CONTRIBUTION OF ECOTOURISM TO FOREST CONSERVATION AND IMPROVEMENT OF COMMUNITY LIVELIHOOD IN DAKATCHA WOODLAND, KILIFI COUNTY, KENYA

BY

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other University or any other award.

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DEDICATION

To my husband, children and parents for their support and encouragement throughout the study.

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ABBREVIATIONS

CBD	-	Convention on Biological Diversity
CCA	-	Community Conserved Areas
ESOK	-	Ecotourism Society of Kenya
FAO	-	Food and Agriculture Organization
IBA	-	Important Bird Area
IUCN	-	International Union for Conservation of Nature
IUFRO	-	International Union of Forestry Research Organizations
KBA	-	Key Biodiversity Area
KEFRI	-	Kenya Forestry Research Institute
KFS	-	Kenya Forest Service
KWS	-	Kenya Wildlife Service
SDGs	-	Sustainable Development Goals
MENR	-	Ministry of Environment and Natural Resources
META	-	Marine Ecotourism for the Atlantic
NEMA	-	National Environment Management Authority
NGOs	-	Non Governmental Organizations
NMK	-	National Museums of Kenya
TIES	-	The International Ecotourism Society
UNFCCC	-	United Nations Framework Convention on Climate Change
UNWTO	-	United Nations World Tourism Organization
WTO	-	World Tourism Organization

ABSTRACT

Globally, ecotourism emerged from the environmental movement of the late 1970s as a reaction to the environmental and social damage caused by mass tourism. In Africa, developing countries were particularly caught up in a dilemma; balancing the economic benefits of tourism vis-a-vis its harmful effects on culture and environment. Kenya is one of the pioneers and most popular ecotourism destinations in the world; it was Africa's first country to experiment with ecotourism in national parks and reserves and several ecotourism projects have since been initiated for both conservation and development goals. Dakatcha woodland in Magarini Sub-County, Kilifi County of Kenya has been identified as an Important Bird Area (IBA) and Key Biodiversity Area (KBA) due to its rich biodiversity and cultural attractions which make it suitable for ecotourism. Magarini Sub-county has high poverty levels, this coupled with the lack of formal protection status of Dakatcha woodland has led local communities to engage in environmentally degrading activities. The overall objective of the study was therefore to investigate the contribution of ecotourism to forest conservation and community livelihood improvement in Dakatcha woodland. The specific objectives were to determine the relationship between community participation in ecotourism and forest conservation, assess the contribution of ecotourism to poverty reduction and to identify the opportunities and challenges to community participation in ecotourism. To achieve the objectives of the study, both primary and secondary data was collected through descriptive and correlational design. Focus group discussion, questionnaires, direct observations, interviews, photography as well as critical and systematic review of both published and unpublished materials were used to collect data. Quantitative data obtained from household questionnaires was analysed using both SPSS version 17.0 and Excel computer software programs, while qualitative data obtained from Focus group discussion and key informant interviews was analysed using descriptive statistics involving computation of sums, means and percentages. Summaries of representative practices were produced and the results presented using graphs and tables. Regression analysis ($p<0.05$) was performed to determine the effect of community participation in ecotourism on conservation status, household income and education levels. Results of the study revealed that community participation in ecotourism has contributed to; conservation of Dakatcha woodland ($r^2=0.1515$, $p=0.041$), increased household income ($r^2=0.6124$, $p=0.002$), and improved education levels ($r^2=0.6273$, $p=0.0034$). The findings also showed that ecotourism presents several opportunities for local communities including long-term protection of the environment, community development, cultural exchange and preservation of cultural heritage. Ecotourism is thus an effective conservation and development tool for communities living in Dakatcha woodland. However communities face various challenges such as seasonal nature of tourism, language barrier and poor infrastructure. It is recommended that community capacity building, infrastructure development and adequate marketing of the woodland should be undertaken while stakeholder collaboration needs to be strengthened to enhance both conservation and livelihood benefits.

CHAPTER ONE: INTRODUCTION

1.1 Background

Tourism is an important economic sector in the world. The World Tourism Organization (WTO) estimates that travel and tourism account for roughly 10% of the world's gross domestic product and almost 8% of total worldwide employment. Between 1970 and 2000, international tourism grew 1.4 times as fast as the world's economy (Watkin, 2003). In the world's developing countries such as Kenya, tourism is almost universally the leading source of economic growth, foreign exchange, investment and job creation (Kubo, 2004). Generally, tourism is a powerful tool for national development and is one of the fastest growing areas of international trade, particularly for smaller Coastal and Island countries with limited development options. It is also a potential area of conflict, particularly in developing countries caught in a typical dilemma: they want income from tourism while at the same time they deplore its harmful effects on culture and environment (Clark, 1996).

Ecotourism provides a sustainable alternative to conventional tourism and as such, the principles of sustainable development are central to it. It is a form of tourism involving visiting fragile, pristine and usually protected areas, intended as low impact and often small scale alternative to standard commercial tourism aimed at conservation, providing financial benefits and empowerment of local people. It is rooted in a conservation ethic and has a mission to support the biological and cultural resources of communities (UNWTO, 2008). Ecotourism is a growing component of the larger tourism industry, and several factors indicate that it is likely to thrive over time. These include increased

awareness of environmental problems among tourist populations, willingness of tourists to engage in socially-aware travel and interest in visiting lesser known countries rather than the traditional vacation getaways (Ngunyi, 2009).

Ecotourism accounts for a substantial portion of the modern global tourism industry, and generates significant amount of money (UNWTO, 2008). It has been rated as one of the fastest growing sectors in the tourism industry with an annual growth rate of 5% worldwide, representing 6% of the world gross domestic product and 11.4% of all consumer spending (Miller, 2012). According to Miller (2012), today, ecotourism is at the core of many third world nations' economic development strategies and conservation efforts. Nearly every developing country is now promoting some brand of ecotourism (Honey and Krantz, 2007).

In Africa, ecotourism development dates back to 1980s when it led the international trend towards sustainable tourism following the realization that without conserving the environment and supporting the local communities, ecotourism in Africa was doomed to fail (Honey and Krantz, 2007). Ecotourism in Africa is based on the environment and community oriented system that perceives the community as an integral part of the success of the industry. Nearly all ecotourism ventures must ensure concrete benefits for surrounding communities, and as such, many of the leading camps and lodges have voluntarily established community empowerment programs aimed at sharing the benefits from ecotourism (Miller, 2012). The result is that many former poachers have turned to enthusiastic game keepers with remarkable consequences for nature

conservation in the entire region. Some of the most popular ecotourism destinations in Africa include Kenya and South Africa.

Kenya is a popular ecotourism destination and owes this status to its fauna which includes a group of mammals popularly known as the "Big Five", that is Elephant, Rhinoceros, Buffalo, Lion and Leopard. Kenya is also home to approximately 11% of the world's avian species (Honey, 2008). These and other animals can be seen in the country's 54 national parks and reserves, as well as an increasing number of private and community-owned ranches and sanctuaries (Honey, 2008). Kenya's seven habitats; savanna woodlands, beaches, forests, snow-capped mountains, deserts, coral reefs and river deltas also help draw the more than 500,000 tourists every year (Honey, 2008). Kenya's natural attractions allow for enriching, nature-based recreation, such as game-viewing safaris and bird watching, which supports conservation efforts and the well-being of surrounding communities.

Dakatcha woodland has a huge potential as an ecotourism destination due to its rich biodiversity (Mwanbire and Katana, 2010). It is home to globally threatened bird species such as the Southern banded snake eagle, Fischer's turaco, Sokoke Scops owl, Sokoke Pipit and Clarke's weaver which are endemic to two places on earth: Dakatcha woodland and Arabuko Sokoke Forest (Bennum and Njoroge, 1999). This rich biodiversity combined with beautiful landscapes and cultural attractions make Dakatcha woodland suitable for ecotourism.

Diverse benefits can be derived from ecotourism. It provides an opportunity for long-term protection of the environment and natural resources, improves the economic

conditions of local people and enables community members to develop a stronger sense of pride and environmental awareness by sharing their knowledge of the local ecology with visitors. Ecotourism also provides foreign tourists with the opportunity to engage in cross cultural exchange with people from different backgrounds (McLaren, 1998).

Dakatcha woodland has been degraded as a result of uncontrolled massive clearing, encroachment through agricultural expansion, shifting cultivation, frequent fires from charcoal production and agricultural activities as well as unsustainable bush meat hunting (Mbuvi *et al.*, 2011). This has led to loss of biodiversity and severe land degradation that threatens the economic potential and environmental security of this marginal land (Nature Kenya, 2008).

Ecotourism provides an integrated approach to both conservation and poverty reduction. Utilization of the woodland sustainably through non-consumptive ways and in particular ecotourism provides alternative sources of livelihoods through income generation to local communities hence contributing to their economic well-being (Mwanbire and Katana, 2010). This in turn helps reverse environmental degradation hence contributing to sustainable forest management. Some studies have however shown that not all ecotourism projects successfully combine conservation and development goals. According to Merg (2007), the lack of policies that foster responsible tourism development and active local participation has often resulted in adverse environmental and cultural effects while the global political environment has ensured that developed countries continue to benefit from international economic relationships at the expense of developing countries (local communities). It is against

this backdrop that the study aimed to investigate the contribution of ecotourism to both forest conservation and community livelihood improvement in Dakatcha woodland.

1.2 Problem Statement

Environmental degradation in community forests has been rampant in recent years. Lack of formal protection status of such forests has rendered them vulnerable to anthropogenic factors such as uncontrolled logging and charcoal production as they are considered unmanaged and community owned. The high poverty levels in areas such as the Dakatcha woodland has further resulted in a pressing need for survival, with communities resorting to overexploitation of forest resources to meet their basic needs and hence increased degradation. Studies have shown that community support for conservation is directly related to the level of benefits they derive from existing natural resources, and that this support is even greater when the benefits are tangible. Ecotourism provides an integrated approach that enhances both conservation and sustainable livelihoods which offer an integrated approach to poverty reduction by not only addressing the question of low income, but also other dimensions such as bad health, illiteracy, lack of social services as well as a state of vulnerability and feelings of powerlessness in general. Moreover, several studies have been done in government gazetted forests such as the Arabuko Sokoke forest where ecotourism has been found to contribute to both forest conservation and poverty reduction. However, little information exists on the contribution of ecotourism to conservation and poverty reduction in community forests such as the Dakatcha woodland. Studies have also shown that not all ecotourism projects successfully combine the two goals and in some

cases foreigners who are the majority owners of most ecotourism enterprises reap maximum benefits at the expense of local communities. Furthermore, the same ecotourism enterprises that are marketed as environmentally friendly may end up having irreversible negative environmental effects. This study therefore sought to examine the contribution of ecotourism to forest conservation and improvement of community livelihood in Dakatcha woodland. Specifically, the study sought to determine the relationship between community participation in ecotourism and forest conservation, assess the contribution of ecotourism to poverty reduction and identify the opportunities and challenges to community participation in ecotourism.

1.3 Justification of the Study

Dakatcha is one of the last patches of relatively intact coastal woodlands in Kenya. Due to the unique flora and fauna species that reside in the area, including globally endangered birds such as Clarke's weaver and Sokoke scops owl (Musila *et al*,. 2006), it has been identified as an Important Bird Area and Key Biodiversity Area by Conservation International. However, the woodland lacks formal protection status as it is a community forest and as such, the ecological integrity of the woodland is threatened by anthropogenic factors. Consequently, there is need to collect data to determine the contribution of ecotourism to biodiversity conservation and improvement of community livelihood in Dakatcha woodland which is a community forest, since information of this nature is lacking and yet is needed for decision making by policy makers and natural resources managers.

1.4 Research Objectives

The general and specific objectives of the study are outlined in sub-sections 1.4.1 and 1.4.2 respectively;

1.4.1 General Objective

The general objective was to investigate the contribution of ecotourism to forest conservation and improvement of community livelihood in Dakatcha woodland.

1.4.2 Specific Objectives

The Specific objectives of the study were to;

1. Determine the relationship between community participation in ecotourism and forest conservation in Dakatcha woodland.
2. Assess the contribution of ecotourism to poverty reduction in Dakatcha woodland.
3. Identify the opportunities and challenges to community participation in ecotourism in Dakatcha woodland.

1.5 Research Questions

The study addressed the following research questions;

1. How does community participation in ecotourism impact on forest conservation in Dakatcha woodland?
2. How has ecotourism contributed to poverty reduction in Dakatcha woodland?
3. What are the existing opportunities and challenges to community participation in ecotourism in Dakatcha woodland?

1.6 Research Hypotheses

The study sought to test the following hypotheses;

1. Community participation in ecotourism does not contribute to forest conservation in Dakatcha woodland.
2. Ecotourism does not contribute to poverty reduction in Dakatcha woodland.
3. There are no opportunities and challenges to community participation in ecotourism in Dakatcha woodland.

