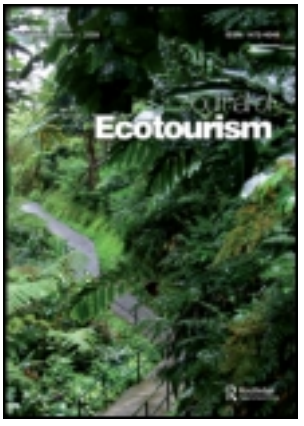

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Contribution of eco-tourism to nature conservation and improvement of livelihoods around Amani nature reserve, Tanzania

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Eco-tourism is acknowledged for playing a central role in conservation of natural resources and improvement of livelihoods especially in biodiversity-rich areas of developing countries. Theoretically, support for conservation from rural residents who live next to protected areas is maximised if they benefit economically. Using Amani Nature Reserve (ANR) in Tanzania, as a case study, this paper examines whether and to what extent eco-tourism improves local livelihoods and hence conservation. Data were collected using a structured questionnaire, Participatory Rural Appraisal and interviews with key stakeholders. Findings indicate that, over Tanzanian Shillings (TAS) 12 million (≈ US$10,000; US$ 1 = TAS 1300 in November 2007) are generated by ANR annually as revenue from eco-tourism. About 20% of this is distributed equally to the 18 villages that surround the reserve. Despite an increase in revenues, there was discontent among residents regarding the percentage share and other benefits they receive from eco-tourism. On average, eco-tourism contributes 9.6% of total annual household income but only 22.7% of the households earn income from eco-tourism. The paper concludes that, in ANR, eco-tourism provides little benefits to local residents and suggestions for appropriate mechanisms of sharing benefits and enhancement of peoples' participation in eco-tourism are underlined.

Keywords: conservation; participation; attitudes; livelihoods; local residents; Amani nature reserve; Tanzania

Introduction

Protected areas have been, and are still being, established all over the world to conserve biodiversity and protect ecosystems for the current and future generations (Baral, Stern, & Bhattarai, 2008; Benitez, 2001). Increasingly, these areas are expected also to contribute to sustainable development and deliver benefits to local communities (Blom, 2010). It has been argued that, to be effective in assisting biodiversity conservation and sustainable development, protected areas need to be integrated within a broad sustainable development planning agenda (Mansourian, Higgins, Dudley, & Stolton, 2008). Conservationists especially in biodiversity-rich countries of the developing world, such as Tanzania, have thus been challenged to design effective biodiversity conservation strategies to meet both conservation and development goals (Bookbinder, Dinerstein, Rijal, Cauley, & Rajouria, 1998). One strategy that has been identified as an ideal mechanism for attaining both

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natural resource conservation and economic development is eco-tourism. In other words, eco-tourism is considered to be both an economic and conservation strategy, which fosters positive residents' attitudes towards conserving protected areas (Hearne & Santos, 2005). According to Munn (1992), eco-tourism provides a means through which local people can gain economic benefits thereby reducing pressure on the physical environments by abandoning unsustainable resource use practices.

Although there are many controversies over an exact definition of eco-tourism, many experts in eco-tourism assert that eco-tourism should have low impact on nature, with a goal of benefiting both conservation and the well-being of local communities (Guangming et al., 2008; Lindberg, Enriquez, & Sproule, 1996). With this in mind the International Eco-tourism Society defines eco-tourism as 'responsible travel to natural areas that conserves the environment and improves the well-being of local people' (Orams, 1995, p. 5). This definition makes local benefits a prerequisite for tourism to be categorised as eco-tourism (Tisdell, 2003). Also, in order to achieve conservation goals, an appreciable amount of revenue must return to local communities living next to or within conservation areas to encourage offsetting the often substantial costs of protection or conservation (Walpole, Goodwin, & Ward, 2001). Thus, unless natural protected areas make tangible economic sense, local residents will often turn against them and lead to failure in conservation (Lindberg & Huber, 1993).

Tanzania is one of the economically poor but amongst the biodiversity-rich countries in Africa (Nelson, 2004). The country has a land area of 945,087 km^2 of which approximately one-third is allocated to natural protected areas (Kweka, Morrisse, & Blake, 2003). Also, Tanzania has been advocating eco-tourism as a means of enhancing conservation of its protected areas and, assisting in efforts to promote the economy and livelihoods of local people. The country's tourism policy recognises the fact that most tourist attractions lie within local communities or in their vicinities, hence it is imperative for communities in or around these areas to be fully involved in the conservation of these natural areas and to get a share of the income generated from tourism activities (Ministry of Natural Resources and Tourism [MNRT], 1999).

