**IMPACTS OF PROTECTED AREAS ON LOCAL LIVELIHOOD: A CASE STUDY OF SAADANI NATIONAL PARK**

**Beatrice Simon Moshi**

**Master's thesis in Natural Resources Management (Biology)**

**Norwegian University of Science and Technology**

**Faculty of Natural Science and Technology**

**Supervisor: Professor Eivin Røskaft (Department of Biology)**

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# ABSTRACT

The study examines the impacts of protected area (PA) (Saadani National Park, SANAPA) has on livelihood of local people. Local people from 200 households were interviewed. Data were collected from June to August 2015 through a simple, randomly-sampling, questionnaire survey, interview with key informants; focus group discussions; and reviews of published and unpublished journals and articles. Local people were found to have little access to natural, physical and financial resources because of the laws and regulations surrounding the establishment of the PA, and hence, PA undermined their livelihoods. Local communities engaged in different activities, but agriculture and fishing were the main source of income in surveyed villages. Positive park effects include: support for social development projects, park-related employment and ecotourism benefits.

The results revealed that the PA is also associated with the costs, such as crops damage, human injuries, livestock depredation, restrictions in accessing resources and boundaries conflict. Crops raiding was the major problem in Matipwili and Gongo villages, where as livestock depredation was highest in Saadani and Mkwaja villages. Different factors, such as the benefits and costs of the park and the restriction on the access to different assets including land as well as the involvement and participation of local people in conservation, were the main reasons for the negative attitudes. From all villages surveyed, 55.5% of respondents had negative attitude toward the park. Little awareness of the benefits provided by SANAPA was associated with poor involvement and participation by local communities in the management of resources, which resulted in bad relation between locals and the park. Households that were involved and benefited from the park supported its existence compared to those that were not involved and received no benefits from the conservation activities. Education was significant in influencing an awareness of the benefits in locals. Due to costs from the park, local people who practiced fishing and farming were negatively affected and want the park to be removed compared to local people with alternative livelihood activities. Access to different resources especially land were seen to be an important factor in diversification of different activities. Therefore this study recommends that, conservation-related benefits should offset the costs and different communities project should improve the living standard of local through poverty alleviation as well as target the immediate livelihood needs. In addition, the involvement of local people and alternative livelihood should be considered during the planning and management of PAs. PAs should encourage education as a way of creating awareness on conservation-related benefits, which will help to change local people attitudes and hence, achieve the long-term conservation goals.

**Key words**: *Impacts of protected areas, sustainable livelihood, benefit-sharing, local community attitudes.*

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## ACRONYMS AND ABBREVIATIONS

**CBC**      **Community Based Conservation**

**ICDP**      **Integrated Conservation and Development Projects**

**IPBES**      **Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services**

**MNRT**      **Ministry of Natural Resources Tanzania**

**NCAA**      **Ngorongoro Conservation Area Authority**

**NTNU**      **Norwegian University of Science and Technology**

**PAs**      **Protected Areas**

**SANAPA**    **Saadani National Park**

**SLA**      **Sustainable Livelihood Approach**

# ACKNOWLEDGEMENTS

# CHAPTER 1: BACKGROUND

## 1.1 Introduction

Protected areas (PAs) play important roles in the conservation of the world's habitats for different plant and animal species (Maxted et al., 2013). PAs are believed to play an important role in poverty alleviation by supplying ecosystem services, facilitating the development of ecotourism and providing conservation benefits for social and economic development (Fisher, 2005). Worldwide, PAs cover approximately 11.5% of the planet´s surface (Jenkins et al., 2013), and in Tanzania, 43.7% of the total land is protected, forest reserve cover 15.7% of the land and wildlife protected areas cover about 28% comprising National Parks, Game Reserves, Ngorongoro Conservation Area Authority (NCAA), and Game Controlled Areas (Songorwa, 2007). Conservation and management of these area are facing different challenges but the major one is human population growth which lead to over exploitation, degradation of resources and loss of habitat (Toonen et al., 2013).

The livelihoods and well-being of rural poor people are more vulnerable to the establishment of PAs particularly in developing countries, because their livelihoods are dependent mainly on agriculture and on the available natural resources(Amin et al., 2015). The impacts of PAs on local livelihood have been widely studied (West et al., 2006, Roe, 2008).  Benefits and costs experienced by local people because of PAs can influence positive or negative attitudes towards conservation activities (Clements et al., 2014). Balancing conservation goals and the needs of the local people has been challenging particularly in recent years (Bennett and Dearden, 2014). Understanding the factors which influence the relation between local people and PAs is important in achieving conservation and livelihood goals (Kideghesho et al., 2007). In recent years, people living adjacent to PAs have competed with and come into conflict with wild animals such as, the African elephant *Loxodanta africana* over resources and from loss of crops due to crop raiding and other conflicts (Redpath et al., 2013).

Historically, the establishment of PAs with the exclusion of local people from land and resource use, displacement of people from their lands has been a feature of conservation activities (Lele et al., 2010). Different studies have suggested that, the successful sustainable management of PAs and the acceptance of the establishment and expansion of PAs involve participation and involvement of the local communities (Campbell and Vainio-Mattila, 2003, Bode et al., 2015). Therefore, an increasing recognition of local support in management and conservation by ensuring that a PA play a role in sustaining local livelihoods by providing incentive benefits to offset the costs of conservation (Sekhar, 2003). Participatory approaches, such as Integrated Conservation and Development Projects (ICDP) and Community-Based

Conservation approaches (CBCs) are new strategies that include local communities in conservation and have been developed in Tanzania as well as worldwide (Lele et al., 2010). However, little information is available on the results of such efforts and a debate is ongoing, as to when and how to include local communities in conservation to achieve sustainable conservation (Wang et al., 2012).

Thus, surveys of the impacts (both benefits and costs) of PAs on local people living in and around such areas are fundamental in balancing the conservation goals with the needs of the local people (Sekhar, 2003). Benefits can be social support-related projects, benefits from ecotourism and employment, as well as cultural and environmental benefits (Bennett and Dearden, 2014). Additionally, while living adjacent to PAs local people experience costs and losses such as crop damage, livestock depredation, human injuries and restricted access to the Parks' resources (Khumalo and Yung, 2015). Therefore, PAs may influence local perceptions because of the benefits and costs of conservation activities (Clements et al., 2014). A study conducted by Mfunda et al. (2012) revealed that, access to conservation related-benefits positively influence perceptions towards conservation.

This study contributes to an understanding of the different impacts PAs have on local livelihoods, and how the local people perceive conservation activities in terms of the costs and benefits obtained by living adjacent to Saadani National Park (SANAPA) in Tanzania. This study used the Sustainable Livelihood Approach (SLA), which was established to understand rural livelihood development through the interaction among different resources (assets), influence of institution policies and process of the diversification of strategies to generate income (Amekawa, 2011). This paper identifies different assets to which local people have access, document different activities conducted by the local communities living adjacent to the SANAPA and describe impacts of conservation (both costs and benefits) that households have obtained from SANAPA. Finally, the perceptions and attitudes were assessed with respect to indicator questions addressing aspects such as costs, benefits, access to different assets, relations, participation and involvement in conservation.

## 1.2 Problem justification and statement

Several challenges, such as population growth, poor relations between conservationists and local people, poor involvement of local people in conservation activities, unequal power relations and unequal sharing of benefits are facing the wildlife sector (Vedeld et al., 2012). Poverty among most rural people creates an increase of pressure on available natural resources (water sources, firewood, and rangeland for grazing their livestock), most of which are found within the PAs (Thuy, 2014). Recently the establishment of PAs is increasingly used to mitigate adverse effects on biodiversity (Bode et al., 2015). Restricting access to

land and valuable resources without providing users with alternatives has adverse effects on local communities, including reduction in food security and loss of livelihoods (West et al., 2006).

The exclusion of local communities, and hence poor public relations in conservation activities, have led to an increase in biodiversity loss and conflicts between local communities and conservation effort (Redpath et al., 2013). In addition, local communities experience other costs, such as crop raiding, livestock loss and wildlife incidents including human injuries, which influence negative attitudes towards PAs and make locals unwilling to cooperate on conservation activities (Ogra, 2008) . Based on these challenges, recognition of the needs for local support to achieve efficient and sustainable conservation has increased (Kideghesho et al., 2007). Changes and improvements to current conservation policy should include and encourage proper participation and involvement of local communities in conservation activities (Redford et al., 2013). Equitable benefit sharing, information sharing, education and awareness on the importance of conserving biodiversity are needed to achieve sustainable conservation (Redford et al., 2013). Also alternative livelihoods should be considered during the establishment and expansion of PAs, which will encourage better co-existence between wildlife and people.

