

**POTENTIALS AND CONSTRAINTS OF ECO-TOURISM IN IMPROVING  
NATURE CONSERVATION AND LIVELIHOODS: THE CASE OF AMANI  
NATURE RESERVE, TANZANIA**

**BY**

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**ABSTRACT**

Amani Nature Reserve (ANR), which is within the Eastern Arc Mountains, is well known for its biological and ecological values. Eco-tourism is being practiced in the reserve. However, despite the fact that eco-tourism has been proposed as a viable economic activity that can minimize negative human impacts on wildlife habitat and provide an incentive to preserve natural areas, little has been reported on the potentials and constraints of the practice in the area. This study was conducted in the villages adjacent to ANR, to determine the potentials and constraints of eco-tourism in nature conservation and livelihoods improvement in and around ANR. Questionnaire survey, Participatory Rural Appraisal (PRA) and key informant interviews were the methods used in data collection. The results reveal that there are enormous natural (flora, fauna and sceneries) and cultural resources for development of productive eco-tourism in ANR. However, the existing potential is not fully exploited. Despite an increase in tourists and hence revenues in ANR, little is accrued by the local communities. Results further show that eco-tourism contributed only 9.6% to total household income annually and only 22.7% of the surveyed households were engaged in eco-tourism-related activities. The study concludes that the existing level and type of involvement in eco-tourism is not effective enough to bring about significant impact, which comes into view that the potentials for eco-tourism in improving livelihoods is yet to be realized in the area. Increased local community involvements in tourism in order to improve people's livelihoods and to enable them understand the inter-relationships between humans and the environment are recommended.

**DECLARATION**

I, REHEMA ABELI SHOO, do hereby declare to the senate of Sokoine University of Agriculture that this dissertation is my original work and has not been submitted for a degree award in any other University.

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Rehema Abeli Shoo  
(MSc. Candidate)

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Date

The above declaration is confirmed

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Prof. A.N Songorwa  
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Date

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## **DEDICATION**

I dedicate this work to my beloved father W.S. Abeli and mother T. Kataya who laid a good foundation of my education and gave moral and financial support, and to my beloved step mother J. Abeli for her love and patience during the entire period of my study.

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**LIST OF ABBREVIATIONS AND ACRONYMS**

ABG	-	Amani Botanical Garden
ANR	-	Amani Nature Reserve
asl	-	above sea level
df	-	degree of freedom
EUCAMP	-	East Usambara Conservation Area Management Programme
GDP	-	Gross Domestic Product
GMP	-	General Management Plan
IUCN	-	International Union Conservation for Nature
MNRT	-	Ministry of Natural Resources and Tourism
Max.	-	Maximum
Min.	-	Minimum
NBS	-	National Bureau of Statistics
PRA	-	Participatory Rural Appraisal
SE	-	Standard Error
SPSS	-	Statistical Package for Social Sciences
TAS	-	Tanzanian Shillings
TBA	-	Tropical Biology Association
TIES	-	The International Eco-tourism Society
URT	-	United Republic of Tanzania
WTTC	-	World Travel and Tourism Council
WTO	-	World Tourism Organization

## CHAPTER ONE

### 1.0 INTRODUCTION

#### 1.1 Background Information

Tourism, within which eco-tourism is a niche market, generates over 10% of global Gross Domestic Product (GDP) and employs around 200 million people worldwide per year (WTTC, 2005). It is one of the largest and fastest growing industries in the world (WTO, 2003). However, Wearing and Neil (2000) report that local communities are significantly vulnerable to the deleterious impacts of tourism development particularly on indigenous cultures as they directly experience negative socio-cultural impacts.

The Eco-tourism Society defines eco-tourism as “a responsible travel to natural areas which conserves the environment and improves the well-being of local people” (Orams, 1995). Eco-tourism has evolved into a type of specialty travel incorporating a diverse array of activities from bird watching, scientific study, photography, diving, bush walking to regeneration of damaged ecosystems (Wearing and Neil, 2000). It is being explored not as a replacement to traditional mass-based tourism but as a complement to it - an attempt to take advantage of a growing niche in the wider global industry or, in more technical terms, to diversify the port-folio of tourism activities (Brandon, 1996).

According to Boo (1993), communities near protected areas are getting new employment opportunities through eco-tourism. However, these same protected areas, which are looked at as opportunities, are under-funded, understaffed and are experiencing a multitude of unsustainable development activities in and around their borders. All these factors are threatening conservation and thus eco-tourism. Some of these threats could be reduced if

the potential benefits of eco-tourism could be harnessed. Fortunately, the majority of eco-tourists are eager to contribute more than is currently being requested to conserving the areas that they visit. However, opportunities must exist to allow them to contribute. In order to provide these opportunities a system must be in place, and this requires planning (Boo, 1990).

In Tanzania, tourism sector is among the sectors with great economic growth and high employment creation potential (MNRT, 1999). The National Tourism Policy of Tanzania was reviewed in 1999 to cope with the dynamism of the tourism industry. It seeks to assist efforts to promote the economy and livelihoods of the people, essentially poverty reduction through encouraging development of quality tourism that is culturally and socially acceptable, ecologically friendly, environmentally sustainable and economically viable. Designing environmentally friendly tourism programmes and putting into place mechanisms that will ensure that tourist activities respect use of biodiversity, wildlife conservation and other naturally occurring phenomena of aesthetic value, are among the policy strategies in developing eco-tourism (MNRT, 1999).

Amani Nature Reserve (ANR) in northeastern Tanzania is worldwide famous due to its potentials especially in conservation and tourism. It has substantial endemic, rare and threatened flora and fauna compared to the rest of the Eastern Arc Mountain Forests (ANR, 2000). However, Kessy (1997) reports that the people of East Usambara, particularly around ANR, depend on the diverse products from the forests for their subsistence, a practice which is common in most parts of the country. This causes a great challenge to conservationists who are charged with the responsibility to manage the reserve.

## 1.2 Problem Statement

Although there are strong arguments in support of eco-tourism playing a central role in improving local livelihoods in rich biodiversity areas such as ANR (Nelson, 2004), specific information on how various existing eco-tourism opportunities can be utilized and maximized in order to increase benefits to the community in question and to conservation is lacking. Mashauri (2001) writes on the relationship between eco-tourism development in the area and community perception towards those developments. However, he says little about eco-tourism as a means for diversification and, therefore, livelihood improvement. Earlier studies in ANR have concentrated mostly on quantitative studies and have taken the form of technical reports covering issues such as vegetation, species diversity and management of forest biodiversity (Johansson, 1996; Fowler and Nyambo, 1996; Ellman *et al.*, 1995). They hardly touched on issues such as potentials and constraints related to eco-tourism in the area for livelihood improvement or report on the existing eco-tourism opportunities and constraints for nature conservation.

The most recent research work in ANR was by Kingwere (2005) who examined the role played by the whole concept of conserving nature in efforts to reduce poverty and guarantee improvement of rural livelihoods. But it had limited analysis of eco-tourism as a means for livelihood improvement and sustainable conservation in the area. Alongside review of compensation agenda on lost properties as a result of forest demarcation process, Kingwere (2005) suggests the need for private sector and local community participation in eco-tourism activities.

### **1.3 Justification**

ANR is one of the areas where eco-tourism can play a significant role in nature conservation and local livelihood improvement. However, little was known about the potentials and constraints of the practice in the area. This study, therefore, determined the potentials and constraints of eco-tourism with particular focus on nature conservation and livelihood improvement in and around ANR. The information obtained provides some insights of opportunities and constraints of eco-tourism and enables policy- and decision makers to design appropriate policies, develop strategies and suggest short- and long-term solutions to improve eco-tourism. Moreover, the identified opportunities and constraints are envisaged to trigger a discussion on the management of ANR for the purpose of improving eco-tourism activities.

### **1.4 Research Objectives**

#### **1.4.1 Overall objective**

The overall objective of this study was to assess the potentials and constraints of eco-tourism in improving nature conservation and livelihoods around Amani Nature Reserve.

#### **1.4.2 Specific objectives**

Specific objectives included to:

- (i) identify and examine potential attractive features for eco-tourists inside and around ANR;
- (ii) examine the current contributions of eco-tourism in nature conservation and local livelihood improvement in and around ANR;
- (iii) identify problems hindering the planning, better management and development of eco-tourism in and around ANR;

- (iv) identify and assess the modalities of ANR for sharing costs and benefits from eco-tourism with local communities, and
- (v) assess policy implication in relation to eco-tourism establishment and development in and around ANR.

### **1.5 Research Questions**

In order to achieve the above-listed specific objectives, the following questions are answered in this thesis:

- (i) What are the potential features/attractions for eco-tourism in and around ANR?
- (ii) How much revenue is generated by ANR annually from eco-tourism activities?
- (iii) What are the factors hindering eco-tourism in and around ANR in terms of policies, planning and management?
- (iv) How is revenue from eco-tourism distributed?
- (v) How do the local communities benefit from eco-tourism?
- (vi) What is the impact of eco-tourism revenue on the local communities adjacent to ANR?
- (vii) How do the communities participate in eco-tourism?
- (viii) How would the communities like to participate and benefit?
- (ix) How policies influence the development and management of eco-tourism in ANR?

## CHAPTER TWO

### 2.0 LITERATURE REVIEW

#### 2.1 The Concept of Eco-tourism

The definition of eco-tourism as a concept or as a development strategy is far from established. The term was first mentioned in the literature by Kenton Miller in 1978 (Rahemtulla and Wellstead, 2001). Much attention has been paid to the question of what constitutes eco-tourism, and numerous concepts and definitions exist (Buckley, 1994). According to Ceballos-Lascuráin (1987), eco-tourism is defined as “traveling to relatively undisturbed or uncontaminated natural areas with specific objective of studying, admiring, and enjoying the scenery and its wild plants and animals as well as the existing cultural manifestations (both past and present) found in these areas”. Furthermore, Honey (1999) believes that the term eco-tourism implies “a travel to fragile, pristine, and usually protected areas that strive to be low impact and (usually) small scale. It helps educate the traveler; provides funds for conservation; directly benefits the economic development and political empowerment of local communities; and fosters respect for different cultures and for human rights.” Although the first definition is effective in capturing the essence of what eco-tourism is, Shores (1992) argues that it focuses almost exclusively on the motives of the traveller, and not on the impacts that such travel has on the cultural and ecological environments of the setting. For tourism to be defined as eco-tourism it should adhere to numerous principles. The principles that are frequently cited include: traveling to natural destinations, impact minimization, direct benefits to conservation, financial benefits and empowerment for local people, respect to local culture and education among all parties (Fennel, 2001). However, there is a growing consensus that eco-tourism consists of three basic characteristics (Blamey, 1997; Weaver, 2001), as addressed below.

### **2.1.1 Natural and cultural attractions**

As a segment of tourism industry, eco-tourism has emerged as a result of increasing global concern for disappearing ecosystems and cultures (Kutay, 1990). According to Weaver (2002), eco-tourism attractions are primarily based on the natural environment. Most definitions of eco-tourism also recognize the importance of associated cultural resources as complementary but secondary attractions. The inclusion of cultural attractions means that eco-tourism does not have to be restricted to relatively undisturbed natural environments, as some definitions insist, but can also occur in the culturally modified landscapes that are found, for example, in many alpine valleys. Silva and McDill (2004) report that, since eco-tourism entails understanding the natural history of the environment and culture, it can also be a means for conserving the area's natural and cultural resources.

### **2.1.2 Educational and learning experiences**

The second distinctive characteristic of eco-tourism is its emphasis on providing learning and educational experiences for the eco-tourist, about the natural environment or associated 'cultural manifestations'. The eco-tourists generally express the desire to learn about nature on their trips (Eagles *et al.*, 1992). Therefore, in eco-tourism, great emphasis is placed on education and interpretation through the explanation of the concepts, meaning and inter-relationship of natural phenomena (McNeely and Thorsell, 1989). This component is mostly provided by tour guides, whose knowledge and communication skills become critical to the role of eco-tourism in environmental education (Buckley, 2003). Wearing and Neil (2000) point out that, this element differentiates eco-tourism from other forms of tourism, where the natural environment simply provides a convenient setting for fulfilling a variety of self-centered motivations. The most desirable type of learning experience is one that allows the eco-tourist to appreciate the local ecosystem as a whole

and the ways in which this ecosystem interacts, both positively and negatively, with the local human population. Such an experience should also provide the eco-tourist with an advanced appreciation for environmental and social issues in general. Weaver (2002) suggests that, one effective way of achieving this is to encourage eco-tourist participation in such activities as tree planting and trail maintenance, which is a very attractive option for visitors who wish to have a meaningful travel experience.

### **2.1.3 Environmental, economic and socio-cultural sustainability**

The third and most important distinguishing characteristic of eco-tourism is its imperative of operating in an environmentally, economically and socio-culturally sustainable manner. Weaver (2002) reports that, it is understandable that all tourism should operate in such a way, but eco-tourism is the only tourism sector in which sustainability is inherent in the definition. In other words; it is the mandate and responsibility of eco-tourism to support the holistic development of destinations. Moreover, in genuine eco-tourism, the positive impacts are mostly deliberate, whereas the negative impacts are mostly unintentional. Studies on the relationships between the environment and tourism have shown that, the desire to derive economic benefits from tourism in protected areas often results in environmental degradation, which not only curtails the potential for tourism development, but also development, which such environments offered for the future (Butler, 1991; Sherman and Dixon, 1991; Whelan, 1991). Eco-tourism is often cited as a type of tourism that attempts to minimize the negative effects of mass tourism (Doan, 2000). Furthermore, Buckley (2003) notes that tourism is a large scale activity in major components of global human society with its own detrimental impacts on the natural environment and eco-tourism may be able to provide models to reduce these impacts.

Lindberg and Hawkins (2003) found that conservation will only be achieved if and when it is linked to socio-economic development and livelihood security of local populations. Eco-tourism-related benefits are an important basis for positive resident attitudes towards adjacent natural areas. Conversely, if residents bear the costs without receiving benefits, they may turn against eco-tourism and conservation and may intentionally or unintentionally damage the site (Lindberg, 1991). One of the principles behind this is that local people will protect, for example, a forest if they realize the forest is worth more to them as a forest than as felled trees. However, it is also important to realize that forests have all types of values for local people, not just economic ones. Lindberg and Hawkins (2003) point out that, apart from eco-tourism potential to provide economic benefits to local people, it also provides social and cultural benefits as well. An eco-tourism approach embraces local people as partners in the activity. An optimistic view in the literature, held by a majority of researchers is that, eco-tourism presents an opportunity to stimulate local economies as an alternative to extractive industry and environmental degradation. In theory, increased tourism in developing countries could increase local incomes. Higher local incomes, in turn, would create incentives for conservation (Taylor *et al.*, 2003).

According to Lindberg and Hawkins (2003), there are opportunities for expanding eco-tourism's local economic benefits and we should be able to determine which are most effective in achieving economic development goals. Moreover, for eco-tourism to act as a process, which facilitates local livelihood improvement, a set of conservation, development and tourism management strategies and policies enabling the development or facilitation of these characteristics is needed. These policies should not see eco-tourism as the province of tourism departments only, but as a complex activity requiring policy and regulatory inputs from all stakeholders (Singh and Furze, 2003).

In spite of the above-mentioned potentials of eco-tourism in providing employment opportunities to communities near protected areas and that conservationists use eco-tourism as a tool for preserving biological diversity and promoting sustainable development, the feasibility and compatibility of these two goals are controversial. Boo (1993) and Lindberg (1991) note that benefits in eco-tourism have not always been as great as desired while costs have sometimes been greater than expected. Moreover, while some scholars believe that eco-tourism can potentially focus the benefits of tourism on the environment and local population while minimizing negative impacts, other observers remain sceptical, warning that eco-tourism has not yet been proven to be either beneficial or a panacea for sustainable use of resources. They also voice the concern that eco-tourism has not reached its potential as a tool for conservation or economic development, in part because host countries have yet to receive the full revenue potential inherent in eco-tourism, and in part because relatively little of the revenues, which have been generated, have directly supported conservation and economic development (Lindberg and Huber, 1993). The constraints of eco-tourism are divided into environmental, socio-cultural and economic ones as highlighted below:

## **2.2 Constraints of Eco-tourism**

### **2.2.1 Environmental constraints**

Despite the centrality of the environment to eco-tourism, there is relatively little accumulated knowledge regarding eco-tourism's impacts on the environment and the effect of these impacts on the eco-tourist's experience. It is often argued that eco-tourists are motivated to preserve the environment, so one would expect them to generate little or no negative environmental impact. Furthermore, eco-tourists are claimed to be educationally sophisticated and environmentally concerned. However, as Wall (1994) points out, eco-

tourists often go to environmentally fragile areas such as alpine and arid areas; and rarely understand the ecological consequences of their visits and how their day-to-day activities append physical impacts on the environment. Kamauro (2006) reports that, while the term eco-tourism may sound relatively benign, one of its most serious impacts is its consumption of virgin territories. The impacts of eco-tourism often are categorized as "direct" (effect of the visitors themselves) like soil erosion and compaction, disturbance to wildlife, trampling of vegetation, accidental introduction of exotic species and removal of vegetation such as plants collection. The other category is "indirect" impact (effect of the infrastructure or activities necessary to provide the visitor experience) such as reclamation of land for infrastructure (e.g., clearing of forests for hotel construction).

### **2.2.2 Socio-cultural constraints**

It is a general rule that eco-tourists are more concerned with environmental impacts and as such eco-tourism promotes a greater understanding and respect of cultures - and usually people protect what they respect as heritage (Richardson, 1991). However, as with the natural environment, the socio-cultural environment serves both as an eco-tourism attraction and a recipient of eco-tourism's impacts. If these impacts become, on the whole, too negative, the local sustainability of eco-tourism can be jeopardized. In some areas local residents have been sufficiently unhappy with eco-tourism development that they sabotaged the natural resource on which this development was based. Many eco-tourism activities involve relatively intense interaction between greatly differing cultures, and these differences may exacerbate the negative socio-cultural impacts of eco-tourism, especially when communities are not given the opportunity to decide if they want to become involved with tourism, and how (Wight, 1993). The impacts of tourism on host communities, and resulting resident attitudes toward tourism, have been popular research topics in the past

several years (e.g., Lankford and Howard, 1994; Lindberg and Johnson, 1997). Commodification of culture, in which cultural symbols are treated as commodities to be bought and sold, is among the cultural impacts of eco-tourism (Brandon, 1996). This happens when religious rituals, traditional ethnic rites and festivals are reduced and sanitized to conform to tourist expectations.

### **2.2.3 Economic constraints**

Eco-tourism has been embraced by many as an opportunity to generate income and employment in areas relatively untouched by traditional development efforts. Such goals have often been achieved in part, but there is realization that little of the money spent by tourists remains at or near the destination itself. The amount of money, which actually reaches the destination region, less the amount leaked out to pay for outside goods and services has not been adequately quantified. Moreover, a common estimate is that less than 10% of tourists' spending remains in communities near eco-tourism destinations (Lindberg, 1991; Boo, 1990). Dr. Kreg Lindberg, who is a leading eco-tourism economist, estimates that around 90% of tourism revenue is lost through leakages such as imports and profit repatriation in most eco-tourism destinations (Lindberg, 1998). These leakages are probably even higher in mountain regions, which tend to produce only a small portion of the goods and services consumed by eco-tourists (Weaver, 2002).

### **2.3 Factors Affecting Eco-tourism**

Although eco-tourism has some advantages for rural development and conservation of natural and cultural heritages, there are also some problems. One of the more fundamental issues surrounding eco-tourism is lack of experience in eco-tourism planning. Moralyova and Ledovskikh (1999) report that mechanisms are not in place to determine carrying

capacities for parks and thoroughly monitor tourism impacts. This makes them vulnerable against possible ecological problems of tourism organized without proper planning and control. Moreover, eco-tourism planners and managers have little accurate information concerning eco-tourists on various facilities and services, which is important if they are to be successful. According to Saleh and Karwacki (1996), the factors, which motivate the eco-tourist to visit a destination are of primary concern to all eco-tourism planners, developers and managers. Effective marketing can be undertaken only if such variables have been identified.

Several other problems related to eco-tourism are the byproducts of inadequate funding. For example, while significant investment has been made in creating a national park system geared towards eco-tourism, overall funding falls severely short of the amount necessary to support adequate park management, infrastructure, and programming. As a result, problems such as trail deterioration, habitat disruption, littering and increased soil erosion and compaction, which reduce vegetation cover are becoming more commonplace (Narayan, 1998; Songorwa *et al.*, 2006).

