ORIGINAL ARTICLE

COMMUNITY BASED ECOTOURISM AS A TOOL FOR BIODIVERSITY CONSERVATION IN WUNANIA-KOSOYE NATURAL ATTRACTION SITE, ETHIOPIA

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ABSTRACT

Tourism can play a vital role in protecting the environment, conserving biodiversity and maintaining sustainable development. Furthermore, tourism has the power to enhance the environment, to provide fund for conservation, to preserve culture and history, to set sustainable use limits, to protect wildlife and to add value to biodiversity. In this paper, a cross sectional study in Wunania, Kosoye, was used to describe the existing situations and events in the area. For the study, both quantitative and qualitative methods were employed. The study established that the local community's awareness level of biodiversity conservation and the economic significance of ecotourism in Wunania-Kosoye natural attraction site was very high. Yet, this contrasted with a loss of biodiversity in the last decades due to deforestation, uncontrolled grazing, and land degradation. The research finding suggested that Community Based Ecotourism is becoming preferable when it is compared with other alternative approaches for conserving biodiversity in Wunania-Kosoye natural attraction site.

Keywords: community based ecotourism, Wunania-Kosoye, tourism, development

INTRODUCTION

Tourism can play a vital role in protecting the environment, conserving biodiversity and maintaining sustainable development (UNEP & WTO, 2005). Moreover, it has the power to enhance the environment, to provide fund for conservation, to preserve culture and history, to set sustainable use limits and to protect wildlife and add value to biodiversity (Mcintosh, Goeldner & Richie, 1995). Ecotourism to biodiversity hotspots are estimated to be growing at 100% a year and is considered as one of the most rapidly expanding sectors of the travel industry (Environmental Grantmakers Association, 2008), and it is part of a growing niche market of the tourism industry. Its contribution to the world economy has grown fast in recent years (United Nations, 2001). community based tourism (CBT) emerged in the mid-1990s as a generally small-scale initiative involving interactions between visitor and host community particularly suited to rural and regional areas. CBT is commonly understood to be managed and owned by the community, for the

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community, and is committed to making a low impact on the environment and local culture, while helping to generate future employment for local people (Timothy, 2002).

Community based ecotourism (CBET) serves as a means to conserve both cultural & natural resources of the particular tourist attraction through diversifying economic activities (Godfrey & Clarke, 2000). It contributes to poverty reduction (Conservation International, 2003), to finance infrastructure, and social amenities improvement (Denman, 2001). Moreover, it is a source of employment opportunities for local communities (Aref, 2010; Tisdell, 2003) and a means for creating educational opportunities (Bushell & Eagles, 2007), while helping tourism to be viewed as a tool for community development (Allen, Long & Perdue, 1993). CBET is managed and owned by the community with the purpose of enabling visitors to increase their awareness and to learn about the community as well as the local people's ways of life (Coward, 2001; Potjana, 2003).

Studies show that local community level of awareness, knowledge, perception, participation and attitude are vital factors for successful CBET in a particular destination (Ap & John, 1998; Teye, Sanmoz & Sirakaya, 2002; Tosun, 2006; Wood, 2002). Increasing awareness of tourism interaction with the environment should lead tourist destinations and tourism businesses to behave environmentally responsibly (Richard & Hall 2000). As CBET is exercised in a given area, local community members can organize themselves and engage in the production and delivery of tourism services such as cultural show, community lodge, local tour guiding, and producing and selling of handicrafts (Strasdas & Zeppenfeld, 2008). However, the degree of engagement of local people in such type of activities depends on their level of awareness (Fenta & Mekonnen, 2009). According to Teye, Sanmoz and Sirakaya (2002), miscommunication and wrong perceptions of local community can be the major barriers to regional tourism development projects. They argue that local community support is crucial for the successful completion of CBET projects.