Amani Nature Reserve (ANR) in north-eastern Tanzania is an important natural area for conservation and eco-tourism. Eco-tourism activities such as bird watching, forest walks, hiking, nature photography, and observation of butterflies, primates, reptiles, and amphibians are practiced in this nature reserve. Despite the existence of long-running conservation programmes by the Government that have assisted protection, the reserve continues to be threatened by habitat loss due to fragmentation, degradation, and conversion to agriculture. Much of the early research in ANR has reported little about the success of eco-tourism in achieving conservation and development goals in the area. For example, a research work by Kingwere (2005) examined a role played by the whole concept of conserving nature in efforts to reduce poverty and guarantee improvement of rural livelihoods. However, it had limited analysis of eco-tourism as a means for livelihood improvement and conservation in the area. Mashauri (2001) wrote on the relationship between eco-tourism development in the area and community perceptions towards those developments. However, he says little about eco-tourism as a tool for providing long-term livelihood security for communities to maintain, rather than to degrade, natural resources in the course of their economic activities. We, therefore, assess whether eco-tourism is an effective tool for providing sufficient economic incentives and development opportunities for local people to value and protect biodiversity around ANR. Also, we examine how economic benefits from eco-tourism are distributed and shared among the local communities. An understanding of the eco-tourism opportunities and distribution of economic benefits can assist reserve managers

and policy-makers in making more informed decisions and policies on eco-tourism management and development in ANR. Also, the study is significant due to its contribution to the understanding of the extent to which eco-tourism can yield economic benefits to local people and be used as an alternative economic strategy that is consistent with nature conservation.

Methods

Study site

ANR (Figure 1) lies within latitudes 5°05′S and 5°14′S and longitudes 38°40′E and 38°32′E. It forms the southern and largest forested mountain block of the East Usambara Mountains, which are part of the Eastern Arc Mountains chain. The reserve constitutes 8380 ha of land and is characterised by high average annual rainfall, ranging between

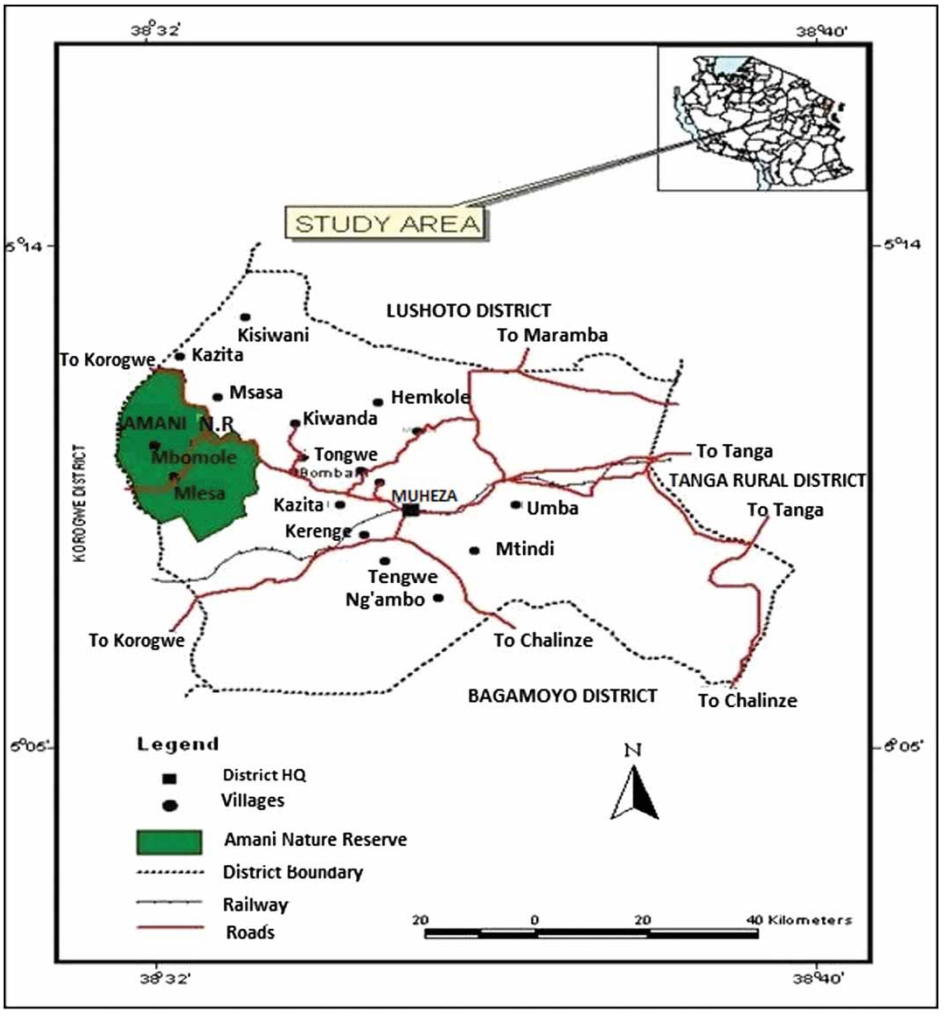

Figure 1. Location of Amani nature reserve.