Inadequate eco-tourism marketing and information dissemination have also been reported to hinder eco-tourism development. The main reason why many community-based eco-tourism projects have failed is that they have not attracted a sufficient number of visitors. Often, assumptions that are made about the marketability of a particular location or experience have been unrealistic and not based on research. As a result, promotional activities have been misdirected. The problem has been lack of tourism knowledge not only among local communities themselves but also among advisors and supporting agencies (Denman, 2001). A study done in Russia by Moralyova and Ledovskikh (1999)

revealed that lack of marketing information and skills is one of the most serious factors hampering eco-tourism development. The world community has little knowledge of Russia's protected areas and their significance.

The underdevelopment of culture as a resource to attract tourists due to the prevailing low cultural gratitude that pervades the local communities is also among the problems facing eco-tourism. A survey of eco-tourism potential in Pakistan's Biodiversity Project Area revealed that, uncooperative attitudes and negative interaction between tourists and host communities was one of the problems hindering eco-tourism development (Mock and O'Neil, 1996). There is also inadequacy of awareness and appreciation, especially on the part of local communities, of tourism and the importance of setting aside and preserving tourist attractions. Local people's involvement and participation in eco-tourism planning and management is limited in some eco-tourist destinations. Brandon (1996) reports that, most eco-tourism projects emphasize a beneficiary approach and people are viewed as beneficiaries and have no involvement in the project design, planning and management. Hands-on and on-the-job/field work increase local communities' level of awareness and understanding and strengthen their capability to manage their resources sustainably.

Inadequacy of tourist services and facilities is another factor hampering eco-tourism development. Most eco-tourism projects have not invested sufficiently in staff and guides' training. Consequently, infrastructures such as living facilities, transport and a set of equipped ecological trails and routes, which are needed to support tourism, are not well developed (Moralyova and Ledovskikh, 1999). According to Wells (1997), this exposes sensitive sites to degradation. Visitor satisfaction surveys are becoming a more important part of eco-tourism. The provision of educational information is paramount to the eco-

tourist. Destination information must be of high quality and on-site personnel must be very knowledgeable. Consequently, there must be an ongoing process of training personnel and updating visitor information. Since satisfaction with facilities and services plays a large part in the eco-tourist's intention to return, it is critical that planners and managers pay attention to eco-tourists' needs in these areas (Saleh and Karwacki, 1996).

#### **2.4 Tanzania's Efforts to Boost Eco-tourism**

The United Republic of Tanzania as cited by Gyasiwa (2007) has defined eco-tourism as "a purposeful travel to natural areas to understand the culture and natural history of the environment taking care not to alter the integrity of the ecosystem, while producing economic opportunities that make the conservation of natural resources beneficial to the local people".

Although there is much potential for tourism to have positive impacts on the national economy, there are also numerous negative effects. The impacts include environmental degradation, cultural degradation, and the fact that, the local communities located in areas that support tourist attractions are not always included in the planning or implementation of projects, nor do they benefit from traditional tourism activities (Olang *et al.*, 2004). According to Gyasiwa (2007), Tanzanian government has been concerned about the potential impacts of tourism on the environment, culture, and economy of the communities involved in tourism, and has deliberately decided to put eco-tourism in the national tourism policy. The policy puts emphasis on promoting eco-tourism in order to ensure proper conservation and sustainable management of the environment. Some of the policy strategies in eco-tourism include enhancing the conservation of nature, creating sustainable environmental awareness among tourists and local population and sensitizing them on the

need to respect nature and conserve the environment. Moreover, the policy emphasizes on putting in place mechanisms that will ensure that tourist activities respect the use of biodiversity, wildlife conservation and other naturally occurring phenomena of aesthetic value (MNRT, 1999).

In Tanzania, other sectors of the economy like forestry also realize that, development of eco-tourism is a potential source of income for forest owners and communities in the rural areas. The existing wildlife-based tourism as well as related marketing services form a sound basis for the development of forest-based eco-tourism activities. The policy statement on eco-tourism states that: “The private sectors and community involvement in the development of forests-based eco-tourism will be encouraged. This will be linked with the overall tourism development and an appropriate legal framework established” (MNRT, 1998, p.28).

Furthermore, the government of Tanzania, in collaboration with various stakeholders, has put emphasis on promoting, strengthening and sensitizing communities’ and individuals’ participation as a strategy to invigorate environmental conservation and management. Regarding this, the National Environmental Policy of Tanzania puts forward a number of objectives. These include: “to prevent and control degradation of land, water, vegetation, and air which constitute our life support systems; to conserve and enhance our natural and man-made heritage, including the biological diversity of unique ecosystems of Tanzania; and to raise awareness and understanding of the essential linkages between environment and livelihoods, and promote individual and community participation in environmental action” (URT, 1997, p.9).

The National Tourism Master Plan of Tanzania emphasizes on the importance of ensuring that the natural environment, on which most of Tanzania's tourism is dependent, is protected from overuse or inappropriate development. Furthermore, the master plan realizes that, Tanzania has a varied and interesting culture that can form a central element in its appeal as a tourist destination. The main actions proposed in order to develop the cultural component of the tourism product are identification of restoration/conservation needs of historic and cultural sites in priority development zones and the implementation of restoration/conservation measures for selected sites. The establishment of interpretative/exhibition centers for a number of themes -early man, rock art, slave trade, village life, etc. is also among the proposed actions (MNRT, 2002).

## **2.5 Eco-tourism Aspect in Amani Nature Reserve**

### **2.5.1 Visitor infrastructures**

In order to facilitate visitors' full access to the eco-tourism features of Amani Nature Reserve (ANR) the reserve has developed various facilities so as to offer maximum satisfaction. These include the Zigi Information Center, rest houses and campsites.

#### **2.5.1.1 Zigi information center**

This is located within the reserve near the main entry gate at Zigi (Plate 1). Information on nature trails, camping sites, and tour guides is provided here. Cultural values of the community and their relationship with the environment features are also in display as well as biological values of the ANR.



Plate 1: Zigi information centre.

#### 2.5.1.2 Rest houses and camping sites

ANR operates two rest houses (Zigi and Amani), which offer full accommodation and meal services to visitors at relatively cheap prices. Single to double self contained rooms are found in both rest houses. Also, ANR has two camping sites, one with fixed water closet located at ANR Headquarters while the other is located at Kiganga area (which has mobile a sanitary system).

#### 2.5.2 Endemic and rare species

ANR is rich in endemic vertebrates, which are forest-dependent and include all the strict endemic birds, mammals, reptiles and amphibians. Furthermore ANR has plenty of endemic plants such as wild relatives of coffee and African violet species (*Saintpaulia*). Plate 2 shows one of African violet species, *Santpaulia confusa* as captured in ANR.



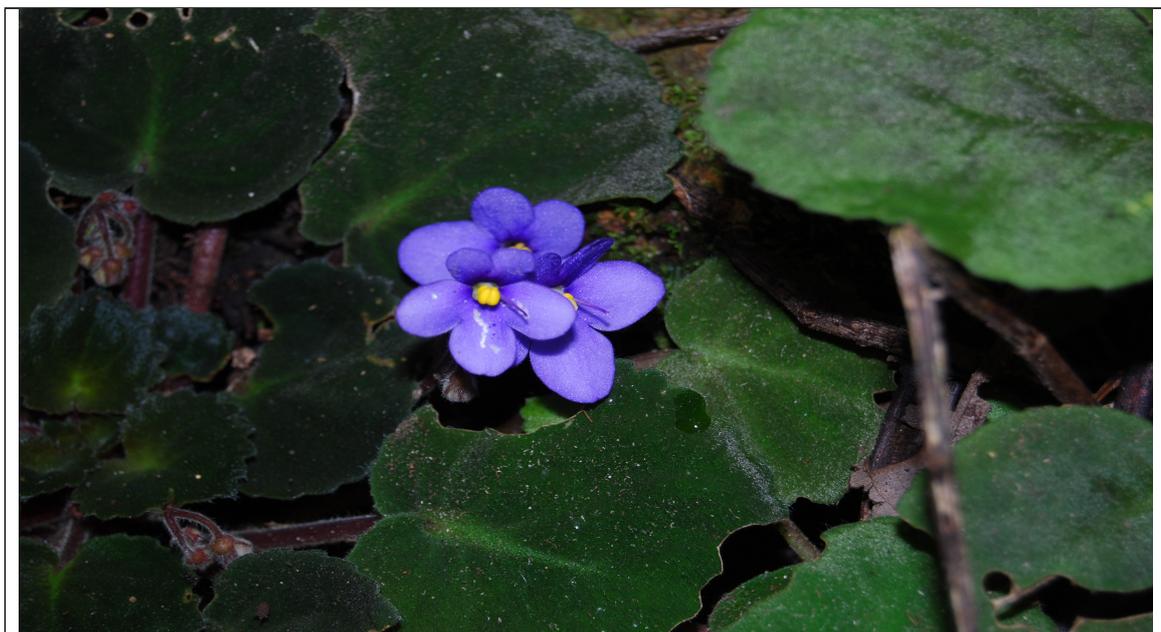


Plate 2: African violet (*Santpaulia confusa*).

The African violet (*Saintpaulia ssp*), which was the target species of this study, has been promoted as a botanical 'Panda' symbolizing the decline of the Eastern Arc Mountains' forests (Eastwood *et al.*, 1998). The genus is also being promoted as a tourist attraction in an effort to develop eco-tourism in the hotspot (Kolehmainen *et al.*, 2004). The presence of African violet flowers in ANR (8 species out of 21 species known worldwide) increases the importance of the reserve for both conservation and tourism. The African violet species found in ANR include *Saintpaulia grotei*, *Saintpaulia diplotricha*, *Saintpaulia pendula* and *Saintpaulia magungensis*. Others are *Saintpaulia confusa*, *Saintpaulia grandifolia*, *Saintpaulia tonguensis* and *Saintpaulia difficilis*.

## CHAPTER THREE

### 3.0 MATERIAL AND METHODS

#### 3.1 Description of the Study Area

##### 3.1.1 Location

The study was conducted in and around ANR, which has an area of 8380ha. The reserve (Fig. 1) is located in the north-eastern corner of Tanzania within Muheza and Korogwe districts, in Tanga region between latitudes 5°05'S and 5°14'S and longitudes 38°40'E and 38°32'E. It forms the southern and largest forested mountain block of the East Usambara Mountains, which are part of the Eastern Arc Mountains chain. The western side is bordering Lwengera valley, which separates East Usambara from West Usambara.

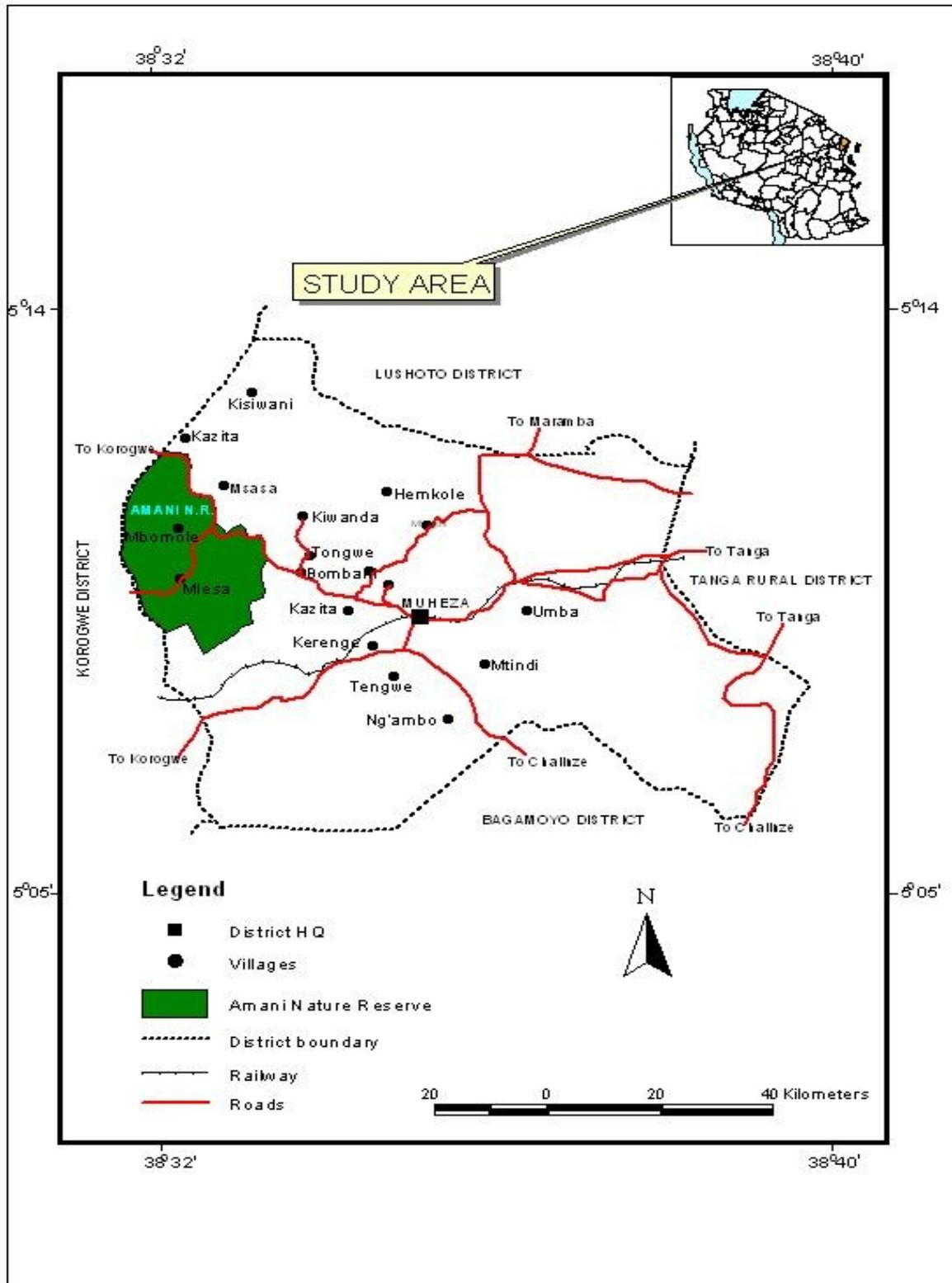


Figure 1: Location of Amani Nature Reserve. (Source: modified from Frontier Tanzania, 2001).

### **3.1.2 Topography, geology and soils**

In ANR, altitude ranges approximately between 300m and 1130m asl. The highest point is in the southern part, at Kimbo peak. The mountain block forming the ANR rises to form a plateau whose average altitude is 930m asl in its central part. Like other parts of East Usambara mountain range, ANR is composed of ancient crystalline rocks, which are believed to be very old. The rocks are fairly uniform and belong to the Precambrian Usagaran system predominated by gneiss and to some extent granulites and amphibolites. The high degree of endemism and floristic diversity support the theory of a long time since the uplifting. Soils are largely clay and clay-loams usually with 1-5 m in depth. They are generally red and well drained. Soils at higher altitudes are acidic and highly leached although undisturbed natural forest cover prevents leaching because of more effective nutrient circulation (Hamilton, 1989).

### **3.1.3 Climate**

ANR receives an annual average rainfall, which ranges between 1200mm and 1400 mm. In fact, the Amani block is the wettest of all the East Usambara forest blocks. The rain falls almost throughout the year with peaks between March and May and between October and December. The mean annual humidity at Amani is 87% in the morning and 77% at midday. Mean annual temperature at Amani (at about 900m altitude) is 20.6°C with a mean daily maximum temperature of 24.9 °C and mean daily minimum of 16.3 °C. The hottest season is in January-February and the coolest in July-September (ANR, 2000).

### **3.1.4 Vegetation**

Two main types of forests are present in ANR: semi-deciduous forests in the lowlands with low rainfall and submontane evergreen forests in the mountains with high rainfall. In the

deciduous to semi-deciduous woodlands, species of the genera *Acacia* and *Combretum* are common. These dryer types of forest are dominating on the western and south-western slopes of ANR where rainfall is low. The submontane forests can be exceptionally tall and luxuriant, with the tallest trees reaching 65m in height in favourable sites. There is notable variation in floristic composition. The common tree species include *Cephalosphaera usambarensis*, *Allanblackia stuhlmannii*, *Albizia gummifera*, *Beilschmiedia kweo*, *Diospyros abyssinica*, *Englerodendron usambarense* and *Drypetes gerrardii* (EUCAMP, 2001).

Flora of the East Usambara mountains consists of 2083 vascular plant taxa, 64 (3.1 %) of which are strictly endemic. In the southernmost parts, including the ANR, forests are considerably richer in species than in the northern parts. Of the endemic vascular plants, over 90% occur in forest habitats and predominantly (78%) in submontane forests. Sixteen of the strictly endemic species are trees reaching more than 5m in height. Eighteen of the endemic species are shrubs and thirty are herbs. The most famous of the endemic plants is the genus *Saintpaulia* (African violet - a herb), of which eight species have been recorded in the East Usambara Mountains particularly in ANR (Iversen, 1991). The plant taxa in ANR are presented in Appendix 1V.

### 3.1.5 Wildlife

ANR and the East Usambara mountains in general are well known for their diverse avifauna with a high degree of endemism. Greater part of the birds are strictly forest-dependent and the most threatened species only live in the understoreys of the least disturbed forests. Thirteen globally threatened species, including Long-billed Apalis (*Apalis moreaui moreaui*), Usambara Eagle Owl (*Bubo vosseleri*), Amani Sunbird

(*Anthreptes pallidigaster*), Usambara Mountain Weaver (*Ploceus nicolli*) and Swynnerton's Robin (*Swynnertonia swynnertoni*) are known to live in ANR (Stuart, 1989).

The East Usambara Mountains of which Amani is part are also rich in endemic invertebrate fauna. For example, 41 species of millipedes (the major macro-decomposers) are found here, 85% of which are endemic. Within the non-marine mollusca (*Gastropoda*), endemic species represent 45% of the total fauna. Of the 37 species and subspecies of butterflies restricted to montane forests known in the East Usambara, 15 (40%) are endemic. There are 15 forest-dependent amphibian and 13 reptile species in the East Usambara that are endemic to Tanzania (EUCAMP, 2001; TBA, 2007).

In contrast to other animal groups, mammals show very low levels of endemism with only one subspecies, the Tree Hyrax (*Dendrohyrax validus vosseleri*), as a possible endemic. However, some mammal species such as Collared Fruit Bat (*Myonycteris relicta*) and Bushy-tailed Mongoose (*Bdeogale crassicauda*) are classified as globally threatened. The most visible species are the primates: Gentle Monkeys (*Cercopithecus mitis*), Colobus Monkeys (*Colobus guereza*) and Yellow Baboons (*Papio cynocephalus*) (EUCAMP, 2001; TBA, 2007). Appendix V shows a list of fauna species in ANR.

### **3.1.6 Population, land use and local economy**

According to the Tanzanian population and housing census of 2002, Muheza district, which covers a landmass of about 4922 sq km, has an estimated total population of 279 423 (URT, 2003). Land area of the Amani plateau is 126 sq. km (or 12 600 hectares) of which approximately 25% is taken up by five tea estates, 34% is the agricultural land belonging to the villages, 18% is public forest land of which part has been already cleared

for agriculture, and 23% is ANR controlled by the Forest and Beekeeping Division (Johanson, 1996).

Farming, for both food and cash crops, is the main livelihood strategy of most local people in the surroundings of the ANR. The average farm size is 2.7ha, ranging from 1.1ha to over 20ha. The main food crops are maize, cassava, bananas and beans. The main cash crops are maize, sugarcane, tea, cardamom, cinnamon, cloves and black pepper. In general, the farming methods are poor, which lead to soil impoverishment and reduced productivity. Several daily household products such as fuelwood, building poles, wild vegetables and fruits are collected from the forests (Mashauri, 2001).

## **3.2 The Study Population and Sampling Procedures**

### **3.2.1 Study population**

This study comprised of varied stakeholders in tourism. These were local people living around ANR, tourists, ANR officials, tour operators and local tour guides.

### **3.2.3 Sampling procedures**

Purposive sampling was employed for village selection. In the light of the above technique, five villages were purposely selected to represent the entire population of 18 villages surrounding ANR. Criteria included closeness to the reserve, presence of eco-tourism attractive features, extent of dependence on forest products and utilization, and experiences with certain specific forest resource management issues in relation to eco-tourism. The underlying assumption was that, villagers have direct interaction with both forest and other eco-tourism resources hence they would provide the most and required information. A total of 172 (9%) out of 1915 households were selected for questionnaire survey as indicated in

Table 1. This is according to Boyd *et al.* (1981) who suggest that a sampling fraction ( $n/N$ ) should at least be equal to or greater than five percent, where  $N$  represents population size. The households were picked from the village register books in which all the households were listed. Thereafter, the first household was randomly selected followed by systematic sampling in selecting the succeeding households. According to Sounders *et al.* (2007) the interval ( $I$ ) between households was obtained systematically using the formula  $I=N/n$

Where:

$N$ = total number of the households (as per village register).