1.7 Significance of the Study

This study was aimed at providing information on the contribution of ecotourism to forest conservation and livelihood improvement, which may be used by policy makers to develop sound conservation, management and development strategies for the woodland. Notably, poverty reduction and environmental sustainability are key goals of Kenya's vision 2030 and SDGs. The identification of opportunities and barriers to community participation in ecotourism provided valuable information for developing the ecotourism industry by maximizing on the existing opportunities in mitigating poverty and environmental degradation.

1.8 Scope and Limitations of the Study

The study was conducted in Dakatcha woodland in Magarini Sub-county, Kilifi County. It sought to determine the relationship between community participation in ecotourism and forest conservation, assess the contribution of ecotourism to poverty reduction and identify the opportunities and challenges to community participation in ecotourism. Demographic and socio-economic profiles of respondents were studied, household

forest uses and livelihood sources documented, and respondents' perceptions on forest conservation determined. The contribution of ecotourism to both forest conservation and poverty reduction were determined through regression analysis, and the opportunities and challenges to community participation in ecotourism identified.

A few challenges were experienced during the study; the wide geographic coverage of the area posed logistical challenges in traversing the area. However, the use of local enumerators residing in the various locations helped to overcome the challenge.

Poor road network made it difficult to access some of the sample households in the target locations. This was overcome by using motorcycles to access the most remote areas. Finally, the unwillingness of the community to give information especially on the negative impacts of human activities on the forest was a challenge. This was overcome by use of local enumerators who reside in the community and could therefore win the confidence of community members.

1.9 Definition of Standard Terms

Biodiversity: refers to the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part (United Nations, 1992).

Deforestation: refers to the direct human-induced conversion of forested land to non-forested land (United Nations, 1992).

Eco-rating: refers to a systematic approach to verifying a tourism organization's environmental, economic and socio-cultural performance when evaluated against an agreed set of criteria (Ecotourism Kenya, 2010).

Ecotourism: refers to tourism that involves travel to natural destinations, minimizes negative impacts on the environment, builds environmental awareness, provides direct financial benefits and empowerment for local people, respects local culture, and supports human rights and democratic movements (Honey, 2008).

Fuel wood: are any type of bio-fuel that is derived directly or indirectly from trees and shrubs grown on forest and non-forest land (FAO, 2004).

Important Bird Area: is a key site for the conservation of birds (Collar and Stuart, 1988).

Livelihood: this comprises the capabilities, assets (both material and social resources) and activities required for a means of living (Chambers and Conway, 1991).

Poverty reduction: It is a deliberate process of targeted interventionist policies, programmes and projects aimed at reversing the trends of all forms of deprivations (Kirui, 2003).

Sustainable livelihood: refers to a livelihood which is able to cope with and recover from stresses and shock, and maintain or enhance its capabilities and assets both now and in the future, respecting the natural resource base (Chambers and Conway, 1991).

Sustainable tourism: this is tourism that takes into account the ecological and socio-cultural carrying capacities. It integrates tourism into current economic and growth policies so as to mitigate the negative economic and social impacts of mass tourism (Ngunyi, 2009).

Triangulation: refers to the use of both qualitative and quantitative research methods in a single study.

Woodland: is an area of land planted with relatively short trees that are more widely spaced than those in a forest (Collar and Stuart, 1988).

Key Biodiversity Area: is an area rich in a variety of plant, animal, bird and other wildlife species of global importance (Collar and Stuart, 1988).

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The literature review was structured thematically; section 2.2 defines ecotourism, section 2.3 provides the historical perspectives of ecotourism while section 2.4 provides details on the theoretical elements of ecotourism. Section 2.5 looks at the relationship between ecotourism and conservation while 2.6 looks at the relationship between ecotourism and poverty. Socio-cultural elements of ecotourism, the politics of ecotourism, Global overview of ecotourism and Ecotourism in Kenya are presented in sections 2.7, 2.8, 2.9 and 2.10 respectively. Finally, section 2.11 looks at the conceptual framework of the study.

2.2 Defining Ecotourism

The International Ecotourism Society (TIES, 1992) defines ecotourism as responsible travel to natural areas that conserve the environment and improves the wellbeing of local people. Honey (2008) expands on the TIES definition by describing the seven characteristics of ecotourism as tourism that involves travel to natural destinations, minimizes negative impacts on the environment, builds environmental awareness, provides direct financial benefits and empowerment for local people, respects local culture, and supports human rights and democratic movements. This study adopted Honey's definition of ecotourism.

2.3 Historical Perspectives of Ecotourism

Ecotourism emerged from the environmental movement of the late 1970s as a reaction to the environmental and social damage caused by mass tourism. It emerged as a direct

result of the world's acknowledgement and reaction to sustainable practices and global ecological practice, and by the early 1990s, it was the fastest growing sector of the tourism industry, expanding globally by between 20% and 34% per year. In 2004, ecotourism and nature tourism were growing three times faster than the global tourism industry as a whole (Lindberg and Enriquez, 1994).

The number of visits to national parks in potentially important ecotourism destinations has grown dramatically since 1980's signaling a shift in tourist preferences from traditional popular destinations in Europe to nature destinations located mainly in the developing world. Protected areas in Nepal for instance witnessed a four-fold increase in visitors between 1980 and 2001 while other developing countries have reported similar trends (UNEP, 2005). Furthermore, ecotourism grew to approximately 25% of the world's travel market by the end of 2012, taking the value of the sector to approximately $473 billion a year (Miller, 2012). The perceived potential of ecotourism as an effective tool for sustainable development is the main reason why developing countries are now embracing it and including it in their economic development and conservation strategies (Lindberg, 1991).

2.4 Theoretical Elements of Ecotourism: Role of Partnership in Ecotourism

Since late 1990's, the idea of partnerships in ecotourism has been emphasized. The year 2002 was declared as the International Year of Ecotourism and at the World Ecotourism Summit held in Quebec, partnership was a major theme leading to the Cairns charter on partnerships for Ecotourism which was launched in Australia in October 2002. Based

on the principles laid out in the Quebec Declaration and the objectives of the world Summit on Sustainable Development, the charter focuses on the development of effective partnership for ecotourism (Rutten, 2004).

In the early 1990's partnerships were primarily considered to link government departments, national tourism authorities and the private sector to facilitate information exchange and help the private sector to adopt more sustainable procedures (Rutten, 2004). A preceding Regional Conference on Ecotourism in the East African Region organised by the African Conservation Centre in Nairobi in March 2002 further discussed each partner's role in detail. Underpinning the important position of local communities, the conference emphasized that adopting the bottom- up approach creates awareness, enhances skills and engenders a sense of ownership amongst the community toward ecotourism (Watkin, 2003).

Most ecotourism projects take place in community owned lands hence community participation is very important for the sustainability of ecotourism. The private sector on the other hand often provides resources for development of ecotourism. However, they should strive to adopt more sustainable business procedures and should be transparent and accountable to local communities because inequitable benefit sharing between private sector and communities has often provided a disincentive for community participation in ecotourism (Watkin, 2003). Finally, governments have a role to create institutional framework that regulates and controls ecotourism enterprise and ensures

suitable returns for the partners involved. Successful ecotourism thus requires meaningful partnership among all the above stakeholders.

2.5 Ecotourism and Conservation

In many developing countries, tourism has become a prime source of foreign exchange inflows, with a generally low negative impact on the environment compared to other productive sectors such as agriculture and mining. With growing global pressures on forest resources and the search for sustainable forest use, it has become imperative to look towards tourism in forest areas as a component in the design of conservation strategies and practices (Wunder, 1999).

Moreover, the tourist appeal of natural areas such as forests and hence their ability to generate financial resources provide important conservation incentives for the relevant natural resource managers by increasing the gains from conservation –based options compared to competing non-sustainable land uses that results to forest degradation and conversion (Lindberg and Enriquez, 1994). Ecotourism also provides an opportunity for long –term protection of the environment and its resources and this is particularly valuable considering that the hot spots of biological diversity are generally the poorest regions of the world, particularly in developing countries where economic necessity is most likely to drive people to pursue environmentally damaging options (Downs, 1994).

2.6 Ecotourism and Poverty

Tax revenues from ecotourism can provide valuable financial resources for developing infrastructure, tourist attractions and other public facilities and services. In addition, this

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revenue helps finance both poverty alleviation programs by governments and community needs (UNWTO, 2008). Ecotourism has the potential to increase employment opportunities for the rural poor through recruitment of local tour guides and development of markets in native handicrafts and artwork for souvenirs (Nature Kenya, 2008). This in turn reduces their vulnerability, and through increased foreign exchange earnings, additional funds can be diverted to poverty reduction programs (UNEP, 2005). Furthermore, ecotourism results to increased demand for local accommodation and increased market for local products such as locally grown food grains, vegetables and fruits (UNWTO, 2008).

2.7 Socio-cultural Elements of Ecotourism

Since the 1960s people have become increasingly concerned over peace, human rights, and the environmental and landscape destruction of our planet and in the subsequent stages the concern of socio-cultural dimension are focused (UNEP, 2002). These ideological changes are reflected and adapted in the changing face of the travel and tour industry worldwide.

Ecotourism evolved in the 1970s as a reaction to many negative consequences of tourism; prostitution, crime, drug trafficking, cultural devastation, destruction of natural landscape and natural resources, and economic discrepancies. Ecotourism thrives upon the support of the local communities hence socio-cultural aspects of local communities must be incorporated into planning and marketing of ecotourism destinations and products (Stronza, 2005). According to Stronza (2005), ecotourists are more likely to appreciate local traditions, customs and cuisine than other market segment, while

ecotourism projects that promote the cultural values of a community are more likely to be embraced by communities hence resulting in their active participation.

2.8 The Politics of Ecotourism

The politics of ecotourism is evident at multiple scales and levels. The multiple interests of the diverse stakeholders (community, governments, multilateral donor agencies and global) constitute diverse political processes that are often hierarchically organized (Walley, 2004). At the community level for instance, there are power relations that may hinder everyone from benefiting equally from ecotourism initiatives. At the state level, policy formulation, investment and allocation of resources presents a political dimension of ecotourism (Mowforth and Munt, 1998). For instance, making ecotourism a positive economic and environmental tool requires policies that foster responsible tourism development, broad and active local participation in its benefits and conservation of developing countries' biological heritage.

Ecotourism must thus be regulated and managed to protect against adverse environmental and cultural effects that come with overbuilding of tourist facilities and influx of populations around fragile ecosystems (Merg, 2007). For example pollution from runaway resort and hotel development around fragile park areas in Costa Rica, Nepal and Thailand exemplifies poorly managed ecotourism activity (Merg, 2007). At the global level, travel has always been subject to fluctuations in relation to the global political environment while tourism is often used as a political instrument in Western-African relations where western countries reward friendly African states with tourism

stimulating measures such as positive travel advisory, aid and positive media reports. These relations consequently affect ecotourism traffic to developing world and imply power relations between developed and developing world (Walley, 2004). Ecotourism in developing countries is often viewed by critics as an extension of former colonial conditions since it has continued to benefit from international economic relationships that structurally favour the advanced capitalist countries in the North (Walley, 2004).

Unequal trading relationships, dependence on foreign interests and division of labour have relegated poor developing countries to becoming tourism recipients and affluent developed countries to the positions of tourism generators, with the latter enjoying the freedom from having to pay the price for the meanwhile well- known negative impacts in destinations (Duffy, 2006). These factors have in some cases resulted to some ecotourism ventures not successfully contributing to both conservation and development goals. Global political environments also affect ecotourism. For instance incidents of attacks on tourists or fear of travelling to unsafe destinations impact on visitor numbers.

2.9 Global Overview of Ecotourism

Travel and tourism industry is responsible for over 230 million jobs and over 10% of the gross domestic product worldwide. It is the principle export for 83% of the developing countries and the leading export for one third of poorest countries (UNWTO, 2008). While conventional 'sun and sand' resort tourism has matured as a market and its growth is projected to remain constant, sustainable tourism which

encompasses ecotourism, nature and cultural tourism is expected to grow most quickly over the next two decades (UNWTO, 2008). Ecotourism could grow to 25% of the world's travel market taking the value of the sector to 473.6 billion US dollars a year (UNWTO, 2008). Analysts predict a growth in eco-resorts and hotels, and a boom in nature tourism and suggest early converts to sustainable tourism will make market gains as tourists continue to demand for environmentally sensitive tourism (Wearing and Neil, 2009). A survey of U.S, British and Australian travelers revealed that 70% were willing to pay more for stays in hotels with responsible environmental attitude (Gonzalez, 2013). Ecotourism has thus evolved as a key foreign exchange earner in many countries.