1200 and 1400 mm (Amani Nature Reserve [ANR], 2000). Plant and animal species display a high degree of endemism compared to the rest of the forests on the Eastern Arc Mountains (Burgessa et al., 2007). Specifically, ANR is rich in endemic vertebrates, which are forest-dependent and include strict endemic birds, mammals, reptiles, and amphibians. There is a notable variation in floristic composition as reported by Frontier Tanzania (2001). The flora of East Usambara mountains of which ANR is a part consists of 2083 vascular plant taxa of which 64 (3.1%) are strictly endemic. The most famous endemic plant is the genus *Saintpaulia* (African violet, which is an herb) of which eight species have been recorded in the East Usambara mountains particularly in ANR. The African violet (*Saintpaulia* sp.) has been promoted as a botanical 'Panda' symbolising the decline of the Eastern Arc Mountains' forests (Eastwood, Bytebier, Tye, Robertson, & Maunder, 1998). Also, the genus is being promoted as a tourist attraction in an effort to develop eco-tourism in this biodiversity hotspot. The presence of African violet flowers in ANR (8 of the 21 species known worldwide) has increased the importance of ANR for both conservation and tourism (Mpanda, 2007). In addition, ANR is bordered by 18 villages, which support a total population of over 31,469 people (Mwanyoka, 2005). Our study area comprised five of these villages with an estimated population of 9570. The majority of villagers are subsistence-level farmers and farming for both food and cash is an important occupation of the majority of people living adjacent to ANR. Average farm size is 2.7 ha, ranging from 1.1 ha to over 20 ha. In general, farming methods are poor, which lead to soil impoverishment and reduced productivity. Several daily household products such as fuel wood and wild vegetables are collected from the forests (Mashauri, 2001).

Data collection and analysis

Data collection took place between November and December 2007. Primary data were obtained through a household questionnaire survey, Participatory Rural Appraisal (PRA), key informant interviews and personal observation by the authors. Secondary data were collected from published and unpublished documents obtained from the Internet, libraries, ANR's head office and from the village offices. Five villages, namely Kisiwani, IBC-Msasa, Mlesa, Shebomeza, and Mbomole were purposively selected to represent the entire population of 18 villages surrounding ANR. Selection criteria included presence of eco-tourism attractive features, extent of dependence on forest products and utilisation, experiences with certain specific forest resource management issues in relation to eco-tourism and proximity to the nature reserve. The underlying assumption was that villagers had direct interaction with both forest and eco-tourism resources hence they would provide the required information.

A questionnaire survey was conducted using a structured questionnaire administered to heads of households. Through the survey the authors sought to collect information on costs incurred because of and benefits obtained from eco-tourism, socio-economic, and demographic data such as income, occupation, education, and household size. A total of 172 (9% of the 1915 households in the 5 villages) were surveyed (Boyd, Westfall & Stasch, 1981). Using a village register the first household was randomly selected followed by systematic sampling in selecting the succeeding households (Saunders, Lewis, & Thornhill, 2007). The proportions of the sampled populations are presented in Table 1.

PRA was carried out to get the local communities' perceptions and attitudes towards eco-tourism in ANR. In addition, PRA provided an opportunity for in-depth views and opinions from respondents regarding the level of community participation in management of natural resources and eco-tourism activities. Selection of participants was done adhering

Table 1. Distribution of selected households in the surveyed villages.

Village	Kisiwani	IBC-Msasa	Mlesa	Shebomeza	Mbomole	Total
Total households	282	397	498	342	395	1915
Sampled households (9%)	25	36	45	31	35	172

to equal representation of sexes, age groups, and a range of conservation-related responsibilities within a village. In each of the surveyed villages, a sample of 12 residents (six males and six females) was selected to form a PRA group according to the criteria-mentioned above. In addition, interviews were conducted with key stakeholders such as ANR staff, village council leaders, and village environmental/natural resource committee leaders in order to obtain information on how the community benefits from eco-tourism and how benefits, if any, are distributed among the community.

Quantitative data obtained from the questionnaire survey were analysed using Statistical Package for Social Sciences. Data collected through PRA techniques were compiled and analysed with the help of local communities and the results were communicated back to them for verification as an immediate action. In addition, content analysis was applied to qualitative data obtained through interviews.

Results

Demographic characteristics

The study villages were facing rapid population growth (Table 2). Household size ranged from 2 to 16 with an average household size of six persons (SE = 0.1875, mode = 4, median = 5). This number is above the 2000/2001 household budget survey figure in Tanzanian mainland of four persons (National Bureau of Statistics [NBS], 2003).

Respondents to the questionnaire survey included 110 males (64%) and 62 females (36%) with age ranging from 18 to 94 years (Table 3). This was so because most of the households in this community are headed by males and since the study targeted heads of households, most males represented their households. But it could also be due to sampling bias of non-response, as women may have been away when enumerators visited their households. Most of the respondents (73%) were natives to the area. Immigration was attributed to the fact that the area is endowed with exceptional environmental services (Jambiya & Sosovele, 2004) so people came to engage themselves in various

Table 2. Human population growth in the surveyed villages.