$n$  =Sample size

$I$ =Interval between households.

The proportions of the sampled populations are given in Table 1.

Table 1: Distribution of selected households in the surveyed villages

<i>Villages</i>	<i>Kisiwani</i>	<i>IBC-</i>	<i>Mlesa</i>	<i>Shebomeza</i>	<i>Mbomole</i>	<i>Total</i>
		<i>Msasa</i>				
Households	282	397	498	342	395	191
Sampled						5
households (9%)	25	36	45	31	35	172

Tourist respondents were obtained through random encounter.

Purposive sampling procedures were also used to select key informants. ANR staff were chosen based on the specific responsibility, which one had regarding tourism. These

included the ANR conservator, tourism officer, cooks and forest attendants. Local tour guides were selected based on the experience one had regarding tourism in Amani. Those guides who had worked with ANR for more than 9 months were included in the sample. Furthermore, village representatives were selected based on their positions in the villages and finally the tour operators were obtained through cross-checking the tour companies' data in ANR office. Those operators who had frequent visitors to ANR were included in the sample.

### **3.3 Data Collection**

The data used in this study are from both primary and secondary sources.

#### **3.3.1 Primary data**

Several methods were used for primary data collection. These included participatory rural appraisal (PRA), questionnaire survey and interviews with key informants. The aim was to crosscheck and verify information obtained through these different methods regarding the topics in question.

##### **3.3.1.1 Participatory rural appraisal**

Participatory Rural Appraisal (PRA) approach is essentially a process of learning about rural conditions in an intensive and interactive manner (Mearns, 1994). Selection of participants in this exercise was done adhering to equal representation of sexes, age groups and range of responsibilities in conservation activities within a village. With the help of a village government leader in each of the surveyed villages, 12 people (six males and six females) were selected to form a PRA group (Appendix 6) according to the criteria mentioned above. During the PRA exercise participants were divided into three age

groups; the youth, middle age and old. The youth were participants less than 30 years. This was important because of the diversity of knowledge, perception and understanding of livelihoods-related issues and perspectives of different groups of the society for the assessment of potentials of eco-tourism as an alternative livelihood opportunity in the area.

The methods used included village resource mapping (Appendix 7), pair-wise ranking and Venn diagram. The information collected included local community attitudes toward ANR, eco-tourism opportunities/attractions available in the area, available resources and utilization, problems and their consequences, stakeholders/institutional analysis, their interactions and impacts on the community. Plate 3 illustrates village resource mapping at Mlesa village.



Plate 3: Village resource mapping at Mlesa village.

### **3.3.1.2 Questionnaire survey**

Questionnaire survey was conducted using structured questionnaires, which were administered to heads of households although other household members were allowed to add some information. A total of 172 copies of the household questionnaire (Appendix 1) were administered. In order to elicit information, open- and close-ended questions were used. Information collected included cultural and socio-economic (income, occupation and education), demographic data on household size, tourist attractive features and benefits/costs obtained from eco-tourism.

Questionnaire survey was also used to collect data from tourists. In total 33 copies of the tourist questionnaire were administered (Appendix 2). Information collected included country of origin, main reason for trip, the means they got to know ANR and their general opinions on the strategies to take in order to ensure eco-tourism growth in and around ANR.

### **3.3.1.3 Key informant interviews**

These were carried out using well designed checklists (Appendix 3), which guided the discussions. Key informants considered in this study were ANR officials, local tour guides, village representatives (village government leaders, village natural resource committee leaders and influential people or elders) and tour operators. They provided useful information regarding revenues obtained from eco-tourism, cost and benefit sharing modalities, policy issues in relation to eco-tourism, economic activities and local community perception of eco-tourism. Table 2 shows numbers of interviews and sexes of interviewees in each category of key informants.

Table 2: Number of interviews conducted per category

<i>Key informant</i>	<i>ANR officials</i>	<i>Local tour guides</i>	<i>Tour operators</i>	<i>Village representatives</i>	<i>Total</i>
Males	6	7	7	3	23
Females	2	0	8	0	10
Total	8	7	15	3	33

### 3.3.2 Secondary data

A range of secondary data on conservation activities and resource utilization in the area was collected from ANR offices, villages and non-governmental offices such as Tanzania Birding Safari, Shidolya Tours and Nature Beauties Safari. Other documents and publications were obtained through literature search using Internet and libraries. This information was important in broadening perspectives and also provided in-depth understanding of the research topic.

## 3.4 Data Analysis

### 3.4.1 Qualitative data analysis

Henderson (1991) states that, content analysis is any technique which allows researchers to systematically analyze some dimension that appears in written form. Components of verbal discussions held with key informants were analyzed in detail with the help of content analysis method. In this way the recorded dialogue with a respondent was broken down into smallest meaningful units of information or themes to ascertain values and attitudes of respondents. Moreover, data collected through PRA techniques such as identified problems and their ranking were compiled and analyzed with the help of local communities and the results were communicated back to them for verification as an immediate action.

### **3.4.2 Quantitative data analysis**

Quantitative data obtained from the questionnaires were coded by assigning a numerical value to each answer to a question. Answers to open questions were grouped into categories, and each category given a numerical value. Statistical Package for Social Sciences (SPSS) version 11 was used to clean the data, and establish the database necessary for statistical analysis. Descriptive statistics were run on all questions covering both nominal and ordinal data whereby the percentages, means and standard error of the means were obtained. For questions resulting in “range” responses the mode, median, minimum and maximum values were shown. Chi-square test was used to assess whether the answers were significantly different among different respondents. Cross-tabulations were also applied to find relationships between variables and to provide idea whether the patterns described in the samples were likely to apply in the population from which the samples were drawn. Excel computer software was also employed to develop a summary of data and the results in form of figures.

## CHAPTER FOUR

### 4.0 RESULTS AND DISCUSSION

This chapter presents the research findings and discussion. It is divided into six sections: general information; eco-tourism potentials for ANR; current contribution of eco-tourism in nature conservation and livelihoods; factors (constraints) hindering the planning, better management and development of eco-tourism; modalities for sharing costs and benefits with local communities; and finally policy implications in relation to eco-tourism establishment and development in and around ANR.

#### 4.1 General Information

General characteristics of respondents in this study were households' and visitors' origins, sex, age, household size, education level, income and human population. Others were visitors' sources of information, duration of stay and trend. These characteristics were used to portray the general status of respondents and how the status influenced perception of and participation in eco-tourism practices in the study area.

##### 4.1.1 Origins

###### 4.1.1.1 Origins of the surveyed households

Results in Table 3 show that 73% of the surveyed households (mainly Sambaa and Bondei) were natives to the area and the remaining (Chagga, Pare, Ha, Nyakyusa and Hehe) originated from outside and came in order to engage themselves in various income-generating activities such as agriculture, tea-picking and gold mining.

Table 3: Origins of surveyed households per village

<i>Origin</i>	<i>Kisiwan</i>	<i>IBC-</i>	<i>Mbomol</i>	<i>Mlesa</i>	<i>Shebomez</i>	<i>N=172</i>	<i>Percentag</i>
	<i>i</i>	<i>Msasa</i>	<i>e</i>		<i>a</i>		<i>e</i>
Native	22 (12.8%)	25 (14.5%)	29 (16.9%)	27 (15.7%)	23 (13.4%)	126	73.3
Immigrant	3 (1.7%)	11 (6.4%)	6 (3.5%)	18 (10.4%)	8 (4.7%)	46	26.7

However, the proportion of migrants varied considerably among the villages. For example, Mlesa had the highest proportion of immigrants (10.4%) compared to other villages. This could be due to the fact that Mlesa is nearer to a tea factory hence more people are attracted to the area due to employment opportunities. Furthermore, Amani Division, just like the rest of the East Usambara Mountains, is experiencing an ever-increasing human population (Table 4) due to both natural increase and immigration. Immigration into this area is attributed to the fact that the area is endowed with exceptional environmental services (Jambiya and Sosovele, 2004) such as good climatic condition.

Table 4: Population trends (1978 / 02)

<i>Year</i>	<i>1978</i>	<i>1988</i>	<i>2002</i>
Amani Division	19 980	23 988	29 065
Percentage change	-	+20.1	+21.2

*Source:* Muheza District office

It was further noted that, the surveyed villages were facing rapid population growth as the percentage change of population was positive (Table 5).

Table 5: Human population growth in the surveyed villages

Village	1988	2002	2007	Percentage change based	
				on 1988 population:	
				2002	2007
Kisiwani	1536	1599	1700	4.1	10.7
IBC-Msasa	1939	1993	2439	2.78	25.8
Mbomole	1241	2100	2157	69.2	73.8
Mlesa	2233	3302	4410	47.9	97.5
Shebomeza	1240	1534	1872	23.7	60.0

Source: Muheza District office and village government offices

#### 4.1.1.2 Origins of tourists

The tourists' survey data (Fig. 2) revealed that United Kingdom (UK) was the biggest source of arrivals, having the largest proportion (31%). Arrivals from the United States of America (USA) and Denmark were the next largest contributing 15% each. These data try to relate with those of Eagles and Higgins (1998) estimated from anecdotal sources where USA and UK were mentioned to be the most prominent countries in supplying eco-tourists in order of market size. Arrivals from other countries such as Finland, Germany and The Netherlands were 12%, 9% and 6% respectively. Ireland, Australia, Portugal and Norway had relatively few arrivals with 3% each. The interviews with tour operators also revealed that most clients came from the United Kingdom.

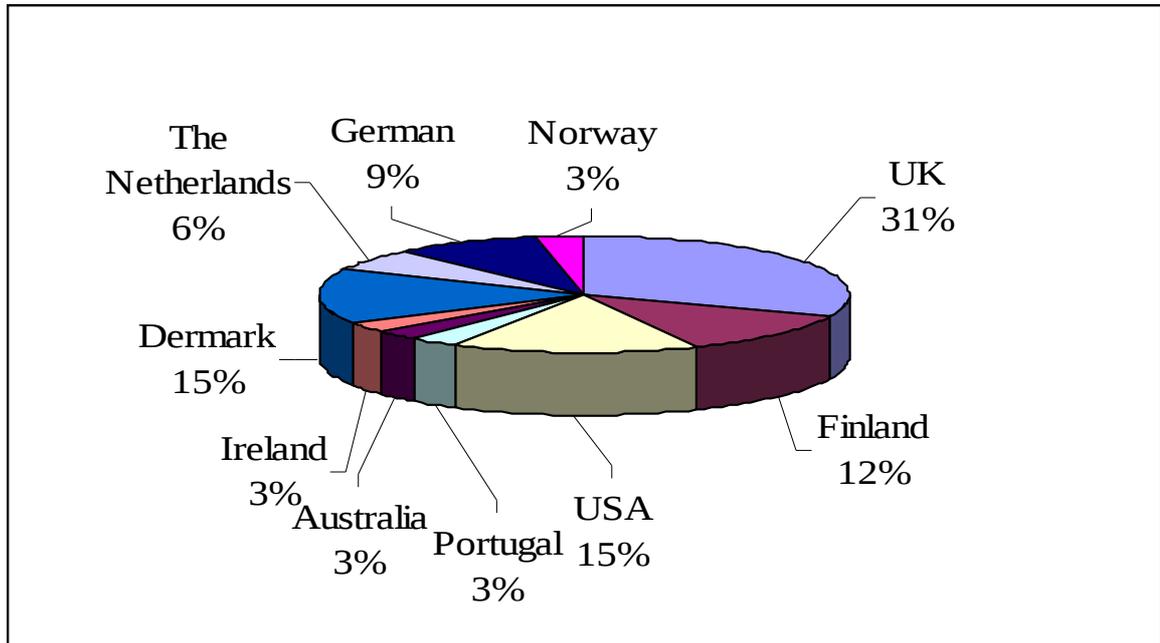


Figure 2: Visitors' countries of residence

#### 4.1.2 Sex and age

##### 4.1.2.1 Sex and age of respondents of surveyed households

Results in Table 6 indicate that the majority (64%) of the respondents were males and only 36% were females. This is because the study was targeting heads of households who, in most cases, are males. A larger proportion (42.4%), of respondents was in the age group of above 45, 34.9% were in the 31-45 age group whereas 22.7% were between 18 and 30. This implies that the majority of respondents were in age groups with enough knowledge of the area and hence eco-tourism. Most of them had been there for more than 30 years, a period which enabled them to experience and/or witness various conservation and eco-tourism practices in the area.

Table 6: Sex and age of respondents from the surveyed villages

<i>Variable</i>	<i>Characteristics</i>	<i>Respondents</i>	<i>Percentage</i>
Sex	Male	110	64.0
	Female	62	36.0
Age category	18 – 30	39	22.7
	31 – 45	60	34.9
	> 45	73	42.4

#### 4.1.2.2 Sex and age of tourists

During the survey of tourists it was revealed that the majority (57.6%) were females and only 42.4% were males. Moreover, it was found that there were relatively more visitors in the age group above 45 (39.4%), followed by 31-45 age group (Table 7). These findings are more or less similar to those presented by TIES (2001) that, majority of eco-tourists belong to the age group of 35-54. The results further show that the 18-30 age group had relatively small proportion (24.2%) while there were no tourists below the age of 18. These findings are supported by Diamantis (1998) who found that, in Australia, mature travelers strongly believe that learning about nature enriches life (80.1% for >45), while this is a less important attitude for those under 45 (65.3%).

Table 7: Sex and age of tourists

<i>Variable</i>	<i>Characteristics</i>	<i>Respondents</i>	<i>Percentage</i>
Sex	Male	14	42.4
	Female	19	57.6
Age	18-30	8	24.2

31-45	12	36.4
Above 45	13	39.4

#### 4.1.3 Education level of respondents in the households

Table 8 shows that the majority (83%) of the respondents had primary education. Only 8.4% had secondary education, and the rest were illiterate or semi-illiterate. This implies that local people will always do low pay jobs which in turn have serious impacts on the environment and hence eco-tourism in particular.

Table 8: Education of respondents in the surveyed villages

<i>Variable</i>	<i>Characteristics</i>	<i>Respondents</i>	<i>Percentage</i>
Level of education	Never went to school	8	4.8
	Adult education	6	3.5
	Primary education	143	83.3
	Secondary education	15	8.4
	College/University	0	0.0

On the other hand it can be said that since the majority had primary education eco-tourism practices are likely to be achieved because it will be easy for them to be sensitized on natural resource conservation and understand its importance as they can be trained and can read books, newsletters and other sources of information. According to Wearing and Neil (2000), education plays a powerful role in increasing local involvement and contribution in eco-tourism.

#### 4.1.4 Household sizes

The study area had a relatively big household size with an average of 6 people (Table 9) as compared to reported average household size of mainland Tanzania. According to the 2000 /01 household budget survey in Tanzania, the average household size on mainland Tanzania was four people (NBS, 2003). The smallest household had two people while the largest had 16. Moreover data (Table 5) indicate that population in all the surveyed villages is still growing. This implies that there is high demand for natural resources in order to fulfill daily basic needs as well as surplus per person, which influences people to clear forests and over-exploit the resources.

Table 9: Household size

<i>Family size</i>	<i>Respondents</i>	<i>Average</i>	<i>Mode</i>	<i>Median</i>	<i>Min.</i>	<i>Max.</i>
<i>(N=172)</i>						
1-5 People	61	6 (0.1875)	4	5	2	16
6-10 People	104	-	-	-	-	-
11-15 People	6	-	-	-	-	-
>15 people	1	-	-	-	-	-

#### 4.1.5 Household income

It was observed that 26% of the surveyed households earned less than TAS 300 000 annually (Table 10), with an average of 915 227 (80698.9 SE). The lowest income noted was TAS 109 000 and the highest was TAS 9 425 000 annually.

Table 10: Household income in 2006

<i>Amount (TAS)</i>	<i>Respondents</i>	<i>Average</i>	<i>Mode</i>	<i>Median</i>	<i>Min.</i>	<i>Max.</i>
	(N=172)					
<300 000	45	915 226.9 (80698.9SE)	350 000	627 750	109 000	9 425 000
300 001-600 000	39	-	-	-	-	-
600 001-900 000	35	-	-	-	-	-
900 001-1 200 000	18	-	-	-	-	-
1 200 001-1 500 000	13	-	-	-	-	-
1 500 001-1 800 000	11	-	-	-	-	-
>1 800 000	11	-	-	-	-	-

#### 4.1.6 Visitors' sources of information

Tourists were asked how they got to know Amani. Fig. 3 gives key sources of information. Data reveal the importance of oral communication as a source of information, with 37% of all visitors obtaining information from this source. Travel guides (21.4%) were the next most important source, travel companies (15.3%) and tourist leaflets (15.3%) also provided information. Relatively less important sources identified by the survey included University studies and Media with 9% and 3% respectively. These results agree with those of Prakash *et al.* (2005) concerning visitor information about lake Bosumtwi basin before their visit. The main sources were from other people (68.75%), travel guide (22.92%) and through textbooks (22.92%). Use of electronic media like Internet, Television and Radio was found to be very low in terms of marketing and publicizing the lake. In the current study, interviews with tour operators revealed that most of them used the electronic sources especially the Internet to promote their businesses.

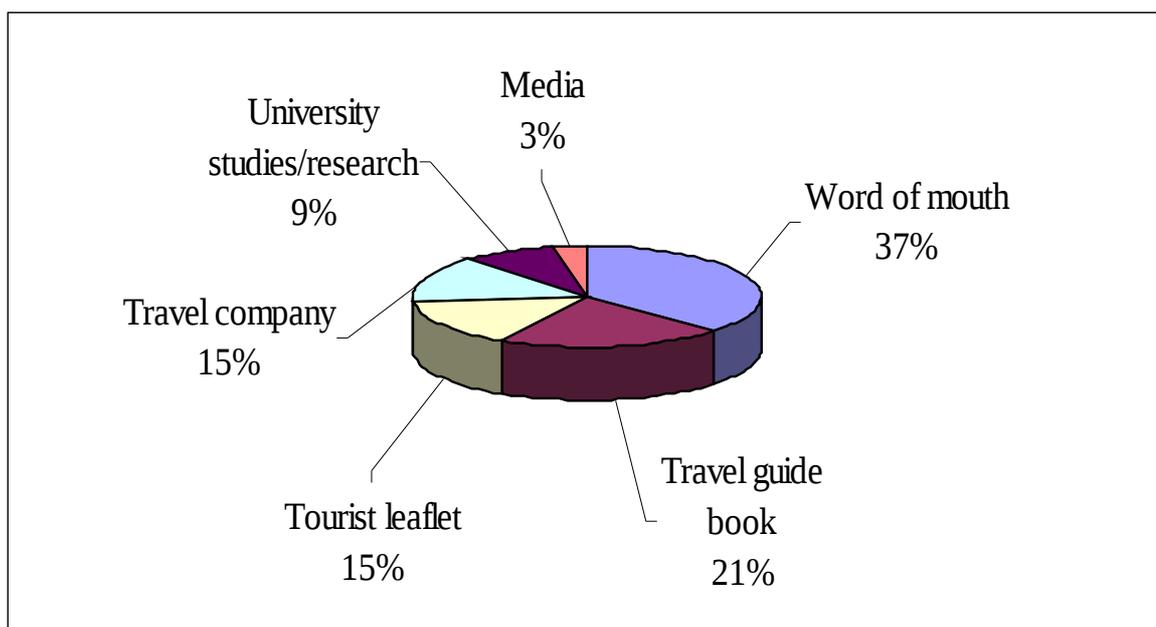


Figure 3: Visitors' sources of information.

#### 4.1.7 Duration of stay and frequency of visits to Amani Nature Reserve

Results found that 36.3% of the tourists stayed in ANR for an average of two days (three nights), 27.3% three days (four nights), 12.1% one day (two nights) and 9.1% four days (five nights) while 3% stayed for five days and another 3% six days. Those who stayed more than a week accounted for 9.2% and data show that they were mainly researchers. In general, most of the tourists who visit Amani stay on an average of 5 days as shown in Table 11. However, these results are in contrary to a report by Gurusinghe (2001) that about 70% of eco-tourists prefer trips lasting 8-14 days. Also, the tourists were asked if that was their first time to ANR; 37.5% were first time visitors whereas 50% had been there between one and three times. 12.5% had been there more than four times. The average frequency of visits for those who had been to ANR before was 3 times as indicated in Table 11.