Although Wunania-Kosoye natural attraction has a huge potential for the development and implementation of ecotourism, its contributions to the tourism sector is low. As a result, the major sources of community livelihood are subjected to only subsistence agriculture with traditional farming practices (Negash et al., 2010). Studies show that even though only 20% of the Wunania-Kosoye area is suitable for cultivation, more than 47% of the total area has been cultivated (North Gondar Zone Culture Tourism Department & Amhara National Regional State-CTPDB, 2010). So about 27 % of the cultivated lands are either steep slope or degraded lands. To improve the livelihood of the community and protect the natural attraction site from further degradation a preferable economic activity of the area would be CBET.Introducing and developing CBET in a natural attraction site like Wunania–Kosoye has such important advantages as maintaining biodiversity and promoting sustainable development; ecotourism is a travel that concerns itself with the flora, fauna, geology, and the ecosystems of an area as well as

the people who live in and nearby the natural attraction (Fennel, 2002).

OBJECTIVES AND METHODS

The objective of this research was to describe the awareness and perception of the local community in Wunania-Kosoye of CBET and biodiversity conservation. Wunania-Kosoye is situated at 12°45'02.8" N latitude and 37° 32'26.4" E longitude in the northwestern highland with altitudes ranging from 1500m to 3200m above sea level. It extends from Chirambezo *kebele* in Lay Armachiho to Kosoye Ambaras *kebele* in Wegera *woreda*. It is found along the historical tourist route from Gondar to the Simen Mountains National Park.

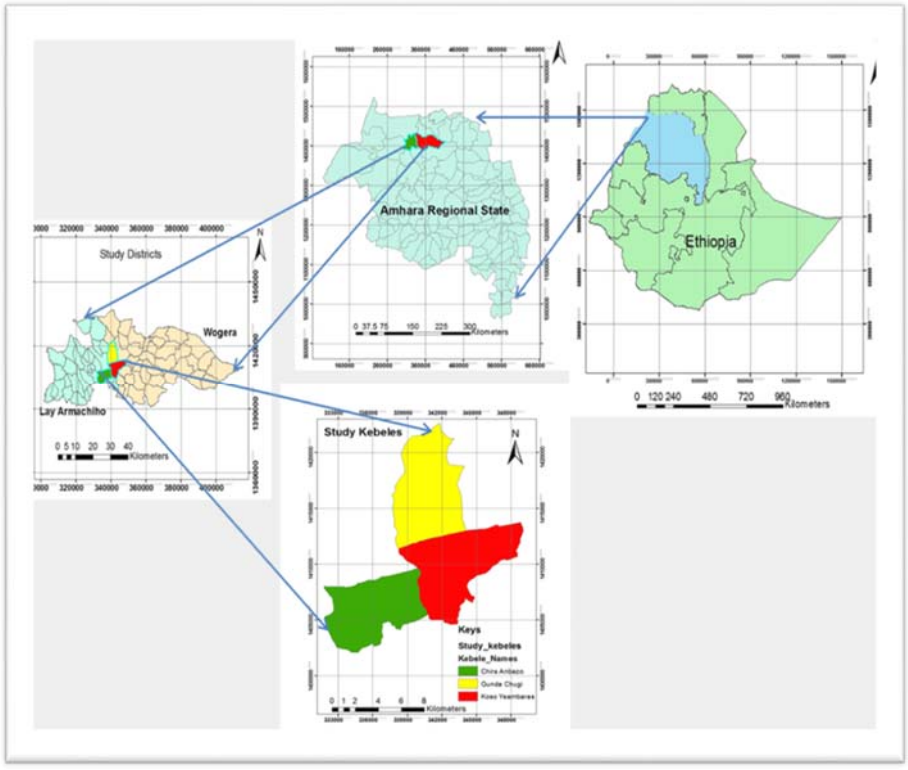

Figure 1: *Location of Wunania-Kosoye natural attraction/ wildlife Reserve*

National Park.

A cross-sectional analysis was made to describe the existing situations and events. Both quantitative and qualitative methods were employed. When research is conducted in natural settings, supplementing the quantitative with qualitative methods helps to investigate, interpret, and measure real

life events and complex socio-cultural aspects of the livelihoods and impacts of development from the local communities' perceptions (Knerr, 2008).