Costa Rica is the birthplace of ecotourism, as it was the first destination to offer minimal environmental impact travel (Miller, 2012). It is recognized as one of the few countries with true ecotourism and has gained immense popularity for its development of a successful, yet environmentally friendly, ecotourism industry supported by its rich biodiversity and immense ecosystem (Dasenbrock, 2002). Many of the first ecotourists in Costa Rica were academics who came to the country to study biology. The publications generated by these biologists, coupled with an aggressive campaign by the Costa Rican Tourism Board, soon led to a growing group of "nature tourists" (Dasenbrock, 2002). By 1995, more than 800,000 foreign ecotourists visited Costa Rica with most of them visiting national parks and reserves. The tourism boom began in 1987, with the number of visitors up from 329,000 in 1988, through 1.03 million in 1999, to a historical record of 2.34 million foreign visitors in 2012 (Gonzalez, 2013). In

2012 international tourist receipts reached US$2.4 billion. The country is ranked fifth in the world, and first among the Americas, in terms of the 2012 Environmental Performance Index (Gonzalez, 2013). However, ecotourism industry, environmentalists and economists alike debate whether an economy centered on tourism produces more good than harm (Wearing and Neil, 2009).

Ecuador is one of the world's most biodiverse countries and a popular ecotourism destination. As a means to protect its precious ecosystems, Ecuador's 2008 constitution was the first in the world to legally recognize the Rights of Nature (Wunder, 1999). Furthermore, the indigenous movement in Ecuador is one of the strongest in South America with 14 distinct indigenous peoples that represent 7% of the Ecuadorian population, and additional groups of uncontacted peoples deep within the Amazon. (Wunder, 1999). Indigenous communities own more than 6.8 million hectares of forests; however, deforestation and pollution through the oil, copper, gold and agriculture industries threaten their territorial and cultural integrity with the potential to reduce the gains made from ecotourism (Wearing and Neil, 2009).

In Nepal, despite the abundance of opportunities for an ecotourism industry, its effective practice and implementation is not promising due to lack of commitment of government policy and planning strategy supporting integrated conservation and development projects (Gonzalez, 2013). The consequence of this has been that tourism in Nepal is gradually heading towards mass tourism, thus policies must be integrative, collaborative and comprehensive to achieve real outcome of ecotourism by realizing

importance of environmental, social and economic imperatives (Wearing and Neil, 2009).

2.10 Ecotourism in Kenya

Kenya is one of the pioneers and most popular ecotourism destinations in the world, and it was Africa's first country to experiment with ecotourism in national parks and reserves such as Amboseli and Maasai Mara (Weaver, 1999; Honey, 2008). The formation of Ecotourism Society of Kenya (currently Ecotourism Kenya) in 1996 marked a major milestone in the promotion of sustainable tourism in Kenya. Ecotourism Kenya is charged with the mandate of promoting and developing new approaches to sustainable tourism (Ecotourism Kenya, 2010). Its efforts are further complimented by Kenya's tourism Act of Parliament of 2011 which focuses on maintaining the biodiversity of its natural and cultural resources (GoK, 2011).

Since independence, Kenya has greatly depended on ecotourism and practices in parks, ranches, reserves and farms have increased over the last few years not only in focal areas but also in other remote destinations (Gakahu and Goode, 1999). The five main focal points with a huge potential for ecotourism development in Kenya include Taita-Taveta, Laikipia – Samburu, Greater Amboseli, South Coast and Maasai Mara (Ecotourism Kenya, 2010). Insufficient information exist on the status of ecotourism in Kenya and hence there is need to undertake field surveys of the identified focal areas and develop a national inventory of all existing ecotourism projects in Kenya, with a

view to coming up with fuller and more accurate information on the growth of ecotourism in Kenya (Gakahu and Goode, 1999).

Several successful community ecotourism projects have been initiated over the past years and they include Arabuko Sokoke Schools and Ecotourism Scheme, Mwaluganje elephant sanctuary, Shompole and Il Ngwesi group ranches. Efforts to undertake eco-rating are currently on- going in Kenya (Ecotourism Kenya, 2010). Ecotourism Kenya (EK) in cooperation with tourism stakeholders in Kenya has developed an eco-rating scheme in order to give Kenya's tourists an opportunity to choose eco-lodges based on internationally accepted criteria. The scheme was launched in 2002, and focuses on tourist accommodation facilities and awards qualifying applicants a Bronze, Silver or Gold accreditation based on their performance, and is aimed at achieving the highest levels of environmental, economic and social practices within the tourism industry for sustained growth of the sector (Ecotourism Kenya, 2010). This scheme will provide Kenya's eco-lodges and tour operators with the tools they need to compete in the global market as one of the world's top ecotourism destinations (Ngunyi, 2009).

2.11 Conceptual Framework

Figure 2.1 highlights the conceptual framework of the study focusing on the relationship between community participation in ecotourism, forest conservation and community livelihoods. The contribution of ecotourism and the interaction among forest conservation, community livelihoods, opportunities and challenges were

highlighted. Understanding these interactions was key in achieving the objectives of this study.

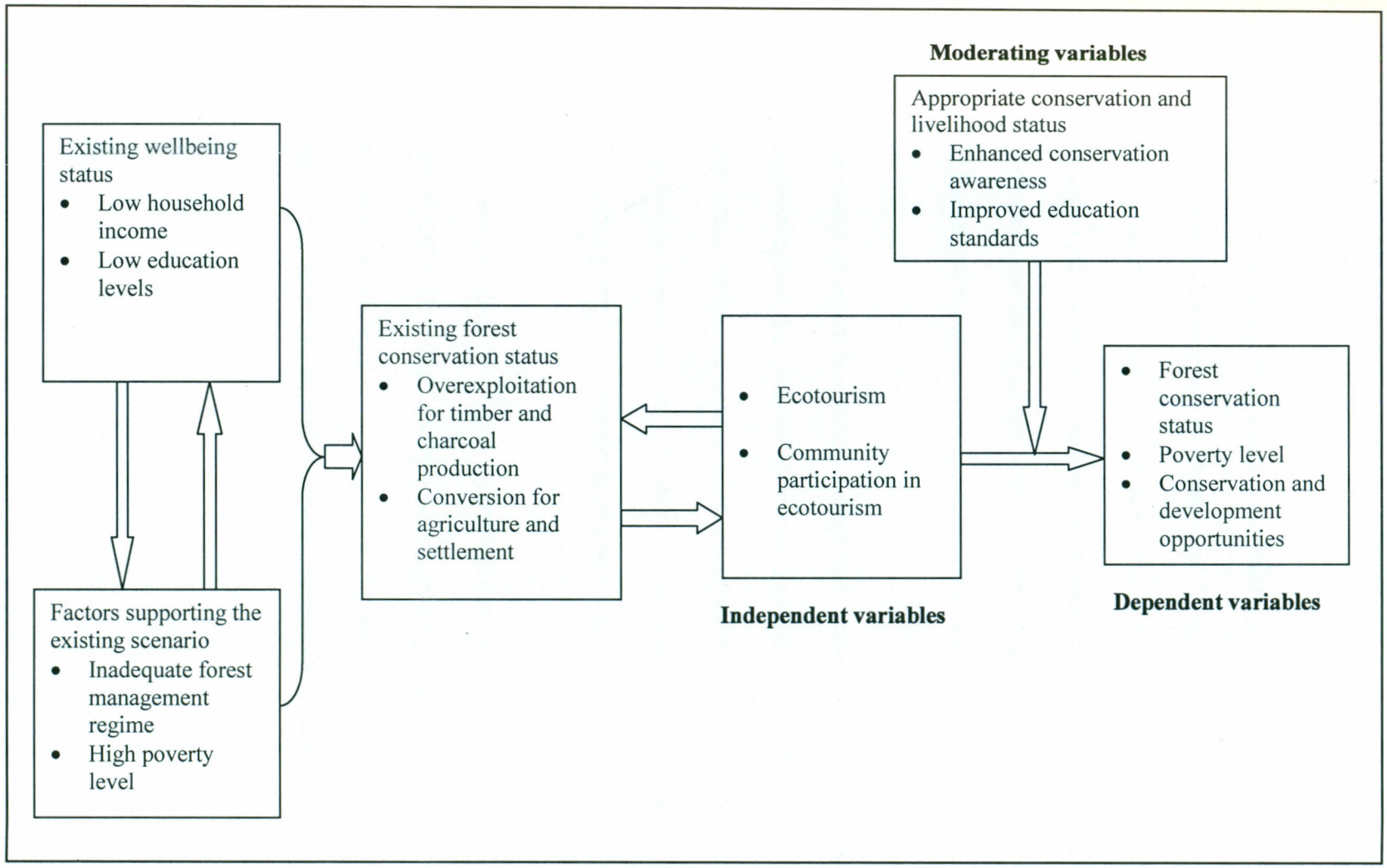

Figure 2.1: Conceptual framework on the contribution of ecotourism to forest conservation and livelihoods

The main factors supporting the existing scenario were the high poverty levels and poor forest management regime characterized by weak legal framework hence low income and education levels. This in turn led to forest destruction due to the pressing need for survival hence vicious cycle of poverty and environmental degradation. As a result, there was expected over-exploitation of the forest for timber and charcoal production, and conversion of forest land for agriculture and human settlement.

Low conservation status resulted to reduced ecotourism activities while community participation in ecotourism had the potential to reverse the trend and result to improved forest conservation status. Enhanced conservation awareness and improved education standards could influence ecotourism to contribute either positively or negatively to forest conservation, poverty levels and conservation and development opportunities.

In this study, ecotourism and community participation in ecotourism were the independent variables while forest conservation status, poverty level and conservation and development opportunities were the dependent variables. Enhanced conservation awareness and improved education standards were the moderating variables.

CHAPTER THREE: METHODOLOGY

3.1 Study Area

The location and size, population and settlement pattern, rainfall pattern, temperature, and topography, soils and vegetation of the study area are described in sub-sections 3.1.1, 3.1.2, 3.1.3, 3.1.4 and 3.1.5 below respectively.

3.1.1 Location and Size

The research was undertaken in Dakatcha woodland which comprises unprotected 32,000ha tract of isolated and scattered pockets of forests. It is a relatively intact Coastal woodland on 03°01'S, 39°51'E in Magarini Sub-County, Kilifi County, Northern Coast of Kenya (Figure 3.1). Together with Arabuko-Sokoke Forest and fragments of Madunguni forests, Dakatcha woodland form part of the only remaining Northern-most forest block of *Brachystegia speciformis* which used to extend from Southern Somalia to Northern Mozambique region.

Magarini Sub-County borders Malindi Sub-County and River Sabaki to the South, Tana Delta Sub-County to the North West, and is located 25 to 50km inland from the Indian Ocean. The Sub-County covers an approximate area of 1,675km^2 and is divided into 2 administrative divisions namely Magarini and Marafa. The study site is located in Marafa Division.