Table 11: Average length of stay and frequency of visits to ANR

<i>Duration of stay</i>					<i>Number of times</i>				
<i>Average</i>	<i>Mod</i>	<i>Median</i>	<i>Min.</i>	<i>Max.</i>	<i>Average</i>	<i>Mode</i>	<i>Median</i>	<i>Min.</i>	<i>Max.</i>
4.8	2	3	1	37	2.75	1	2	1	6
<i>e</i>									
(1.46 SE)					(0.75 SE)				

#### 4.1.8 Tourists' trend in Amani Nature Reserve

##### 4.1.8.1 Annual tourist arrivals

Just like other forms of tourism in Tanzania (Gyasiwa, 2007), eco-tourism has been growing in ANR. This growth is portrayed by increase in the number of tourists (Fig. 4) and earnings (Fig. 7). The growth of eco-tourism indicates that an increasing number of tourists now prefer to visit attractive natural environments instead of going on traditional city or beach-based holidays. Without careful planning, guidance and management,

therefore, eco-tourism will not stop tourism's current negative environmental and socio-economic impacts (Gurusinghe, 2001). The results further show that, between 2000 and 2001 there was a sharp increase in the number of tourists. Interviews with ANR officials revealed that this was the period within which a General Management Plan (GMP) for ANR was prepared and its strategies started to be implemented. It was further noted that before the year 2000 ANR had no GMP hence it could not effectively implement various strategies such as development of visitors' facilities, improved marketing of the area, and the proper organisation of tourism activities, including empowering the local tour guides, all of which attracted visitors to the reserve.

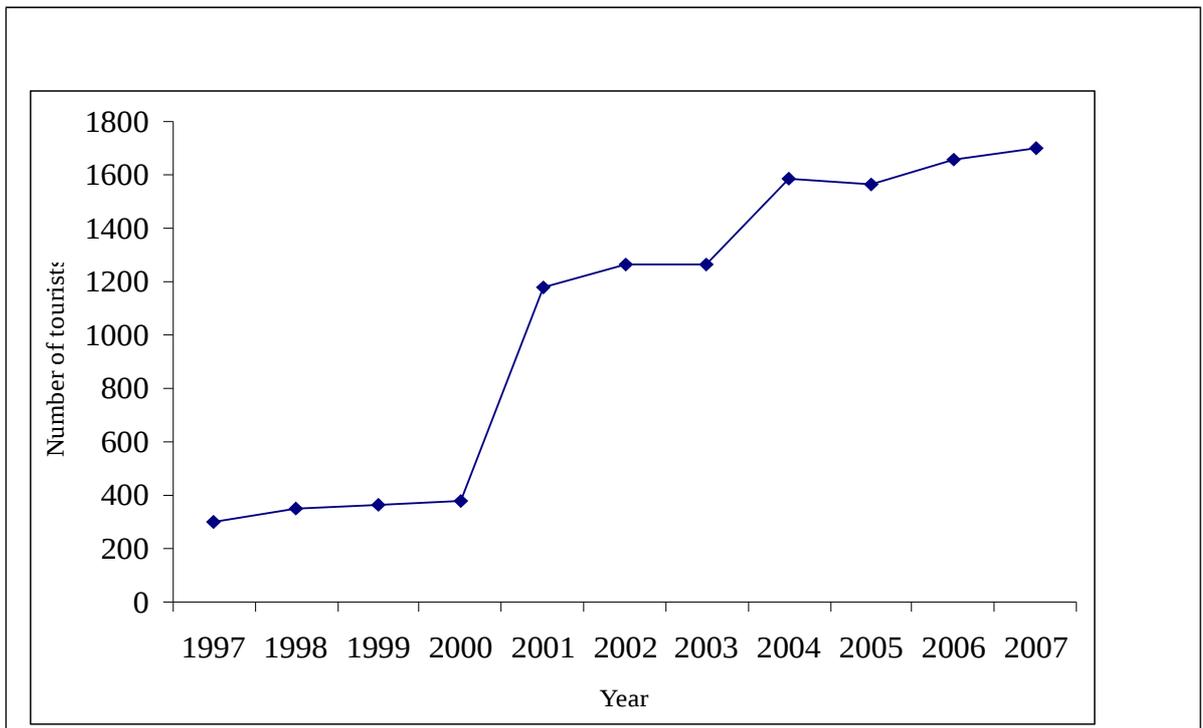


Figure 4: Trend of tourists in ANR (1997 / 07) (Source: Data from ANR office).

#### 4.1.8.2 Tourist arrivals by season

The findings of this study reveal that January is the peak season with an average of 105 visitors (Fig. 5). February, May and August also have many tourists (with over 80 each). The less preferred months are October and November (with less than 65 each), together with March and April where the number of visitors were less than 70 per month. The low season coincides with the rainy season of the area which makes the area, inaccessible for most visitors.

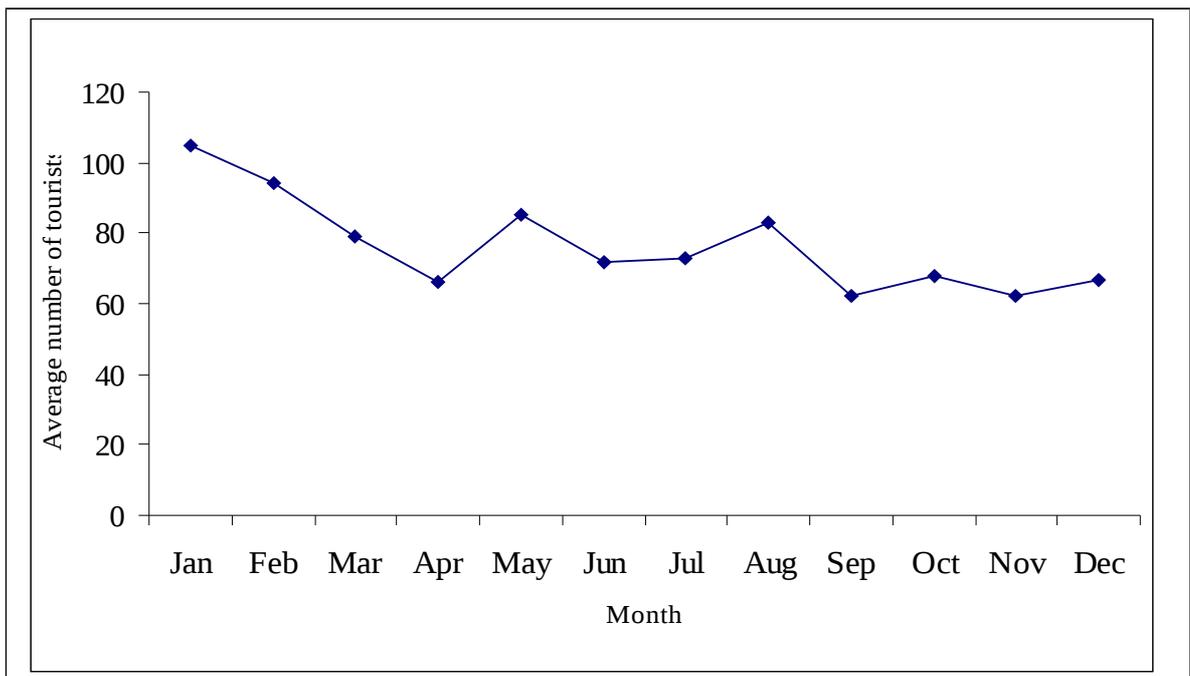


Figure 5: Average number of tourists in ANR per month (1997 / 07).

## 4.2 Eco-tourism Potentials in Amani Nature Reserve

### 4.2.1 Attractive features in and around Amani Nature Reserve

Table 12 shows tourist attractions as per household survey. Chi-square test on villages across awareness of eco-tourism attractions was statistically insignificant ( $p=0.542$ ) implying that there was no significant difference in awareness of eco-tourism attractions

among villages. Forest was mentioned by a large proportion of respondents (28.9%) as it provides good climatic condition for the area. About 17.8% of the respondents mentioned animals like monkeys and bush babies. Waterfalls, butterflies birds, and viewpoints were also mentioned to be important, accounting for 14.3%, 11%, 9.4%, and 7.7% respectively. Other attractions like flowers such as *Saintpaulia*, tea and spice plots, fish ponds, endemic species of chameleons and lizards and local culture were identified by very few respondents as tourist attractions. The attractions, which were mentioned by few respondents were not perceived by majority to be tourist attractions. For example, despite the importance of *Saintpaulia* in eco-tourism, results from the household survey indicates that, majority (73%) of residents were not aware of *Saintpaulia* at all. Only 27% recognized the existence of the flower in their area. This implies that people have got little knowledge of resources in and around ANR. According to Kolehmainen *et al.* (2004), *Saintpaulia* has been largely unknown in Tanzania. Recently, however, the importance of the flower has been identified because it is seen as a tourist attraction of growing importance in the Eastern Arc Mountains especially East Usambara. It is thought that through community-based eco-tourism, with *Saintpaulia* as one of the key attractions, some additional income could be generated for adjacent local communities, which are poor and lack alternative sources of income now that the Eastern Arc Mountain Forests have been conserved due to their biodiversity values. It was further learnt during the survey that, among the respondents who were aware of *Saintpaulia* 49% did not know the local value of the flower whereas 38% reported that the flower has got no local use and only a few (13%) stated that the flower is used for decoration. However, Kolehmainen *et al.* (2004) state that, although *Saintpaulia* has been almost unknown nationally, it may have a long history at local level. The plant was said to be associated with local traditions since many

of *Saintpaulia* localities are known to be sacred to local communities and there are some reports that *Saintpaulia* was or is still used in herbal medicine.

Table 12: Tourists attractions in and around ANR

<i>Attraction</i>	<i>Frequency</i>	<i>Percentage</i>
Endemic species of chameleons and frogs	2	0.5
Fish ponds	6	1.4
Tea plantations	6	1.4
Spice gardens	7	1.6
Local culture	10	2.3
Flowers like <i>Saintpaulia</i>	16	3.7
Viewpoints	33	7.7
Birds	39	9.4
Butterflies	47	11
Waterfalls	61	14.3
Animals like monkeys, bush babies	76	17.8
Forest	123	28.9
Total	426	100.0

*Note:* The total frequency (426) is greater than 172 due to multiple responses where some respondents gave more than one answer.

Table 13 shows responses by tourists regarding specific attractions they came for. Contrary to local perceptions, endemic species of birds and butterflies were found to be major attractions (44.7%). Rainforest by itself was also found to be a main attraction accounting for 31.6% of all the surveyed tourists. Good landscape/scenery and quiet environments were also mentioned as important attractions. Others such as waterfalls and local culture were found to be less important as they were reported by few tourists.

Table 13: Nationalities of respondents and specific attractions

<i>Specific attractions</i>	<i>British</i>	<i>Finish</i>	<i>American</i>	<i>Portuguese</i>	<i>Australian</i>	<i>Irish</i>	<i>Danish</i>	<i>Dutch</i>	<i>German</i>	<i>Norwegian</i>	<i>Freq.</i>	<i>%</i>
Local												
culture	0	1	0	0	0	0	0	0	0	0	1	2.6
Water falls	0	0	0	0	0	0	1	0	0	1	2	5.3
Peace and quiet	0	0	0	0	0	0	2	0	1	0	3	7.9
Landscape/scenery	1	0	0	1	0	1	0	0	0	0	3	7.9
Rain forest	2	2	0	1	1	0	1	2	2	1	12	31.6
Wildlife (endemic species)	7	1	6	0	0	1	0	0	1	1	17	44.7
Total											38	100.0

The total frequency (38) is greater than (33) due to multiple responses where some respondents gave more than one answer.

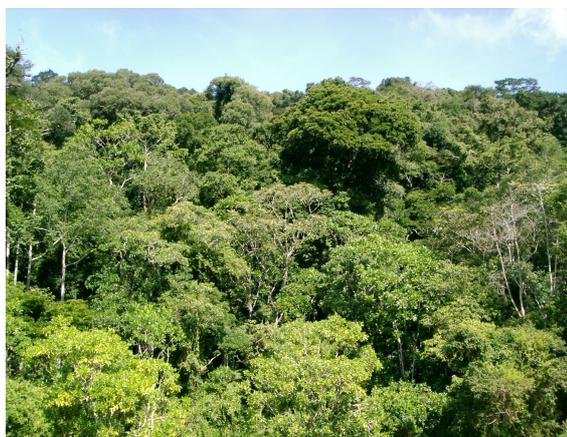
Tourists were asked also to state their travel motives for their trips to Amani. Table 14 shows that about 30% of the visitors indicated interest of nature to be an important reason for their visit to Amani. Other motives given were recommendation by friends or relatives (27.2%), Amani being part of the tour package (18.3%), researching (12.1%) and just for curiosity (12.1%). Prakash *et al.* (2005) report that, it is vital to remember that tourists are not a homogenous group as different tourists have different motives to visit an area.

When asked whether they would recommend the trip to others or not, most of the tourists (73%) were willing to do so. Moreover majority of them (85%) would like to come back to Amani because of richness in biodiversity (45%), natural environment together with its beautiful scenery and landscape (19%) and to show friends (13.6%). Others would like to learn more about Amani through researching and to observe the attractions such as birds, which they were not able to see during their trips. Plate 4 shows some of the tourist attractions found in Amani Nature Reserve.

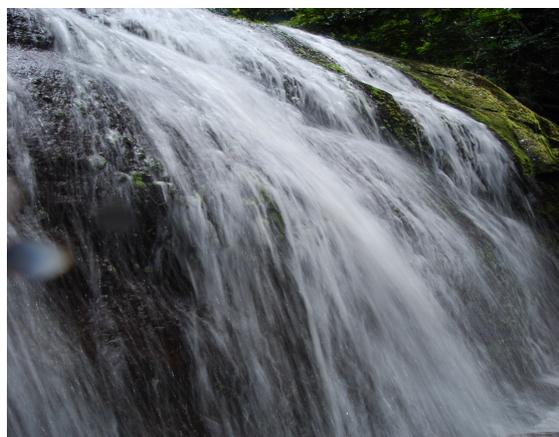
Furthermore, interviews with tour operators revealed that birds and plants are the mostly preferred attractions, which usually bring their clients to Amani. According to the interviews made with local tour guides and ANR staff, together with personal observation, several other attractions are known to be present in and around Amani. These include Amani Botanical Garden (ABG), which is one of the oldest botanical gardens in Africa covering about 340ha and having more than 1 000 species of plants from all over the world. Several ornamental trees are found in the garden, and their arrangement and beauty offer incredible satisfaction to visitors. The garden is valuable for conservation, education, research and cultural reasons.

Table 14: Nationalities of respondents and travel motives

<i>Travel motives</i>	<i>British</i>	<i>Finish</i>	<i>American</i>	<i>Portuguese</i>	<i>Australian</i>	<i>Irish</i>	<i>Danish</i>	<i>Dutch</i>	<i>German</i>	<i>Norwegian</i>	<i>Total</i>	<i>%</i>
											<i>n=33</i>	
Researching/ study	1	2	0	0	0	0	1	0	0	0	4	12.1
Curiosity purpose	2	0	0	0	0	0	1	0	1	0	4	12.1
It is part of the tour package	0	0	2	1	1	0	0	1	1	0	6	18.3
Recommended by relatives/friends	4	2	3	0	0	0	0	0	0	0	9	27.2
Interest in nature	3	0	0	0	0	1	3	1	1	1	10	30.3



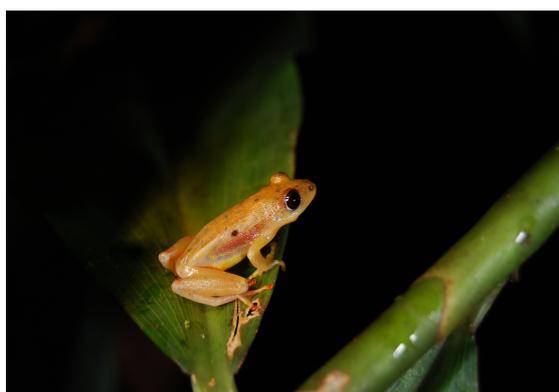
Amani Forest



Waterfalls



Three horned chameleon

(*Chamaeleo deremensis*)

Reed Frog

(*Hyperolius mitchelli*)

Plate 4: Tourist attractions in Amani Nature Reserve.

The community adjacent to ABG has developed many uses of plants in the garden in an interesting way that attracts some tourists to see traditional oil making from palm species. This has made ANR develop new trails that take a look at palms in garden and entire villages' life styles in relation to ABG plants. There are also historical sites, which include buildings and other constructions indicating the history of the area. The Zigi railway station master's house built by Germans in 1904-1910, is now restored to serve as an

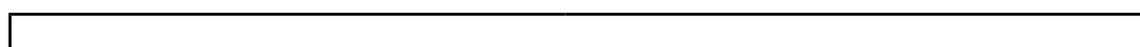
Information Centre. All these sites offer valuable attractions and sense of utility to visitors (Mathew, 2007).

During the PRA exercise, using village resource maps, land use and land holdings in the surveyed villages were also assessed. In this case, locations of different resources, including potential attractive features for tourists were known. Table 15 shows eco-tourist attractions found in the surveyed villages.

Table 15: Exceptional attractive features in the surveyed villages

<i>Village</i>	<i>Attractive features</i>
Kisiwani	Spice garden, Zigi river and teak plantations
IBC-Msasa	View points, Derema waterfall, Derema forest and clove plantations
Mbomole	Sunrise and sunset at Mbomole hill, cardamom plantations
Mlesa	Tea plantations and factory
Shebomeza	Live butterfly exhibition, handcrafts and fish ponds

Plate 5 below shows some of the exceptional tourist attractive features found in the villages around ANR.



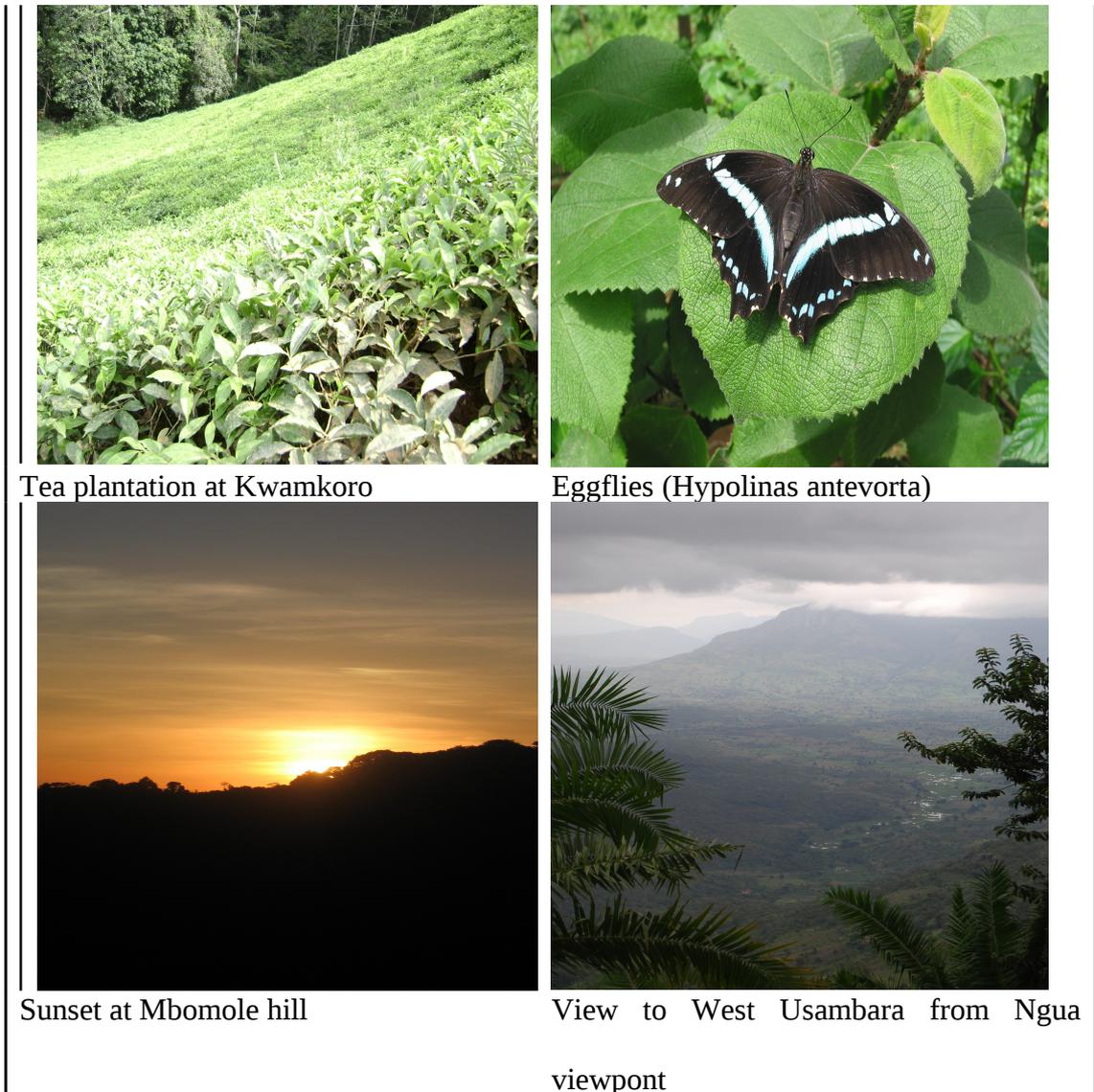


Plate 5: Exceptional attractive features in the villages around ANR.