The target population of the study is the local community residing in Chirambezo, Kosoye Ambaras and Gunda Chugie *kebele*s of Wunania-Kosoye natural attraction site. Moreover, experts/professionals from the District's Culture and Tourism Office, District Environmental Protection Land Administration Authority Office, North Gondar Zone Culture Tourism Department, Sustainable Natural Resources Management Program and local guides were taken as key informants.

Both probability and non-probability sampling methods and the stratified, simple random and purposive samplings were used. These techniques were considered appropriate for the complex situations of Wunania-Kosoye natural attraction site.

In order to select respondents to fill the questionnaire, stratified and simple random sampling techniques were used. There are three *kebele*s in the study area (Chirambezo in Lay Armachiho *woreda* and Kosoye Ambaras and Gunda Chugie both in Wegera *woreda*). Each *kebele* is dominated by one of the three agro-climatic zones. To get a balanced representation of the population from each agro-climatic zone, all *kebele*s were taken as the focus of this study. The target population of the study area is 4,369 households' heads (Kosoye Ambaras 1695, Chirambezo 1567 and Gunda Chugie 1107; Lay Armachiho and Wegera rural land owners' registration books, 2012). The sample size for quantitative data is determined by using Cochran's formula as indicated in Bartlett Kotrlik and Higgins (2001).

The study used the following formula to calculate sample size:

$n = N/ 1+N (e)^2$

The following step was used to determine sample size derived from the above formula to collect qualitative data using questionnaire, where:

n: designates the sample size the research used;
N: designates total number of households in all sample kebeles assuming that the issue affects all households;
e: designates maximum variability or margin of error (5%) (.05);
1: designates the probability of the event occurring.

Therefore,

$n = N/ 1+N (e)^2$
$n =4369/ 1 + 4369 (.05)^2$
$n =4369/ 1 + 4369 (.0025)$
$n =4369/ 1 + 10.9225$
$n = 4369/ 11.9225$
8 $n = 366$

Since the source population was less than 10,000, the correction formula
n = no/ 1+ no / N
was employed. Where:
no: initial sample
N: source population
n: required corrected sample.

Therefore n = 366/1+366/4369 = 338. The required sample size chosen to fill the questionnaire was 338 household heads residing in all *kebele*s. However, some factors, like rugged terrain, inaccessibility, and scattered settlements obliged us to select only 200 samples. Hence 71, 78 and 51 respondents were proportionally selected to fill the questionnaire from Chirambezo, Kosoye Ambaras and Gunda Chugie, respectively. Of the total sample, 154 were men and 46 women.

Sampling techniques and data analysis
For the qualitative method, non-probability sampling was chosen since it is useful to identify the relevance of the focus of the study rather than the representativeness of the population (Knerr, 2008). Purposive sampling technique worked well in selecting knowledgeable experts/professionals, stakeholders and local community leaders and elders as key informants. Moreover, key informant-interview was conducted with the selection of six community representatives/community leaders and elders. These representatives of the local community are residents of the villages and the first group of the key informants was interviewed to evaluate the perception, level of local community participation, and knowledge of CBET. Based on the population size, the resources available to cover the three *kebele*s and the time it took to interview one village dictated the use of a sample of two community representatives from each *kebele*.

All the three groups of key informants were selected purposely with respect to their roles in the land administration process, resource management activities, conservation works, ecotourism development activities and their knowledge and experience on the subject of the study. The selection of sample size for the interview stressed the quality of the respondents and their potential know-how to answer the questions and to provide rich and relevant information for the analysis and interpretation of the data.

The qualitative data were analyzed based on the procedures by Bith (2011). The interviews were transcribed (for audio recorded conversations) and summarized (for non-recorded conversations) into word processing files for analysis. Key contents and concepts were searched for within each file and in the secondary data documents. These contents and concepts were then categorized into three main themes i.e.,

- local community level of awareness: about the relation of biodiversity conservation and community based ecotourism;
- community participation: association between community awareness on biodiversity and their level of participation in community-based ecotourism development;

- economic effects of Wunania Kossoye CBET: the economic benefits compared to the alternative income.