				Percentage change based on 1988 population	
Village	1988	2002	2007	2002	2007
Kisiwani	1536	1599	1700	4.1	10.7
IBC-Msasa	1939	1993	2439	2.9	25.8
Mbomole	1241	2100	2157	69.2	73.8
Mlesa	2233	3302	4410	47.9	97.5
Shebomeza	1240	1534	1872	23.7	60.0

Source: Muheza District office and village government offices.

Table 3. Demographic profile of respondents ($n = 172$).

Variable	Characteristic	*n*	Percentage
Sex	Male	110	64.0
	Female	62	36.0
Origin	Native	126	73.3
	Immigrant	46	26.7
Age category	18–30	39	22.7
	31–45	60	34.9
	>45	73	42.4
Level of education	Never went to school	8	4.8
	Adult education	6	3.5
	Primary education	143	83.3
	Secondary education	15	8.4
	College/university	0	0.0
Annual household income in TAS (1 US$ = TAS 1300)	<300,000	45	26.2
	300,001–600,000	39	22.7
	600,001–900,000	35	20.4
	900,001–1,200,000	18	10.5
	1,200,001–1,500,000	13	7.6
	1,500,001–1,800,000	11	6.3
	>1,800,000	11	6.3

income-generating activities such as agriculture, tea-picking, and gold mining (Songorwa, Mutekanga, & Kicheleri, in press). These findings entail that there is high demand for natural resources to fulfil daily basic needs as well as surplus, which influences people to over-exploit the resources. On average, the respondents' annual incomes were considerably low. A large proportion (49%) of the surveyed households earned less than TAS 500,000, 28% earned between TAS 500,000 and 1,000,000 while the remaining 23% earned above TAS 1,000,000. The lowest annual income reported was TAS 109,000 while the highest was TAS 9,425,000. Again, such low income levels indicate the state of poverty among the local residents and the likelihood for the community to exploit environmental resources unsustainably. Also, it was noted that the literacy level among the respondents was low, a fact which explains why many people were compelled to engage themselves in unskilled and low-paying jobs. Data on education levels show that majority (83%) of the respondents had primary education and only 8.4% had attained secondary education. The rest were illiterate or semi-illiterate. Low level of education is a hindrance to peoples' full participation in eco-tourism activities. The implication of this situation is that many people might have negative perceptions of the usefulness of nature and eco-tourism in particular and participate in activities that have negative impacts on the environment.

Eco-tourism in ANR

Tourist arrivals in ANR

Annual data on the level of visitation show that eco-tourism in ANR has been growing. This growth is portrayed by increase in the number of tourists (Figure 2), which indicates that an increasing number of tourists now prefer to visit attractive natural environments instead of going on traditional city or beach-based holidays. Furthermore, results show that between

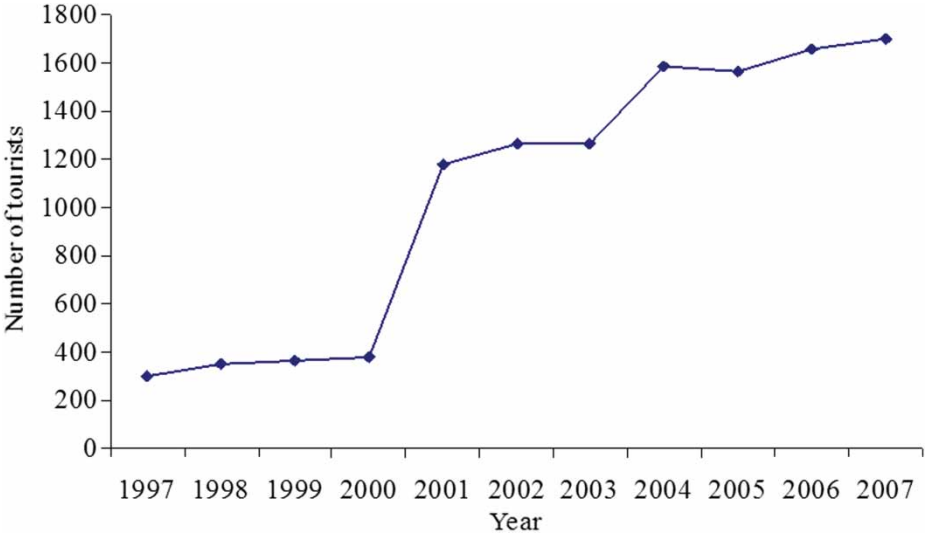

Figure 2. Tourist trend in ANR (1997–2007).
Source: Secondary data from ANR office.

the year 2000 and 2001 there was a sharp increase in the number of tourists. Interviews with ANR officials revealed that this was the period within which a reserve management started to implement various tourism strategies as stipulated in the General Management Plan (GMP). It was further noted that before the year 2000, ANR had no GMP, and hence a range of strategies which could have attracted visitors to the reserve were not in place. These strategies involved development of visitors' facilities, improved marketing of the area, and proper organisation of tourism activities, which included empowering the local tour guides.