## 1.3 Objective and research questions

This study examined the impacts that Saadani National Park in south-eastern Tanzania had on people's livelihoods especially the benefits and costs to people living adjacent to this NP. Research questions and hypotheses are as follows;

i)      What livelihood activities are conducted by the communities living adjacent to SANAPA?

ii)     What assets are available to support the livelihoods of people adjacent to SANAPA?

iii)    What are the costs incurred because of the existence of SANAPA?

iv)     What are the benefits that villagers obtain from SANAPA?

v)      What are the perceptions and attitudes of people towards conservation in SANAPA?

## 1.3.1 Research hypotheses

1) Access to the different assets influences the attitudes of local people toward the park.

2) People with alternative livelihood activities will have a positive relation with the park.

3) Local communities who receive benefits from SANAPA have a good relation with the park.

4) Local communities experiencing costs as a result of SANAPA are less likely to support conservation.

# CHAPTER 2: THEORETICAL PERSPECTIVES

## 2.0 Sustainable Livelihood Approach

The Sustainable Livelihood Approach (SLA) provides an understanding of the lives of poor and marginalized people by offering a means of poverty reduction (Agarwala et al., 2014).The framework consist of context (shocks, trends, season ability and livelihood assets), livelihood strategies and livelihoods outcomes (Scoones, 2009). Livelihood is sustainable if it can access assets, cope with and recover from stress and shocks, maintain and enhance it capabilities and assets, and provide sustainable livelihood to future generations (Chambers and Conway, 1992). The assets in the framework includes natural, social, physical, human and financial capital and are called factors of production (Theresa and Cramm, 2012). Natural capital includes lands, minerals, forests, wildlife and fish. Social capital involves social networks, memberships or association groups to which people belong. Physical capital includes buildings, animal keeping, different machinery and other furniture. Human capital involves the good health of households, skills and knowledge of doing different strategies. Finally, financial capital includes savings, bank credit, remittances or pensions (Ellis and Allison, 2004). Vulnerability, context is pursuing different strategies that are composed of a range of activities that vary from individual to individual or from household to household and is influenced by different factors, such as access to assets, trends (i.e, economic trends) and shocks (diseases, floods and drought) as well as social factors such as policies, institutions and process (Ellis, 2000). For example, drought has an impacts on natural capital and in turn reduces crop yields but it may have little or no impact on other assets (Adger, 2006). Based on the context of this framework, SANAPA can be seen as an institution that comprises the different policies, laws and regulations which influence the access to and control the damage to the assets (Jakobsen, 2013). As a result of local access to assets, different institutions influence the ability of locals to recover and cope with shocks, thereby encouraging households or individuals to engage and diversify into different livelihood strategies, such as agricultural and non-agricultural activities, and hence influence livelihood outcomes (Bhandari and Grant, 2007) . Rural livelihood diversification is then defined as a process by which households or individuals construct diverse groups of activities and social capabilities for survival and to improve their standard of living (Ellis, 2005).  According to Ellis (2004) , diversification is a positive strategy for reducing vulnerability, shocks and poverty, and it is an effective mechanism for reducing the depletion of resources. In the past, rural people depended mainly on agriculture and natural resources because they assumed that farm output and available resources would provide enough income for their living (Vedeld et al., 2012). Due to the different factors, such as the climatic and environmental conditions, which currently affect agricultural products, people need to diversify their strategies for living (Tran, 2013). SLA

provides an effective tool for balancing conservation goals and livelihoods by analysing the impacts and roles of PAs laws, policies and processes as well as how assets influence livelihood strategies (Ahebwa et al., 2012). Because the SLA literature provides guidance on the impacts of PAs on livelihood outcomes, I will use SLA to describe the different assets accessed by local communities adjacent to SANAPA to determine the different types of livelihood activities. The framework (Figure 1) presents different factors that have an impact on livelihood strategies when determining a Sustainable Livelihood.
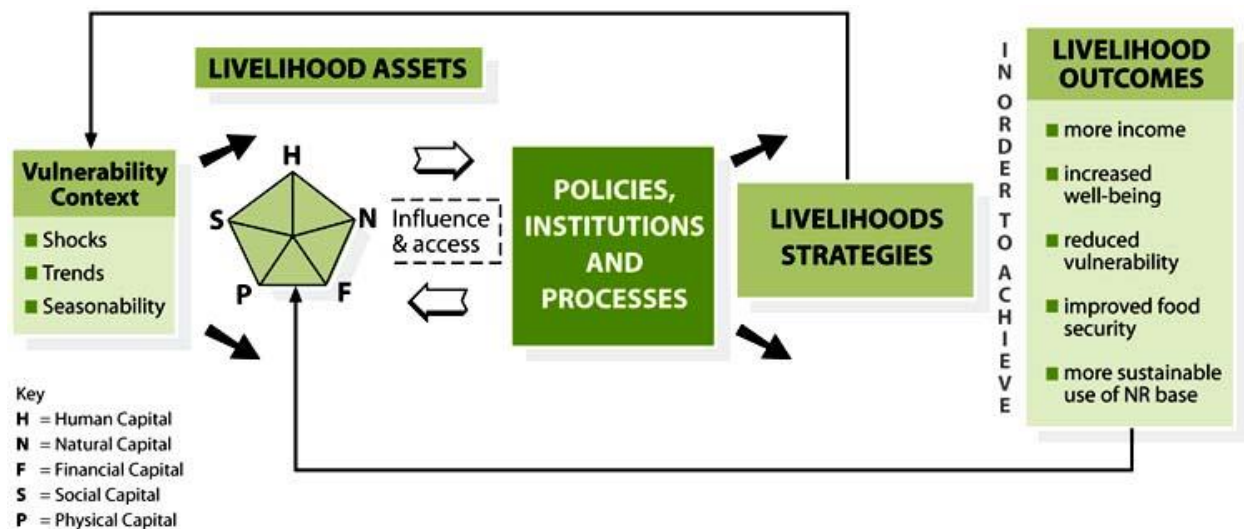


**Figure 1**: *Sustainable Livelihood Framework (Source: www.fao.org)*

## 2.2 Livelihood and PAs

The formation and expansion of PAs have positive and negative social, economic, environmental and physical benefits to the adjacent communities (Bennett and Dearden, 2014). Many studies (Ferraro et al., 2011, Ferraro et al., 2015, Canavire-Bacarreza and Hanauer, 2013) have revealed that PAs can help in poverty eradication through empowerment, eco-tourism activities and benefit sharing from tourism. In contrast the creation of PAs can lead to restricted access to resources, eviction and displacement from a community's indigenous lands, conflicts with wildlife and other social impacts (Clements et al., 2014). Because of the costs and impacts experienced from PAs local people develop negative perceptions towards conservation (Karanth and Nepal, 2012).

In the past, the establishment of PAs in Tanzania, as well as all over the world involved the exclusion of local communities from planning and management issues (Mutanga et al., 2015). In addition the access of local people to resources were restricted without the provision of alternatives (Andrade and Rhodes, 2012). This led to problems between the PAs and the local communities and hence, to difficulty

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in enforcing conservation policies. Most rural people living near PAs in third world countries are poor and mostly depend on agriculture and available resources, such as, firewood, fisheries and water. Such resources are found inside the park and, hence, increase pressure on natural resources (Donato et al., 2012). Dependence on natural resources is influenced by different factors, but the main are poverty, the lack of an alternative energy source and the unequal distribution and expansion of agricultural land (Barbier, 2013). In rural areas, the presence of small and scattered populations do not support a sufficient scale of local economies to allow diversification into other economic activities which would reduce the pressure on natural resources (Ellis, 2000). The restriction on access to different resources, which they accessed freely in the past without providing alternatives, influences the increase in encroachment and poaching activities (Watson et al., 2013). In addition, when local communities are excluded from PA management and their needs are ignored, conservation policies become difficult to enforce (Kideghesho et al., 2007). According to Badola et al. (2012), the need to include local people in the planning, decision making and management of conservation activities will help to change the perceptions and attitudes of people, and hence, it will increase the acceptance of PA establishment.

## 2.3 Attitudes of local people towards conservation

According to  Karanth and Nepal (2012) sustainable and effective conservation activities are strongly influenced by the attitudes, perceptions and impacts that local people have experienced from conservation activities. An understanding of the factors which influence people's attitudes and perception is the key features in planning, decision making and management of the biodiversity conservation goal (Kideghesho et al., 2007). Understanding the perceptions and attitudes of local people provides guidance for policy and management policy towards conservation activities (Allendorf et al., 2012). According to Mfunda et al. (2012), access to conservation-related benefits can positively influence local attitudes. In addition (Karki, 2013) revealed that, other factors such as government policy, lack of participation in decision making, PA staff or management intervention, and poor involvement of local people in planning conservation activities, influence negative perceptions. Local people especially those living in and adjacent to PAs have had a long relation with these areas, and their attitudes generally depend on the costs and benefits of PAs and the local dependency on natural resources (Kideghesho et al., 2007). The needs and attitudes of these nearby communities should be considered in the management of the PA to achieve long term survival of conservation goals (Chowdhury et al., 2014).  According to Chowdhury et al. (2014) the effective sustainable survival of PAs, especially in developing countries, would be threatened if the needs and aspiration of the local people are not considered.