The quantitative information was analyzed first using descriptive methods and then inferential techniques of data analysis. In the data analysis process, the completed questionnaire was coded and the data was analyzed by using the Statistical Package for the Social Sciences (SPSS) Version 16.0. Data was interpreted to show a detailed picture of the existing situation in the study area. In descriptive analysis, the frequency distribution, percentage, and average mean were used. From inferential statistics, Chi-square test was run to see the association between the awareness of the community on biodiversities and their knowledge on the significance of community participation. An independent t-test was used to compare the awareness level between male and female respondents, and a one way ANOVA was used to see the difference in awareness level among respondents of the three *kebele*s and to analyze the difference in the concentration of natural attraction resources among the three *kebele*s.

RESULTS AND DISCUSSION

The local community awareness level on biodiversity conservation and the economic significance of ecotourism in Wunania-Kosoye natural attraction site was evaluated. The result, as can be seen from Table 1, showed that 91.4% of the respondents were well aware about the relation of biodiversity conservation and CBET. Very few respondents (3.8%) did not know the value of biodiversities in their *kebele*. Table 1 also indicated that the majority of the respondents (78.5%) had adequate knowledge about biodiversity conservation in their *kebele*, and 11.8% of them were unable to respond. Only 9.7% of the respondents had no adequate knowledge about biodiversity conservation in their *kebele*. Based on these findings, it is possible to understand that lack of awareness is not the main problem of biodiversity conservation in this site. Furthermore, the cumulative average agreement level of the respondents to apply the biodiversity conservation awareness given them by Government officials and professionals was about 4.12 mean average, verifying their agreement.

The data collected on the interdependency between biodiversity and ecotourism showed that 76.9% of the respondents recognized the great dependency of ecotourism on the biodiversities of the area. Some respondents (15.6%) were not sure whether ecotourism was dependent on the biodiversities of the site or not, and only 7.5% could not recognize its relation with biodiversities.

The triangulated qualitative information/data obtained from the interviews with key informants and field observation on the problems of biodiversity conservation in Wunania-Kosoye area also revealed that low level of community awareness was the major problem for the last five years. However, after the introduction of CBET into the site, the problem was restricted to certain individuals who were directly benefited from the uncontrolled use of natural resources. Besides, these key informants observed the loss of biodiversity in the last decades due to deforestation of natural vegetation for

cultivation, constructions, furniture, fuel-wood, and charcoal in addition to uncontrolled grazing, seasonal migration of cattle, and land-sliding especially around Zagol Amba and Wunania areas. According to the key informants,

Table 1: *Local community awareness about biodiversity conservation and significance of CBET at Wunania-Kosoye, North Gondar*

Level of awareness on biodiversity conservation and CBET	Relative Agreement										Mean Average
	SDA		DA		N		A		SA		
	F	%	F	%	F	%	F	%	F	%	
Biodiversities	3	1.6	4	2.2	9	4.8	99	53.2	71	38.2	4.24
Biodiversity conservation	4	2.2	14	7.5	22	11.8	91	48.9	55	29.6	3.96
Implementation of biodiversity conservation based on professionals advices	3	1.6	7	3.8	12	6.5	107	57.5	57	30.6	4.12
Ecotourism depend on biodiversities.	9	4.8	5	2.7	29	15.6	97	52.2	46	24.7	3.89
Economic benefits of ecotourism	1	5	5	2.7	4	2.2	94	50.5	82	44.1	4.35
CBET promotes conservation of natural resources	4	2.2	2	1.1	8	4.3	95	1.1	77	41.4	4.28
CBET has more sustainable economic benefit than other livelihood alternative	1	.5	5	2.7	11	5.9	110	59.1	59	31.7	4.19
Importance of local community participation	5	2.7	1	.5	0	.0	88	47.3	92	49.5	4.40
Total (local community awareness about biodiversity conservation and significance of CBET)											4.801

Note: The Likert scale was used where, SDA=Strongly Disagree, DA=Disagree, N= Neutral, A=Agree, SA= Strongly Agree.

Source: Primary data of field survey 2012.

migration of wildlife due to deforestation, wildfire, and eucalyptus tree plantation were the other challenges in the study area.