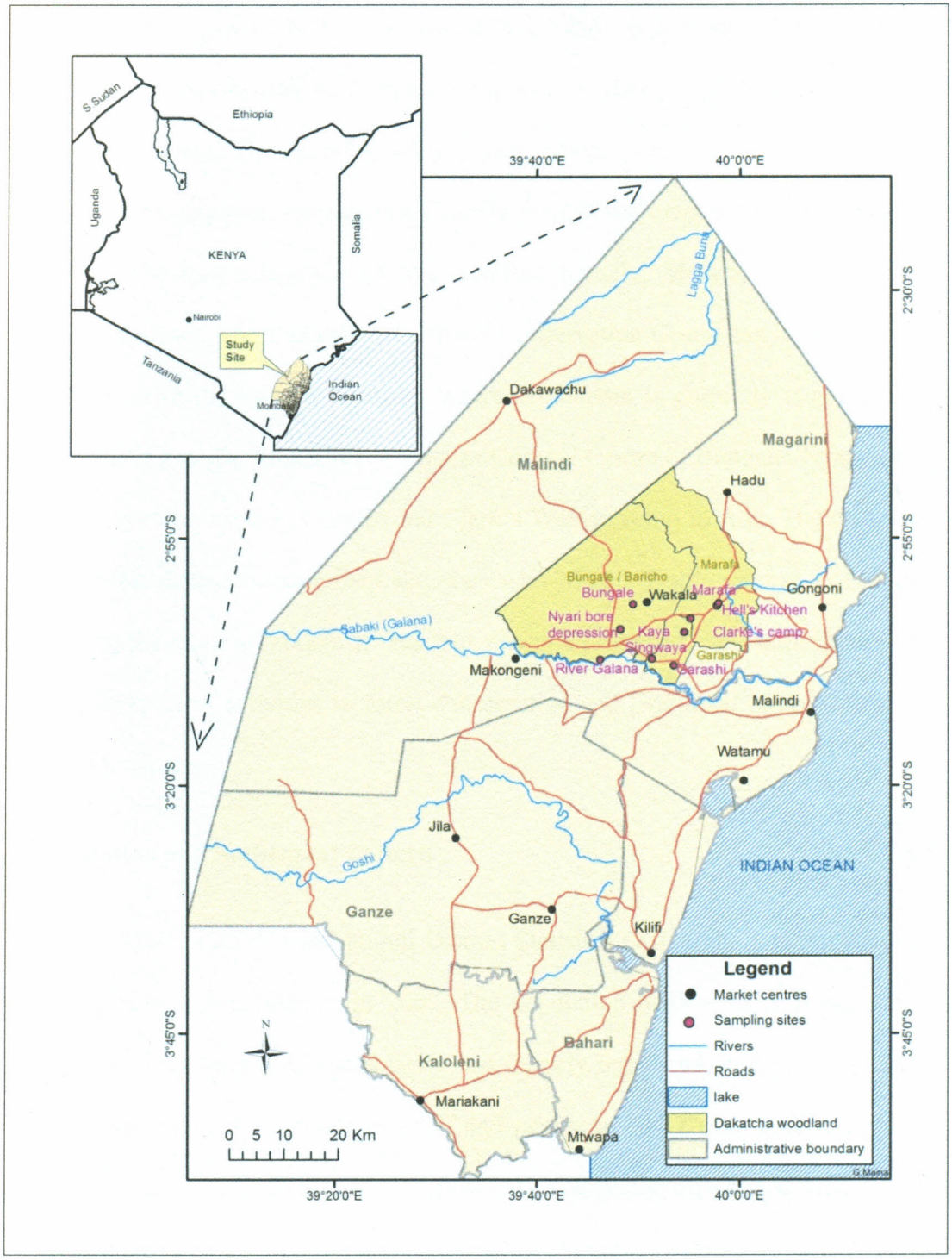

Figure 3.1: Dakatcha Woodland Geographical Location in Kenya

Source: Author (2013)

The Dakatcha covers two tracts of woodland that nearly adjoin each other, one of around 25,000 ha, North-west of Baricho town, and another of 7,000 ha, North and West of Marafa town. The woodland lies about 140km North of Mombasa and is managed by The County Government of Kilifi in trust of the local community (Mbuvi *et al.*, 2011). The area comprises of five locations namely; Marafa, Adu, Bungale, Dagamra and Garashi. The Dakatcha Woodland Conservation Group has identified key eco-tourism sites in the various locations where ecotourism is currently ongoing: the Hell's Kitchen in Marafa; Mekatilili wa Menza Cultural Centre in Bungale; Nyari Bore in Garashi; Kaya Singwaya in Garashi and Clark's Weaver camp in Adu. The different locations exhibit different ecotourism activities with Marafa Hell's kitchen in Marafa division being the main attraction. It was thus possible to compare the contribution of the various ecotourism activities to forest conservation and livelihood improvement in the different locations.

3.1.2 Population and Settlement Pattern

According to KNBS (2009) and Malindi District Statistics Office, the total population in Magarini District was 160,154 in 2009. The population density is 70 persons per square kilometre but Marafa Division being less densely populated, had 62,705 people in 1675.1 square kilometers compared to 97,449 people in 741.7 square kilometers in Magarini Division (GoK, 2011). The population is sparsely distributed with more people concentrated in major trading centres such as Marafa which has approximately 10.2% of the total population (GoK, 2011; Mbuvi *et al.*, 2011).

The settlement pattern is influenced by factors such as rainfall, altitude and administrative policy such as settlement schemes (MacOloo, 2003). In Dakatcha Woodland, poor climatic conditions, poor soils, and scarcity of water contribute to low population density and hardship in human survival (A Rocha Kenya, 2009).

3.1.3 Rainfall Pattern

The annual rainfall ranges from 1200mm along the coastline and decline to 400mm further to the hinterland. Rainfall pattern is bimodal; with long rains falling from April to June while short rains occur from October to December. In Dakatcha woodland, the hot dry coastal hinterland practically extends to the coastline leading to lower than average rainfall (Bennum and Njoroge, 1999). Braun (1980) however states lower figures of 450-900mm annually. Due to low rainfall, there is only one permanent river, River Sabaki, in the vicinity of Dakatcha woodland. Other rivers like Deki and Koromi are semi-permanent or seasonal (Ruuska, 2012).

3.1.4 Temperature

The mean annual temperature of Dakatcha woodland is 24-30° Celsius while the mean maximum and minimum temperature are 29.5 degrees Celsius and 21.5 degrees Celsius respectively (Braun, 1980).

3.1.5 Topography, Soils and Vegetation

The landscape is gently undulating. Altitude ranges between 180m and 300 m above sea level. The woodland vegetation is dominated by *Brachystegia speciformis* in the deep loose sandy soils of the valleys and the slopes around Marafa, while *Brachylaena*

huillensis-Cynometra webberi associations are prominent on red Magarini sands top of the low hills (Mbuvi *et al.*, 2011). Other dominant species for red soils include *Manilkara sulcata, Combretum hildebrandtii, Encephalartos hildebradtii* and *Bigitaria milanjiana* (Macharia, 1996). On more shallow soils it is common to find *Croton Dichogamus, Euphorbia tirucalli, E. candelabrum* and Acacia species. The imperfectly drained, but fertile black cotton soils with high clay content on the other hand are characterized by *Diospyros cornii, Thespasia danis, Acacia nilotica, Aspilia mossambicencis and Pennisetum mezianum* (Ruuska, 2012). When wet, these soils are sticky and gummy and crack widely when dried out, and only a few types of trees survive on these soils that are most common in low-lying flat areas with seasonal streams (Teel, 1988).

On the western side of Dakatcha woodland, the saline and sodic soils resulting from high evaporation rates and little rainfall, species such as *Acacia zanzibarica, Suaeda monoica* and the grasses *Sporobolus helvotus* and *S. pellucidus* are dominating (Macharia, 1996). During the dry season, good grazing areas for livestock can be found on clay soils accumulated on the alluvial soils with trees such as *Acacia elatior* and *Balanites orbicularis* and grasses such as *Cynodon dactylon, Echinocloa haploclada, Setaria sphacelata* and *Sorghum verticiliflorum* (Macharia, 1996).

3.2 Research Design

The research design was both descriptive and correlational. According to Polit and Hungler (1999), descriptive research provides an account of situations and helps

describe what exists and uncover new facts. It also entails use of a combination of many research methods and statistical techniques that yield numeric data and operate on the basis of the hypotheses. Correlation research was used to determine the interaction between variables; the relationships between ecotourism and forest conservation, and ecotourism and livelihood improvement were determined.

3.3 Target Population

Those targeted by the study included community members living in Dakatcha Woodland, key informants comprising of officers from Kenya Forest Service (KFS), Kenya Forestry Research Institute (KEFRI), Kenya Wildlife Service (KWS), representatives of local NGOs, local leaders, opinion leaders, Dakatcha Woodland Conservation Group, tourists and tour operators.

3.4 Sample Size and Sampling Procedure

According to KNBS (2009), the total population of Dakatcha woodland is 35,000. The area comprises of five locations namely; Marafa, Adu, Bungale, Dagamra and Garashi. Dagamra Location was however excluded from the study since it is further away from the woodland. The other four locations are further divided into 12 sub-locations namely; Dakatcha, Baricho, Gandini, Adu, Kamale, Kadzandani, Singwaya, Mikuyuni, Mambasa, Masindeni, wakala, and Madina.

A representative sample of 384 household respondents was selected from households living in twelve sub-locations adjacent to the woodland using the Fisher's formula as follows;

$$n = \frac{Z^2 p (1-p)}{c^2}$$

$$n = \frac{(1.96)^2 (0.50) (0.50)}{(0.050)^2} = \mathbf{384}$$

Where:

n = desired sample size

Z = degree of confidence at 95% confidence level (1.96)

p = proportion in population having measured characteristics chosen at 50% as recommended by Fisher *et al.* (1998)

c = level of statistical significance at 5% (0.05)

The formula was ideal in this study since the population is greater than 10,000. According to Mugenda and Mugenda (2003), big samples are always the best despite resources and time constraints.

In order to select the households for questionnaire administration, household lists were drawn in a participatory manner in each of the twelve sub-locations during focus group discussion and simple random sampling used to select 32 households from each of the lists. Purposive sampling was used to select key informants to be interviewed.

3.5 Data Collection

Both primary and secondary data were acquired to complement each other. Secondary data was collected from documented information in books, gray literature, previous related studies, government departmental reports and reports from NGOs and CBOs.

Primary data on the other hand was gathered from sampled households, key informants, transect walks, observation and photography.

A total of 384 household respondents were interviewed to gather information on the past and current conservation status of the woodland, various forest uses, annual contribution of ecotourism to household incomes and level of community involvement in forest conservation. Semi-structured questionnaires were used to obtain household information as they allow probing of arising lines of enquiry and elaboration of points of interest which in turn enable the attainment of information from literate and non-literate individuals (Gary, 1995). This came in handy as there are very high illiteracy levels in the study area (Mbuvi *et al.*, 2011; Ruuska, 2012).

Thirteen (13) focused group discussion (FGD) were also held, one in each of the twelve sub-locations comprising both men and women, and another one targeting representatives of tour guides, tour operators and members of Dakatcha Woodland Conservation Group. The FGD were aimed at validating information obtained from the interview schedules and questionnaire survey. In addition, fifteen key informants drawn from local CBOs, government departments, NGOs and private sector were interviewed using semi-structured interviews.

Transect walks and direct observation were used in the study area with a view of getting insight into residents resource use activities and attitudes towards conservation, as well as their involvement in ecotourism. Three cross-sectional transects were developed

across the woodland with the guidance of the key informants in order to provide representative views. A checklist of the key parameters to be observed was used to collect data at different locations at intervals of 1 km. The main parameters observed were the threats to the woodland, household forest uses, ecotourism activities in the area and the conservation status of the woodland. Other parameters observed were economic activities of the communities and human settlement patterns. Results from the three transects were recorded, discussed with the key informants and compared, and a summary table was drawn (Appendix II).

3.6 Data Analysis Methods

Data analysis was done using both qualitative and quantitative methods; a combination of descriptive, parametric and non-parametric statistics was used. SPSS version 17.0 and Excel computer software programs were used for the analysis. In descriptive statistics, sums, means, frequencies and percentages were computed to explore the pattern of the data in response to the variables of the study. Parametric statistics, mainly regression analysis and generalized linear modelling were performed for quantitative data to determine the relationship between ecotourism, conservation and community livelihoods. All statistical tests were analyzed at $p<0.05$ level of significance. Summaries of representative practices were produced and the results presented using graphical and tabular techniques.

3.7 Ethical Considerations

Ethical considerations were made during the study; respondents were allowed to voluntarily participate in the study having clearly understood the objectives and

duration of the study and those who felt uncomfortable answering some of the questions were not coerced. The information obtained from respondents was treated with utmost confidentiality and used only for academic purposes.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Introduction

This study aimed at investigating the contribution of ecotourism to forest conservation and improvement of community livelihood in Dakatcha woodland. More specifically, it sought to determine the relationship between community participation in ecotourism and forest conservation, assess the contribution of ecotourism to poverty reduction and identify the opportunities and challenges to community participation in ecotourism. Section 4.2 presents the demographic and socio-economic profiles of respondents; section 4.3 presents the relationship between community participation in ecotourism and forest conservation; section 4.4 presents the contribution of ecotourism to poverty reduction while section 4.5 presents the opportunities and challenges for community participation in ecotourism.

4.2 Demographic and Socio-economic Profiles of Respondents

The age and gender of respondents, as well as access to social amenities and education levels were studied to provide background information of respondents and provide a basis for analysis of the relationship between ecotourism and various socio-economic characteristics.

4.2.1 Age of Respondents

Stratification of respondents into various age groups was carried out to establish whether all members of the community participated in ecotourism irrespective of their age or whether there were certain aspects of ecotourism which specific individuals or

sub-groups in a specific age were involved in. About 29% of the respondents were 41-50 years old while 28% were 31-40 years old. A further 17% were over 60 years old, while 14% were aged between 51-60 years. Only 12% of those interviewed were youth aged between 20-30 years (Figure 4.1).