#### 4.2.2 Tourist activities in and around Amani Nature Reserve

Data obtained from the survey of tourists identified main eco-tourist activities in the study area as shown in Table 16. Nature walking/ hiking (33.9%) and nature photography (22%)

were clearly the most popular activities. Bird watching (15.3%) and observing plants (10.2%) were also popular activities. Other activities like researching, observing butterflies and animals (monkeys, reptiles and amphibians) together with swimming were found to be carried out by few tourists. These findings somehow agree with those of Finucane (1993) who found that the main activities identified by the 'eco-tourism' operators in Western Australian were bushwalking, nature photography and observing animals.

Table 16: Eco-tourism activities undertaken in ANR

<i>Activity</i>	<i>Frequency</i>	<i>Percentag</i>	<i>Location</i>
		<i>e</i>	
Observing animals	2	3.4	Derema trail
Swimming	2	3.4	Derema
Butterfly watching	3	5.0	Shebomeza
Scientific study (Research)	4	6.8	Sangarawe
Observing wildflowers and other plants	6	10.2	Derema trail
Bird watching	9	15.3	Kwamkoro
Nature photography	13	22.0	Zigi
Nature walking/hiking	20	33.9	Ngua, Mbomole hill
Total	59	100.0	

*Note:* The total frequency (59) is greater than 33 due to multiple responses where some respondents gave more than one answer.

Moreover the interviews done with the local tour guides revealed other eco-tourism activities such as watching and sometimes participating in traditional dances, observing fish ponds, and spice and tea plantations. Plate 6 shows eco-tourist activities done by tourists in ANR.



Plate 6: Tourists' activities in Amani Nature Reserve

#### 4.2.3 Visitor services and facilities provided by Amani Nature Reserve

As it can be seen in Table 17, visitors' perceptions of the services and facilities at Amani varied. Services such as catering, cleanness and staff attitudes to visitors were considered by a large proportion of tourists as excellent, accounting for 42.4%, 24.2%, and 66.7% respectively. Information on site was rated as poor (42.5%). Such a high proportion indicates that ANR attracts educationally-minded tourists with focus on educational aspect of their trips. Access to the site was rated by 48.5% of the tourists as average. This also indicates that these eco-tourists recognize that some basic infrastructure, such as hiking trails and access roads, are required although environmental damage is to be minimized.

Such facilities enable the eco-tourist to observe nature while disturbing it as little as possible, thereby contributing to the safety of both entities. Tour guiding services and accommodation were generally ranked as good.

Table 17: Rating by tourists of visitor services and facilities provided by ANR

<i>Service/Facility</i>	<i>Excellent</i>	<i>Good</i>	<i>Fair</i>	<i>Poor</i>
Catering	14 (42.4%)	16 (48.6%)	3(9%)	0
Cleanness	8 (24.2%)	19 (57.6%)	5 (15.2%)	1 (3%)
Information on site	0	8 (24.2%)	10 (33.3%)	14 (42.5%)
Access	0	11 (33.3%)	16 (48.5)	6 (18.2%)
Tour guiding	5 (15.2%)	14 (42.4%)	8 (24.2%)	6 (18.2%)
Accommodation	7 (21.2%)	15 (45.5%)	10 (30.3%)	1 (3%)
Staff attitude to visitors	22 (66.7%)	9 (27.3%)	2 (6%)	0

In general except for few, visitors were satisfied with the services and facilities provided by ANR. Saleh and Karwacki (1996) point out that, understanding of the motives for visiting a destination and of the expected facilities and services are both crucial for initially attracting the eco-tourist to a particular destination. Ensuring a return visit further requires that the eco-tourist has a high level of satisfaction with on-site facilities and services. Basic infrastructure, together with abundant information services are the primary destination facilities and services required to ensure a high level of satisfaction among environmentally-sensitive, learning-oriented eco-tourists.

#### **4.2.4 Community attitudes towards eco-tourism**

In general most households had positive attitude towards eco-tourism. Despite the concept being new, most respondents to the household survey (67.44%) acknowledged the importance of eco-tourism while the rest (32.56%) said that eco-tourism was not important. Chi-square test on villages regarding eco-tourism importance was significant ( $\chi^2=16.36$ , df

=4,  $p=0.003$ ). More people from Shebomeza village 27 (15.7%) acknowledged that eco-tourism was important to their households probably because they are closer to ANR boundary hence they could easily grasp the benefits. Those who said it was important stated various reasons as shown in Table 18. More respondents (25.9%) stated that eco-tourism creates conservation awareness as more people in the area have become more environmentally aware.

Table 18: Community attitudes toward eco-tourism

<i>Reason</i>	<i>Frequency</i>	<i>Percentage</i>
Research leads to discovery of plants which have economic value	2	0.5
Brought employment to some people	39	10.5
Tourists support income-generating activities	64	17.0
Protected forest brings rainfall	86	22.9
Villages get some share from tourism money	87	23.2
Creates awareness in conservation	97	25.9
Total	375	100.0

*Note:* The total frequency (375) is greater than 172 due to multiple responses whereby each respondent gave more than one answer.

Others (23.2%) acknowledged that some of the money from tourism, which is given to their villages, is contributing to village development activities such as building dispensaries and schools, which, in turn, lessen the payment they could have contributed as households. Another considerable proportion of respondents (22.9%) was aware of the

contribution of eco-tourism in protecting the forest, which brings rainfall hence they get more harvests. This study also found that 17% of respondents appreciate the way in which eco-tourism supports income-generating activities such as butterfly farming and 10.4% noted that some people got employment because of eco-tourism. Few respondents (0.5%) reported on the importance of research done mostly by eco-tourists leading to discovery of plants with economic value such as Msambu (*Allanblackia stulmanii*).

Moreover, during interviews with some key informants especially local tour guides and village representatives (Village environmental committee leaders, village government leaders and influential people), several other items, which were thought to be benefits brought by eco-tourism, were revealed. These include the fact that the villagers are being allowed by ANR to use the forest in conducting income-generating activities such as beekeeping, an activity which helps to conserve the forest and at the same time improves their wellbeing. Others said that, because of eco-tourism, ANR provides the villagers with tree seedlings for transplanting in their farms, e.g. clove seedlings. Also, they mentioned that eco-tourism made the area more active both socially and culturally.

On the other hand, the survey of tourists found that the majority (72.7%) of them used local tour guides for interpretation, 21.2% did not while a few (6.2%) came with their own guides. Moreover, tour operators were asked how they make use of the local knowledge and expertise together with their facilities. The results from the interviews showed that most of them use local tour guides.

#### **4.2.5 Eco-tourism and local culture**

Respondents in the household survey were asked to state their opinions on whether eco-tourism has led to change of local culture. A large majority (87.2%) believed that eco-tourism has not led to change of local culture. The following information was obtained from them: Around 47.7% said that, there is usually no interaction between local people and tourists as the latter spend much time in the forest and usually don't stay long. Some 18.6% associated culture and eco-tourism by saying that tourists are attracted by and interested in the local culture as one of the attractions. Others (16.3%) reported that most tourists do not visit the villages; they just pass through on their way to the forest. Few (4.6%) thought that the culture they used to have is still the same and that the people are still practicing it. These results give us an insight that people have maintained and feel proud of their culture; since most of the respondents claimed that there was no significant difference between before and after the introduction of eco-tourism. However, the remaining proportion of respondents (12.8%) had a perception that eco-tourism has brought cultural change in their villages. For example, they claimed that some youth are already behaving like Western people especially in terms of how they dress. They also noted that they are no longer allowed to go into the forest and de-bark trees or take their roots for medicinal purposes. Other people said that eco-tourism has led to eviction of people in some areas in order to put more land under conservation. These people said that, the establishment of ANR included taking away their lands but in return they just got inadequate compensation and hence making their lives more difficult. Increased living cost and theft were also among the things people claimed to be caused by eco-tourism.

### 4.3 Contribution of Eco-tourism to Improvement of Livelihoods

#### 4.3.1 Main occupations and average incomes

The household survey revealed that the main source of livelihood in the study area was crop farming whereby 93% of the surveyed households were crop farmers. Total annual income from agriculture was TAS 56 480 480, which contributed 35.6% of the total annual household income (TAS 158 529 030) as shown in Table 19. Wobst and Mhamba (2006) report that, the agricultural sector has been the mainstay of the Tanzanian economy where over 80% of the population depends on agriculture for their living. Crops grown in the area are shown in Fig. 6. Interviews with village representatives revealed that both cash and food crops were cultivated by the people in the study area. Furthermore, during the household questionnaire survey it was found that bananas are grown by 17% of respondents followed by cardamom and cassava, which accounted for 14% each.

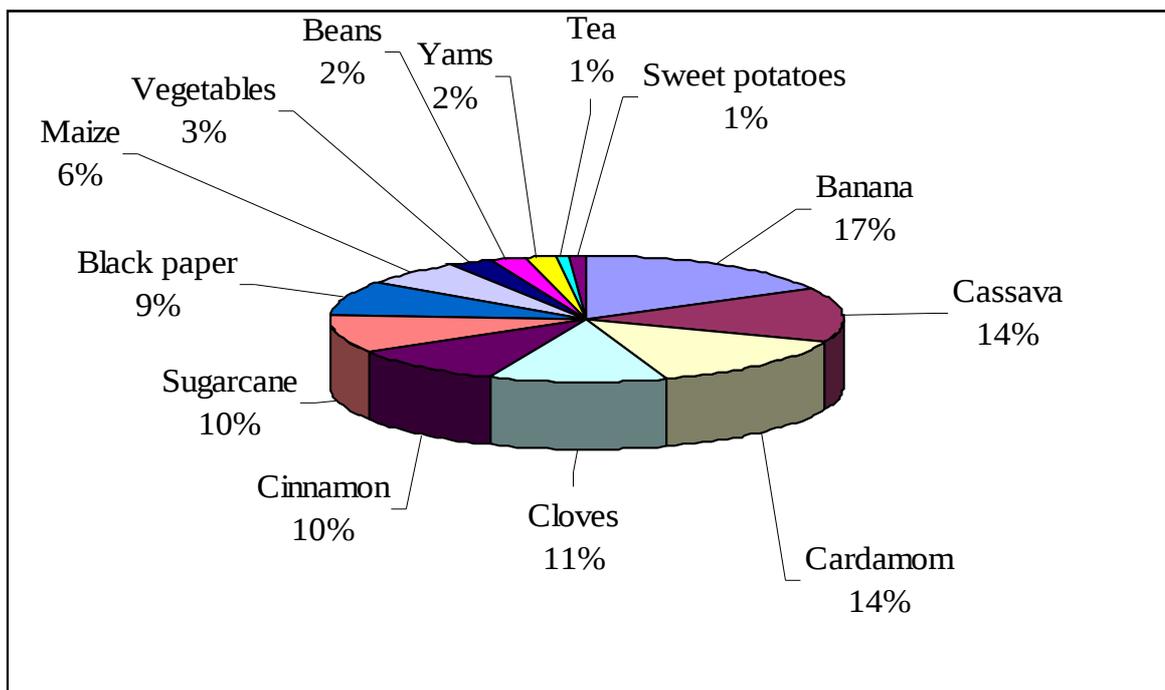


Figure 6: Crops cultivated in the surveyed villages.

Cardamom is the major high-income earning crop. Other cash crops are cloves, cinnamon sugarcane and black pepper, all of which form a critical source of household income. Important food crops include banana, cassava, maize and beans to mention just a few.

It was further noted that people in the study area practice livestock keeping as one of the secondary sources of income and is mainly done on zero-grazing basis. Data show that annual income from livestock was TAS 19 805 550 hence it contributed 12.5% to the total household economy. However, it was revealed that though there were more livestock keepers than businessmen, annual income from business activities was higher

(TAS 28 329 500), which was about 17.9% of the total household income, compared to livestock keeping. Businesses were mainly small scale such as selling local brew, food, vegetables, spices, and owning small shops. Other businesses conducted were selling of forest products such firewood, allanblackia seeds, which are used to make oil and natural medicine. People who conducted eco-tourism-related activities were 22.7% of all the survey respondents. Results indicate also that the total annual household income from eco-tourism was TAS 15 162 000, which accounted for 9.6% of the total annual household income. Other respondents (18%) were employed and they included school teachers, health workers and those working at the tea factory. It was further noted that though relatively few people were under salary employment, the activity contributed a slightly higher proportion (15.4%) to the total household income compared to tourism and livestock keeping.

The remaining income earning activities were casual labor, which contributed 4.3% of the total annual household income, butterfly farming (2%), tailoring (0.7%) poultry and

carpentry 0.6% each, fish farming (0.3%), and lumbering ( 0.2%). There was a notable lack of involvement in natural resource-based activities such as beekeeping.

This could be probably because the study area receives relatively high rainfall, a condition which is not conducive for the activity. Household survey results show that only 1.2% of the surveyed households were beekeepers and the activity contributed only 0.2% of the total household income. Plate 7 shows some of the income generating activities done by people in the surveyed villages.

Table 19: Main sources of livelihoods and annual average income

<i>Economic activity</i>	<i>Freq.</i>	<i>Annual household earnings(TAS)- 2006</i>			
		<i>Total income</i>	<i>Average</i>	<i>Min</i>	<i>Max</i>
Crop farming	160	56 480 480	338 206.47 (54639.12 SE)	3000	7 985 000
Livestock	42	19 805 550	118 596.00 (21103 SE)	36 000	1 680 000
Business	40	28 329 500	165 669.59 (50375 SE)	7 500	5 475 000
Tourism	39	15 162 000	82 569.77 (16835.67 SE)	5 000	960 000
Salary employment	31	24 411 000	148 368.00 (28383.43SE)	15 000	2 196 000
Casual labour	22	6 809 500	40 055.88 (11541.68 SE)	12 000	1 200 000
Poultry	7	886 000	5181.28 (4250.50 SE)	24 000	720 000
Butterfly farming	7	3 240 000	18 947.37 (8906.14SE)	80 000	1 200 000
Fish farming	3	520 000	3750.00 (2525SE)	120 000	400 000
Carpentry	3	1 030 000	5988.00 (3718.70 SE)	150 000	480 000
Beekeeping	2	380 000	2209.00 (1577SE)	160 000	220 000
Lumbering	2	395 000	2296.50 (1908.39 SE)	75 000	320 000
Tailoring	2	1 080 000	6315.79 (4480.50)	480 000	600 000
Total	360	158 529 030			

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



Plate 7: Economic activities done by people in the surveyed villages.

#### 4.3.2 Eco-tourism-related activities done by local people

One method of assessing the role of eco-tourism in livelihood improvement is by looking at the position it occupies as a source of income in the household. Results in Table 19 show that, among the economic activities practiced in the study area, tourism ranks fourth and that only 39 (22.6%) of the surveyed households are engaged in eco-tourism-related activities. These results suggest that a small proportion of residents make their living from tourism. This could be because they are not informed or there are limited opportunities in tourism. Table 20 shows eco-tourism-related activities done by people in the five surveyed villages.

Table 20: Eco-tourism-related activities conducted by people in the selected villages

Activity	Kisiwani	IBC-Msasa	Mbomole	Mlesa	Shebomeza	Total n=39	Percentage
Forest attendant	0	0	1	0	0	1	2.5
Traditional dancer	0	0	0	1	0	1	2.5
Making and selling crafts	0	0	0	0	1	1	2.5
Making furniture	0	0	0	1	0	1	2.5
Selling traditional dresses	0	0	0	0	1	1	2.5
Selling eggs to ANR	0	0	0	0	1	1	2.5
Fish farmer	0	0	1	0	1	2	5.2
Tour guiding	0	1	0	2	0	3	7.8
Cooking for tourists	1	0	0	0	2	3	7.8
Field /research	0	1	1	0	1	3	7.8
assistant							
Field visits by tourists	1	0	1	0	1	3	7.8
Selling fruits to tourists	2	0	0	0	1	3	7.8
Clearing trails	1	2	0	1	0	4	10.2
Watchman	1	1	2	0	0	4	10.2
Butterfly cages	2	1	0	0	1	4	10.2
Selling vegetables	1	0	2	0	1	4	10.2

#### 4.3.3 Tourism income and its proportion in the household income

On average a person who conducted eco-tourism-related jobs earned TAS 370 308 annually whereas 5000/= and 960 000/= were the lowest and highest incomes respectively (Table 21). The findings show that the proportion of eco-tourism income to the total household income was 9.6%.

Table 21: Average tourism income and its proportion in the total household income

<i>Total annual household income (TAS)-2006</i>				<i>Total annual tourism income (TAS)-2006</i>			
<i>Total income</i>	<i>Average</i>	<i>Min.</i>	<i>Max.</i>	<i>Total income</i>	<i>Average</i>	<i>Min.</i>	<i>Max.</i>
158 529 030	915 226.9 (80698.9	109 000	9 425 000	15 162 000	370 307.7 (44792SE)	5000	960 000
SE)							

#### **4.4 Factors Hindering Growth of Eco-tourism in the Area**

##### **4.4.1 Hindrances as perceived by local people**

Various aspects were perceived by respondents during the household survey as obstacles to growth of eco-tourism in and around ANR (Table 22). Poor infrastructures especially roads were reported by most respondents (40.1%). For example, the road from Muheza to Amani is almost impassable during the rain season. Moreover, transport is also difficult for some tourists who don't have their private cars hence they are forced to use public transport, which is not reliable. Poor involvement of local people by ANR was another main factor accounting for 22%. Gutierrez (2006) reports that, local people living in and around an eco-tourism destination have to be involved in the planning, implementation and maintenance of the eco-tourist park for effective implementation, hence through eco-tourism, the local people living in poverty are able to have a say in how they would like to develop the park that is going to protect the land they live in. Some (15.9%) respondents reported poverty in terms of both income and non-income (low education among local people) as another factor, which hinders growth of eco-tourism. This suggests that, in order to have meaningful participation in tourism, education at all levels must be developed so that people can understand the link between them and the environment. Moreover, research has shown that majority of rural people depend entirely on agriculture, which does not pay much and that most of them live at the bottom of the poverty line with a daily income of less than TAS 1000 (IFAD, 2002). Considering the needs of these people, it is unlikely that they can fully participate in environmental conservation. Inadequate attractions were mentioned by 12.8% of respondents. This suggests the need for diversification of eco-tourism activities in order to enhance tourists' experience. Furthermore, despite the fact that there are some marketing strategies done by ANR in promoting eco-tourism, some respondents (7.9%) reported poor marketing strategies as a factor hindering tourism. Very

few respondents (0.9% and 0.4%) reported lack of qualified tour guides and mining activities respectively as factors that hindered growth of eco-tourism.

Table 22: Factors hindering growth of eco-tourism in the area

<i>Factors</i>	<i>Frequency</i>	<i>Percentage</i>
Mining activities within the reserve	1	0.4
Lack of qualified tour guides	2	0.9
Poor marketing strategies	18	7.9
Few attractions	29	12.8
Poverty by local people	36	15.9
Poor involvement of local people by ANR	50	22.0
Poor infrastructures	91	40.1
Total	227	100.0

*Note:* The total frequency (227) is greater than 172 due to multiple responses where some respondents gave more than one answer.

#### **4.4.2 Hindrances identified by tourists**

The tourist survey found that most of the tourists (71%) are not visiting the villages. Only a few (29%) do so. This implies that tourist attractions in the villages are not well developed and/or maintained. Moreover, concerning accommodation, a large number of tourists (83%) used rest houses in ANR, 11% used NIMRI rest house and only a few (6%) camped at Emau hill, which is owned by a private investor. No tourist used locally owned accommodation. This could probably be due to insufficient infrastructures in the villages such as buildings which can meet tourist standards. All these prevent the local people from fully benefiting from eco-tourism especially economically. Wallace and Pierce (1996) suggest that eco-tourism should direct economic benefits to local people. The tourist survey data also showed that 9% of the tourists won't revisit Amani and another 6% were not sure. Some of the reasons given include inadequacy of well trained local tour guides and little or no information on site. This suggests the need for employing

experienced/trained guides who originate from the area and have an in-depth knowledge of indigenous wildlife, landforms that exist there and local cultures. Other tourists gave reasons of high fees (both entry and tour guiding), the area not being accessible especially during the rainy season and their expectations not being met.

