities managing these conservancies.

Another problem is that even such a revenue-sharing system would still entail trying to exploit direct use values from hunting and viewing tourism to pay for the indirect use values and non-use values that community conservancies generate for the global community. Our analysis indicates that the current system fails to do so. Moreover, although a reallocation of revenue between conservancies would give a better distribution of the overall revenue, the fact that overall financial profitability has stagnated indicates that, with the continued establishment of new conservancies, in future overall revenue may not be enough to finance the new conservation activities being set up.

If Namibian CBNRM is to remain a conservation success, it is likely that government support, from the Namibian government or from other governments, will remain necessary. Simply reallocating funds between conservancies would make community conservation less attractive in areas where community members currently perceive it as a success, and thus undermine those communities' support for continued conservation. From the Namibian government's perspective, the community conservancies are an important source of employment generation in areas where unemployment is high, so financial support for conservancies could be justified as an employment policy. However, the foreign donors that have encouraged the establishment of all these conservancies also need to take on a long-term responsibility for the activities that they have set up. The values that the conservancies generate, in the form of improved conservation, create benefits for the entire world and should, arguably, be the responsibility of the entire world as well.

The gap between the non-use values that justify the conservancies and the use values that are intended to pay for them is, in all likelihood, not confined to Namibia; it seems probable that, where financial data available for conservancies in other African countries, similar problems would be found there. The question, then, is whether the costs of maintaining these benefits for the global community should also be shared by the global community or should be borne solely by poor rural populations in African countries.

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