



# The effectiveness of economic incentives for sustaining community based natural resource management

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## ABSTRACT

Incentives are key to attracting and maintaining participation in community based natural resource management (CBNRM) initiatives. However, incentives cannot work if people do not know about them, if they are inappropriate or if they are delivered in insufficient quantities. In southern African CBNRM initiatives, many incentives are offered, particularly jobs and community income from hunting and photographic tourism activities. There is a need to assess – jointly – residents' knowledge and perceptions of these incentives and their actual delivery to determine whether they are likely to be effective in sustaining participation in CBNRM activities over the long run. This paper reports the results of just such an assessment at two CBNRM sites, the Tchuma Tchato project in Mozambique and Kwandu Conservancy in Namibia. While different types of benefits were delivered at both sites, they were largely of low value and low in volume. It appears that the incentives offered are not inappropriate, but are insufficient – too few people benefit directly and the level of benefits is generally too small. Further, a large minority of households feel benefits have been inequitably distributed and that the direct costs of living with wildlife have been ineffectively addressed. These issues should be viewed as potentially serious challenges to maintaining local participation in CBNRM activities in the long run.

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## Introduction

Community based natural resource management (CBNRM) schemes aim to achieve the dual goals of biodiversity conservation and poverty alleviation. The use of incentives to encourage communities to participate in sustainably managing their natural resources is a critical design element of CBNRM.

The literature suggests that incentives to participate in CBNRM must – at worst – contribute at least as much to livelihoods as the returns that could be generated from an alternative use of the resource (Jones and Murphree, 2001; Muir et al., 1996). They must also be sufficient and appropriate to align the individual and social costs and benefits of natural resource management. This does not suggest that financial incentives are the only valid incentives to offer (Rasker et al., 1992; Sommerville et al., 2010). Cultural, social and aesthetic factors have been identified as reasons for becoming involved in conservation initiatives, and some communities continue to participate despite the economic benefits of doing so being in doubt (Wyman and Stein, 2010).

It is essential to determine whether the assumptions made about incentives in the design and implementation of CBNRM programmes actually meet the needs and wishes of residents, and

therefore encourages such participation. The attitudes and knowledge of CBNRM area residents is crucial – if they are unaware of incentives, or their attitudes reduce the likelihood of responding to them (e.g., because they are inappropriate or insufficient), then such incentives will be ineffective (Stern, 1992).

It has been recognised that if residents' perceptions of costs and benefits are vastly different to those of programme implementers and designers (Barrow and Murphree, 1998; Salafsky and Wollenberg, 2000), programmes are highly unlikely to achieve their objectives. However, the examination of residents' perceptions of incentives is rarely undertaken. The purpose of this research was, therefore, to examine CBNRM-area residents' perceptions of the incentives and delivered benefits associated with CBNRM activities, to determine whether they were appropriate and sufficient. Such evaluations are important. If implementers (including communities) do not know whether incentives have been delivered, or whether they are appropriate or sufficient, they cannot know whether CBNRM programmes will sustain participation and therefore achieve their conservation objectives in the long run.

The initial incentive of CBNRM was the devolution of property rights over wildlife to communities, entitling communities to a claim over the stream of benefits generated by the utilisation of wildlife (Bromley, 1989), which could change the balance of costs and benefits associated with wildlife management. These benefits would encourage participation in CBNRM initiatives and sustainable resource utilisation was expected to result (Bond, 2001;

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Emerton, 2001; Murphree, 1993). Indeed, the rapid spread of CBNRM across southern Africa indicates this incentive for instigating the collective action necessary for CBNRM has been appropriate and sufficient in many communities.

However, if participation<sup>1</sup> is to be maintained over the long term, incentive design and delivery must change over time with changing economic circumstances (Sanchirico and Springborn, 2011; Weible, 2008). This aspect of incentive design has been given limited attention in the literature, though evidence suggests that communities will eventually drop out if realised benefits are inadequate over time (Fischer et al., 2011; Songorwa, 1999). This research therefore seeks to increase the understanding of community perceptions of incentives associated with CBNRM, how they change over time, and whether they are likely to be appropriate and sufficient to maintain participation into the future.