# CHAPTER 3: MATERIAL AND METHODS

## 3.0 Study area

Saadani National Park (SANAPA) is a protected area in Tanzania, which covers 1100 km$^2$. It is the only National Park that includes both terrestrial and marine areas, and it is the only National Park bordering the sea. The park is located in south-eastern Tanzania (5°21' 22" and 6°21' 53" S latitude and between 38°34'13" and 38°51'2 E longitude), extending into three districts (Bagamoyo, Handeni, and Pangani). It was officially gazetted as a national park in 2005, transitioning from the former Saadani Game Reserve, which was established in 1969, the former Mkwaja Ranch Area, and the Wami River, as well as the Zaraninge Forest. The area experiences a bimodal rainfall. Short rains begins in October to November, producing 100-250 mm on average, followed by a dry season which is not severe from January to February, and then the long rains fall from March to June with temperature ranges from 20-30°C(Sitters et al., 2013).

The park supports a wide range and unique combination of both marine and land-based flora and fauna. Approximately 30 species of large mammals are present, as well as a variety of reptiles and birds. In addition, many species of fish (more than 40), Green turtle *Chelonia mydas*, and Humpback whale *Megaptera novaeangliae* occur in the ocean. The park is dominated by *Acacia zanzibarica*  but also contains a variety of vegetation in a forestry-savanna-grassland mosaic, coastal forests on the Zaraninge Plateau,  a shoreline with salt flats, coastal fringe forest, herbaceous vegetation, mangrove forest, and maritime ecosystems(Bloesch and Klötzli). SANAPA shares its ecosystem with Wami-Mbiki Wildlife Management Area through which animals, such as elephants and buffalos, migrate (Mligo, 2016)

The park (Figure 1) is surrounded by 17 villages which are engaged in different activities that are impacted by the PA. The study was conducted to examine the impacts SANAPA has on communities located in four villages (Saadani, Matipwili, Mkwaja and Gongo). Three villages (Saadani, Matipwili and Gongo) are located in Mkange Ward at Bagamoyo District and one village (Mkwaja) is located in the Mkwaja ward of the Pangani District. The selection of these villages was based on their different activities and the impacts of the National Park. Saadani and Mkwaja villages depend on fishing, where as Gongo and Matipwili depend on agriculture as the main income-generating activities. Agriculture is mainly for subsistence but sometimes also for cash. Crops such as Maize, Cassava, Rice, Pineapples and Coconuts, are cultivated in the study area. Maize, Cassava and Rice is for household use, while most pineapples and coconuts are cultivated as cash crops. In addition, people in the study area are also engaged in small businesses, such as small restaurants and small shops for selling food and other basic needs.
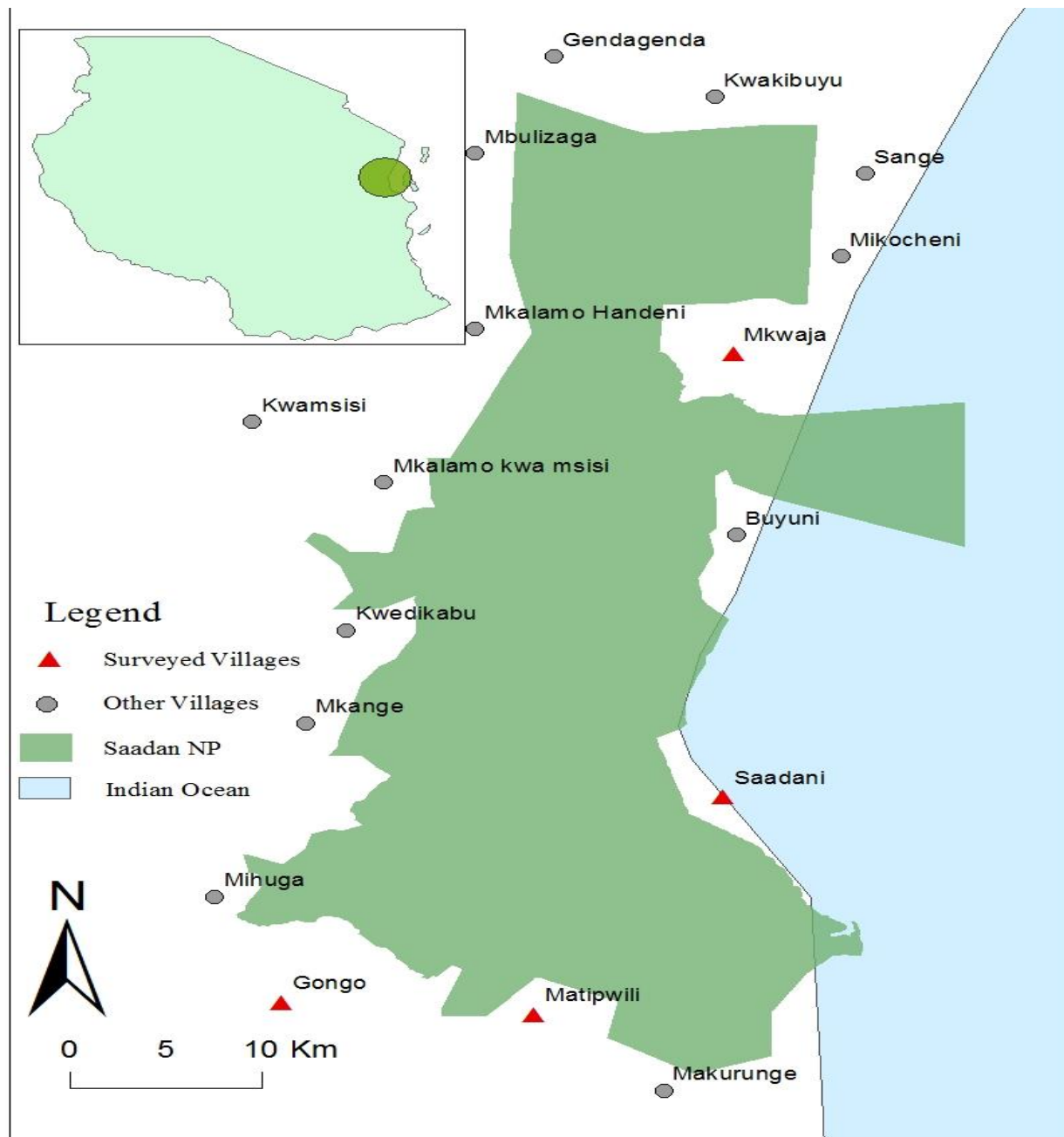
**Figure 2**: *Map showing villages adjacent to Saadani National Park; Inserted map shows the location of Saadani National Park on a map of Tanzania.*

## 3.2 Data Collection

The study sought to determine the impacts of the protected area on people's livelihoods in terms of the costs and benefits the communities receive from SANAPA. Survey data were collected from June to August 2015. The questionnaire survey used both closed and open questions and involved interviews of 200 respondents from randomly selected households from the four villages (Figure 2). The villages

were located into two wards, Mkange and Mkwaja, and in two Districts, Bagamoyo and Pangani. In each village, 50 households were randomly selected, and surveys were carried out with the head of the household, and his wife or another adult person who represented the household. Before beginning data collection, I sent information to the regional and district office to obtain an introduction letter for use when I visited the villages. A survey of the study area was performed for the purpose of being more familiar with the area. I made an appointment to meet with the people, such as village leaders, to obtain information on the number of people and households available in the village for the random selection of those to be interviewed. In addition information was sent out in advance to the households to make them available for the interview.

The purpose of the interviews was stated as seeking to learn of the relation between people and the park and how people perceived the presence of the National Park adjacent to their area. The interview was conducted in Swahili because it is the national language of Tanzania, and every member in the study area understood it. The household questionnaire was intended to collect information about household characteristics (age, sex, level of education and number of household members), different economic activities (e.g., crops production, fishing, and business), costs and benefits, and types of assets owned (e.g., land size, livestock and other physical assets), as well as household perceptions and attitudes towards conservation activities.

In addition, qualitative methods, such as focus group discussions, and direct observation, were used as described by Doody et al. (2012) . Focus group discussions were performed with 5-8 people who served as the key informants, including village leaders, experienced persons, elders and teachers for one meeting in each village. Focus group discussion was helpful in collecting information such as the benefits the village received from SANAPA. In addition, direct observation was used when respondents were unwilling to provide information, such as the number of assets they owned, their life condition and the place where they collected their sources of energy, including the charcoal and firewood used in their household.

Based on measurement of perception, this study sought information about how people perceive or feel (affective) about the presence of a protected area adjacent to their village; and to what extent they were willing to support management of the PA (behavioural component). The different methods used during data collection enhanced the reliability of the data collected. Secondary data were collected from books, published papers and journals, SANAPA and TANAPA brochures and from internet sources to provide the general background for the research and the study area.

