

## Assessment of the contribution of community-based wildlife management to poverty reduction in Rukwa, Tanzania

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### Abstract

This study was conducted to examine the contribution of community-based wildlife management (CBWM) to poverty reduction in three villages namely Kibaoni, Mamba, and Usevya located in Inyonga division, Rukwa region, Tanzania. Socio-economic data were collected through direct observation, questionnaires surveys, and interviews. Data collected were analyzed using Statistical Package for Social Sciences (SPSS) whereby both qualitative and quantitative methods were employed. In qualitative data, the content analysis method was used to analyze components of verbal discussions which were held with different respondents whereas in quantitative data, descriptive statistical analysis was carried out. The study revealed that CBWM played roles in the contribution to poverty reduction in a study area. In this study however, it was concluded that social economic activities such as agriculture, livestock keeping, beekeeping, formal employment, and retail business reduced poverty to the local communities in a study villages. It was recommended that government should always conduct monitoring and evaluation of the performance of CBWM and life standard of livelihoods to the local communities.

**Keywords:** CBWM, contribution, livelihoods, poverty

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### Introduction

Community-based wildlife management (CBWM) has been identified as an alternative strategy to the colonial fortress conservation approach as it intends to devolve property rights and management responsibility for the wildlife to local communities (Adams and Hulme, 1999; Songorwa, 2004). The underlying assumption behind CBWM is that it contributes to improving rural livelihoods and reducing poverty whilst protecting wildlife (Songorwa, 2000). Poverty is however multidimensional and is perceived differently by different groups. The International Fund for Agricultural Development (IFAD) uses a definition of poverty that includes various broad classes which are material degradation, lack of assets, isolation, alienation, dependence, lack of decision-making power, vulnerability to external shocks and insecurity. Therefore, poverty not only constitutes an inefficient use of society's resources but also causes social and political instability (Jazairy et al., 1992). In Tanzania, the linkages between environmental management such as wildlife management and poverty reduction are highlighted in the government's Poverty Reduction Strategy Paper and Development Vision 2025 (VPO, 2005). Poverty varies greatly across the country but is highest among rural families living in arid and semi-arid regions that depend exclusively on livestock and food crop production (IFAD, 2007). In addition, poverty seems to be more severe in rural areas than urban areas as 85% of the population lives in rural

areas (URT, 2003). The CBWM is well linked to macroeconomic policies in addressing poverty reduction (URT, 2000). These include the Tanzania Development Vision 2025, which is a principal vision of the country to reduce poverty by increasing socio-economic opportunities, ensuring good governance, transparency, improved, and redefining public sector performance, which emphasizes on appropriate balance between public and private institutions (URT, 2000).

Rukwa which is located in southern Tanzania is one of the regions which is relatively poor and undeveloped (URT, 2005). Most of the local communities around Katavi National Park (KNP) which is found in the Rukwa region previously depended much on wildlife and resources from KNP before the gazettement of the park (Mulder et al., 2007). By then these resources were easily accessible, which led to increased hunting due to increased food insecurity, because of the rapid population growth. However, the lack of concrete information on how the introduced CBWM contributes to poverty reduction is not known. This study therefore aimed to explore the contribution of CBWM to poverty reduction in the local communities around KNP located at Rukwa region, Tanzania.

### Methods

#### Description of a study area

The study was conducted in the Inyonga division located in the Rukwa region (Figure 1). The division was purposely selected based on the reason that it implements CBWM activities. Inyonga division lies approximately between latitude 6° 43' and 7° 07' south of the Equator and between longitude 31° 04' and 32° 4' east of Greenwich meridian Joan (Machibya, 2010).

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**Figure 1:** Map showing the location of study villages  
**Source:** Machibya, (2010)

### Climate

Climate of the area is governed by two main seasons which are dry starting from May to October and wet season which starts from November to April. The average annual rainfall is approximately 900 - 1000 mm while the average annual temperature ranges between 26°C and 30°C. Annual average wind strength is about 2 km/day (Mpanda, 2003).

### Socio-economic activities

Socio-economic activities included agriculture, livestock keeping, beekeeping, formal employment, and retail business. Most households in a study area depend on agriculture whereby they cultivate both cash and food crops. The main cash crops include tobacco while the main food crops are maize, beans, rice, potatoes, and groundnuts. Besides agriculture, the communities depend on livestock and poultry for their livelihoods, and the types of livestock kept are goats, cattle, pigs, and poultry.

### Data collection

Both primary and secondary data were collected. Primary data involved household questionnaire surveys while secondary data was acquired from relevant reports in the Mpanda district council office and Non-Government Organizations (NGOs). Other secondary information was obtained from published manuscripts and textbooks.

### Household questionnaires survey

Structured questionnaires with both closed and open-ended questions were used to collect household data. The questionnaires were designed to focus on key issues including how CBWM contributes to reduce poverty in the study area. The questionnaires were pre-tested in 10 households prior to the actual survey. The pre-testing aimed to check for redundancy, meaningfulness, comprehensiveness, and clarity of the required

information from the respondents to ensure the applicability of the prepared questionnaires.