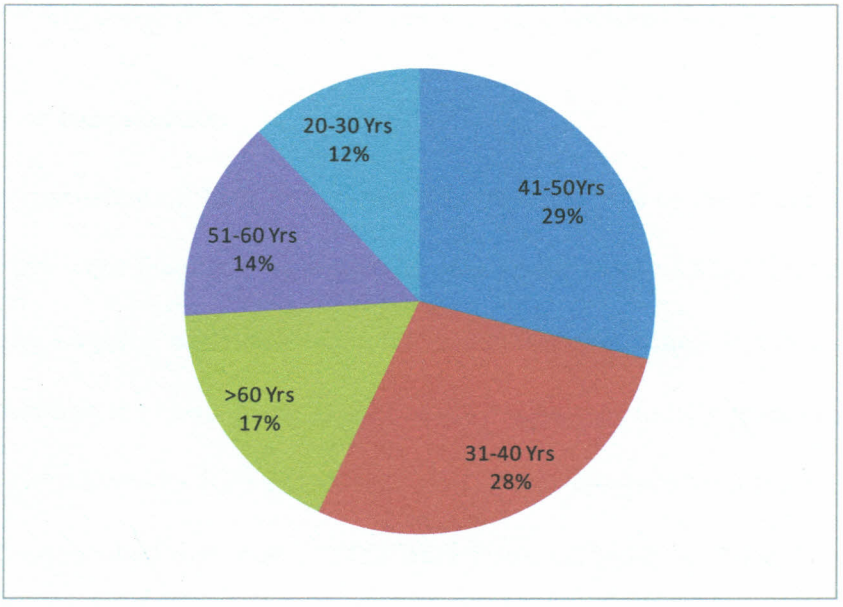

Figure 4.1: Age ranges of the respondents

Source: Field data (2013)

The study established that although all members of the community participated in ecotourism, older people were more involved than the youth. This was attributed to the fact that conservation activities are mostly practiced by older members of the community while the youth are more engaged in other forms of economic activities, mainly employment in urban areas. According to Ruuska (2012), young people in Magarini often migrate to neighbouring towns in search of employment opportunities. The different age groups however participated in different aspects of ecotourism. Bird

watching and tour guiding was dominated by the youth aged between 20-30 years at 72%, while 64% of those aged between 31 and 50 years were mainly involved in tour operations and hotel management. Older members of the community aged above 50 years were actively involved in handcrafts making and traditional dances (57%).

4.2.2 Gender of Respondents

The gender composition of those interviewed showed that 81% of the respondents were male while 19% were female. Women in the area spend most of their time during the day farming, looking for water and engaging in charcoal production and sale while tree logging and hunting are male dominated economic activities, mostly practiced illegally at night to prevent arrest by KFS rangers. These findings compare with those of Ruuska (2012) which established that most of the illegal forest activities in Dakatcha woodland are carried out by men mostly at night to avoid being arrested. This could explain why majority of the respondents were male since questionnaires were administered during the day. Illegal logging, hunting and charcoal production impact negatively on forest conservation and consequently affect ecotourism negatively.

4.2.3 Access to Social Amenities

Access to social amenities is a key indicator of community wellbeing and was thus studied to provide an overview of the socio-economic status of the community. The study revealed that access to basic social amenities, particularly housing, sanitation, water and energy is still a major challenge. About 53% of the respondents live in traditional huts, 44% in semi-permanent houses and only 3% in permanent houses. Furthermore, lack of permanent water sources in the vicinity of homesteads forces

people to walk long distances to fetch water. On average, homesteads are situated approximately 1,800 metres away from the nearest water source and the main sources of water are seasonal ponds, rivers and dams, a few wells and boreholes. Only 16% of the residents mainly those living around Marafa trading centre have access to piped water. These findings compare with those of other studies (Mbuvi *et al.*, 2011; Ruuska, 2012) which depict inadequate access to social amenities in the area.

4.2.4 Education Levels of the Respondents

The level of education was studied because it is a vital instrument in the development of an individual and the society at large. Quality education plays a key role in poverty reduction; it provides the necessary skills for individuals to improve their livelihood and secure employment. The study established that 62% of the respondents had attained primary education while 23% were illiterate. A further 11% had attained secondary education, while 3% had attained tertiary education. Only 1% of the respondents had attained University education (Figure 4.2).

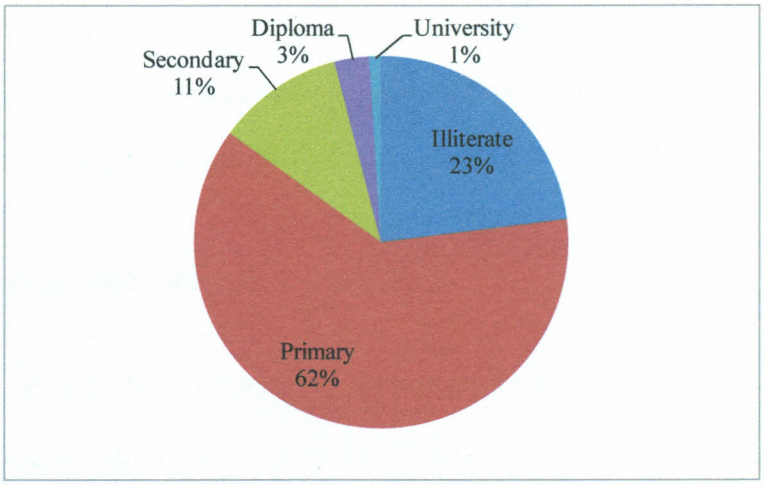

Figure 4.2: Education levels among respondents

Source: Field data (2013)

Results of this study conform to earlier studies by GoK (2005) and KNBS (2007) which found that Magarini sub-county had one of the lowest secondary school enrolment rates in the country. The low enrolment rate was attributed to early pregnancies and marriages among teenage girls as well as inadequate schools in the area which force students to trek very long distances to access schools.

4.3 Community Participation in Ecotourism and Forest Conservation

This section is divided into seven sub-sections; sub-section 4.2.1 defines ecotourism as perceived by the respondents, sub-section 4.2.2 looks at household forest uses while sub-section 4.2.3 elucidates the importance of forest conservation as perceived by respondents. Sub-section 4.2.4 provides details on the relationship between community participation in ecotourism and forest conservation while sub-section 4.2.5 looks at the

demographic characteristics and conservation of the woodland. Details on the threats to conservation of the woodland, and Management of Dakatcha woodland are provided in sub-sections 4.2.6 and 4.2.7 respectively.

4.3.1 Ecotourism as Defined by the Respondents

In the context of this study, ecotourism constituted tourism that involves travel to natural destinations, minimizes negative impacts on the environment, builds environmental awareness, provides direct financial benefits and empowerment for local people, respects local culture, and supports human rights and democratic movements as per Honey (2008) definition. The main activities that constituted ecotourism in the study were: bird watching, tour guiding, handcrafts making, and performance of traditional dances to entertain the tourists.

Various definitions were given for ecotourism by respondents. About 50% of the respondents defined ecotourism as 'tourism' activities that do not destroy the environment or that are in harmony with nature. Another 50% of the respondents defined ecotourism as tourism activities aimed at improving the wellbeing of the local community and which do not go against their cultural beliefs and practices. These definitions indicate that the local community have an understanding of ecotourism and can clearly differentiate it from conventional tourism.

4.3.2 Household Forest Uses

Households use the woodland for farming, grazing, as hunting grounds, to obtain construction materials as well as for cultural purposes such as prayers and sacrifices. Source of forest products was listed as the biggest forest benefit with residents ranking the various forest products in order of their importance (Figure 4.3).

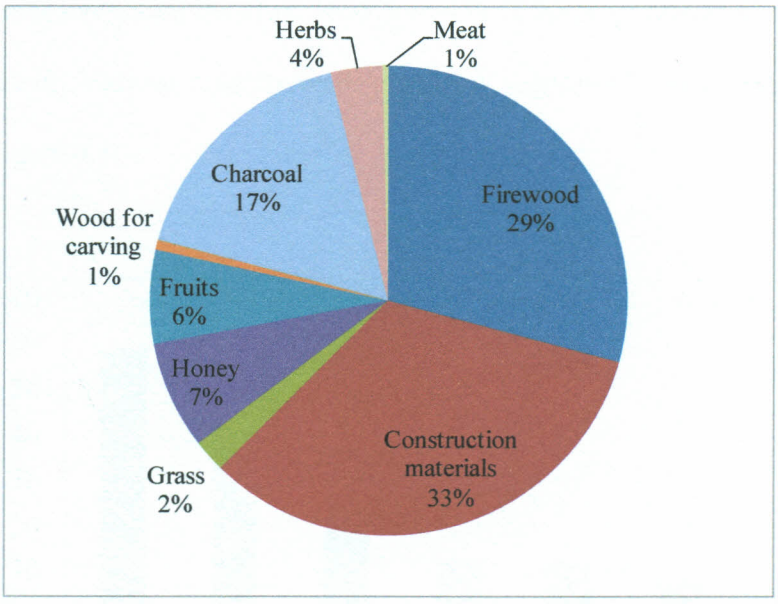

Figure 4.3: Forest products harvested by respondents

Source: Field data (2013)

Construction materials (33%) were ranked as the most common forest products extracted from the woodland. This was followed by firewood (29%) and charcoal (17%). This confirms the respondents' view that illegal logging and charcoal production are the biggest threats to conservation of the woodland. These results further compare with those of A Rocha Kenya, (2009) which indicated that firewood, charcoal and

kerosene are the main sources of household energy in the woodland with the latter being commonly used for lighting.

4.3.3 Importance of Forest Conservation as Perceived by Respondents

Majority of the respondents (96%) supported forest conservation mainly due to its environmental and livelihood benefits. However, 4% of the respondents did not support forest conservation. Various reasons were given for support of forest conservation as elucidated in Figure 4.4.

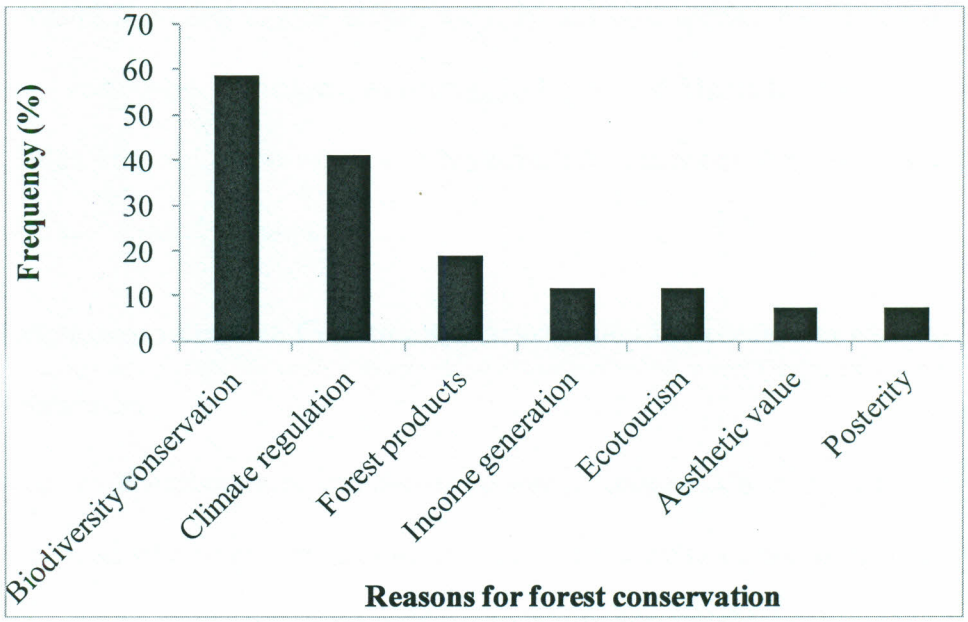

Figure 4.4: Respondent's reasons for conserving the forest

Source: Field data (2013)

Biodiversity conservation was the most important reason for forest conservation (58.6%). This was followed by climate regulation (41.2%), source of forest products

(18.9%), income generation (11.6%) and ecotourism (11.6%). Aesthetic value and conserving for posterity were the least important reasons for forest conservation at 7.4% each.

Those who did not support forest conservation said it restricts access to the forest hence making it difficult for them to derive any tangible benefits from the forest. They were also of the opinion that forest conservation could lead to displacement of those illegally inhabiting the forest. These results indicate that ecotourism was not a major reason for forest conservation especially amongst non-participants in the various ecotourism activities. Respondents however reiterated that conservation of the rich biodiversity of the woodland including unique plants, animals and bird species has attracted a large number of ecotourists to the area. According to Isager and Theilade (2001), community participation in forest conservation is often driven by the realization of environmental, economic and cultural benefits.

4.3.4 Relationship Between Community Participation in Ecotourism and Forest conservation

Regarding the contribution of ecotourism to forest conservation in the area, 73.5% of the respondents who were participating in ecotourism activities were of the opinion that ecotourism had contributed to forest conservation while 26.5% of them were of the opposing opinion. Regression analysis ($p<0.05$) revealed that community participation in ecotourism has contributed to forest conservation ($r^2=0.1515$, $p=0.041$) (Figure 4.5). The contribution is however minimal and this was attributed to the various challenges

that affect ecotourism in the area including high poverty levels and weak forest management regime that make the woodland vulnerable to anthropogenic factors.