## 3.3 Data Analysis

Data collected from the field were entered into the computer, coded and analysed statistically using SPSS version 21 and EXCEL. Descriptive statistics were run before starting analyses to clean the collected data and to acquire a knowledge of the nature of the data. Categorical responses were analysed using Pearson's chi-square tests to determine if two variables were independent of each other (Agresti and Kateri, 2011). Logistic regressions were run using "relation with the park" as the dependent variable to determine which factors were strong in influencing attitudes. Responses were assigned a code of 0 for bad and 1 for Good. The larger the value, the more positive the attitudes were towards PA. The independent variables used in the estimation of the logistic regression model were as follow; age, sex, respondent occupation, education, number of household members, land size, benefits, costs, involvement and participation of local people in conservation. Logistic regression assumes non-linearity and is used to predict the power of dependent categorical variable from a set of independent variables. The associations among the variables were regarded as significant when $P<0.05$. Tables, charts and graphs are used to present the results and findings of the study.

# CHAPTER 4: RESULTS

## 4.1 Respondents' characteristics

Of the 200 interviewed respondents, 109 (54%) were males, and 91 (45%) were females. The minimum age was 24 years, and the maximum age was 67 years, with an average of 43.7 (SD = 13.1) years. The average number of household members was 4.9 people (SD = 1.3), the minimum number was 2, and the maximum was 7. Most respondents (66%) had been to school but only at a primary level, 19% had never been to school, and only 15% had been to secondary school and above.

## 4.2 Livelihood resources: assets owned and accessed by local people

The rate and amount of resources accessed differed across the villages. Natural capital with respect to land and other natural resources was highest in the Gongo and Matipwili villages compared to Saadani and Mkwaja villages. Most households 66.0% in Saadani village owned less than 1 acre of land, while those households from Matipwili and Gongo owned larger farms ($\chi$2 = 119.75, df = 2, P ≤ 0.001**, Figure 3).**
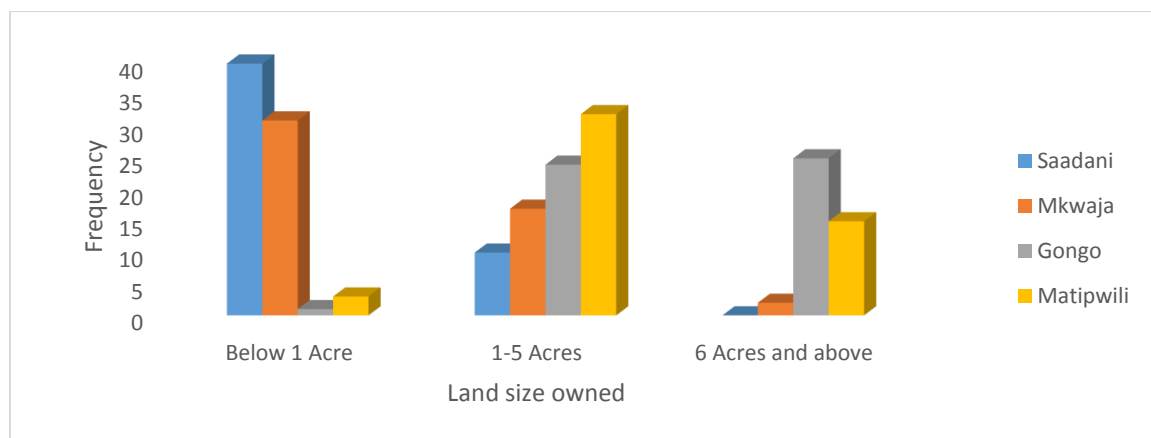


**Figure 3**: *Land size in acres owned in each villages*

Access to the different elements of physical capitals such as building, machinery and other equipment was common, and the frequencies of such ownership differed in each villages in ($\chi$2 = 17.31, df = 4, P ≤ 0.001). Of all interviewed households, 53% (n = 200) were not engaged in livestock keeping. The frequency of livestock ownership differed between villages ($\chi$2 = 26.61, df = 3, P ≤ 0.001). No household kept cows, sheep or pigs (**Table 1**)

**Table 1**; *Number of animals kept in the visited households in each village.*

| Village of respondent | Types of livestock | | | |
|---|---|---|---|---|
| | Chickens | Goats | Ducks | None |
| Saadani | 8 | 5 | 2 | 35 |
| Mkwaja | 10 | 16 | 1 | 23 |
| Gongo | 28 | 0 | 2 | 20 |
| Matipwili | 20 | 4 | 1 | 25 |
| Total | 66 | 25 | 6 | 103 |

There was no access to financial capital with respect to banking services. People required 3-5 hours to travel to Chalinze and Bagamoyo to access banking services. Three villages (Saadani, Matipwili and Mkwaja) used mobile services for financial services. The situation was worse in one village (Gongo) due to a telephone network problem.

## 4.3 Activities conducted by households in the visited area

Households were engaged in different activities, including business, formal employment such as a teacher, game officer, nurse, self-employment; and temporary jobs. Agriculture and fishing were observed to be the main sources of income of all households interviewed, (**Figure 4**).
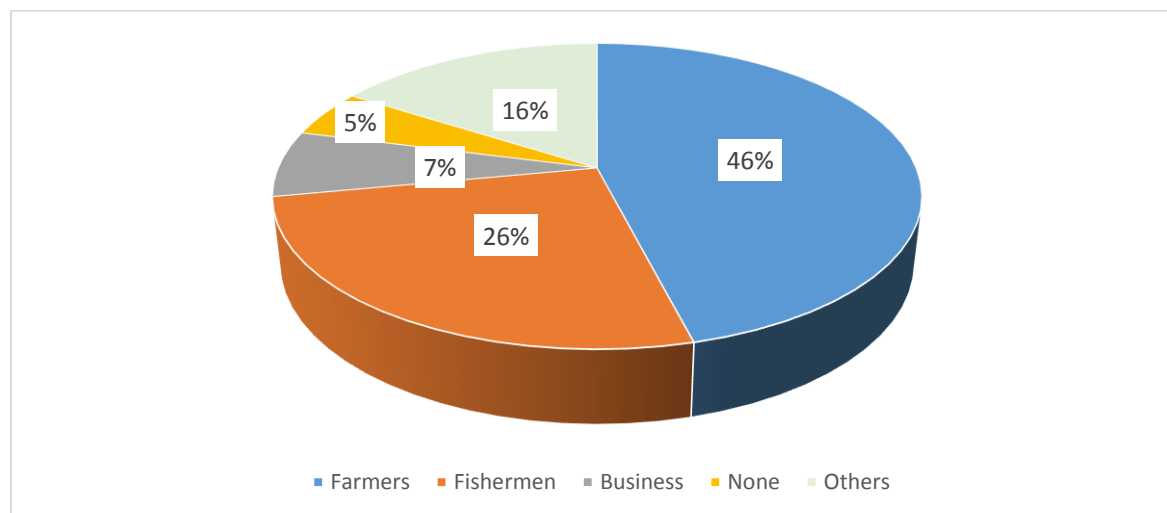


**Figure 4:** *Distribution of livelihood activities.*

Saadani and Mkwaja villages had the highest number of respondents (9%) with no activities compared to those far away ($\chi2$ = 144.7, df = 4, P ≤ 0.001). Most respondents from Matipwili and Gongo depended on agriculture whereas those from Saadani and Mkwaja villages depended on fishing (**Table 2**)

**Table 2**: *Livelihood activities in village settlements far from and close to the park boundary.*

| Village of respondent | Respondent Occupation | | | | |
|---|---|---|---|---|---|
| | Farmers | Fishermen | Business | None | Others |
| Saadani | 1 (2.0%) | 23 (46.0%) | 4 (8.0%) | 6 (12.0%) | 16 (32.0%) |
| Mkwaja | 3 (6.0%) | 27 (54.0%) | 8 (16.0%) | 3 (6.0%) | 9 (18.0%) |
| Gongo | 46 (92.0%) | 1 (2.0%) | 0 (0.0%) | 0 (0.0%) | 3 (6.0%) |
| Matipwili | 42 (84.0%) | 1 (2.0%) | 2 (4.0%) | 1 (2.0%) | 4 (8.0%) |
| Total | 92 (46.0%) | 52 (26.0%) | 14 (7.0%) | 10 (5.0%) | 32 (16.0%) |