### Sampling for household survey

The actual data collection was preceded by a preliminary survey to determine a total number of sample villages and households required. A sample of three villages namely Kibaoni, Mamba, and Uuseya was purposively selected based on their easy accessibility. In this study, a simple random sampling technique was used to select 40 households in each village as described by Mbeyale, (2007) who argued that a sample size of at least 30 units was sufficient to capture reliable information regardless of the population size. In this study however, the household heads were the key respondents during household survey as they are decision makers for the households as recommended by Kajembe (1994).

### Focused group discussion

A total of 5 focused group discussions from each village were employed to encourage collective responses and different opinions about how CBWM contributes to reduce income in a study area. The focused group discussions comprised of 10 to 15 men and women with experiences on the utilization of wildlife resources. Key informants including village leaders and elders were also involved to provide information in relation to the different types of wildlife resources utilized in order to reduce poverty in a study area.

### Data analysis

Data collected were analyzed using Statistical Package for Social Sciences (SPSS) whereby both qualitative and quantitative methods were employed. In qualitative data, the content analysis method was used to analyze in detail the component of verbal discussions which was held with different respondents through household questionnaires, focused group discussion, and key informants. In quantitative data, descriptive statistical analysis was carried out whereby percentages of the respondents were computed.

## Results and Discussion

In this study, it was observed that CBWM in a study area contributed much to poverty reduction. Based on the findings of this study, it was observed that 65% of the respondents claimed that there has been an improvement in their income, while 45% claimed an increase in agricultural activities outputs and 30% claimed about presence of markets for their products. Furthermore, it was observed that 25% of the respondents reported the presence of employment opportunities while 27% and 20% being reporting an improved economy and reduction of crop-raiding animals respectively (Table 1).

The high percentages (65%) reported by the respondents in their income improvement implies that the CBWM contributes greatly to the community income in a study area. This was through various employment opportunities including game scouts and tour guides in some tourist companies around KNP. These

results are similar to those obtained by Hahn and Kaggi, (2001) who observed that game scouts were employed in the Selous Conservation Programme at Selous game reserve, Tanzania with payment ranging from USD 0.5-1 per day. A study conducted by Arntzen et al., (2003) in Namibia found that CBWM has made Namibian communities to improve their life standards. Another study conducted by Msangeni et al., (2024) in some villages surrounding Burunge Wildlife Management Authority showed that CBWM created employment opportunities for local residents. Nielsen, 2006 also suggested that CBWM improved individual income of local communities in New Dabaga/Ulangambi Forest Reserve, Tanzania.

**Table 1:** Contribution of CBWM in poverty reduction through social economic activities in a study area

Contribution of CBWM in poverty reduction	Respondents (%)
Improvement of individual income	65
Increase of agriculture output	45
Presence of markets for the products	30
Improved economy	27
Emergency of employment opportunities	25
Reduction of crops-raiding by animals	20

Additionally, the current study observed that respondents in a study area reported reducing their poverty level through livestock activities. In this study, 60% of the respondents who reported to allocate lands for grazing imply that CBWM plays big role in distributing lands for the local communities to continue with their daily grazing activities in order to reduce poverty. It can be further noted from Table 2 that, about 58% of the respondents claimed that CBWM in collaboration with livestock officers provided livestock vaccination education while 45% of the respondents encouraged local communities in a study area to keep their livestock so as to minimize hunting. The lower respondents (25%) claimed that CBWM assisted in reducing human-wildlife conflicts by educating communities not to encroach protected areas. Findings from this study are similar to those observed by CSPR, (2005) in Zambia who revealed that about 60% of the respondents improved their income through conducting their livestock activities in the distributed land. A study conducted by Ruvuga et al., (2020) observed that majority of the local communities in Kilosa district, Morogoro, Tanzania are grazing in an allocated land where they have improved their income.

**Table 2:** Contribution of CBWM to reduce poverty through livestock activities in a study area

Contribution of CBWM in poverty reduction	Respondents (%)
Facilitation of land use planning by allocating lands for grazing	60
Provides vaccination education	58
Emphasize people on keeping more livestock's	45
Education to livestock keepers	30
Reduce human-wildlife conflicts	25

Table 3 presents a summary of reported achievements of CBWM in a study area whereby 65% of the respondents reported improvement of social services while 54% being reported a decrease in poaching and

illegal wood harvest. It can be further noted from the Table that 50% of the respondents responded that there was an increase of honey production, which contributed to household income and food security. Forty five percent of respondents claimed that they were aware of CBWM whereby 27% reported that CBWM provides employment opportunities to the local communities and only 12% claimed that there was a decrease of crop-raiding animals. Findings from this study are similar with those conducted by Mamo et al., (2021) who observed that, there was a decrease in crop-raiding animals at the edges of forests in Southwest Ethiopia.