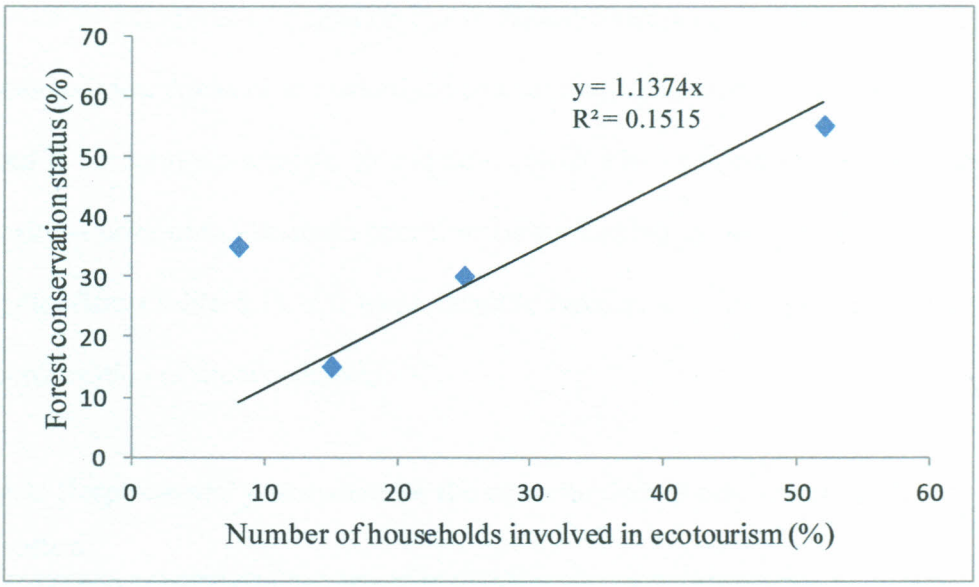

Figure 4.5: Relationship between community participation in ecotourism and forest conservation

Source: Field data (2013)

All those who acknowledged the contribution of ecotourism to forest conservation were involved in ecotourism. They revealed that ecotourism had contributed to the conservation of the woodland mainly through enhancing community awareness on the importance of conservation as well as through income generation for the households which has in turn provided an incentive for conservation. These results compare with the findings of Collins (2008) and Ruuska (2012) who reported that economic benefits can change attitudes towards forest conservation among forest adjacent dwellers.

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Interviews with key informants further revealed that revenue generated from ecotourism activities provide supplementary household income, while the promotion of Dakatcha woodland as an ecotourism destination has increased conservation awareness among the local communities. Areas of the woodland surrounding ecotourism sites have also been preserved to attract more tourists. In addition, community projects such as schools and health centres have been initiated either directly by tourists or using revenue generated from ecotourism (Table 4.1). All these benefits have in turn provided incentives for better conservation of the woodland.

Table 4.1: Respondents' perception on the contribution of ecotourism to forest conservation

Contribution of ecotourism	Frequency (n=384)	Percentage (%)
Income generation	246	64
Conservation of ecotourism sites	43	11
Increased conservation awareness	46	12
Support of community projects (education and health)	50	13
Total	384	100

Source: Field data (2013)

4.3.5 Demographic Characteristics and Conservation of the Woodland

The settlement pattern in areas adjacent to the woodland is sparsely distributed with more people concentrated in major trading centres such as Marafa, Garashi, Baricho and Adu. The distribution of people is determined by rainfall, and administrative policies such as establishment of settlement schemes. Charcoal production and sale was the

4.5 Opportunities and Challenges for Community Participation in Ecotourism

Community participation in ecotourism presents a myriad of opportunities that can be harnessed for conservation, economic and cultural gains. However, the local community faces a number of challenges during their participation and promotion of ecotourism in Dakatcha woodland. Detailed findings on the opportunities and challenges faced by the community are presented in sections 4.4.1 and 4.4.2 below.

4.5.1 Opportunities for Community Participation in Ecotourism

The study revealed that the woodland has a rich diversity of flora and fauna which makes it highly suitable for development of ecotourism. Furthermore, the rich cultural attractions and the strategic location of the woodland near Malindi town which is a major tourist hub presents a perfect opportunity for development of ecotourism for enhanced economic, environmental and social benefits.

Results of the study show that ecotourism has had significant positive impacts on the local community and various opportunities exist for continued and enhanced community participation in ecotourism. Ecotourism provides an opportunity for long-term protection of the environment through provision of economic incentives such as income generation, employment creation and provision of secondary school bursaries to bright needy students. A similar study by Collins (2008) revealed that ecotourism has resulted in improved education levels amongst participant students living adjacent to Arabuko Sokoke forest.

utilization of forest resources have a direct impact on conservation of the woodland since over exploitation of forest resources results to forest degradation.

Specific occupation has an important bearing on the forest resource extraction. The study revealed that 60% of the respondents practice farming, followed by charcoal production and timber sale (18%), ecotourism (11%), retail businesses (5%), casual work (4%), salaried employment (1%), and hunting (1%). Farming, charcoal production and timber sale which were the most widespread livelihood sources in the area impacted negatively on the forest through conversion of forested areas into farmlands and over extraction of wood products respectively.

According to the study, ecotourism is a secondary economic activity to farming and sale of forest products, and that although farming is not reliable due to low and erratic rainfall, communities continue to practice it mainly for subsistence purposes, while the high demand for forest products such as timber and charcoal in Malindi town has led to more people exploiting the forest for economic gain.

4.3.6 Threats to Conservation of the Woodland

Anthropogenic activities have negative impacts on conservation of the woodland. Charcoal production, illegal logging, human induced forest fires, conversion of forest land to agricultural land and overgrazing were identified as the most significant threats to the woodland. Other threats include poaching, firewood collection, illegal settlement, overgrazing, land grabbing and political interference (Table 4.2).

Table 4.2: Threats to Dakatcha woodland

Threat	Frequency (n=384)	Response (%)
Charcoal production	147	38.4
Overgrazing	15	3.8
Conversion of forest land to agricultural land	51	13.4
Illegal logging	97	25.2
Poaching	16	4.1
Firewood harvesting	7	1.8
Forest fires	28	7.3
Human settlement	10	2.7
Land grabbing	8	2.0
Political interference	5	1.3
Total	384	100

Source: Field data (2013)

Respondents stated that the primary reason why they practiced charcoal production, timber logging and other forest destructive activities was because they wished to boost their income but had no alternative ways of generating income. They were however of the opinion that ecotourism has significantly reduced the magnitude of human induced forest destructive activities such as charcoal production, overgrazing, agricultural encroachment, illegal logging, firewood harvesting and poaching through provision of alternative source of income which has reduced human pressure on the forest. These results compare with those of Mbuvi *et al.*, (2011) which established that anthropogenic factors resulting from high poverty levels and weak management framework are the

biggest threat to conservation of Dakatcha woodland (Plate 4.1). However, some parts of the woodland are also being conserved as seen in Plate 4.2.

Plate 4.1: A site degraded due to deforestation in Dakatcha woodland

Source: Author, 10/02/2013

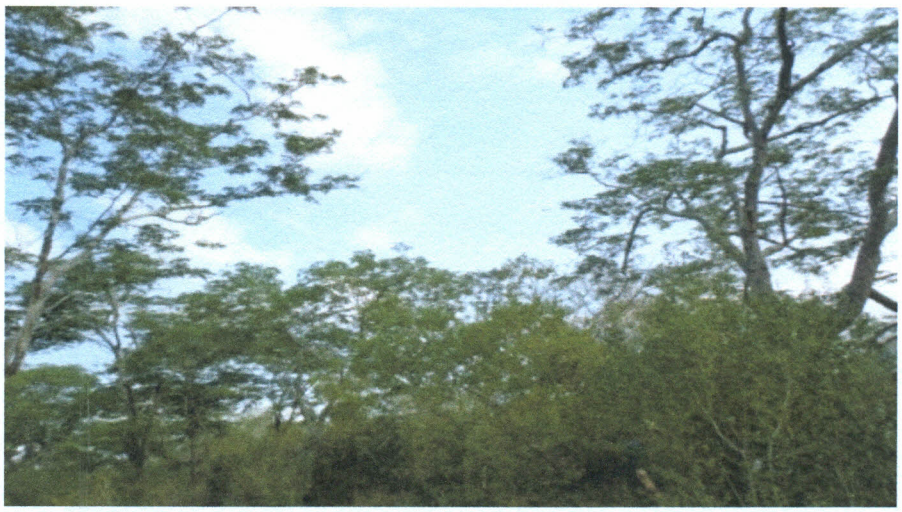

Plate 4.2: Conserved part of the woodland with mature *Brachstegia speciformis* trees near one of the ecotourism sites

Source: Author, 10/02/2013

4.3.7 Management of Dakatcha Woodland

The study established that the woodland lacks formal protection status as it is currently held in trust for the community by the County Government of Kilifi. The County government plays an oversight role with individuals and clans owning different areas of the forest. The main land uses were found to be farming (66.5%), charcoal production and timber sawing (20%), settlement (5%), grazing (4%) and hunting (3%) (Table 4.3).

Table 4.3: Land uses at and around Dakatcha woodland

Land use type	Frequency (n=384)	Response (%)
Farming	255	66.5
Charcoal production and timber sawing	77	20.0
Settlement	19	5.0
Grazing	15	4.0
Hunting	12	3.0
Others	6	1.5
Total	384	100

Source: Field data (2013)

The study further revealed that only 7% of the residents have title deeds while another 4% have allotment letters. About 89% of the residents have no title deeds. Land in Magarini Sub-county was also found to belong to two categories; private land (5%) and community land which form the largest track at 95%.

The woodland has thus been degraded by anthropogenic activities such as charcoal production, illegal logging, human induced forest fires, conversion of forest land to

agricultural land and overgrazing, mainly resulting from inadequate management systems and unclear land tenure system. These findings correspond with those of Mbuvi *et al.,* (2011) which revealed that legal protection of the woodland is a prerequisite for sustainable management and effective regulation of all development activities in the area including ecotourism.

4.4 Ecotourism and Poverty Reduction

This section looked at the contribution of ecotourism to sustainable livelihoods and hence poverty reduction. According to Krantz (2001), there is realization that poverty is not just a question of low income, but also includes other dimensions such as bad health, illiteracy, lack of social services as well as a state of vulnerability and feelings of powerlessness in general. Sustainable livelihoods therefore offer an integrated approach to poverty reduction. UNDP (2006) measures poverty in three dimensions of human development; life expectancy, educational attainment and standard of living measured by income. This study established the contribution of ecotourism to education level and household income.

The section is divided into four sub-sections with sub-section 4.3.1 providing details of the main sources of income and sub-section 4.3.2 looking at the relationship between community participation in ecotourism and socio-economic characteristics. Sub-section 4.3.3 provides an overview of the main ecotourism activities in Dakatcha woodland while sub-section 4.3.4 looks at the contribution of ecotourism to poverty reduction.

4.4.1 Main Sources of Income in Dakatcha Woodland

Results (Table 4.4) of the study reveal that the woodland community is mainly poor. The average annual income however varied across the sites; Garashi had the highest income while Adu had the least. Notably, Garashi had the highest income derived from small scale business and investment, forest products, remittance and micro-finance. The situation was attributed to a strong NGO presence in the area coupled with the numerous capacity building initiatives aimed at improving community livelihoods. The situation in Adu was attributed to poor infrastructure development in the area that led to lack of investment opportunities.

Table 4.4: Annual contribution of main livelihood sources to household income

Source of income	Contribution of sources of income per location p.a (Ksh.)				Contribution to household income (%)
	Adu	Bungale	Garashi	Marafa	
Salary & wages	120,040	80,754	89,426	321,074	35
Tree nursery	-	90,000	-	-	20
Business & investment	43,112	42,221	65,780	85,585	13
Ecotourism	15,375	45,821	20,485	52,373	8
Farm production	18,883	51,525	45,199	25,621	8
Forest products	10,758	31,416	61,379	20,343	7
Remittance	13,727	13,438	41,249	24,000	5
Micro-finance	-	12,000	24,000	-	4
Average HH income	36,983	45,897	49,645	45,165	

Source: Field data (2013)

Results indicated that salary and wages were the biggest contributors to household incomes at 35%, followed by tree nurseries (20%), small businesses and investment (13%), farm production (8%), ecotourism (8%), forest products (7%), remittance (5%) and micro-finance (4%) (Table 4.4). The contribution of various sources of income however varied across sites; Marafa had the highest income derived from salary and wages while Bungale had the least. The situation in Marafa was attributed to the fact that it is an urban area and also the administrative headquarters for Magarini Sub-county hence the employment opportunities are relatively higher as compared to the other sites. The contribution of forest products to household income was noted to be much higher in Garashi than in other sites. This is a pointer to possible over-exploitation of forest resources for commercial gain hence resulting to forest degradation. The contribution of ecotourism to household income was highest in Marafa mainly due to the fact that the Hell's kitchen in Marafa is the main ecotourism site in Dakatcha woodland.