Farming was mainly for subsistence however, a few cash crops were cultivated. Most crops were Maize, Coconuts, Rice, Pineapples, and Cassava. 37.5%, n = 200 of the respondents did not cultivate any of these crops at all. The crops cultivated differed ($\chi2$ = 217.3, df = 15, P ≤ 0.001) between village. Most crops were cultivated in Matipwili and Gongo villages, whereas 98.7% of the people in Saadani and Mkwaja villages were not involved in farming at all (**Figure 5**).
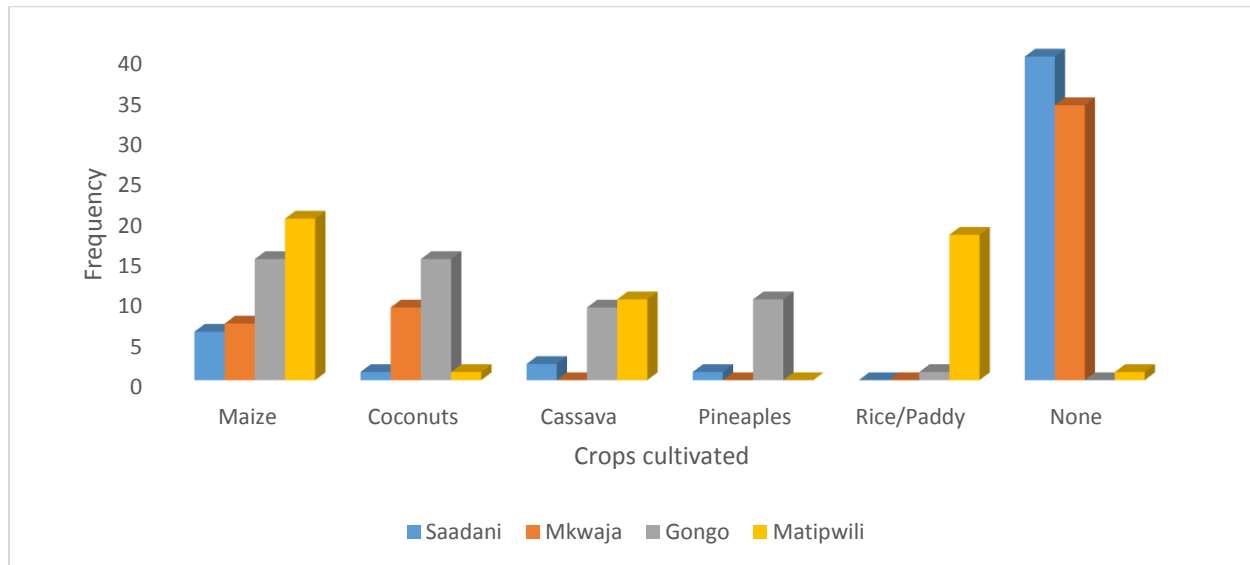


**Figure 5**: *Different crops cultivated in each village*.

People were also engaged in other activities, such as small businesses (shops for selling household goods, small restaurants for cooking *Chapati*, *maandazi* breakfast, and food for different visitors in the area, selling firewood and charcoal, and working as local tour guides and in temporary jobs provided by SANAPA). Saadani villages had highest number (32.0%, n = 200) of people engaged in other activities compared to the other villages ($\chi2$ = 144.7, df = 4, P ≤ 0.001).

## 4.4 Benefits experienced from SANAPA and by living adjacent to PA

Households identified different direct and indirect benefits received from and by living adjacent to SANAPA. Findings from the focus group discussion revealed that (50%, n = 200) of people did not recognize any benefits and support from conservation. Education level were significantly ($\chi 2$ = 4.68, df = 1, P = 0.03, **Figure 6**), influenced the awareness of benefits between villages. The majority of the people (75%, n = 200) with a formal education were aware of benefits compared to those with no education.
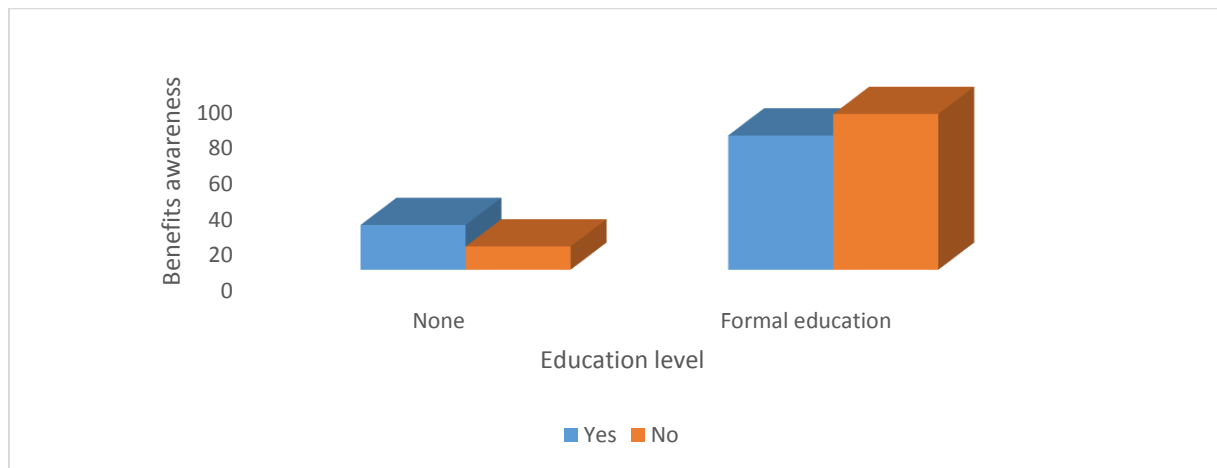


**Figure 6:** *Influence of education on benefits awareness*.

Benefits reported were grouped as employment, benefits from ecotourism, and support in social services such as in dispensaries, classrooms, firewood collection, water services and transport in an emergency situation. Thirty five percent (n = 200) of households acknowledged receiving benefits in term of social services. The types and support of benefits did not differ ($\chi 2$ = 1.60, df = 3, P = 0.66) among the villages (**Table 3**).

**Table 3**: *Types of benefits received from SANAPA by local Communities in each village.*

| Villages | Types of benefits | | | |
|---|---|---|---|---|
| | Employment | Help in social services | Eco-tourism benefits | I don't get any benefits |
| Saadani | 3 (6.0%) | 20 (40.0%) | 2 (4.0%) | 25 (50.0%) |
| Mkwaja | 5 (10.0%) | 15 (30.0%) | 6 (12.0%) | 24 (48.0%) |
| Gongo | 2 (4.0%) | 16 (32.0%) | 7 (14.0%) | 25 (50.0%) |
| Matipwili | 2 (4.0%) | 19 (38.0%) | 3 (6.0%) | 26 (52.0%) |
| Total | 12 (6.0%) | 70 (35.0%) | 18 (9.0%) | 100 (50.0%) |

According to the interview with the Chief Park Warden and CCS officers, 7.5% of the annual revenue accrued from conservation activities was used to support different development projects in adjacent communities. The provision of support is based on requests received from a particular village, that is, the village would initiate a project and request funding from SANAPA. In 2005/2006, SANAPA constructed two classrooms and toilets in Matipwili village. In 2006/2007 and 2014/2015, SANAPA rehabilitated the houses of the doctor and Teacher respectively in Saadani village. Additionally, in 2012/2013, SANAPA constructed a water dam in Gongo village and in 2010/2011 SANAPA provided laboratory equipment to the village of Mkwaja.

Findings from focus group discussions showed that the villages received indirect benefits by hosting different guests, visitors and researchers visiting the area for different purposes. The visitors or researchers contributed to the local economies when visiting the area through the purchase of basic needs, such as food and paying for accommodation in local guest houses and lodges. Information from focus group discussions revealed that, more than 50% of people from saadani and Mkwaja village benefited more from indirect benefits compared to Gongo village. SANAPA also reported providing opportunities for school children to visit the national park and observe natural heritage and learn about conservation issues and ecosystem processes.

## 4.5 Cost/problems experienced by household by living adjacent to PA

The problems and costs identified include crop raiding, livestock loss, restricted access to some resources, boundary conflicts and human injury. Crop raiding was the biggest problem identified by most people (31.5%, n = 200) in the study area. The problems identified differed between across the villages ($\chi2$ = 41.69, df = 4, P ≤ 0.001). Crop raiding was highest (52%, n = 200) in Gongo and Matipwili villages, whereas livestock loss was highest in Saadani and Mkwaja villages (**Figure 7**).
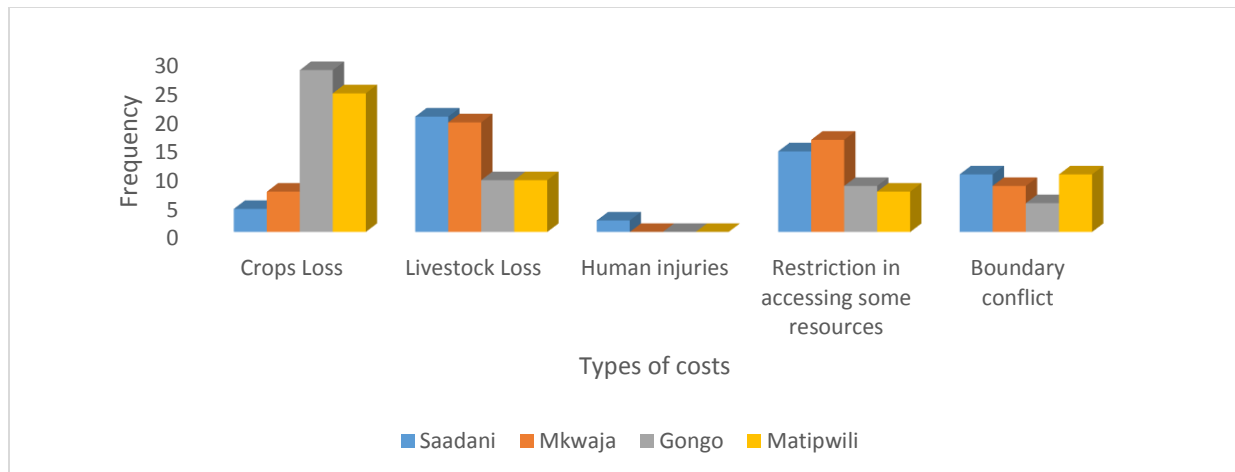
**Figure 7**: *Different types of problems in in each village.*