Tourist arrivals by season and duration of stay in ANR

Tourist arrivals in ANR are subject to pronounced seasonality. The findings revealed that January is the peak season with an average of 105 visitors (Figure 3). February, May, and August also have many tourists (with over 80 each). The less preferred months are October and November (with less than 65 each), together with March and April where the number of visitors were less than 70 per month. The low season coincides with the rainy season as the accessibility of the area becomes difficult for visitors and the weather is not ideal for most of the tourist activities. On the other hand, data on the tourist duration of stay indicate that on average tourists visiting ANR stayed for five days (six nights). While the majority stayed for two days (three nights), only a few, mainly researchers, stayed for more than seven days. However, these results are in contrary to a report by Gurusinghe that about 70% of eco-tourists prefer trips lasting 8–14 days.

Eco-tourism revenues in ANR

Information on tourism revenues and shares that accrued to the local community was used to assess the extent to which eco-tourism offsets the reserve management costs. Figure 4 shows that there was an increase in eco-tourism revenues generated by ANR between 2001/2002 and 2005/2006. Similarly, the proportion (20%) accrued from eco-tourism

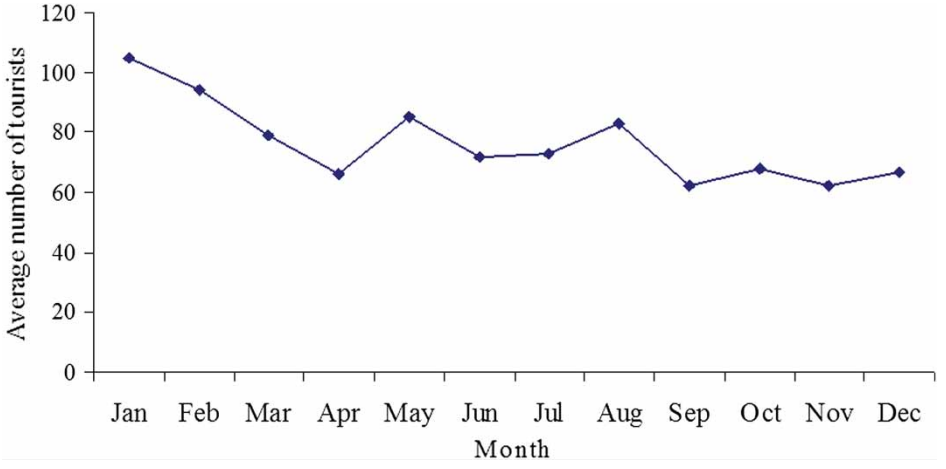

Figure 3. Average number of tourist arrivals in ANR per month (1997–2007).

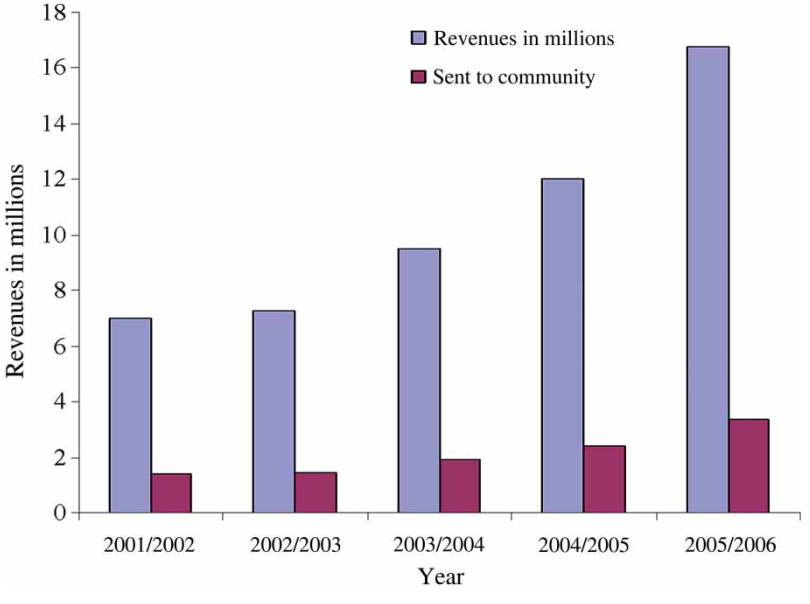

Figure 4. Revenues (in TAS) generated by ANR from eco-tourism and amounts given to village community (2001/2002–2005/2006).
Source: Secondary data from ANR office.

activities and distributed among the 18 villages around the reserve for development projects also increased. Records show that, in the years 2001/2002, 2002/2003, 2003/2004, 2004/2005, and 2005/2006 each village got TAS 77,800, 81,000, 106,000, 133,000, and 186,500, respectively.