Although majority of the local community is dependent on wages for its food security, the lack of employment opportunities, financial capital, skills and technology presents a challenge. The findings compare with those of GoK (2011) which revealed that farming, small business, casual labour and livestock keeping were the main sources of income in the area. Hoorweg *et al.*, (2003) further noted that access to financial capital is a key challenge among rural populations hence there is need to invest in rural infrastructure, promote small-scale industries and rural enterprises and improve access to credit among the rural population.

Small scale agriculture is now supplemented by small business enterprises, sale of forest products, remittance and micro-finance. A new trend has emerged in that more people are now engaged in sale of tree seedlings as an economic venture. This can be attributed to the increasing promotion of Dakatcha woodland as an ecotourism destination and the resulting conservation awareness among locals that has shaped their attitude towards conservation. Consequently, more locals are now engaging in sustainable livelihood activities such as bee keeping and commercial tree nursery establishment.

4.4.2 Contribution of Ecotourism to Household Income

The study revealed that ecotourism is the fourth highest source of income and as such, it is a secondary source of income (Table 4.4). Competing land uses, poor marketing and infrastructure as well as unsustainable use of natural resources presents challenges to the development of ecotourism. There is thus an urgent need to reverse this trend and undertake an aggressive awareness campaign on the role of ecotourism as an alternative livelihood and conservation activity among the local community that could arrest the escalating degradation. Records from Dakatcha woodland conservation group revealed that revenue from ecotourism activities in Dakatcha woodland has been decreasing over the past five years as the number of tourists decrease (Table 4.5). This was attributed to cases of insecurity in the country as well as the global economic crisis witnessed in the past few years. Furthermore, like most other tourism activities in the Coast region, ecotourism was seasonal with more tourists visiting during the high season as compared

to the low season. As such the visitation and revenue generated was segregated in to high and low seasons for comparative analysis.

Table 4.5: Revenue generated from ecotourism visitation fees in Dakatcha woodland in the last five years

Year	Number of tourists during high season (August-April)	Revenue generated (Ksh.)	Number of tourists during low season (May-July)	Revenue generated (Ksh.)
2009	6100	4,880,000	1070	856,000
2010	4010	3,208,000	490	392,000
2011	3740	2,992,000	420	336,000
2012	3310	2,648,000	283	226,400
2013	2700	2,160,000	300	240,000
Total	19,860	15,888,000	2,563	2,050,400

Source: Marafa Hell's Kitchen Tour Guides Association (MHKTGA) (2013)

A total of Ksh. 17,938,400 was earned from visitation fees in the five years beginning from 2009 to 2013. Each tourist paid an entry fee of Ksh. 300 and an additional Ksh. 500 for tour guiding services bringing the total charge to Ksh. 800. Focus group discussions with members of the Dakatcha woodland conservation group revealed that about 5% of the revenue generated was used for operational costs related to running the various ecotourism sites while 50% was used to provide secondary school bursaries to bright needy students. The remaining 45% was used to pay about 50 employees of the

tourist sites, 50 tour guides and another 100 members of traditional dance groups. In addition, about Ksh. 6,210,000 was generated from sale of handcrafts to tourists by the various groups and individuals involved in this business in the various ecotourism sites (MHKTGA, 2013). This is an indication that revenue generated from ecotourism activities was distributed across all segments of the society who are involved in the various ecotourism activities with a further multiplier effect on their families.

4.4.3 Alternative Livelihood Systems

A number of alternative livelihoods have been initiated in Dakatcha woodland through the support of various NGOs with an aim of diversifying the community's sources of income and enhancing forest conservation. These activities include beekeeping, improved farming techniques and tree nursery establishment and on-farm forestry as elaborated below in sub-sections 4.4.3.1, 4.4.3.2 and 4.4.3.3.

4.4.3.1 Bee keeping

Communities in the area have been carrying out beekeeping for many generations with each generation inheriting it from the previous as a customary activity. This has however been at a subsistence level where production has been mainly for domestic consumption at the household level and in some cases for sharing with neighbours and friends. Most community members were using the traditional log hives which vary in sizes and which are universally known to be low yielding. Since June 2009, Nature Kenya partnered with the Finish embassy and Community Development Trust Fund and supplied both community members and members of Dakatcha Woodland Conservation Group with over 1,000 beehives. The intervention has since turned bee keeping in the

area into an income generating enterprise with economic gains for the participating community members and conservation benefits through reduction of forest degradation resulting from poverty. Honey processing unit and a resource centre were set up and acts as honey collection, processing and marketing centre. In addition, Nature Kenya has partnered with the Ministry of Agriculture, Livestock and Fisheries to offer technical advice to the farmers to enhance the profitability of the bee keeping enterprise. According to members of the community, since the inception of the project, the amount of honey produced has substantially increased from an initial 3 litres to 12 -15 litres per hive. A business plan for bee keeping has been developed jointly by the community and Nature Kenya, and the Ministry of Agriculture, Livestock and Fisheries has been able to secure a good market with relatively good prices of Ksh 400 per litre at Kipepeo processing centre in Gede Ruins, Malindi.

4.4.3.2 Farming

Subsistence farming is a major livelihood activity for the Dakatcha woodland community with the main crops cultivated being pineapples, maize and cassava. Cash crops in the area include pineapples, coconut, citrus, mangoes, tomatoes, vegetables and cassava. According to information from the focus group discussions, productivity has remained rather low over the years mainly due to poor soils and erratic rainfall. In 2007, A Rocha Kenya, which is a conservation NGO in the area, initiated the concept of conservation agriculture which was primarily meant to address food shortages resulting from infertile soils around the woodland occasioned by excessive cutting of forest trees. Despite the low adoption rates by the locals, harvests from the demonstration plots have

increased signaling the potential of this method to improve food production for both consumption and commercial markets in the area. According to respondents, the community believes that this concept could help address the perennial food shortages in the area and provide additional income from sale of surplus farm produce. However, they mentioned a few challenges to the adoption of modern farming technologies (Figure 4.6)

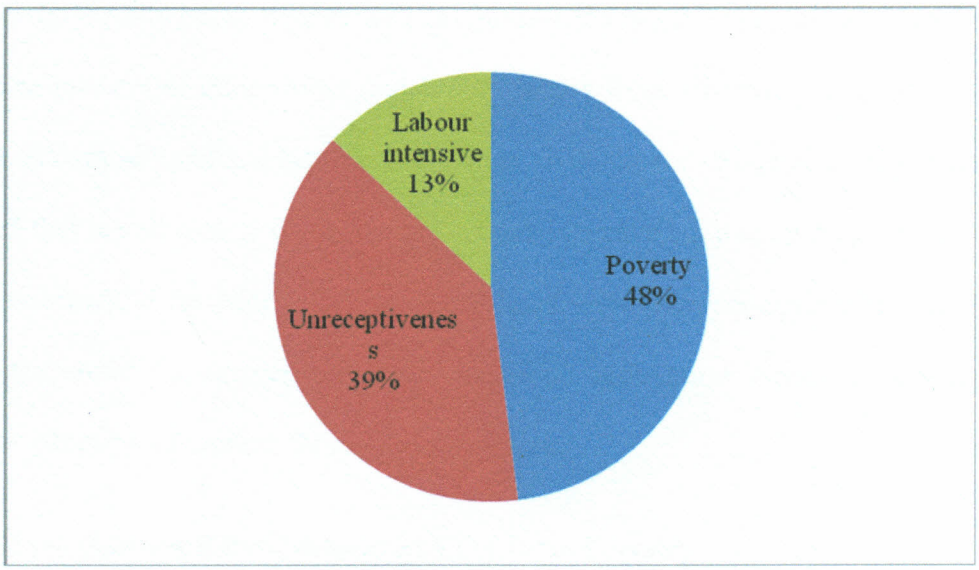

Figure 4.6: Challenges to the adoption of improved farming techniques

Poverty was mentioned as a major challenge to the adoption of improved farming techniques. Most farmers said they lack the financial resources to acquire farm inputs like fertilizer which is a key requirement of modern farming technologies. Local NGOs are now encouraging farmers to use compost manures to improve the farm's fertility and enhance production. Unreceptiveness of most farmers to adopt the new technology was mentioned as another challenge; they consider it foreign, particularly due to the fact

that they are expected to use fertilizers, uncommon activity in the area. It is on this basis that A Rocha Kenya has identified ten farmers in four locations and supplied them with both fertilizers and pesticides. It is hoped that good harvests from these farms will encourage more people to adopt the new technology.

Respondents further mentioned that the improved farming techniques are labour intensive; the methods require that mulch be used to cover the whole farm so as to improve the fertility of the farm as well as conserve the moisture particularly during low rains. The process of transporting mulch particularly from off-farm is viewed by most farmers as cumbersome and hence unacceptable. With the set 10 demonstration farms, it is hoped that it will clearly come out as a labour intensive but a rewarding undertaking that is worthwhile for adoption. The respondents were however optimistic that these challenges could be overcome through enhanced agricultural extension services to facilitate adoption of modern farming technologies.

4.4.3.3 Tree Nursery Establishment and On-farm Forestry

The need to rehabilitate Dakatcha woodland and provide an alternative source of income for local communities informed the decision by key partners mainly Nature Kenya and KFS to initiate, among the groups forming the DWCG, commercial woodlots project. The groups were trained on the process of tree nursery establishment, tree planting and best management practices for improved income. So far, the groups have sold over 40,000 seedlings to individual farmers and other groups for establishment of commercial woodlots. The main trees grown in the area include *Casuarina equisetifolia, Eucalyptus camaldulensis* and *Gmelina arborea*. KEFRI has

also introduced *Mellia volkensii*, an additional fast maturing, drought tolerant and high value tree with high economic returns. Respondents confirmed that to date, over Ksh. 500,000 have been earned from sale of seedlings while income from sale of trees have significantly increased following linkages of farmers to competitive markets, mainly the tourist hotels in Malindi which use poles for hotel construction. For instance, a mature pole of *Casuarina equisetifolia*, which is the most preferred species now sell at about Ksh. 2,500 up from Ksh. 800 which was previously the local market price. An acre of the same species planted at a spacing of 2m by 2m, and having 1,000 trees would thus generate Ksh. 2,500,000 at a maturity age of 5 years. According to respondents, farm forestry has the potential to significantly contribute to economic wellbeing and conservation efforts.

4.4.4 Community Participation in Ecotourism and Socio-economic Characteristics

The study revealed that about 57% of the inhabitants of Dakatcha woodland are involved in ecotourism (Figure 4.7). The level of community involvement in ecotourism is still moderate and this was attributed to inadequate community awareness of the importance of ecotourism as a development and conservation tool.

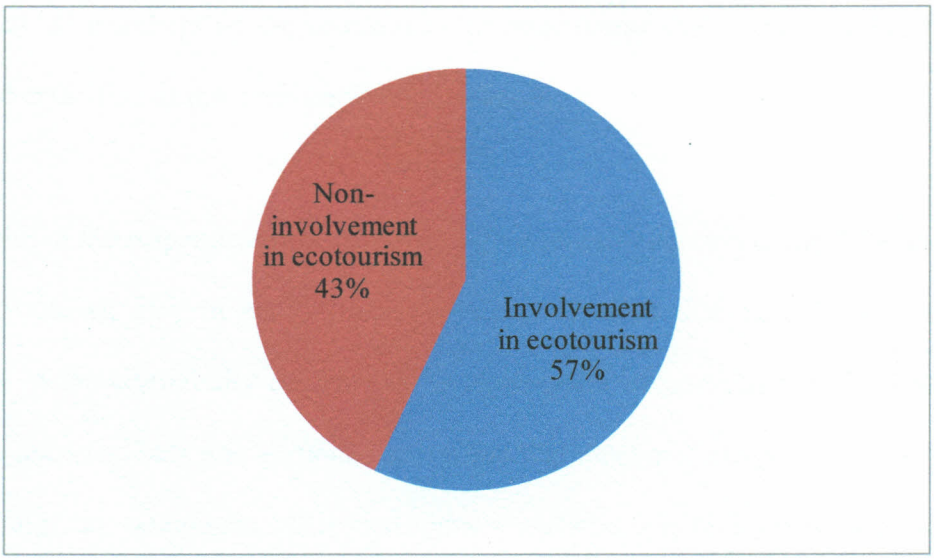

Figure 4.7: Level of community involvement in ecotourism

Source: Field data (2013)

Community perceptions and participation in ecotourism varied with various socio-economic characteristics. Different social classes defined ecotourism differently, but generally the underlying principles of ecotourism remained the same. Majority (92%) of those classified as rich through wealth ranking defined ecotourism as tourism that conserves the environment and improves the well being of the local people. About 90% of the poor on the other hand defined ecotourism as tourism that provides direct financial benefits and empowerment for local people and has minimal negative impacts on the environment. They also emphasized that ecotourism should respect the local culture and enhance environmental awareness amongst the local community. The poor are more attached to their cultural heritage as it forms part of their day to day life as compared to the rich hence their emphasis on respect to local culture. These results

imply that all members of the community irrespective of their social classes have a basic understanding of the main goals of ecotourism.