Crops destroyed were maize, coconuts, pineapple, cassava and rice and the affected domestic animals were goats, chickens and ducks. The animals reported as a problems were baboons (*Papio* spp.) (46.0%), warthogs (17.5%), African elephants (23.0%) and lions (*Panthera leo*) (13.5%). The food situation differed significantly across the villages ($\chi$2 = 85.2, df = 1, P ≤ 0.001), with 87.0% of those from Saadani village shown to be affected most and wanting the animal to be removed from their area compared to 13.0% of those from Gongo and Matipwili. In all villages surveyed 47.5% did not have any coping strategy with the problem of food shortage and complain about the presence of the park in their area. Most respondents 80.0% in Saadani villages did not have farms, compared to 2.0% of respondents in Matipwili villages ($\chi$2 = 197.8, df = 3, P ≤ 0.001, **Figure 8**).
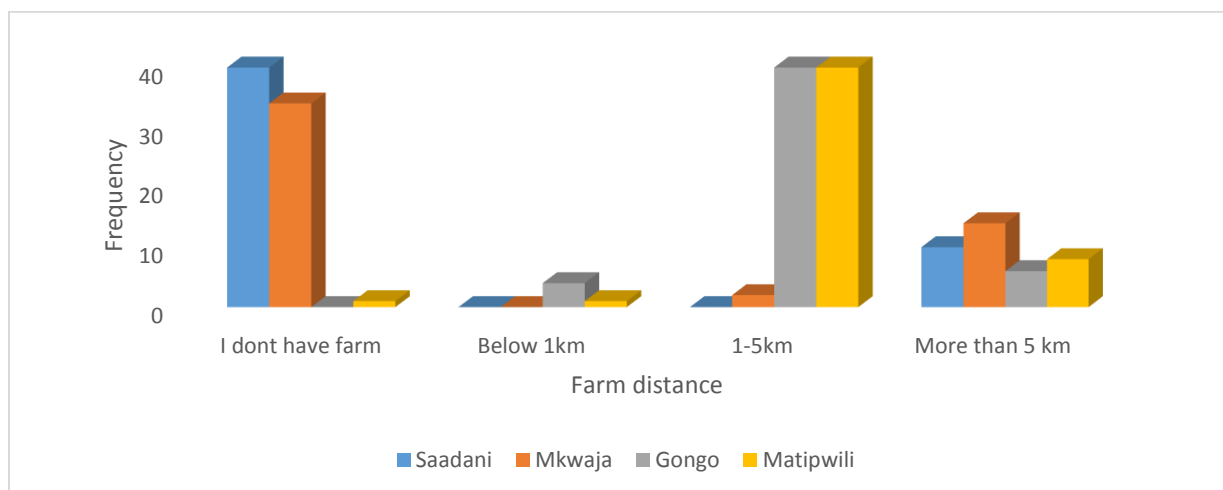


**Figure 8**: *Farm distance from the park in each village.*

In all interviewed households, 24.5% reported a problem with accessing resources, such as forest, land, firewood and water. In addition people reported a lack of area for collecting firewood, little or a lack

of free movements and not being allowed to perform some of the activities such as agriculture, especially in Saadani village. One person from Matipwili village of was reported as killed by lions in 2014 in Saadani village. As no physical boundary separated the park and village people reported boundary conflicts.

## 4.6 Attitudes towards conservation

The relation with the park was associated with a number of factors including; benefits from SANAPA, access to different resources, costs of wildlife, participation and involvement. Respondents were asked to rate their relations with the park. The majority (55.5%) of respondents rated their relationship with the park as bad. A larger proportion (88%, n = 200) of those who received benefits had a good relation with the park compared to those who did not receive benefits ($\chi2$ = 153, df = 1, P ≤ 0.001). Also 71.9 % of those involved in decision making had a good relation with the park compared to those who were not involved in decision making (**Table 4**)*.*

**Table 4**: *Impacts of the benefits of SANAPA and involvement of local people in conservation on their relation with the park.*

| Question | Category | Benefits received | | |
|---|---|---|---|---|
| | | Yes | No | Total |
| Relation with park | Bad | 12 (12.0%) | 99 (99.0%) | 111 (55.5%) |
| | Good | 88 (88.0%) | 1 (1.0%) | 89 (44.5%) |
| | | | | |
| Question | Category | Relation with park | | |
| | | Bad | Good | Total |
| Involvement in decision making | Yes | 14 (12.6%) | 64 (71.9) | 78 (39.0%) |
| | No | 97 (87.4) | 25 (28.1%) | 122 (61.0%) |

Respondent opinions varied ($\chi2$ = 152.1, df = 1, P ≤ 0.001) with an awareness of benefits. A higher frequency (96.8%, n = 107) of those who were aware of the benefits supported the existence of the park compared (90.7%, n = 93) to those who were not aware of the benefits. In addition, 72.0%, (n = 78) of those who were involved in decision making favoured the idea of the park's existence compared to 28.0%, (n = 122) who were not involved in decision making ($\chi2$ = 79.8, df = 2, P ≤ 0.001, **Figure 9**).
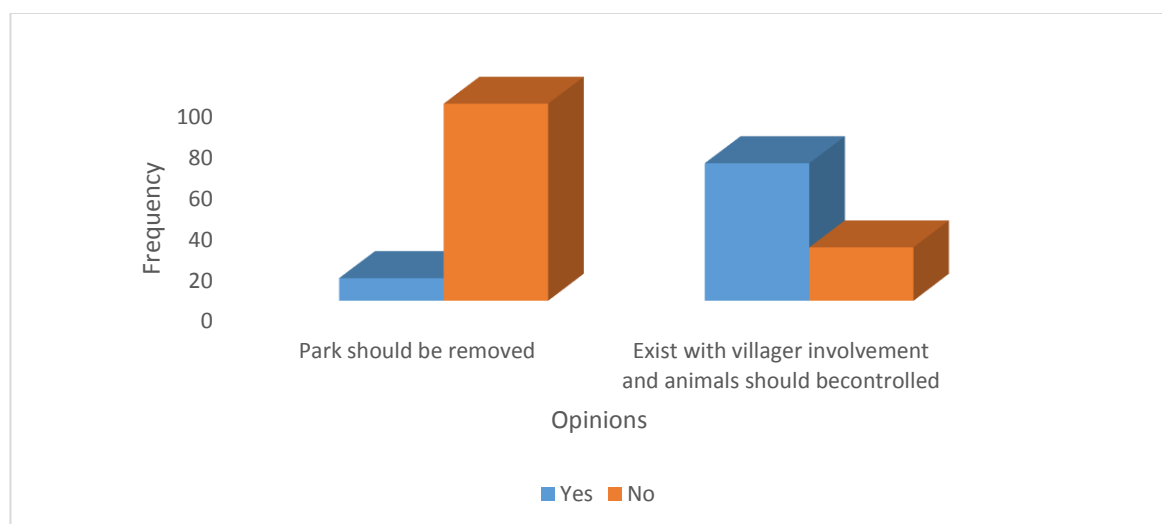
**Figure 9***: Respondents opinion based on involvement in decision making.*

A logistic regression with "relations with park is bad and good" as the dependent variable and nine independent variables was run. None of the demographic variables were significant in explaining the attitudes of people towards the park. Benefits, costs and involvement in decision making explained most significantly the variation of the dependent variables, and a weak association existed between accesses to different resources in terms of land size in explaining the attitudes of local people towards the park (**Error! Reference source not found.**).