Information obtained from the key informants on measures taken so far to solve biodiversity conservation problems reflected that different physical and biological conservation work was done in some selected watershed areas, but the measures taken were not sufficient to mitigate the problems. According to these informants a variety of methods were used to protect the biodiversity of the study area. The most frequently mentioned methods were promoting integrated watershed management, introducing ecotourism and CBET as alternative livelihood activities to reduce dependence on agriculture only, developing bylaws to protect wildlife from illegal hunters, planting fast growing indigenous plants, properly implementing rural land use guidelines, restricting seasonal migration of cattle, encouraging zero grazing, strengthening physical conservation works with biological conservations, and preserving highly fragile areas by prohibiting cultivation.

During the interview conducted with the local community leaders, elders, local guides, and experts/professionals on local community participation in biodiversity conservation it was found out that local community participation in biodiversity conservation would be active since an alternative source of income would be created in the study area

Community awareness on the benefits of CBET

According to Table 1, a significantly high number of respondents (94.6 %)

Table 2: *Association between community awareness on biodiversity and participation in its conservation*

Statistical model				Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)	
			Asymp.		95% Confidence Interval		95% Confidence Interval	
	Value	df	Sig.(2-sided)	Sig.	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Pearson Chi-Square	18.278	12	.107	.140	.133	.147		
Likelihood Ratio	19.259	12	.082	.028	.025	.031		
Fisher's Exact Test	25.089			.016	.014	.019		
Linear-by-Linear Association	.700	1	.403	.429	.419	.438	.207	.224
N of Valid Cases	186							

Source: Primary data of field survey 2012.

believed that ecotourism could provide economic benefits to the local community. Few respondents (7.7%) failed to believe in the economic benefits of ecotourism, while the rest (2.2%) could not tell whether it had benefits or not.

Out of the total respondents, 92.5% believed that CBET could have a huge contribution to promoting the conservation of natural resources in Wunania-Kosoye area, and only 3.3% disagreed with the significance of CBET for conservation. The remaining 4.3% of the respondents were unable to decide whether CBET was significant for biodiversity conservation or not.

Table 1 also revealed that 90.8% of the survey respondents preferred CBET to other means of livelihood alternatives to maintain sustainable economic benefit, 5.9% of the respondents were neutral, and only 3.2% refused to prefer CBET to other means of livelihood alternatives. The cumulative mean average agreement level of the local community participation was 4.40, showing that the local community was well aware about the significance of local community participation in any affairs of their *kebele* ecotourism development. The result of the key informant interview demonstrated that there was a higher rate of significance level for CBET than other alternative methods of biodiversity conservation. Moreover, key informants suggested that environmentally conscious eco-tourists were interested in visiting areas

with rich biodiversity and natural beauty. Unlike other economic activities, the economic benefit obtained from CBET depends on the degree to which conservation of biodiversity is undertaken and on the extent to which natural beauty is maintained. Furthermore, this economic sector is not over consuming or depleting the natural resources of the area. Therefore, CBET can be taken as a more preferable livelihood alternative than other economic activities to maintain biodiversity and for a sustainable development of the site.

There is no significant difference (Pearson Chi-Square =.140 = p > .05) between awareness on biodiversity and knowledge about the importance of community participation. This means that there is an association between the awareness of the respondents about the biodiversities of the kebele and the respondents' knowledge about the significance of community participation. It implies that effective implementation of biodiversity conservation in the site can be achieved through increasing community participation in natural resources conservation activities.

Table 3: *Differences in level of awareness about biodiversity conservation and significance of CBET between male and female respondents*

Group Statistics				
Sex	N	Mean	Std. Deviation	Std. Error Mean
male	140	4.1893	.45738	.03866
female	46	4.1522	.56575	.08342

Source: Primary data of field survey 2012.