**Table 3:** Achievements of CBWM in the study area

Respondents	Respondents (%)
Social services provision	65
Reduction of poachers and illegal wood harvesters	54.2
Increase of honey production	50
Awareness of CBWM	45
Employment opportunities	27
Decrease of crop-raiding animals	12

Additionally, in this study however, it was observed that some forest resources were collected illegally for domestic and commercial uses. Despite these resources being illegally collected, they played a big role in poverty reduction in a study area. Results in Table 4 show percentages of the respondents in the utilization of forest resources to poverty reduction.

**Table 4:** Percentages of forest resources to poverty reduction in a study area

Forest resource	Respondents (%)
Firewood	75
Poles	70
Honey	65
Timber	55
Wild fruits	35
Wild animals	20

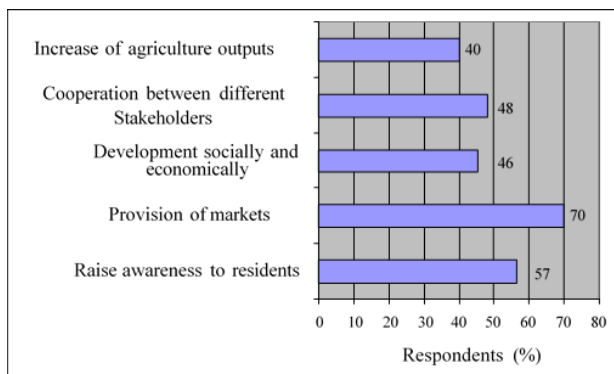
In this study, firewood was the most collected resource (75%) followed by poles (70%) and lastly wild animals (20%). It was further revealed that the most preferred firewood species included *Acacia seyal*, *Thespesia garckeana*, *Bombax rhodogndphalon*, *Acacia nefasia*, *Brachystagia spiciformis* and *Brachystegia* sp. The collections of firewood were mainly used for domestic and commercial purposes. Poles were mainly used for construction while honey was used for commercial. Timbers were harvested for making furniture and commercial purposes which improved their living standard and hence reduced poverty in a study area. The survey revealed that the most preferred timber species were *Pterocarpus bussei*, *Azelia quanzesis*, *Sterculia Africana*, and *Pterocarpus bussei*. In addition, the wildest animals which were poached for commercial purposes were giraffe (*Giraffa camelopardalis*), wildbeest (*Connochaetes taurinus*), elephant (*Loxodonta Africana*), and gazelle. These wild animals were sold for Tanzanian shillings 5,000 equivalent to USD1.92 per

kilogram. Findings from this study are in line with those conducted by Kilonzo, (2022) who reported almost similar timber and pole species which were collected for domestic and commercial purposes at Nyanganje forest reserve, Kilombero district, Morogoro, Tanzania.

Findings obtained from this study (Table 5) show that many forest resources from the park had economic value to the local communities in a study area as they improved their livelihoods and therefore contributed to poverty reduction. It can be further shown from the Table that 82% of the respondents reported a reduction of construction costs due to collection of park resources such as poles and timbers. About 70% of the respondents claimed to obtain money from selling park resources for their basic needs while 67% being reporting to use funds from selling park resources for medical purposes. The lowest percentage of the respondents (15%) reported that the money obtained from selling park resources assists them in their agricultural activities. Findings from this study are in line with those conducted by Barnes and Floor, (1996) in eastern Tanzania who observed that rural households utilize more than 50% of their cash income from selling forest resources for acquiring basic needs and hospital expenditures. Another study conducted by Timko et al., (2010) observed that many communities in Sub Saharan Africa utilize their cash income obtained from selling forest resources for purchasing uniforms and paying school fees for their children.

**Table 5:** Respondents (%) against economic uses of park resources

Expenditures from selling park resources	Respondents (%)
Reduction of construction costs	82
Hospital expenditure	67
Acquisition of fund for school fees	25
Agricultural activities	15



**Figure 2:** Effectiveness of implemented poverty reduction strategies

Regarding the effectiveness of implemented poverty reduction strategies in a study area (Figure 2), it was revealed that about 70% of the respondents reported the availability of a market for their park resources while 57% reported awareness through education as one of the poverty reduction strategies archived. Findings from this study further revealed that 40% of the respondents claimed that the agricultural outputs mainly through promoting small groups of farmers was also one of the affected poverty strategies implemented in a study area. Findings from this study are in line with those observed

by Asamoah et al., (2023) who reported availability of commercialization of the forest resources in Ghana.

## Conclusion

Based on the findings from this study, community-based wildlife management (CBWM) shown to play a big role in the local communities in a study area as it has been very helpful in the reduction of poverty. However, monitoring and evaluation of the performance of CBWM, trends on availability of wildlife resources, and the standard of livelihoods to such local communities should be taken into consideration.

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