Table 5: *Logistic regression of the local people's relation with the park (good, bad) and different independent demographic variables (n = 200). B = Logistic regression coefficient, SE = Standard error, Wald = Wald statistic (which has a χ 2 distribution), df = degrees of freedom.*

| Factors | B | S.E. | Wald | df | Sig. |
|---|---|---|---|---|---|
| **Involvement in decision** | **3.490** | **.904** | **14.906** | **1** | **.000** |
| **Benefits from the park** | **8.025** | **1.550** | **26.808** | **1** | **.000** |
| **Costs from park** | **10.157** | **3.079** | **10.882** | **1** | **.001** |
| **Land size in acre** | **1.312** | **.602** | **4.757** | **1** | **.029** |
| Education level | .843 | .935 | .812 | 1 | .367 |
| Age category | .797 | .540 | 2.174 | 1 | .140 |
| Households member | -.128 | .321 | .158 | 1 | .691 |
| Sex | .250 | .795 | .099 | 1 | .753 |
| Occupation | .483 | .499 | .938 | 1 | .333 |

# CHAPTER 5: DISCUSSION AND CONCLUSION

## 5.0 DISCUSSION

This study contributes to the literature on the impacts of conservation and PAs on local livelihoods. The findings of this study revealed that communities adjacent to SANAPA experience different impacts both positive and negative which influence their perceptions and undermine their livelihoods. Positive impacts were associated with employment opportunities, benefits sharing from tourism, and poverty eradication through empowerments while the negative impacts included reduced access to different resources, livestock loss, boundary conflicts, crop damage and human injuries

Local communities were engaged in different activities but agriculture and fishing were the main sources of income. Community activities differed across the village. The majority of local communities in Saadani and Mkwaja villages depended on fishing, whereas Gongo and Matwili villages depended on agriculture. Additionally, Saadani villages had the highest number of people with no dependable income activity, and hence, the park affected their livelihoods.

Matipwili and Gongo villages had large landholdings compared to Saadani and Mkwaja villages, which restricted their ability to diversify into different activities. During the establishment of SANAPA, Saadani villages contributed more land than the other villages, leaving locals remained with small portion of land, which they were unable to diversify into other economic activities. Access to different resources, especially land, were seen to be important factors in diversification into different activities as most people did not have other strategies, and most depended on agriculture and fishing. This findings is supported by the study conducted by Ellis (2000) on rural livelihood and diversity, which also revealed the importance of accessing assets for the diversification of livelihood strategies, which in turn, reduces the dependence on natural resources. Institution, such as SANAPA and other stakeholders, need to target the immediate livelihood needs and help create opportunities for the local communities to diversify their livelihood. The needs of the local people and poverty reduction should be considered during planning and designation of PAs to meet goals and objectives for conservation and livelihoods (Pfaff et al., 2014).

In addition, the results indicate that, local communities benefited directly and indirectly from employment and ecotourism benefits as well as from help with social services related projects because of being adjacent to SANAPA. The participation, involvement, support from local people and equal provision of the benefits obtained from conservation activities are important in achieving conservation goals (Nyaupane and Poudel, 2011). The effective and sustainable conservation of wildlife will be achieved

through strengthening the capabilities and knowledge of local people and different stakeholders (Langton et al., 2014).

According to Badola et al. (2012) and Karanth and Nepal (2012) , local people are unlikely to support conservation if they do not recognize and appreciate the benefits or if their needs are not taken into consideration. A lack of consideration for the local livelihood has been shown to have a negative impact in the study area not only for the household but also for the PAs, as most people want the park to be removed. The findings of this study are supported by a study conducted by Badola et al. (2012) , on the attitudes of local communities towards conservation of Mangrove, which revealed that the need for linkage to and involvement by local communities increases support for management and conservation of natural resources. As stated by the Sustainable Livelihood Approach conservation benefits should target the immediate livelihood needs and helps create opportunities for the local communities to diversify their livelihood (Karki, 2013).

The problems most reported in this study were crop loss, livestock depredation and restricted access to some of the resources with no alternative. The costs that local communities experienced were associated with living nearby or adjacent to PAs which affected livelihoods. The respondents acknowledged not having enough food throughout of the year, and most of respondents did not know how to mitigate the problem. Because the villages were located at the park boundary, with no physical boundary to separate the park and the villages land, animals seemed to roam around within the villages. Additionally, as a result of laws and regulation related to the establishment of the PA local people experienced restricted access to and exclusion from the resources.

Local people reported a lack of area to collect firewood, a lack of grazing land and lack of free movement due to the restricted access to resources as result laws and regulations of conservation act. This findings were supported by a study conducted by Tumusiime and Vedeld (2015) on the costs and benefits of strict PA in Uganda; that study also revealed that local people had limited access to resources, and hence, had low income. In addition, different studies revealed that support for conservation depended on whether livelihood needs were met (Karanth and Nepal, 2012, Kideghesho et al., 2007). According to Berkes (2004) and Karanth and Nepal (2012), local people are willing to support conservation if their needs and their livelihoods are considered. Therefore, the establishment of PAs and conservation activities requires sustainability of both local community needs and conservation goals (Naughton-Treves et al., 2005)

The results indicated that most of respondents held negative attitudes towards the park and suggested the degazzettement of the park from their area. According to Kideghesho et al. (2007) , who studied on the factors influencing conservation attitudes of local people in western Serengeti, an understanding of the various factors influenced the attitudes and achievement of conservation goals. In this study, factors such as perceived benefits, costs local people experienced as a result of the park, access to resources in term of land, involvement and participation of local people in conservation decision making, are the most significant in influences the attitude of local people towards conservation.

In my study area, the local people have low level of awareness concerning the benefits due to poor involvement and a lack of participation in decision making and management of the natural resources. The results indicate that the benefits are an important factor in influencing the relations between local people and the park. This findings supports one of my study hypotheses (H3) that is, communities that experience benefits are more likely to support conservation. Additionally, this result is similar to the study conducted by Mfunda et al. (2012) in Serengeti which also revealed that benefits, participation and the involvement of local people influenced a positive relation and support from the adjacent villages, which in turn, will increase the acceptance of the formation and establishment of PAs. According to Kideghesho et al. (2007), the exclusion of local people and the use of force to achieve conservation goals may lead to negative attitudes and, hence, increase encroachment and other illegal activities within the park. However another study conducted by Allison and Ellis (2001) revealed that conservation benefits may not always support the livelihoods that experience impacts of PA establishment. The challenge remain to determine how many benefits will be enough to change the negative perceptions of local people towards conservation. Therefore, the need for the involvement and participation of the key stakeholders, such as local people, is important in achieving conservation strategies.

Most costs facing local communities in this study were related to the presence of the park. Costs were significant in shaping the attitudes of locals towards the park, and a high frequency of respondents wanted animals to be removed as a solution to the problem. This observation supported my hypothesis (H4) that, local communities that experience costs were less likely to support conservation initiatives. Different studies revealed that, incidence of costs from PAs influence the negative attitudes of local communities towards conservation (Kideghesho et al., 2007, Infield and Namara, 2001).The farming and fishing practiced by local people seemed to be negatively impacted compared to the other people with alternative livelihoods activities such as businesses. This observation supported my hypothesis (H2) that, people with alternative livelihood activities will have a positive relation with the park. Negative attitudes

towards the park in the study area were associated with costs and restricted access to different resources, such as firewood and land. Local communities with more landholdings had a positive attitudes towards the park and were more likely to engage in other livelihood strategies hence; they showed a reduced dependence on the park. This result supports hypothesis (H1) of my study that; access to the different assets influences the attitudes of local people toward the park. PAs should encourage local people in different ways, including compensation which will help local communities who experienced costs from conservation and improve their relations. Positive interactions between management and local communities will increase the local acceptance of PAs, whereas negative attitudes and negative interactions contribute to the opposition to PAs (Htun et al., 2012). The present study revealed that the perceptions and attitudes towards conservation were influenced by the impacts local people experienced from PA. Based on findings of the different studies on the impacts of PAs on local communities, the results of this study might also be representative of the situations in all communities adjacent to PAs.

## 5.1 CONCLUSION

Overall access to resources by the communities adjacent to SANAPA was the major factor in the ability for most of households to engage in different activities. Local communities adjacent to SANAPA had little access to different resources, hence, depended on available natural resources which were found inside PAs. The Establishment and expansion of PAs has been shown to have different impacts which undermine local livelihood. Most rural people are poor and depend on agriculture and available resources. Restricted access to resources and other impacts of PAs were shown to influence the negative attitudes of local people towards conservation activities**.** Negative attitudes towards the park pose a challenge to the implementation of conservation policies.

Several authors have noted that, the exclusion of local communities in conservation has led to difficulty in achieving conservation goals (Ban et al., 2013, Pullin et al., 2013). The needs and interest of local people should be given priority during the establishment and expansion of PAs by providing alternative livelihoods. According to (Røskaft et al. (2007)) support for conservation will be compromised if the needs and interests of local people are threatened. Therefore, based on the findings of this study and the findings of other studies, if the following recommendations are met, conservation goals can be achieved without compromising the livelihood needs, thereby promoting harmonious living between people and wildlife.