Table 3 reveals that the mean value of male respondents in terms of awareness about biodiversity conservation and significance of CBET is 4.19, which is slightly greater than the mean value of females (4.15). The reason for

Table 4: *Differences in level of awareness about biodiversity conservation and significance of CBET between male and female respondents*

Independent Samples Test		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% CI Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean	Std. Error	Lower	Upper
	Equal variances assumed	5.473	.020	.449	184	.654	.0371	.0826	-.1259	.2001
	Equal variances not assumed			.404	65.42	.688	.0371	.0919	-.1465	.2207

Source: Primary data of field survey 2012.

this slight difference in mean (0.04) is that male respondents have more exposure to participation in different community awareness raising programs

Table 5*: Difference in awareness level among respondents of the three* kebeles

Level of awareness on biodiversity conservation and CBET	N	Mean	Std. Deviation	F	Sig.
Chirambezo	66	4.3977	.36553	14.641	.000
Kosoye Ambaras	69	4.1449	.47725		
Gunda Chugie	51	3.9461	.51675		
Total	186	4.1801	.48507		

Source: Primary data of field survey 2012.

than female respondents. However, the t-test in Table 4, shows that there is no significant difference (t-test = .688 = p > .05) between male and female participants in terms of awareness about biodiversity conservation and importance of CBET.

Table 6: *Multiple comparisons of differences in awareness level among respondents of the three* kebele*s*

Level of local community's awareness on biodiversity and its conservation LSD

(I) Residence of Respondent	(J) Residence of Respondent	Mean difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Chirambezo	Kosoye Ambaras	.25280	.07797	.001	.0990	.4066
	Gunda Chugie	.45165	.08442	.000	.2851	.6182
Kosoye Ambaras	Gunda Chugie	.19885	.08362	.018	.0339	.3638

Source: Primary data of field survey 2012.

Finally, one way ANOVA was used to see whether there is a significant mean difference in awareness level among respondents of the three *kebele*s or not.

Table 5 reveals that the highest mean value of agreement level of respondents' awareness on biodiversity conservation and significance of CBET is observed in Chirambezo (4.3977), followed by Kosoye Ambaras (4.1449), while the least is Gunda Chugie (3.9461). This may be due to the fact that Gunda Chugie is found in a remoter area in comparison to the other two *kebele*s.

There is a statistically significant difference among the respondents of the three *kebele*s (f value for Chirambezo and Kosoye Ambaras (.001), for Chirambezo and Gunda Chugie (.000) and for Kosoye Ambaras and Gunda Chugie (.018)) = P < .05. This is because of the fact that the local communities living in Chirambezo and Kosoye Ambaras *kebele*s have got opportunities to participate in different community awareness raising

programs. Chirambezo community especially started to engage in CBET activities, while the community of Gunda Chugie is the least favored, due to the inaccessibility of the *kebele*.

CONCLUSION

Local communities' awareness level on biodiversity conservation and the economic significance of ecotourism in Wunania-Kosoye Natural Attraction Site was relatively high, while there was loss of biodiversity in the last decades due to deforestation, uncontrolled grazing, and land degradation. A range of methods have been used to protect the biodiversity of the study area. The most frequently mentioned methods are promoting integrated watershed management, introducing ecotourism in the area, and CBET as an alternative livelihood activity, developing bylaws to protect wildlife from illegal hunters, and the plantation of fast growing indigenous plants, properly implementing rural land use guidelines, and strengthening physical conservation work. On the level of awareness about biodiversity conservation and CBET, there is a statistically significant difference among respondents of the three *kebele*s (f value for Chirambezo and Kosoye Ambaras (.001), for Chirambezo and Gunda Chugie (.000) and for Kosoye Ambaras and Gunda Chugie (.018)) = $P < 0.05$). Research findings suggest that CBET is becoming preferable to other alternative approaches for conserving biodiversity in Wunania-Kosoye Natural Attraction Site.

As a conclusion to the study the following recommendations are offered:

- To assure the effective biodiversity conservation at the Wunania-Kosoye Natural Attraction Site, active community participation in natural resources conservation activities be implemented.
- To enhance community awareness on the value of CBET development to biodiversity conservation, awareness creation programs must be conducted in all *kebele*s in the Wunania-Kosoye at Nural Attraction Site.
- In order to conserve biodiversity at the Wunania-Kosoye Natural Attraction Site, Amhara Regional State Culture and Tourism Bureau has to give special attention to CBET development.

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