#### **4.4.3 Hindrances by the ANR management**

The interview with the ANR conservator revealed several other factors that also hinder growth of eco-tourism in the area. They include fire in the western part of the reserve, illegal mining within the reserve and on river beds and inadequacy of human resource. Inadequate funding to run the reserve was also identified as a constraint to eco-tourism development due to the fact that the amount of revenues from tourism is still low to suffice both conservation and community developments (Sawe, C. personal communication, 2007).

#### **4.4.4 Communities' problems in relation to eco-tourism growth**

During the PRA pair-wise ranking exercise, this study further identified some problems experienced by local community which had link to involvement of people in tourism and eco-tourism growth in particular. The mentioned problems (Table 23) were paired and compared against each other through discussion, voting and by consensus among the villagers so as to find out the most prominent problem. Inadequate timber and poles especially for building was the most identified problem in all the surveyed villages. In this case people complained about the bureaucracy exercised by ANR officials in issuing permits to cut trees from public land in order to get timber. They said one had to go through very long and tedious procedures something which is really discouraging. Demand

for timber and building poles leads to serious destruction of forests, and if it continues unabated, the forest resources (on which eco-tourism mostly depend) would be depleted.

Scarcity of employment opportunities and hence difficult living conditions force the villagers to demolish the forests as their sole income source becomes the forests. This also hinders eco-tourism growth in the area as the forest resources could not be sustainably managed under economic and social pressure of local people. However, eco-tourism could have positive impacts by changing the structure of the forest use from active to passive forms, by increasing income level and by decreasing illegal exploitation. Other people reported on the tough restrictions put in place by the ANR authorities regarding access to various forest products, including firewood, medicines, fruits, ropes and poles. They complained that they are no longer allowed to enter into the forest reserve except on Saturdays and Wednesdays where they are just allowed to collect dead wood for firewood.

Along with this, problem animals (vermin) from the reserve, which destroy crops, was also noted as a problem which hinders full participation in eco-tourism and hence its growth. This is due to the fact that people find no reason as to why they should conserve these animals and the forest in particular. It was further observed that inadequate land for agriculture is among the problems which hinder growth of eco-tourism due to encroachments to reserved land. The limited land resources and the fact that the rural population depends on land resources for its livelihood make them apply intensive pressures on the forests by clearing them for agricultural production in order to gain new arable lands.

Table 23: Problem analysis in villages around ANR

	<i>Kisiwani</i>		<i>IBC-Msasa</i>		<i>Mbomole</i>		<i>Mlesa</i>		<i>Shebomeza</i>		<i>Average</i>	
	<i>Score</i>	<i>Rank#</i>	<i>Score</i>	<i>Rank</i>	<i>Scor</i>	<i>Rank</i>	<i>Scor</i>	<i>Rank</i>	<i>Score</i>	<i>Ran</i>	<i>Score</i>	<i>Ran</i>
	*				<i>e</i>		<i>e</i>			<i>k</i>		<i>k</i>
Shortage of agricultural land	5	1	1	5	1	5	1	5	3	2	2.2	4.0
Shortage of timber and poles	4	2	5	1	4	2	2	4	4	1	3.8	1.0
ANR restrictions	3	3	4	2	2	4	4	2	1	4	2.8	3.0
Unemployment	2	4	3	3	3	3	5	1	2	3	3.0	2.0
Illiteracy	1	5	2	4	5	1	3	3	n/m	n/m	-	-

\* = The higher the score the higher the weighting # =The lower the number the higher the rank

n/m = not mentioned

## 4.5 Modalities for Sharing Costs and Benefits

### 4.5.1 Eco-tourism revenues collected by Amani Nature Reserve

Figure 7 shows revenues that ANR generated from eco-tourism in a period of five years and the proportion (20%) sent to the surrounding community for development projects. This proportion is distributed equally among all 18 villages. Records show that in 2001/02, 2002/03, 2003/04, 2004/05 and 2005/06 each village got TAS 77 800, 81 000, 106 000, 133 000 and 186 500 respectively.

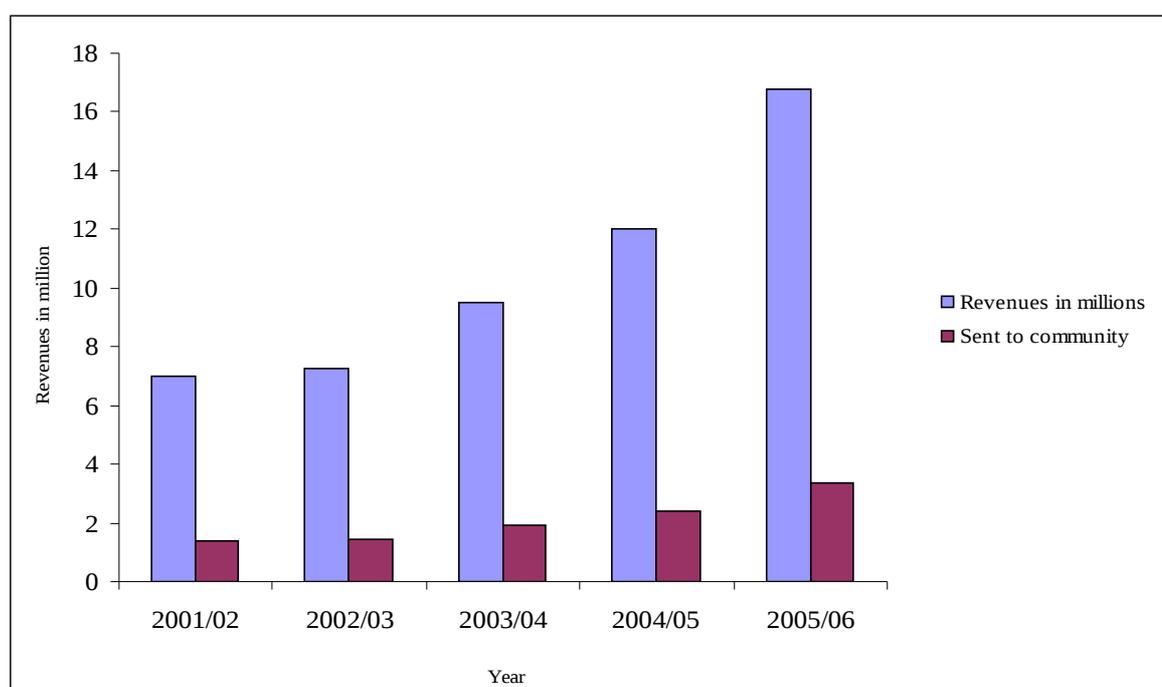


Figure 7: Revenues (in TAS) generated by ANR from eco-tourism and amounts given to village community (2001/2-2005/6) *Source: Data from ANR office.*

However, according to household survey results, the amount that villages get is still small and does little to enhance livelihoods. The results show also that, the population around the reserve is growing rapidly hence a growing demand for more revenues from ANR. This will accelerate invasion of the reserve for agriculture, building poles and illegal taking of

wild fauna, which will then lead to serious impacts on the protected species. Lindberg and Enriquez (1994) report that, if positive attitudes to eco-tourism are to be fostered, residents living in or adjacent to a protected area should be receiving economic and social benefits or compensations, which will support or complement their livelihoods.

#### **4.5.2 Involvement of people in eco-tourism**

This study tried to find out the extent at which ANR involves the local community in eco-tourism activities. About 30.2% of the household survey respondents revealed that they are involved in eco-tourism. However, the majority (69.8%) said that they are not. Results of chi-square test on villages against involvement of people in eco-tourism were statistically insignificant ( $p=0.170$ ) implying that there were no significant difference in peoples' involvement among villages. Those who said they were involved mentioned the different approaches undertaken (Table 24). These include attending village meetings on environmental management issues, participating in various activities such as maintaining trails and working as forest guards, participating in tree planting, and fighting bush fires. Other respondents said that they were involved because the villagers were getting some shares from eco-tourism revenues.

However, what is evident here is that the means of involvement are inadequate in that they do not entail planning and decision making, which are the critical components of successful participatory management of natural resources and hence not compatible with various national environmental sector policies. According to Gutierrez (2006) and Shackleton (2007), the more power and involvement the local people have in the parks and tourist ventures in their areas, the more likely they will benefit economically. Moreover, it

is essential that in eco-tourism the local people are involved in the planning and management of the park.

Table 24: Involvement of people in tourism by ANR

Means of involvement	Kisiwani	IBC-Msasa	Mbomole	Mlesa	Shebomeza	Freq.	Percentage
<b>Taking part in fighting</b>							
bush fires	1	2	2	1	1	7	6.5
Villages provided with	2	1	1	2	4	10	9.1
revenues from tourism							
Participating in tree	3	7	1	1	2	16	16.0
planting							
Provided with	5	6	3	9	12	35	33.0
environmental education							
Provided with jobs	7	6	8	5	11	39	36.4
Total						107	100.0

*Note:* The total frequency (107) is greater than 52 due to multiple responses where some respondents gave more than one answer

The results further show that the type of involvement varies with villages. For example, a greater number of respondents at Shebomeza responded that they are being involved by being provided with environmental education and jobs compared with other villages. The reason could probably be due to the fact that Shebomeza is where ANR headquarters is situated. And these people, being so close to ANR staff, know more concerning environmental education. Moreover, more people at IBC-Msasa seem to participate in tree planting compared to other villages.

Inadequate involvement of the communities in conservation is also highlighted by Jambiya and Sosovele (2004) when they indicate the trends in conservation, which shows that the management of ANR has made considerable efforts towards both conservation and involvement of local communities, and has begun looking into sharing of benefits and costs of conservation. However, they also note that, the type of community participation remains far from the ideal; it is still strongly passive.

Findings of this study further reveal that, 73% of surveyed households which claimed to be involved in eco-tourism were not satisfied with the ANR mode of conduct. Table 25 shows their different views on how they would like to either participate or benefit from tourism. Some of the respondents (47.8%) would like to be given employment like local tour guides and forest guards, 32% said that they lack knowledge on different aspects of eco-tourism hence they would like to be more educated. Others (15.7%) would like ANR to support local development projects and 3.4% wish that ANR could involve them directly in planning. A few (1.1%) would like to participate and benefit from eco-tourism by selling traditional foods to tourists. According to the interviews conducted with ANR staff, the more common means of involving people is through representative seminars, which are mostly about the benefits and the potential hazards of forests.

Table 25: Means of participating and benefiting from tourism in ANR

<i>Means</i>	<i>Frequency</i>	<i>Percentag</i>
Cooking and selling traditional food to tourists	2	1.1

Directly involved in planning	6	3.4
Support local development projects	28	15.7
Provided with education on different aspects of eco-tourism	57	32.0
Given employment in tourism unit	85	47.8
Total	178	100.0

*Note:* The total frequency (178) is greater than 38 due to multiple responses where some respondents gave more than one answer.

Through the household survey this study tried to find out how ANR involves people in conserving *Saintpaulia*. Results (Table 26) show that majority of the respondents (60.7%) are not involved in any way when it comes to conserving the plant. However, the level of involvement varies from one village to another. For example, majority of respondents at Mlesa reported that they are not involved at all, very few at Mbomole while at Kisiwani no respondent reported that they are not involved. This could be due to the fact that at Kisiwani there are many *Saintpaulia* locations compared to other surveyed villages hence more emphasis by ANR. The other 28% reported that ANR raises awareness through meetings on the value of the plant. Few respondents (10.7%) noted that they are being involved by being stopped to cultivate near *Saintpaulia* sensitive habitats.

According to Johansson (1978), habitat loss and degradation threaten the survival of many *Saintpaulia* species. Reduction in forest cover is the principle cause of their threatened status both in the lowlands and in the mountains, hence an increase in light means a more severe exposure to drought during the dry season. Locally, uncontrolled fires that escape into the natural forest are also reported to be a threat to *Saintpaulia*. Moreover according to Percy *et al.* (1991), a much more immediate threat is that of disturbance from reduction in forest canopy cover which destroys the essential shaded habitat. This entails that as forest cover disappears, majority of *Saintpaulia* species also disappear.

Table 26: Ways used by ANR to involve people in conserving *Saintpaulia*

Means of involvement	Kisiwani	IBC-Msasa	Mbomole	Mlesa	Shebomeza	Total	Percentage
Stopping people from cultivating near its habitat	0	2	0	0	1	3	10.7
Sensitizes on the importance of the plant through meetings	1	3	2	1	1	8	28.6
Sensitizes on the importance of the plant through meetings	1	3	2	1	1	8	28.6
They don't involve us	0	3	2	7	5	17	60.7

Therefore, for conservation efforts to be successful, a multidisciplinary approach with both ecological (e.g. restoration of the habitats) and socio-economic measures is needed. As threats to *Saintpaulia* conservation are growing, there is a need to start tackling them at the community level, to prevent encroachments to its habitats and clearing of forest. Also, promotion of education and livelihoods of the communities will be needed to reduce pressure on *Saintpaulia* habitats. Hughes & Flintan (2001) report that biological research alone can only solve a small fraction of the problems of plant conservation as conservation of the *Saintpaulia* habitats conflicts with the needs of the adjacent human communities. Success of conservation efforts essentially depends on the availability of, and the will to use, the limited conservation resources for combating illegal tree felling, for the training of communities in forest conservation and for the generation of livelihoods that utilize forest in a sustainable way. The current trend in conservation that seeks integration of conservation and social-economic development is hence a desired approach also in the conservation of *Saintpaulia*.

During the PRA exercise using institutional analysis, various institutions/groups which are in place and involving people in eco-tourism were identified. In this case, the degree of contribution of institutions/groups, which ensure successful local participation in conservation and in improving people's livelihoods was mentioned and ranked in terms of the institutions' effectiveness and the way they are considered important or less important among the local people (Table 27). This study, like the previous one by Kajembe and Kessy (1999), confirms that local people are the best assessors of the relevance of local institutions on the basis of their functions.

After comparing different institutions against each other through discussion, voting and by consensus among the villagers, it was found that, Village Environmental Committees (VECs) were relatively higher with a mean rank of 1.8. It was observed that local people involve themselves in conservation activities mainly through their VECs. UWAMA, which is a short form of *Umoja wa Wafugaji Maziwa*, is also an important institution with a mean rank of 2. The latter is responsible for providing reliable milk market hence most villagers improve their livelihoods through the presence of this institution. ANR was acknowledged in having encouraged people to establish various income generating activities, which are environmentally friendly such as butterfly farming and beekeeping. Moreover, ANR was said to prohibit haphazard timber harvesting hence conserve water sources. Other institutions like the village governments and schools were considered important though to a lesser extent.

Table 27: Institutions and their importance

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

Key: The rank\* of 1 indicates the greatest role played by the institution or group in conservation or in improving livelihoods in collaboration with local people.  
n/m = not mentioned.

The importance of the village government in initiating various committees relating to conservation and development in the village was recognized in all surveyed villages. School was considered to be one of the effective institutions in creating environmental awareness. Notably, fish farmers' group and allanblackia group are not generally seen as influential institutions despite their potential in improving livelihoods. This is because of the fact that few people are making livelihoods through those activities. The role of butterfly farming in conservation and increasing people's income was acknowledged by all but one village. Tea factory was ranked the least in IBC-Msasa while in the other villages like Kisiwani and Mbomole was not mentioned at all. Efficient cooking stoves group though not mentioned at Mlesa was acknowledged in protecting the environment as the stoves use less fuel woods.

#### **4.6 Policy Implications on Establishment and Conduct of Eco-tourism**

A recent change in Tanzanian tourism policy has been an increased focus on sustainability in order to maximize the benefits received from tourism. Based on the results from this study, it is clear that much is still to be done to ensure sustainable tourism practices in the area. According to Buckley (2001), it is important to consider development of eco-tourism product in the context of the policy. It is also essential to identify major issues that are likely to affect the development and management of eco-tourism, as well as to develop policies and programs to assist in making the industry more viable and sustainable. Moreover, when developing sustainable nature-based tourism it is important to initiate a participatory approach in planning and implementation. The development of positive relationships between people, resources and tourism is very unlikely to occur without implementation of effective policies. Furthermore, if planning and decision-making do not involve local populations eco-tourism will not succeed, and may even be detrimental to local communities (Ziffer, 1989). The local communities need to have access to capital and appropriate management and marketing skills to invest in and benefit from the tourism sector. In this case there is a need to seek and provide training to local people to enable them to develop skills and expertise to participate more in the tourism business (e.g. guiding skills and small enterprise development courses). A procedure should be laid down on how profits from tourism could be reinvested or used in the area.

Boo (1993) notes that in rural areas, well-managed tourism, even at low volumes, can make a significant impact on livelihoods. However, local communities must have legal rights over land and other resources if they are to invest their own efforts in tourism and attract partners for development. Providing opportunities for cross-cultural exchange that reach beyond simple observation and encourage complex interactions among visitors and

hosts is also essential. There should also be communication programs that portray the destination's desired image. These include advertising, personal selling, public relations and incentives.

## CHAPTER FIVE

### 5.0 CONCLUSION AND RECOMMENDATIONS

#### 5.1 Conclusion

From the findings of this study it is concluded that ANR and the adjacent villages are endowed with great eco-tourism potentials. These potentials vary from natural (endemic flora and fauna, landscape/scenery, waterfalls) to cultural (historical sites and traditional dances). However, while communities do participate in conservation of natural resources and eco-tourism in particular, the existing type and level of involvement are not effective enough to bring about significant impact. The involvement of the local community is just limited to activities that never entail planning, supervising and decision making, and hence not in line with the current natural resources policies.

Furthermore, although tourism in the area was observed to increase with time, there has been little to benefit the local communities and to pay for conservation. It comes into view that the ANR Management and the Local Governments are yet to develop better modalities for eco-tourism to benefit the community. Given the current situation, the potentials for eco-tourism in improving nature conservation and livelihoods is yet to be realized in the area.

#### 5.2 Recommendations

- (i) Given the findings of this study, several suggestions regarding eco-tourism are now put forward. To begin with Amani should increase local community's involvement in tourism. This is due to the fact that eco-tourism activities are often initiated by individuals outside a community, and therefore, local

communities ought to be involved in all stages of eco-tourism ventures in order to ensure that their interests are considered by all parties. Along with this, locals should be given opportunities at all levels of management and operation of eco-tourism ventures.

- (ii) A successful eco-tourism venture requires eco-tourism activities to provide environmental education and awareness programs for local communities involved. This study recommends on increased environmental education and awareness programs at all levels to enable people understand the interrelationships between humans and the environment. The programs will also increase local communities' understanding of what they should expect from eco-tourism hence they can plan accordingly.
- (iii) A clear plan to identify tourists' attractions in the villages should be developed in collaboration with the local people living in adjacent villages. This is crucial as it will ascertain the tourism potential for each village. Together with this, capacity building of local communities in cultural tourism is also important.
- (iv) More efforts are still needed to integrate the conservation of rare and endemic species such as *Saintpaulia* to eco-tourism development in collaboration with the local communities. This would be beneficial for both the local people and for the conservation of the species and their habitats.
- (v) Generally, except for the few, tourist's services and facilities were good. Access to site, information on site and tour guiding services were not satisfactory to

most of the tourists. Improvement of these services is strongly recommended since satisfaction with facilities and services plays a large role in the eco-tourist's intention to return hence it is essential that planners pay attention to eco tourists' needs in these areas.

- (vi) Adequate financial benefits from eco-tourism activities are often not transferred to local communities. It is finally recommended that, policymakers should establish eco-tourism monitoring and accountability programs to ensure that local communities receive appropriate amounts of revenue.

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## APPENDICES

### Appendix 1: Household Questionnaire

#### A: Basic household information

1. Ward: .....
2. Village: .....
3. Sub-village: .....

4. Origin of household? (Tick in the bracket corresponding to your answer):

1. Native [    ]                      2. Immigrant [    ]

5. Gender of respondent (Tick in the bracket corresponding to your answer):

1. Male [    ]                      2. Female [    ]

6. Age of respondent (Circle the number corresponding to your answer):

1. Below 18 years                      2. 18 – 30 years
2. 31 – 45 years                      4. Above 45 years

7. Highest level of education attained by the respondent (*Circle the number of your answer*):

1. Never went to school                      2. Adult education      3. Primary education
4. Secondary education                      5. Higher (*Please, specify*):.....