Apart from the 20% ANR's revenue share, which was equally distributed to all the adjacent villages, this study also assessed the distribution of other tourism benefits particularly among the study villages. It was found that, some of the villages were benefiting more from eco-tourism in the area than others. For example, cross-tabulation between the study

villages and eco-tourism benefits showed that a large proportion of respondents 19(48.8%) in Shebomeza village were benefiting directly from eco-tourism, while there were only 10(25.6%) respondents in Kisiwani, 6(15.4%) in Mbomole, 2(5.1%) in Mlesa, and 2(5.1%) in IBC-Msasa who mentioned to have benefited from tourism. Some of the reasons could be the proximity of Shebomeza village to ANR headquarter and most tourist facilities. This situation provided many members of this village with either direct employments by the ANR or an opportunity to sell local produce to ANR restaurant. Also, due to frequent interactions with tourists, local people in Shebomeza were either able to sell handcrafts to tourists directly or provide them with various forms of entertainments such as local dances and get paid in return.

Main livelihood activities and income levels

Crop farming was the predominant occupation in the area and 93% of the surveyed households were crop farmers. This was above the national figure of 80% reported by Wobst and Mhamba (2006). Both food and cash crops were grown, banana being grown by a larger proportion of residents followed by cardamom and cassava. Cardamom was the major high-income earning crop. Other cash crops were cloves, cinnamon, sugarcane, and black pepper, all of which formed a critical source of household income. Important food crops included bananas, cassava, maize, and beans to mention just a few. Income from agriculture contributed 35.6% of the total annual household income (TAS 159,209,030) (Table 4). Also, the majority of households practiced livestock keeping as a livelihood activity, which was mainly done on zero-grazing basis. Livestock keeping contributed 12.5% to the total household economy. Although there were more livestock keepers than retail traders, annual income from trade was higher than that from livestock keeping. Retail trading such as selling local brew, food, spices, and forest products such as firewood and allanblackia seeds (used to make oil), contributed 17.9% to the total household income.

Table 4. Main sources of livelihood and annual average income.

		Annual households' earnings(TAS)- 2006				
Income-generating activity	Freq.	Total income	Median income	Average	Min.	Max.
Crop farming	160	56,480,480	178,000	353,003 (54639SE)	3000	7,985,000
Livestock	42	19,805,550	360,000	471,561 (21103SE)	36,000	1,680,000
Retail trading	40	28,329,500	257,500	708,237 (50375SE)	7500	5,475,000
Tourism	39	14,202,000	275,000	364,154 (16835SE)	5000	960,000
Salary employment	31	25,371,000	648,000	818,419 (28383SE)	15,000	2,196,000
Casual labour	22	6,809,500	172,000	309,522 (11541SE)	12,000	1,200,000
Poultry	7	886,000	71,000	126,571 (4250SE)	24,000	720,000
Butterfly farming	7	3,240,000	360,000	462,857 (8906SE)	80,000	1,200,000
Fish farming	3	1,200,000	480,000	400,000 (2525SE)	120,000	600,000
Carpentry	3	1,030,000	400,000	343,333 (3718SE)	150,000	480,000
Beekeeping	2	380,000	190,000	190,000 (1577SE)	160,000	220,000
Lumbering	2	395,000	197,500	197,500 (1908SE)	75,000	320,000
Tailoring	2	1,080,000	540,000	540,000 (4480SE)	480 000	600,000
Total	360	159,209,030				

Note: The total frequency (360) is greater than 172 due to multiple responses whereby each respondent gave more than one answer.

Table 5. Average tourism income and its proportion in the total household income.

Total annual household income (TAS)-2006					Total annual tourism income (TAS)-2006				
Total income	Average	Median	Min.	Max.	Total income	Average	Median	Min.	Max.
159,209,030	12,246,848 (80698 SE)	3,240,000	109,000	9,425,000	14,202,000	364,154 (44792SE)	275,000	5000	960,000

The role of eco-tourism in improving livelihoods was assessed by looking at the position it occupied as a source of household income. Among all economic activities listed, eco-tourism ranked fourth in terms of number of people engaged in the activity and fifth in terms of contribution to household income. Results indicate that only 22.7% of the households surveyed were engaged in eco-tourism-related activities and eco-tourism accounted for 9.6% of the total annual household income. This suggests that a relatively small proportion of residents make a living from eco-tourism. One reason could be lack of awareness of eco-tourism opportunities. In the review of eco-tourism-related activities it was noted that a few households earned income from the sale of locally produced goods to the tourists or provision of services associated with eco-tourism in ANR. These included selling vegetables, eggs, and fruits to the ANR restaurant, making and selling traditional dresses to the tourists and some were traditional dancers who entertained tourists. Other respondents revealed that they had been working for ANR as field/research assistants, tour guides, cooks, forest attendants, and watchmen. On average a person involved in eco-tourism-related jobs earned TAS 364,164 annually – with 5000 and 960,000 being the lowest and highest incomes, respectively (Table 5).