## Methods

### Case study sites

To understand how different contexts (of implementation) may affect expectations and or perceptions, the research was conducted across two sites in different countries – the Tchuma Tchato project in Tete Province, Mozambique and the Kwandu Conservancy in the Caprivi Region of Namibia. These sites were also selected because of the longevity of their CBNRM activities which allowed for the examination of lagged effects and changes over time.

### Tchuma Tchato

The Tchuma Tchato project was the first CBNRM project implemented in Mozambique, starting with the Bawa community in the early 1990s. Project activities spread to other communities in Tete Province at the request of these communities. Activities began in the Daque area (Mágoè District), the focus of this research, in 1994/95.

Specific legislative reform was required to enable central government taxes on trophy hunting to be shared with the project (and local government). Additionally, to maximise revenues, special trophy hunting prices were set for Tchuma Tchato project areas, approximately three times higher than those for hunting elsewhere in the country. Project design and implementation received technical and financial inputs from various external agencies, including non government organisations (NGOs) and academic institutions.

The project developed in the Daque area to increase local control over resource extraction (not just wildlife), with a later focus on developing tourism initiatives; though the latter has been broadly unsuccessful to date. Project activities have had a strong focus on wildlife management, with few economic or community development activities implemented, though elected village councils were established to take environmental and revenue management decisions.

Following the withdrawal of external (financial and technical) support in 2005, project activities have continued, though at a reduced scale due to financial constraints. Revenues, though small,

<sup>1</sup> Participation is understood here to mean – at the least – a tacit agreement to follow the rules relating to wildlife utilisation – that is, to not hunt illegally. This is a similar understanding as the passive beneficiaries described by Wells et al. (1992). While participation typically implies a much more active role, it was beyond the scope of this research to determine the actual extent and intensity of participation in CBNRM activities.

**Table 1**

Sample size of households by category, Tchuma Tchato (Mozambique) and Kwandu Conservancy (Namibia).

	Tchuma Tchato	Kwandu Conservancy
Purposive	50	46
Random	69	68
Total	119	114
Total population	n/a	4300

have been repeatedly disbursed to villages and have been used to purchase a variety of goods (discussed in more detail below).

### Kwandu Conservancy

Kwandu Conservancy in the Caprivi Region was developed within the Namibian national CBNRM programme. In 1996 it started to receive financial and technical support from NGOs and government, and it was formally recognised by government in 1998.

The purpose of the conservancy is to ‘alleviate poverty and give employment to people by conserving wildlife ... [and] through benefit sharing from tourism revenues<sup>2</sup> and to ‘conserve natural resources and wildlife for future generations, to benefit the members of Kwandu Conservancy in a fair way so that their quality of life is increased.’ (Kwandu Conservancy, nd). The conservancy is managed by a 14 member committee.

In addition to many wildlife and forest management activities, the conservancy supports conservation agricultural extension, craft production and sales, chilli cultivation (for income and use in human–wildlife conflict mitigation measures) and fruit tree cultivation. The conservancy has also been trialling the human animal conflict compensation (self-insurance) scheme (HACCSIS), initially to compensate farmers for livestock losses to predators, and more recently for crop losses to elephants.

Revenue is generated by a community-run campsite and a trophy hunting concession shared with three neighbouring community conservation initiatives. The conservancy has distributed benefits numerous times, including game meat and other goods, as well as revenue distributions. The conservancy is financially self-sustaining, though it continues to receive technical inputs from NGOs and government.

### Data collection and analysis

Data were collected using household surveys, focus group discussions and key informant interviews. For the household survey, two samples were selected from within each site (Table 1) to allow an examination of the distribution of impacts amongst households with different levels of involvement with the programme. For the purposive sample, households were selected because they were known to be currently (or formerly) closely involved in the management of the CBNRM initiative, and/or were known to have received direct benefits from the programme. For the random sample, households were randomly selected from households residing in the CBNRM area.

Both open-ended and closed questions were included in the household survey. The open-ended format was utilised to determine the range of respondent-identified perceptions, to allow for unanticipated results to emerge and to increase the understanding of the relative importance of different issues. Closed questions were incorporated to determine whether CBNRM-area residents

<sup>2</sup> Cordelia Muyoba, Manager, Kwandu Conservancy. Interviewed 23 November 2007.

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