8. Household composition (In the table below, enter numbers of males and females under each age category):

Age category (yrs)	Male (number)	Female (number)	Total
<18			
18-35			
35-55			
>55			

#### B: Employment

9. Among the following, what is/are your source(s) of income and how much did you get from each source in the calendar year 2006?

S/N	Source of income	Amount (TAS)
1.	Lumbering	
2.	Carpentry	
3.	Employed	
4.	Casual labour	
5.	Business	
6.	Agriculture	
7.	Tourism	
8.	Livestock	
9.	Poultry	
10.	Others (please, specify).....	

10. In the table below, please, list the crops you grow and give information on household's crop production and prices in the calendar year 2006?

Crop	Unit of measurement	Production (total units)	Price per unit

11. In the table below, please, mention the businesses you conduct and how much you earned from each, in the calendar year 2006?

Type of business	Amount (TAS)

#### C: Eco-tourism Information

12. Are tourists coming to your village? (*Tick in the bracket corresponding to your answer*): 1. Yes [    ]                      2. No [    ]

13. If your answer to question 12 is Yes, do you have any idea what is the interest of the tourists in your village? (*Tick in the bracket corresponding to your answer*):

1. Yes [    ]                      2. No [    ]

14. If your answer to question 13 is Yes, list them in order of importance

1..... 2. .... 3. ....

15. If your answer to question 12 is No, please explain in the space provided below why? .....

16. Are you aware of eco-tourism activities in this area? (*Tick in the bracket corresponding to your answer*): 1. Yes [    ]                      2. No [    ]

17. If your answer to question 16 is Yes, please list them

1. .... 2. ....  
3. .... 4. ....

18. Has eco-tourism created a job /jobs for any member of your household? (*Tick in the bracket corresponding to your answer*): 1. Yes [    ]                      2. No [    ]

19. If your answer to question 18 is Yes, what kind of job? .....

20. How much did the household earn from that job in the calendar year 2006?  
.....

21. What was the proportion (in %) of eco-tourism income in the total household's income? .....

22. Is the eco-tourism job: (Circle the number corresponding to your answer):

1. Year around? 2. Seasonal?

23. Do you think eco-tourism is important to your household? (*Tick in the bracket corresponding to your answer*): 1. Yes [    ]                      2. No [    ]

24. Briefly explain your answer to question 23. ....

25. How much did your household get from Amani Nature Reserve as a result of eco-tourism activities in the calendar year 2006? .....

26. Does Amani Nature Reserve involve you or any one in your household in eco-tourism? (*Tick in the bracket corresponding to your answer*): 1. Yes [    ] 2. No [    ]

27. If the answer to question 26 is Yes, how? (*Please explain in the space provided below*):  
.....

28. If the answer to question 26 is Yes, how does your household benefit by being involved? *(Please explain in the blanks below):*

.....

29. Are you or your household satisfied with the way you are or it is being involved? *(Tick in the bracket corresponding to your answer)*      1. Yes [      ] 2. No [      ]

30. If your answer to question 29 is No, how would you like to participate in eco-tourism? *(Please explain in the space provided below):*

.....

31. If your answer to question 29 is No, how would you like to benefit from eco-tourism? *(Please explain in the space below):*

.....

32. If your answer to question 26 is No, why? *(Please explain in the space below)*

.....

33. In the table below, can you, please name, the eco-tourist attractions, services and facilities in and around Amani Nature Reserve?

	Attractions	Services/Facilities
1 .		
2 .		
3 .		

34. What do you think could be the factors hindering growth of eco-tourism? *(Please list them):*

- 1. .... 2. ....
- 3. .... 4. ....

35. Is /are there any particular village/villages you think is/are benefiting more from eco-tourism in the area than others? *(Tick in the bracket corresponding to your answer)*

- 1. Yes [     ]                      2. No [     ]

36. If your answer to question 35 is Yes, please list the villages.

- 1. .... 2. .... 3. ....

37. If some village(s), is/are benefiting more, why do you think is the case? *(Please explain in the space provided below):*

.....

38. How, do you think, should the benefits from eco-tourism be distributed? *(Please explain in the space provided below):*

.....

39. Which of the following benefits have tourism brought to your village? *(Circle the number(s) corresponding to your answer(s)):*

- 1. Jobs                      2. Publicity of the area                      3. Better education
- 4. Tarmac roads      5. Telephone                      6. Electricity
- 7. Made people more environmentally aware      8. Others *(Please specify)*.....

40. Do you think eco-tourism has led to change of local culture? *(Tick in the bracket corresponding to your answer):*                      1. Yes [     ] 2.                      No [     ]

41. If your answer to question 40 is Yes, how? *(Please explain in the space provided below):*.....

42. If your answer to question 40 is No, why? *(Please explain in the space provided below):*.....

43. Which of the following has been caused by tourism in your community? (Circle the number(s) corresponding to your answer(s)):

- 1. Increased living costs
- 2. Erosion of culture (e.g. clothing, customs)
- 3. Creation of social classes
- 4. Increase of theft
- 5. Others (Please specify).....
- 6. ....

44. In what particular areas, the management of ANR should help you or your household to get more benefits from tourism? (Please explain in the space provided below):

.....

45. Please give your opinion/suggestion on how eco-tourism in and around ANR could be improved.....

D: Conservation of African Violet flower (Saintpaulia)

46. Are you aware of the of African violet flower? (Tick in the bracket corresponding to your answer): 1. Yes [ ] 2. No [ ]

47. If your answer to question 46. is Yes, what is the local name of the Plant?.....

48. Do you grow it on your farm? (Tick in the bracket corresponding to your answer):

- 1. Yes [ ] 2. No [ ]

49. If your answer to question 48. is Yes, what is the local uses of the flower? (Please explain in the spaces below) .....

50. Is eco-tourism one of the reasons which made your household to grow the flower? (Tick in the bracket corresponding to your answer): 1. Yes [ ] 2.No [ ]

51. If your answer to question 50 is Yes, are the tourists visiting your home to see the flower? (Tick in the bracket corresponding to your answer):

- 1. Yes [ ] 2. No [ ]

52. If your answer to question 51 is No, why? (Please explain in the spaces provided below)

.....

53. In what ways does Amani Nature Reserve involve you in conserving the flower? (Please explain in the spaces provided below)

.....

Date of the interview ..... Interviewer .....

Thank you for your time.



13. If your answer to question 12 is Yes, what has attracted you most? *(Please, explain in the space provided below):*

.....

14. Have /did you visit any village(s)? *(Tick in the bracket corresponding to your answer):*

1. Yes [    ]                      2. No [    ]

15. If your answer to question 14 is Yes, please name them

1. .... 2. ....

3. .... 4. ....

16. What attracted you in those villages? *(Please fill in the table provided below)*

	Village	Attraction	Its status
1.			
2.			
3.			

17. Did you participate/ have you participated in nature-based activities? *(Tick in the bracket corresponding to your answer):*

1. Yes [    ] 2. No [    ]

18. If your answer to question 17 is Yes, what are those activities? *(Please list them in the table below)*

	Activity	Location
1.		
2.		
3.		

19. If your answer to question 18 is No, please explain why?.....

20. Did/have you use/used a tour guide for interpretation? *(Tick in the bracket corresponding to your answer)*

1. Yes [    ]                      2. No [    ]

21. If the answer in question 18 is Yes, was your guide competent in the interpretation? *(Tick in the bracket corresponding to your answer)*

1. Yes [    ]                      2. No [    ]

22. If the answer in question 21 is No, please explain briefly why?

.....

23. May you rate the following services, conditions and facilities? *(In the table below, please tick in the box corresponding to your answer):*

	Facilities and services	Excellent	Good	Fair	Poor

1.	Catering				
2.	Cleanliness				
3.	Information on site				
4.	Staff attitude to visitors				
5.	Access				
6.	Accommodation				
7.	Tour guiding				
8.	Others (Please specify).....				

24. How much did you pay in order to see the attractions? *(Please fill in the table below):*

	Attraction	Amount paid
1.		
2.		

25. Are you satisfied with the set fee? *(Tick in the bracket corresponding to your answer):*

1. Yes [        ]                      2. No [        ]

26. If your answer to question 25 is No, please explain briefly why?

.....

27. Would you like to come to Amani again? *(Tick in the bracket corresponding to your answer)* 1. Yes [.....]                      2. No [.....]

28. If the answer in question 27 is Yes, please explain in the space provided below why?

.....

29. If the answer in question 27 is No, please explain in the space provided below why?

.....

30. Would you recommend this tour to a friend/relative? *(Tick in the bracket corresponding to your answer):*                      1. Yes [        ]                      2. No [        ]

31. Please give your opinion on what measures to take, in order to ensure growth of eco-tourism in and around Amani Nature Reserve.

**Thank you for you time**

## Appendix 3: Checklists

## A: Checklist for Amani Nature Reserve (ANR) Officials

1. What is the general background information on Amani Nature Reserve?
2. What are your responsibilities in relation to the management of Amani Nature Reserve?
3. What are the existing eco-tourism attractions in Amani Nature Reserve?
4. What are the attractions outside the reserve?

	Attraction	Location

5. Which season do you receive more visitors?
6. What is your fee structure?
7. Do you have income record which shows the amount obtained from eco-tourism every year?
8. How do you involve the local community in eco-tourism?
9. How does the local community benefit from eco-tourism?
10. Do you have any record/data which shows how much the local community gets from eco-tourism?
11. What do you consider as problems hindering better planning and management of the Amani Nature Reserve? Rank them if possible.
12. What are the strategies you have/ intend to have to improve management of Amani Nature Reserve?
13. What are the efforts so far undertaken to boost eco-tourism in Amani Nature Reserve?
14. In your opinion, are those efforts successful?
15. If the efforts are not successful, what could be the reason?
16. If they are successful, what are the future strategies for boosting eco-tourism?
17. Do you have nature-based activities such as hiking available in the area?
18. What special services and facilities are available for eco-tourism?
19. Do you give any packages to attract eco-tourists?
20. If the answer to question 19 is Yes, what is included in your packages?

21. Do you have marketing strategies to promote eco-tourism?
22. If the answer to question 21 is Yes, what are they?
23. Are the marketing strategies successful?
24. If the answer to question 23 is No, why?
25. If the answer to question 23 is Yes, why?
26. Do you have visitor centre(s) which provide information to visitors?
27. If the answer to question 26 is Yes, please name the centers
28. Is there special transport for eco-tourists?
29. What mode of transport do they use?
30. What is your perception on economic conditions of surrounding communities?
31. What are the land use practices around the reserve in relation to eco-tourism?
32. Please, give your opinion regarding performance of eco-tourism
33. Basing on your profession, what do you think could be the reasons for poor/ better eco- tourism performance
34. Are the existing natural resource policies adequately addressing the issue of eco-tourism?
35. If the answer to question 34 is Yes, How?
36. If the answer to question 34 is No, why?
37. What do you think/suggest should be done and by whom to improve eco-tourism and enhance benefits to local community.

### **Conservation of African violet flower**

38. How many species of African violet flower do you have?
39. What is the current status of the species
40. What is the importance of the flower?
41. Do you have any plans for improving the flower?
42. What role does ecotourism play in conserving the flower?
43. What is the community perception towards this flower?
44. How do communities participate in conserving the species?
45. What are major threats to African violet habitats to its survival?
46. What actions have been taken to conserve the flower?
47. What measure have you taken to make local communities reduce pressure on the flower?

### **B: Checklist for local tour guides**

1. For how long have you been working in this business?
2. Who are your customers?
3. How much did you get from this business in the following calendar years?

Year	2005	2006	2007
Amount			

4. How is this business important to your family financially?
5. What positive impacts do you think your community is getting from tourism in and around Amani Nature Reserve?
6. What negative impacts have you realized so far?
7. What needs to be done to make people benefit more from tourism?
8. What are the existing attractions and their location outside Amani Nature Reserve?

	Attraction	Location	Current used(Yes/No)
1.			
2.			
3.			
4.			

**C: Checklist for Village representatives (Village government leaders, Natural resource committee leaders and influential people or elders**

1. What are the main income generating activities in your area – if possible group them by gender and rank.
2. What are the crops grown in the area and specify their main use/purpose (e.g. famine crops, household consumption and cash crop)
3. What is the importance of Amani Nature Reserve in your area?
4. What benefits are accrued from Amani Nature Reserve to the local community?
5. How is the relationship between Amani Nature Reserve management and the villages?
6. What could be done by Amani Nature Reserve to strengthen eco-tourism activities so that they can improve people's livelihoods?

**D: Checklist for the tour operators**

1. For how long have you been offering trips to Amani?
2. Which continent are mostly your customers coming from?
3. What attractions they specifically came for?
4. Do you know how much your customers spend when in Amani?
5. If yes, which particular area of spending among the following is commonly high
  - a) Food
  - b) Guiding
  - c) Camping
  - d) Souvenirs
6. What kind of promotion material you use to promote your business
7. What factors make your promotion difficult?
8. When you are making trip to Amani , how do you use local people expertise and their facilities?
9. What do you suggests to be done in Amani to improve tourism and to make it better for local people to benefit more from eco-tourism

Appendix 4: List of Flora species in Amani Nature Reserve (*Sources: Schulman et al., 1998; and Iversen, 1991*).

S/N	Scientific name	Common/ English name
1.	<i>Afrosalsalisia ceracifer</i>	-
2.	<i>Aisodeopsis schumanii</i>	-
3.	<i>Alangium chinense</i>	-
4.	<i>Azelia quanzensis</i>	Lucky-bean tree
5.	<i>Allanblackia stuhlmanii</i>	-
6.	<i>Alchonea hiltera</i>	-
7.	<i>Anickia cummariae</i>	-
8.	<i>Aningeria adolf-friedericii</i>	-
9.	<i>Annona senegalensis</i>	-
10.	<i>Anysophyllea obtusifolia</i>	-
11.	<i>Antiaris toxicaria</i>	False mvule
12.	<i>Antidesma membranaceum</i>	-
13.	<i>Anthocleista grandiflora</i>	Cabbage tree
14.	<i>Aorathe penduliflora</i>	-
15.	<i>Beilschmeidia kweo</i>	-
16.	<i>Bersama abyssinica</i>	Bersama
17.	<i>Blighia unijugata</i>	-
18.	<i>Bombax rhodognaphalon</i>	Wild kapok
19.	<i>Breonadia salicina</i>	Adina
20.	<i>Bridelia micrantha</i>	Bridelia
21.	<i>Caloncoba welwitschii</i>	-
22..	<i>Casearia battiscombei</i>	-
23.	<i>Celtis africana</i>	White stinkwood
24.	<i>Celtis Celtis mildbraedii</i>	Red fruited celtis
25.	<i>Celtis gomphophlla</i>	Forest celtis
26.	<i>Celtis wightii</i>	-
27.	<i>Cephalosphaera usambaraensis</i>	-
28.	<i>Cidrela Odorata</i>	Spanish cedar
29.	<i>Cleistanthus polystachyus</i>	-
30.	<i>Chytranthus kilimandicharica</i>	-
31.	<i>Cola greenwayi</i>	-
32.	<i>Cola scheffleri</i>	-
35.	<i>Cola usambaraensis</i>	-
36.	<i>Combretum molle</i>	-
37.	<i>Combretum schumannii</i>	Forest tree combretum
38.	<i>Commiphora africana</i>	-
39.	<i>Cordia africana</i>	East African cordia
40.	<i>Cordia sinensis</i>	-
41.	<i>Croton Syvaticus</i>	Forest croton
42.	<i>Cyathea manniana</i>	-
43.	<i>Cylicomorpha parviflora</i>	Wild pawpaw
44.	<i>Cynometra engleri</i>	-
45.	<i>Dialium holtzii</i>	-
46.	<i>Diospyros mespiliformis</i>	African ebony
47.	<i>Dracaena usambaraensis</i>	-
48..	<i>Drypetes gerrardi</i>	-
49.	<i>Drypetes usambarica</i>	-

50.	<i>Englerodendron usambararense</i>	-
51.	<i>Entandrophragma excelsum</i>	-
52.	<i>Ethricoca fisher</i>	-
53.	<i>Fernandoa magnifica</i>	-
54.	<i>Ficus</i>	Figs
55.	<i>Ficus exasperata</i>	-
56.	<i>Ficus sur</i>	Cape fig
57.	<i>Ficus natalensis</i>	Barkcloth fig
58.	<i>Ficus vallis-choudae</i>	Haroni fig
59.	<i>Funtumia africana</i>	Bastard wild rubber
60.	Genus <i>Abizia</i>	Albizia
61.	Genus <i>Trichilia</i>	-
62.	Genus <i>Tabernaemontana</i>	Wild magnolias
63.	<i>Greenwayodwondron Usambaraensis</i>	-
64.	<i>Gycarpus americanus</i>	Propeller tree
65.	<i>Hallea rubrostipulata</i>	-
66.	<i>Harungana madagascariensis</i>	-
67.	<i>Hirundo abyssinicas</i>	-
68.	<i>Isoberlinia scheffleri</i>	-
69.	<i>Keetia spp</i>	-
70.	<i>Khaya Anthotheca</i>	frican Mahogany
71.	<i>Lannea welwitschii</i>	-
72.	<i>Leptonychia usambarensis</i>	-
73.	<i>Leptaususi holstii</i>	-
74.	<i>Makaranga capensis</i>	Macaranga
75.	<i>Manilkara sp</i>	-
76.	<i>Maesopsis eminii</i>	Muzizi
77.	<i>Maesa lanceolata</i>	-
78.	<i>Maranthes goetzeniana</i>	Maranthes
79.	<i>Maytenus acuminata</i>	-
80.	<i>Mesogyne insignis</i>	-
81.	<i>Milicia excelsa</i>	Mvule (in E.Africa); Iroko (in W. Africa)
82.	<i>Morinda asteroscepa</i>	-
83.	<i>Myrianthus holstii</i>	Giant yellow mulberry
84.	<i>Newtonia buchananii</i>	Forest newtonia
85.	<i>Quasia undulata</i>	-
86.	<i>Rhinolea feruginea</i>	-
87.	<i>Ocotea usambarensis</i>	East African camphor-wood
88.	<i>Ochna holstii</i>	Forest ochna
89.	<i>Odyndea zimmermanii</i>	-
90.	<i>Parinari excelsa</i>	-
91.	<i>Parkia fiicoidea</i>	-
92.	<i>Phyllostachys bambusoides</i>	Bamboo
93.	<i>Polyscias fulva</i>	Parasol tree
94.	<i>Polyceratocarpus scheffleri</i>	-
95.	<i>Pouteria adolfi-friederici</i>	Muna
96.	<i>Psidium cettoleum</i>	Guava
97.	<i>Rauvolfia caffra</i>	Quinine tree
98.	<i>Rawsonia lucida</i>	-
99.	<i>Santipaulia spp</i>	African violet
100.	<i>Sapium ellipticum</i>	-
101.	<i>Schefflerodendron usambaraensis</i>	-
102.	<i>Scorodophloeus fischeri</i>	-
103.	<i>Spathodea campanulata</i>	Nandi flame
104.	<i>Spondias lutea</i>	-

105.	<i>Sorondea madagascariensis</i>	-
106.	<i>Steculia appericulata</i>	Tall steculia
107.	<i>Strombosia scheffleridendron</i>	Strombosia
108.	<i>Synsepalum cerasiferum</i>	-
109.	<i>Synsepalum msolo</i>	-
110.	<i>Strombsia scheffleri</i>	-
111.	<i>Syzygium cortatum</i>	-
112.	<i>Syzygium guineense</i>	Water pear
113.	<i>Tabernamontana pachysiphon</i>	-
114.	<i>Tabernaemontana stapfiana</i>	-
114.	<i>Tabernaemontana ventricosa</i>	-
116.	<i>Tabernaemontana holstii</i>	-
117.	<i>Tarerrna sp</i>	-
118.	<i>Teminalia sambesiaca</i>	-
119.	<i>Tarena sp.</i>	-
120.	<i>Todallia asiatica</i>	-
121.	<i>Treculia africana</i>	African breadfruit
122.	<i>Trema orientalis</i>	Pigeonwood
123.	<i>Trichilia roka</i>	-
124.	<i>Trilepisium Madagascariense</i>	Bastard fig
125.	<i>Uvariadendron oligocarpum</i>	-
126.	<i>Vitex Amaniensis</i>	-
127.	<i>Xylopi aethiopica</i>	Large red-fingers
128.	<i>Xymalos monospora</i>	Lemonwood
129.	<i>Zanha golungensis</i>	-
130.	<i>Zanthodeista grandiflora</i>	-
131.	<i>Ziziphus pubescens</i>	Buffao thorn
132.	<i>Zanthoxylum gillettii</i>	African satinwood