Some respondents (18%) were employed in formal sectors as school teachers, health workers, and workers at a tea factory. Although only a few were employed in these activities, this employment contributed slightly more to the total household income than did eco-tourism or livestock keeping. The other income-generating activities were casual labour and self-employments such as tailoring, poultry, carpentry, and lumbering. Also, results show that a few people were involved in natural resource-related activities such as butterfly farming and fish farming and these activities contributed 2% and 0.3% to the total household income, respectively. There was a notable lack of involvement in beekeeping; only 1.2% of the households were involved in this activity which contributed only 0.2% to household income. This could be because the area receives relatively high rainfall, a condition which is not favourable for bees.

Involvement of people in eco-tourism activities by ANR

To what extent did ANR involve the local community in eco-tourism activities? A large proportion of the respondents (69.8%) claimed that, they were not adequately involved. Those (30.2%) who reported to have been involved in eco-tourism-mentioned various ways in which they participated. These included attending community meetings and seminars about environmental management issues and employment opportunities offered by ANR, such as working as forest guards. Other respondents mentioned the 20% share of the ANR income given to the villages by ANR annually as part of involvement in eco-tourism. This percentage share was invested in community development projects such as building health centres, classrooms, and sponsoring some secondary school students.

Based on various forms of local people involvement in eco-tourism which range from passive to complete self-mobilisation (Pretty, 1995), it was deduced from the findings of this study that the local people in ANR were mainly passive participants in eco-tourism. This is because of the fact that people were only able to receive a few low-paying jobs and share benefits while having no decision over the implementation and evaluation of tourism programmes. It has been reported that, in passive participation, the local people tend to be viewed simply as the beneficiaries of tourism development and receive a share of project benefits, but, do not influence the direction and execution of development project (Garrod, 2001; Pretty, 1995). This seems to be the case in ANR, where the community participate through material incentives such providing labour power in return for cash or through selective consultation such as giving information regarding useful indigenous plants during community meetings.

From the PRA exercise, this study revealed village institutions that either improved the livelihood of the residents and/or involved local people in natural resource management activities. Members of the PRA groups were asked to rate and rank institutions based on three criteria: the institution's importance to conservation and improving people's livelihoods, its effectiveness in ensuring successful local involvement in conservation and the extent to which people have confidence in and influence over the institution. An institution is considered important and effective when people realise its benefits, when it is ready to listen, discuss, and make decisions in consultation with the people, and, when it is capable of providing the right solutions to their problems. Table 6 presents results of the ranking of the village institutions based on the above criteria. The pattern of the ranking show that the people were aware of a large number of institutions that either influenced their lives or played part in management of natural resources. It was also evident that villages had different opinions about the best institutions and each village yielded somewhat different patterns of rankings from others, implying that institutions considered important and effective in one village were not necessarily considered to be so, in other villages.

Table 6. Institutions and their importance.

	Rank[a] by villages					
Institution/group	Kisiwani	IBC-Msasa	Mbomole	Mlesa	Shebomeza	Average
Butterfly project	4	3	8	n/m	1	–
Tea factory	n/m	11	n/m	1	9	–
Village government	3	5	6	6	5	5.0
ANR	5	7	4	4	4	4.8
Village environmental committees	2	1	1	3	2	1.8
Primary school	6	4	5	5	6	5.2
Beekeepers association	8	9	7	8	8	8.0
Fish farmers association	7	8	3	7	7	6.4
Efficient cooking stoves association	9	6	11	n/m	10	–
UWAMA	1	2	2	2	3	2.0
Allanblackia project	10	10	9	9	11	9.8

Note: n/m = not mentioned.
[a]The rank of 1 indicates the greatest role played by the institution in Conservation and or in improving livelihoods in collaboration with local people.

With a mean rank of 1.8, Village Environmental Committees (VECs) were the institutions that received the highest rating on all the dimensions and among all villages. This is a formal institution established by the village council and is responsible for managing natural resources available in the village on behalf of the entire village. VECs met regularly, (mostly once a week) to discuss conservation issues in relation to peoples' livelihoods. They were reported to raise awareness amongst villagers about their rights and responsibilities and of any changes in forest management guidelines, coordinate and schedule all forest-related activities such as tree planting, issue permits for harvesting various forest products such as timber and playing a big role in preventing any form of forest degradation.

The milk association unit (UWAMA – Umoja wa Wafugaji Maziwa) was also ranked high, as it was considered to be an important and trustworthy institution in improving livelihoods. UWAMA was acknowledged for its support in providing a reliable market for milk, which helped livestock keeping households to enhance their incomes. The effectiveness of ANR as an institution for improving local livelihoods and conservation was ranked relatively low as compared to VECs and UWAMA. However, it was reported to play a significant role in protecting water sources, native plants, and wildlife as well as contributing a percentage of its revenues to village development projects.