## 5.2 RECOMMENDATION

This study revealed that effective conservation and management of biodiversity needs the support and cooperation of local communities. The establishment and expansion of PAs should consider and provide the needs and promote alternative livelihoods to the neighbouring communities. Therefore this study recommends the following:

- Improvement and implementation of concreate conservation policies should be considered to increase the participation, transparency and involvement of local communities in conservation activities. A need exists to develop different joint mechanism programs which will includes and involve local communities in conservation. The involvement of local communities in conservation will help to achieve effective conservation and livelihood goals.
- Benefits should be sufficient to offset the costs of conservation activities. Additionally, equitable distribution and sharing of conservation related benefits should be considered to target the immediate livelihood needs, including an improvement in the living standard of local people by alleviating poverty, support of local economies through tourism development and capacity building programs. Local communities will support conservation if the provision of benefits is sufficient to meet their livelihood needs for survival. This will help to change negative perceptions and attitudes towards conservation and will contribute the acceptance of the establishment of PAs to local livelihoods.
- Laws and regulations governing the establishment and expansion of PAs should encourage the development of alternative livelihood needs which contribute to poverty alleviation as a way of compensating local communities from restricted access to different assets. The development of alternative livelihoods will help reduce illegal activities, as well as the dependence and pressure on natural resources.
- PAs should encourage education as a way of creating awareness on the importance of conservation and conservation-related benefits which will help to change the attitudes of local people. Most CBC projects should directly target people to engage them in alternative income - generating activities that will reduce their dependence on resources in the conservation area.
- Demarcation or buffer zone to separate PAs area and village land should be known. This will help to control encroachment and other illegal activities inside the PAs.

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## Appendix 1

### Household Questionnaire

Questionnaire number_____

District_____

Ward_____

Village_____

Date_____

Household GPS: Lat_____Long_____

## **Personal information**

1. Respondent age

i) ≤ 37 Years ( )   ii) 38-48 Middle aged ( )      iii) 49+ Older   ( )

2. Sex

Male ( )                Female ( )

3. Occupation

Farmer ( )          Fisher   ( )            Teacher   ( )        Businessman   ( )

 Others (specify) _____2_____

4. Level of Education

None    ( )        Primary level  ( )        Secondary level ( )       others (specify) _____

5. Do you have child/children in school?   i) Yes    ( )    ii) No     ( )

| Age (years) | Sex | Education level |
|-------------|-----|-----------------|
|             |     |                 |
|             |     |                 |
|             |     |                 |
|             |     |                 |

If no what is (are) the reason(s)_____

## Assets and Wealth

**1) Land**

11. What is the area of land owned by household? _____

**ii). House**
1a.Do you own a House?    i) Yes   ( )            ii) No      ( )
1b.How many houses do you own? _____

| No. of Room | Wall material | Roof material | Floor material |
|---|---|---|---|
| | i)Cement    ( ) | Grass    ( ) | Cement    ( ) |
| | ii)Burnt Bricks    ( ) | Iron/steel   ( ) | Soil       ( ) |
| | iii)Unburnt Bricks   ( ) | Mud/Cow dung    ( ) | Tiles      ( ) |
| | iv)Mud   ( ) | | |
| | v) | | |

**iii) Animal**

17. Do you own Livestock?    Yes   ( )         No   ( )

| Livestock owned | Number |
|---|---|
| Cow | |
| Goat | |
| Sheep | |
| Chicken | |
| Ducks | |
| Turkeys | |
| Pigs | |
| Others Specify | |

### iv. Equipment

1. Do you owned any of this equipment?

| Name of Equipment | No. owned | Name of Equipment | No.owned |
|---|---|---|---|
| i)Ox-plough | | viii)Wheelbarrow | |
| ii)Bicycle | | ix) Tractor | |
| iii)Motorcycle | | x)Refrigerator | |
| iv)Sewing machine | | xi) Cell phone | |
| v)TV | | xii)Other(specify) | |
| vi)Cannoe/fishingnet | | | |
| vii)Radio | | | |

6. What is the main sources of income?

Agriculture ( )      Fishing ( )      Business ( )      hunting ( )   others

(specify) 1._____2._____3._____

7. What other activities do you do as alternative source of income? _____

8. Do you think your activities have any impacts on wildlife population?

Yes ( )        No  ( )

9. If yes what impacts1._____2._____3._____

10. Do you have any of these?

Farm ( )          Backyard garden  ( )

11. If yes how far from the park?

1-3 km  ☐     4-6 km ☐     7-9 km ☐     Others (specify) _____

12. What are the major three crops you cultivate in your farm/garden?

1._____2_____3._____

13. What best describes the food situation in your household for the past 12 months?

1. In most cases, we do not have enough food
2. We have food but with some months of food scarcity
3. We always have enough throughout the year

14. What are the copying strategies used in the period of food shortage?
   i)        Sell livestock  ☐
   ii)       Borrow money ☐
   iv)      Sell household assets  ☐
   iii)      Others (specify) ☐
15. What are the sources of energy used for cooking in your household?

i) Firewood ☐
ii) Charcoal ☐
iii) Kerosene ☐
iv) Gas ☐
iv) Electricity ☐
v) Others Specify 1._____2._____3._____

16. Where does your household obtain the energy used for cooking?
i) Village forest ☐
ii) General land ☐
iii) Within the national park
iv) Own farm land ☐
v) Others specify 1._____2._____3._____

17.Do you receive any benefits from SANAPA? I) Yes ☐ ii) No ☐

|   | Types of benefit | Yes | No |
|---|---|---|---|
| 1 | Are you employed or have you been employed by SANAPA? | | |
| 2 | Do you have children at school constructed by SANAPA? | | |
| 3 | Do you access to medicinal plants and ritual sites? | | |
| 4 | Do you participate in eco-tourism activities? | | |
| 5 | Do you have access to water for domestic use/livestock? | | |
| 6 | Do you have access to firewood and building materials? | | |
| 7 | Others (specify) | | |

18. Do you think there is fair distribution of benefits obtained from the Park i) Yes ☐ ii) No ☐

19. Who do you think benefit more from the NP?
i) Government leader (Village council leader) ☐
ii) Rich people ☐
iii) Poor people ☐
iv) Females ☐
v) Males ☐
vi) Young people ☐
vii) Old people ☐

## Expenses of living adjacent to PA

20a.Do you experience any problem by living adjacent to NP? i) Yes ( ) ii) No ( )

20b.If yes, which of the following is a problem?
i) Crops loss ( )
ii) Livestock loss ( )
iii) Human injuries ( )
v) Others specify_____

21. Which crops were destroyed and how much was your loss?

| Crops destroyed by Wildlife | Loss/year |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |

23. Which domestic animals were killed, injured, killed or affected by wildlife?

| Domestic animals | Problem types | Number of animal killed |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

24. Which animals are the main causes the problem?
   i) baboon   ( )
   ii) warthog   ( )
   iii) elephant   ( )
   iv) lion    ( )
   v) Others (specify)  1._____ 2._____ 3_____

25. What do you think should be done to control these problems?
 i) Remove animals   ( )
ii) Compensation    (  )
iii) Others (specify) ( )

## Perception and attitudes

26. How do you rate your relation with the park?  i) Bad ( )  ii) Good   ( )

| | Indicators of relations | Yes | No |
|---|---|---|---|
| | Do you report any illegal activities which conducted inside the Park? | | |
| | Are you or any member of your family employed by the park? | | |
| | Do children attend a school constructed by SANAPA? | | |
| | What are the household benefits from the income generated from the activities conducted by SANAPA? | | |
| | Are you allowed to access medicinal plant or ritual sites? | | |

| | | | |
|---|---|---|---|
| | Are you allowed access to water for domestic use/for livestock inside the park? | | |
| | Do you have access to firewood or building materials inside the park? | | |
| | Do you enjoy the services provided by SANAPA? | | |

27. How does your household obtain information about conservation issues?
   i)     By participating in the meeting  ( )
   ii)    By being a member of the village government  ( )
   iii)   By being a member of committee in the village  ( )
   iv)    By being an employer in the village   ( )
   v)     From friends   ( )
   vi)    Others (specify) 1._____2._____  3._____
28. Do you know how decisions are made? i) Yes  ( )    ii) No  ( )
29. Is your household involved in the decision making process?  i) Yes   ( ) ii) No  ( )
30. How are decisions communicated at the village level?
   i) Through the village meeting  ( )
   ii) On the village notice board ( )
   iii) Through talking with a friend ( )
   iv) Others (specify)  _____
31. How would you like to be involved in the management of natural resources?
1._____2._____3_____

32. What is your opinion about the presence of the Park in this area?
   1.  It should be removed
   2.  It should exist, but the animals should be controlled
   3.  It should exist with villagers being involved in its management

# Appendix II

## SANAPA and Interview Questions

1. How do community livelihoods benefit from SANAPA?
2. Who benefits most? How do you ensure that benefits are evenly distributed across sex, ages and ethnic groups?
3. How are communities involved in decision making (planning and management) processes for the protected area?
4. What capital or resources are available to support livelihoods?
5. What processes do protected area management use to ensure that local livelihoods are considered?