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Appendix 5: List of Fauna species in Amani Nature Reserve (*Sources: Stuart, 1989; EUCAMP, 2001, and TBA, 2007*)

A: List of birds in ANR

S/N	Scientific name	Common/ English name
1.	<i>Andropadus tephrolaemus</i>	Mountain Greenbul
2.	<i>Anthreptes pallidigaster</i>	Amani sunbird
3.	<i>Anthreptes rubritorques</i>	Banded green sunbird
4.	<i>Apaloderma narina</i>	Narina Trogon
5.	<i>Apaloderma vittatum</i>	Bar -tailed Trogon
6.	<i>Arcanator orostruthus</i>	Dappled mountain robin
7.	<i>Bathmocercus winifredae</i>	Mrs Moreau's warbler
8.	<i>Bradornis pallidu</i>	Pale Flycatcher
9.	<i>Bubo vosseleri</i>	Usambara eagle owl
10.	<i>Bycanistes brevis</i>	Silvery Cheeked Hornbill
11.	<i>Bycanistes bucinator</i>	Trumpeter Hornbill
12.	<i>Campethera cailliauti</i>	Green-backed Woodpecker
13.	<i>Campephaga flava</i>	Black Cuckoo-Shrike
14.	<i>Centropus superciliosus</i>	White-browed Coucal
15.	<i>Cercococcyx montanus patulus</i>	Barred Long-tailed Cuckoo
16.	<i>Coracina caesia pura</i>	Grey Cuckoo-Shrike
17.	<i>Colius striatus</i>	Speckled Mousebird
18.	<i>Cossypha natalensis</i>	Red-capped Robin-chat
19.	<i>Cuculus solitarius</i>	Red-chested Cuckoo
20.	<i>Gypohierax angolensis</i>	Palm-nut Vulture
21.	<i>Halcyon albiventris</i>	Brown-hooded Kingfisher
22.	<i>Hipposideros ruber</i>	Leaf-nosed bat
23.	<i>Hirundo abyssinica</i>	Lesser Striped Swallow
24.	<i>Lophaetus occipitalis</i>	Long-crested Eagle
25.	<i>Macheiramphus alcinus</i>	Bat Hawk (Bat-eating Buzzard)
26.	<i>Malaconotus nigrifrons</i>	Black-fronted Bush- Shrike
27.	<i>Megaceryle m. maxima</i>	Giant Kingfisher
28.	<i>Motacilla aguimp vidua</i>	African Pied Wagtail
29.	<i>Nectarinia venusta</i>	Variable Sunbird
30.	<i>Nectarinia olivacea</i>	Olive Sunbird
31.	<i>Nectarinia amethystine</i>	Amethyst Sunbird
32.	<i>Nycteris grandi</i>	Large Slit-faced bat
33.	<i>Otus ireneae</i>	Sokoke scops owl
34.	<i>Phyllastrephus fischeri</i>	Fischer's Greenbul
35.	<i>Phyllastrephu sstrepitans</i>	Northern Brownbul
35.	<i>Phylloscopus ruficapillus minullus</i>	Yellow-throated Woodland Warbler
37.	<i>Ploceus nicolli</i>	Tanzanian mountain weaver
38.	<i>Pycnonotus barbatus</i>	Common Bulbul
39.	<i>Prinia subflava</i>	Tawny-flanked Prinia
40.	<i>Rhinolophus eloquen</i>	Horseshoe bat
41.	<i>Rhinolophus landeri lobatus</i>	Lander's horseshoe bat
42.	<i>Rousettus (Stenonycteris)lanosus</i>	Mountain fruit bat

	<i>kemp</i>	
43.	<i>Saxicola torquata axillaries</i>	Common Stonechat
44.	<i>Sheppardia gunningi</i>	East coast akalat
45.	<i>Smithornis capensis</i>	African Broadbill
46.	<i>Stactolaema leucoti</i>	White-eared Barbet
47.	<i>Stactolaema olivacea</i>	Green Barbet
48.	<i>Terpsiphone viridis</i>	African Paradise Flycatcher
49.	<i>Treron calva</i>	African Green Pigeon Certain
50.	<i>Trochocercus albonotatus</i>	White-tailed Crested Flycatcher
51.	<i>Strix woodfordii</i>	African Wood-owl
52.	<i>Turtur tympanistria</i>	Tambourine Dove
53.	<i>Orthotomus moreaui</i>	Long-billed apalis

## B: List of Reptiles in ANR

S/N	Scientific name	Common/ English name
1.	<i>Pelomedusa subrufa subrufa</i>	Helmeted Terrapin
2.	<i>Geochelone pardalis babcocki</i>	Tropical Leopard Tortoise
3.	<i>Lygodactylus capensis grotei</i>	Grote's Dwarf Gecko
4.	<i>Cnemaspis africana</i>	Usambara Forest Gecko
5.	<i>Cnemaspis barbouri</i>	Uluguru Forest Gecko
6.	<i>Cnemaspis sp. Forest</i>	Gecko sp
7.	<i>Hemidactylus mabouia</i>	Tropical House Gecko
8.	<i>Hemidactylus platycephalus</i>	Baobab Gecko
9.	<i>Agama Montana</i>	Montane Rock Agama
10.	<i>Bradypodion (Chamaeleo)fischeri</i>	Eastern Usambara Two-horned
	<i>fischeri</i>	Chameleon
11.	<i>Bradypodion spinosum</i>	Rosette-nosed Chameleon
12.	<i>Bradypodion (Chamaeleo) tenue</i>	Usambara Soft-horned Chameleon
13.	<i>Chamaeleo dilepis dilepi</i>	Common Flap-necked Chameleon
14.	<i>Chamaeleo deremensis</i>	Usambara -Three-horned Chameleon
15.	<i>Rhampholeon brevicaudatus</i>	Bearded Pigmy Chameleon
16.	<i>Rhampholeon temporalis</i>	Pitted Pigmy Chameleon
17.	<i>Rhampholeon sp.</i>	Pigmy Chameleon
18.	<i>Mabuya varia varia</i>	Variable Skink
19.	<i>Mabyua striata striata</i>	Common Striped Skink
20.	<i>Lygosoma afrum</i>	Peter's Writhing Skink
21.	<i>Cordylus tropidosternum</i>	East African Spiny-tailedLizard
	<i>tropidosternum</i>	
22.	<i>Typhlops lineolatus lineolatus</i>	Lineolate Blind-Snake
23.	<i>Typhlops gierrai</i>	Usambara Blind-Snake
24.	<i>Typhlops sp.</i>	Blind-Snake sp.
25.	<i>Leptotyphlops macrops</i>	Worm-snake
26.	<i>Python sebae</i>	Northern African Python
27.	<i>Atheris ceratophorus</i>	Horned Bush-Viper
28.	<i>Bitis gabonica</i>	Eastern Gaboon Viper
29.	<i>Elapsoidea nigra</i>	Usambara Garter-Snake
30.	<i>Elapsoidea loveridgei</i>	Loveridge's Garter-Snake
31.	<i>Elapsoidea sp.</i>	Garter Snake

32.	<i>Naja nigricollis nigricollis</i>	Black-necked Spitting Cobra
33.	<i>Dendroaspis angusticeps</i>	Eastern Green Mamba
34.	<i>Lamprophis capensis</i>	Common House Snake
35.	<i>Lycophidion meleagr</i>	Speckled Wolf Snake
35.	<i>Lycophidion capense loveridgei</i>	Loverdige's Wolf-Snake
37.	<i>Mehelya capensis capensis</i>	Southern Cape File Snake
38.	<i>Aparallactus weneri</i>	Usambara Centipede Eater
39.	<i>Natriciteres olivacea</i>	Olive Marsh Snake
40.	<i>Philothamnus macrops</i>	Usambara Green Snake
41.	<i>Philothamnus hoplogaster</i>	Southeastern Green Snake
42.	<i>Philothamnus punctatus</i>	Spotted Bush Snake
43.	<i>Crotaphopeltis hotambeia</i>	Herald Snake
44.	<i>Crotaphopeltis tornieri</i>	Tornier's Cat-Snake
45.	<i>Dipsadoboa weneri</i>	Werner's Tree Snake

#### C: List of Amphibians in ANR

S/N	Scientific name	Common/ English name
1.	<i>Bufo brauni</i>	Dead leaf toad
2.	<i>Bufo gutturalis</i>	Square-marked toad
3.	<i>Afrivalus fornasini</i>	Leaf-folding frogs
4.	<i>Leptopelis parkeri</i>	Tree frogs
5.	<i>Probreviceps macrodactylus</i>	Rain frog
6.	<i>Xenopus muelleri</i>	Tropical plantanna
7.	<i>Phrynobatrachus</i>	Puddle frogs
8.	<i>Ptychadena anchietae</i>	Grass frog
9.	<i>Rana angolensis</i>	Common river frog
10.	<i>Hyperolius punctulatus, Hyperolius mitchelli and Hyperolius mariae</i>	Reed Frogs

#### D: List of Mammals in ANR

S/N	Scientific name	Common/ English name
1.	<i>Colobus angolensis palliatus</i>	Angola Pied Colobus
2.	<i>Papio cynocephalus</i>	Yellow baboon
3.	<i>Cercopithecus aethiops</i>	Vervet Monkey
4.	<i>Cercopithecus mitis</i>	Blue Monkey
5.	<i>Otolemur crassicaudatus</i>	Greater Galago
6.	<i>Galagoides orinus</i>	Usambara galago
7.	<i>Rhynchocyon petersi</i>	Zanj Elephant Shrew
8.	<i>Paraxerus lucifer byatti</i>	Tanganyika Mountain Squirrel
9.	<i>Anomalurus derbianus</i>	Lord Derby's Anomalure
10.	<i>Hystrix cristata</i>	Crested Porcupine
11.	<i>Cricetomys gambianus</i>	Giant Pouched Rat
12.	<i>Herpestes ichneumon-</i>	Egyptian Mongoose
13.	<i>Herpestes sanguinea</i>	Slender Mongoose

14.	<i>Bdeogale crassicauda</i>	Bushy tailed Mongoose
15.	<i>Genetta genetta</i>	Common Genet
16.	<i>Genetta tigrina</i>	Blotched Genet
17.	<i>Civettictis civetta</i>	African Civet Certain
18.	<i>Nandinia binotata</i>	African Palm Civet
19.	<i>Dendrohyrax validus</i>	Tree Hyrax
20.	<i>Potamochoerus larvatus</i>	Bush pig
21.	<i>Cephalophus monticola</i>	Blue Duiker
22.	<i>Cephalophus harveyi</i>	Harvey's Duiker

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## Appendix 6: Lists of PRA participants

A: Kisiwani village		B: IBC-Msasa village	
1	Estha Mkuna	1	Henry Dudu
2	Cisil Petro	2	Mwanaidi Mhagama
3	Amiri Mussa	3	Ester Ruben
4	Zulefa Idirissa	4	Omary Mbarawa
5	Elizabert Omary	5	Mohamedi Mbwana
6	Hassan Halid	6	Zawadi Rajabu
7	Hamadi Thabiti	7	Mwanahamisi Kapera
8	Pili Salimu	8	Challes Chabiko
9	Swaumu Ali	9	Michael Mgaya
10	Mary George	10	George Samweli
11	Fideli Paizoni	11	Rose Zakaria
12	Waziri Kimera	12	Sauda Rashidi

C: Mbomole village		D: Shebomeza village	
1.	Samweli Alleni	1.	Peter Yusuph
2.	Asha Nyundo	2.	Fatina Zuberi
3.	Mohamedi Radhani	3.	Beatrice Yusuph
4.	Jasmini Mongela	4.	Maria Daniel
5.	Habibu Dalali	5.	Juma Thomasi
6.	Amina Waziri	6.	Elizabeth Sebastian
7.	Stephen Tuya	7.	Yona Matola
8.	Steven Peter	8.	Fatuma Moka
9.	Bakari Hiza	9.	Asha Selemani
10.	Zuwena Musa	10.	Kasimu Sangao
11.	Bahati Chambo	11.	Ally Salumu
12.	Felista Chogo	12.	Salehe Kupe

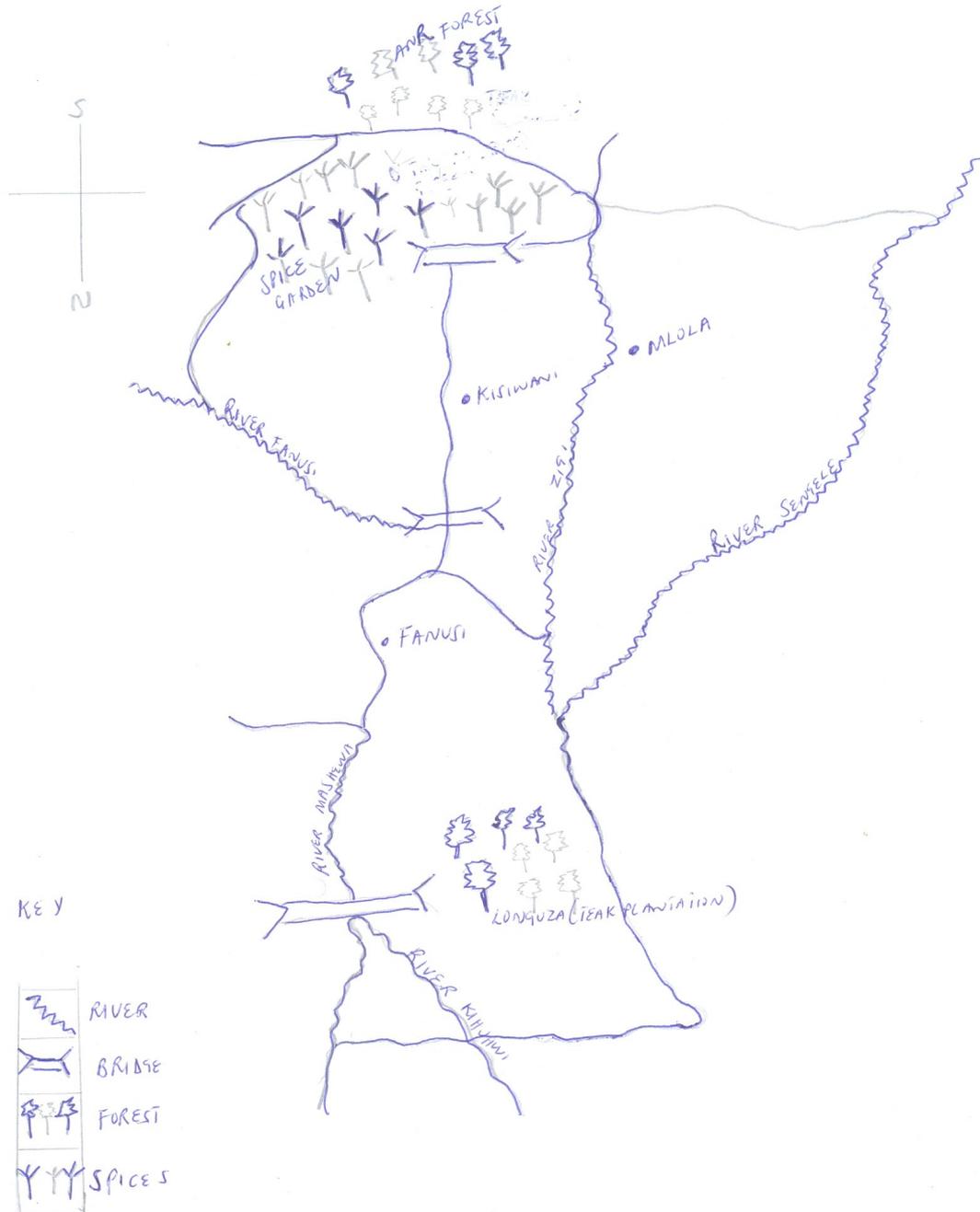
## E: Mlesa village

1. Saidi Kupaza
2. Swelehe Bilunda
3. Mariam Mohamed
4. Abeid Shabani
5. Mwajuma Halfani
6. Nuhu Musa
7. Filipino Athumani
8. Asia Mohamed
9. Kahema Madafa
10. Amina Yusuph
11. Hadija Ibrahim
12. Sarah Samson



Appendix 7: PRA resource maps

KISIWANI VILLAGE RESOURCE MAP



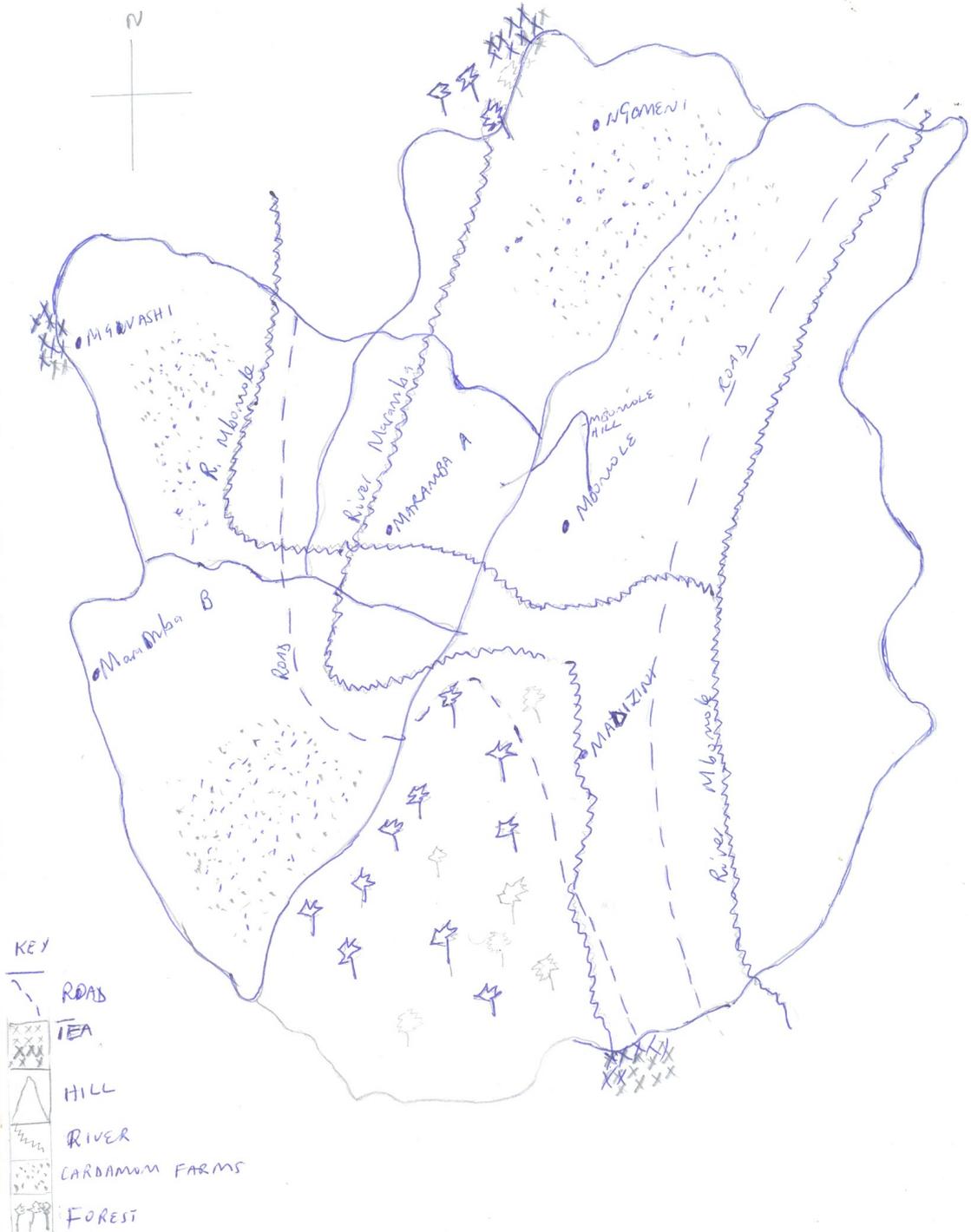
IBC - MSASA VILLAGE RESOURCE MAP



KEY

-  RIVER
-  WATER FALL
-  VIEW POINT
-  FOREST
-  CLOVE PLANTATION

MBOMOLE VILLAGE RESOURCE MAP



SHEBOMEZA VILLAGE RESOURCE MAP



KEY

	
	BUTTERFLY EXHIBITION
	FOREST
	RIVER
	FISH PONDS

MEESEA VILLAGE RESOURCE MAP



KEY

-  FOREST
-  FISH PONDS
-  TEA
-  TEA FACTORY