Other institutions were also considered to be important although to a lesser extent. For example, the importance of the village council in forming and maintaining various committees relating to conservation and development was recognised in all villages. Primary schools were considered to be one of the effective and important institutions in creating environmental awareness by teaching school children the importance of conserving nature. Notably, fish farmers' association and allanblackia project (which uses seeds of the indigenous Allanblackia tree in making cooking oil and soap for domestic use) were not generally seen as influential institutions despite their potential in improving livelihoods and conservation. This could be due to the fact that a few people were making a living through them. The role of butterfly farming in both conservation and improving people's livelihoods was acknowledged in all villages except Mlesa. The tea factory was ranked the least in IBC-Msasa while it was not mentioned at all in Kisiwani and Mbomole villages. Efficient cooking stoves group, though not mentioned in Mlesa, was acknowledged for protecting the environment as the stoves used less firewood.

Discussion

The findings presented above demonstrate that, although ANR's revenues obtained from eco-tourism are increasing, the amounts of benefits accruing to people in the surrounding villages remain small. Based on the evidence obtained during the household survey, data show that crop farming, livestock keeping, and retail trading were the top three livelihood activities practiced by the majority of residents. The most important activities which contributed significantly to household income were the livestock keeping, retail trading, and salary employments. The fact that tourism held the fourth position in terms peoples' engagement in the activity and the fifth in terms of contribution to the annual household income suggests that employment potential in ANR (in eco-tourism-related activities) is low and its direct impact on household income is still little.

Furthermore, the institutional analysis made as part of the PRA exercise also revealed that ANR as an institution had a low mean score of 4.8, suggesting that ANR, and possibly eco-tourism, is not considered by the majority of local people as an important institution in terms of improving the local livelihoods and involving people in conservation. Some

authors assert that, in order to foster positive attitudes towards conservation, residents living in or adjacent to a protected area should be receiving economic benefits from eco-tourism, which support or complement their livelihoods (Lindberg & Enriquez, 1994). With respect to the impact of eco-tourism on household income, data have shown that very few households earned income from eco-tourism-related activities. Producing and selling goods locally has been reported as a strategy through which eco-tourism would generate economic benefits thus stimulating the local economy (Beeler, 2000).

In addition, while some households reported to be involved in eco-tourism, a big number of them were not. The implication is that the means of involvement of people in eco-tourism are inadequate in that they do not entail planning and decision-making, which are the critical components of successful management of natural resources. Inadequate involvement of the local community in conservation was also pointed out by Jambiya and Sosovele (2004) when they indicated the trends in conservation, which show that the management of ANR had made considerable efforts towards both conservation and involvement of local communities, and had begun looking into sharing of benefits and costs of conservation. However, these authors also note that the type of community participation remained far from the ideal; it was still strongly passive. It has been argued that the more power and involvement the local people have in tourist ventures in their areas, the more likely they will benefit economically (Gutierrez, 2006; Shackleton, 2007).

Conclusion

This study was conducted in a developing country, to examine the extent to which eco-tourism in nature reserve contributes to local livelihoods and how economic benefits from eco-tourism are distributed and shared among the local communities. From the findings presented and discussed above it is concluded that, while tourism revenues in ANR increased with time, little benefit accrued to the local community. Despite the fact that ANR as an institution was reported to be important in conserving wild native plants and animals, economic benefits that flowed to the local community were substantially minimal and even those realised were confined only to some villages located close to ANR headquarters.

Apart from the 20% of ANR revenues, which was distributed equally to all the villages, the distribution of other benefits was characterised by evident inequality among villages bordering the reserve. For example, the institutional analysis revealed that the majority of people from the IBC-Msasa and Mlesa villages had not benefited from employment opportunities related to eco-tourism. Only those villages located close to ANR headquarters benefited from either employments by ANR itself or through selling locally made products to tourists. Thus, it is evident that at the time of this study, eco-tourism had little contribution to household income in the neighbouring villages, offered few employment opportunities and economic benefits to local residents and hence had little incentive for people living adjacent the nature reserve to support its long-term biodiversity conservation goal.

These findings have a number of policy implications for successful eco-tourism development and management. The unequal distribution of benefits from eco-tourism-related activities can be lessened through management adjustments, which include putting in place well-defined mechanisms for benefit sharing with local communities. Also, better policies are needed to address the issues that make it difficult for the local people to take full advantage of opportunities created by eco-tourism within their areas. Along with this, policy-makers should establish eco-tourism monitoring and accountability programmes to ensure that communities located in the vicinity of protected areas receive appropriate shares of revenues.

Last but not least, the findings from this study have implications on the improvement of local community participation in eco-tourism and intensification of awareness programmes to enable local people understand the interrelationships between livelihoods and the environment. A successful eco-tourism venture requires eco-tourism activities to provide environmental education for local communities involved so as to ensure maximum community participation in eco-tourism. The programmes would also increase local communities' understanding of what they should expect from eco-tourism hence they can plan accordingly. Similarly, the local communities need to have access to capital and appropriate management and marketing skills to invest in and benefit from the tourism sector. In this case, there is a need to provide training to local people to enable them to develop skills and expertise they require to participate more in the tourism business (e.g. guiding skills and small enterprise development courses).

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