The gender of the respondents was studied to give special attention to the different roles men and women play in ecotourism. The study revealed that only 16% of female members of the community participated in ecotourism as compared to 84% of their male counterparts. This was attributed to the fact that most ecotourism activities such as tour guiding, tour operations, hotel management and bird watching are male dominated due to cultural beliefs that ascribe these roles to the male gender.

Respondents were of the opinion that women interact more with the natural environment hence there is need to fully involve them if ecotourism is to meaningfully contribute to both improved livelihoods and environmental conservation. This conforms to the finding by Scheyvens (2000), which indicated that women and girls generally have greater interaction with the natural environment than men hence their cooperation is needed if the natural resource base upon which ecotourism is dependent is to be sustained. There is need to reverse this trend in Dakatcha woodland by changing mindsets and building the capacity of female members of the community to actively participate in more ecotourism activities for conservation.

Community participation in ecotourism also varied across the social classes. During the FGDs, community based well-being characterization was undertaken according to a community developed criteria (Table 4.6). The criterion was used to characterize the

households into four wellbeing ranks; very rich, rich, poor and very poor. The key indicators for ranking included: type of housing, employment status, level of income, size of land used, ability to educate one's children, number of livestock owned, and ownership of movable assets such as vehicles, motor bikes and bicycles.

Table 4.6: Respondents' Perceived wellbeing ranking indicators

Very rich	**Poor**
• Permanent house • Household income level of at least Kshs. 300,000 p.a • Household head on Permanent employment • Ownership of at least 50 livestock • Ownership of vehicle/s • Ability to educate children up to college level • Use of at least 10 acres of land for farming	• Grass thatched and mud walled house • Household income level of between Kshs. 15,000-100,000 p.a • Casual employment main source of income • Ownership of at least 10 livestock. • Ownership of a bicycle • Ability to educate children up to primary level • Use of at least 1-2 acres of land for farming
Rich	**Very poor**
• Iron roofed and mud walled house • Household income level of	• Most have no housing and are accommodated by neighbours. • Household income level of

between Kshs. 100,000-200,000 p.a • Household head on contract employment • Ownership of at least 25 livestock. • Ownership of at least a motor bike • Ability to educate one's children up to secondary level • Use of at least 5 acres of land for farming	approximately Kshs 15, 000 p. a • Purely casual employees as they lack alternative sources of income • Ownership of none or a few goats or sheep • No ownership of movable asset • Inability to educate children up to primary level • Lack of (No ownership) land for farming

Source: Field data (2013)

The highest participation was recorded amongst the very poor at 46%, followed by rich (27%), poor (22%) and very rich at 5% (Figure 4.8). Poverty and environmental degradation are closely interrelated hence participation of the poor (who are heavily dependent on natural resource base for survival) in ecotourism was found to have enhanced conservation awareness amongst them and translated to improved environmental conservation. Ecotourism has also generated additional income which has provided an economic incentive for them to conserve the woodland.

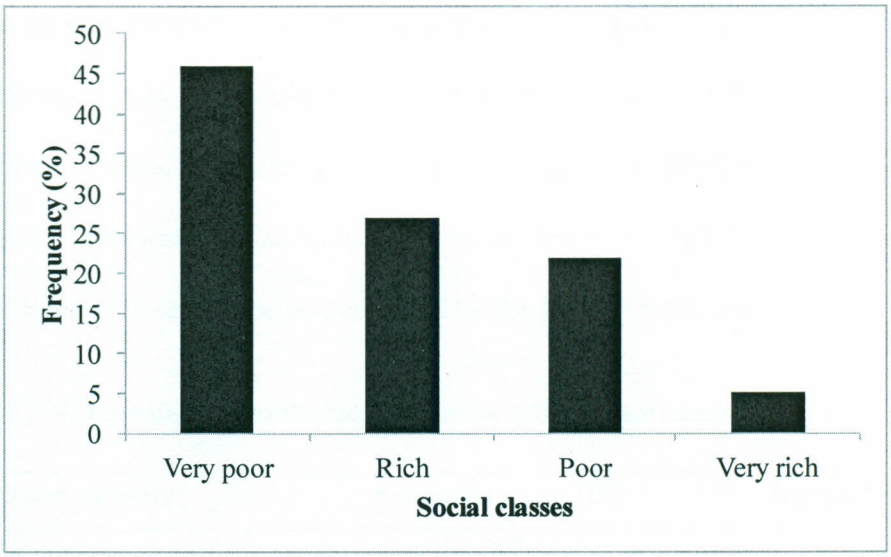

Figure 4.8: Community participation in ecotourism by social classes

Source: Field data (2013)

4.4.5 Main Ecotourism Activities in Dakatcha Woodland

Community members listed some of the significant ecotourism activities they were involved in as bird watching, tour guiding, handcrafts making and performing traditional dances to entertain the tourists. Other less significant activities included tour operation and hotel keeping (Table 4.7). Participation of community members in various ecotourism activities was directly proportional to their percentage contribution to household income, hence the more the income generated, the greater the community participation. As such tour guiding and bird watching were the leading contributors to household income at 41% and 34% respectively. Handcrafts making contributed 15% of all ecotourism revenue while traditional dances contributed 7%. Tour operations and hotel keeping were the least contributors to household income at 2% and 0.2% respectively.

The low income generated by tour operations and hotel keeping can be attributed to the fact that most tour operators are based in neighbouring towns such as Malindi. Furthermore, inadequate hotel facilities in Dakatcha woodland has resulted to tourists residing in more established tourist hotels in Malindi. This has resulted to loss of income that would otherwise be generated by the local community.

Table 4.7: Community involvement in main ecotourism activities

Ecotourism activity	Frequency (n=384)	Percentage (%)
Tour guiding	150	39.0
Tour operations	8	2.0
Handcrafts making	77	20.0
Traditional dances	23	6.0
Hotel keeping	1	0.2
Bird watching	125	32.8
Total	384	100

Source: Field data (2013)

The respondents further listed the major ecotourism sites in the area as Marafa Hell's kitchen, Mekatilili wa Menza cultural site, Nyari Bore depression, River Galana, Kaya Singwaya, Kapangani Rock and Clark's Weaver camp (Figure 4.9). Results of the study indicate that Marafa location had the highest number of households involved in ecotourism at 52%, followed by Bungale (25%), Garashi (15%) and Adu (8%).

Marafa Hell's Kitchen was the most preferred ecotourism destination with most tourists frequenting the area. The site is located in Marafa location and this could explain why

Marafa had the highest number of households involved in ecotourism. In Bungale, Mekatilili wa Menza grave and cultural center were the main attraction with the annual cultural festival attracting a huge number of tourists, while in Garashi location, Nyari bore depression was the main attraction. In Adu location, ecotourism was mainly limited to bird watching activities mainly in Kamale area.

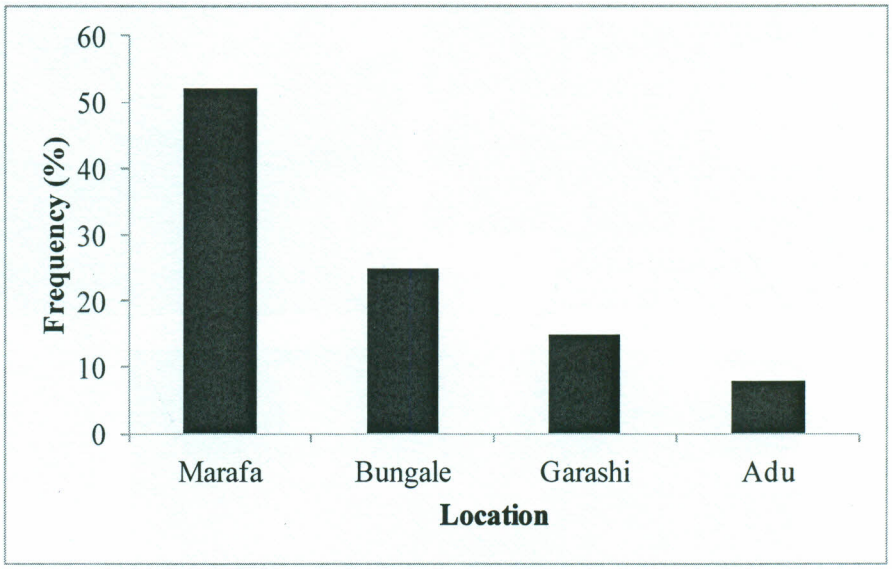

Figure 4.9: Household involvement in ecotourism in the different locations

Source: Field data (2013)

Key informant interviews revealed that the woodland is very rich in biodiversity as it is habitat to unique plant, animal and bird species. Some of the globally endangered birds such as Clarke's weaver, Fischer's turaco and Sokoke scops owl were said to be endemic to Dakatcha woodland and the neighboring Arabuko Sokoke Forest. Unique and rare plant species that are found in the woodland include *Warbugia stuhmanii, Newtonia hilderbrandtii* and *Diospyros cornii.* The rich cultural attractions encompassing Mekatilili wa Menza cultural centre, Marafa Hell's kitchen, Nyari Bore

depression, Bore Singwaya and Kapangani Rock (Plate 4.3 a, b and c) were said to provide a unique cultural experience of the Mijikenda community for visiting tourists. These findings are in tandem with results reported in previous studies by Nature Kenya (2008) and Mwanbire and Katana (2010).

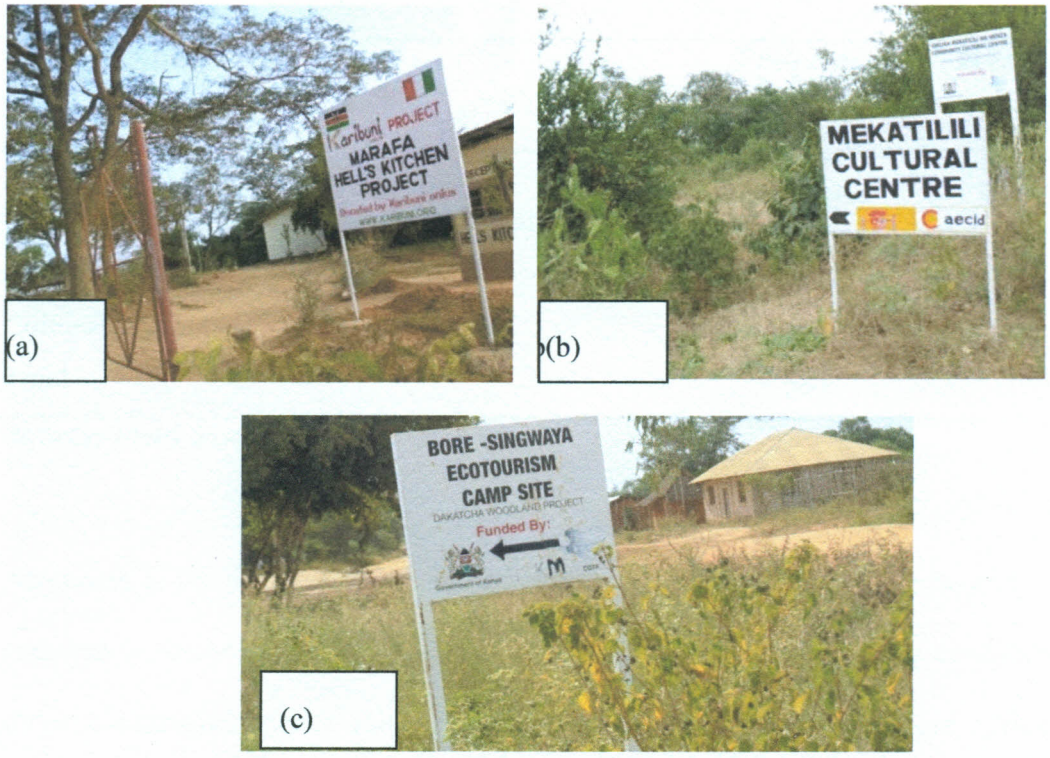

Plate 4.3: a, b and c: Main ecotourism sites in Dakatcha woodland

Source: Author, 10/02/2013

4.4.6 Contribution of Ecotourism to Poverty Reduction

Members of the community had diverse responses on the impacts of ecotourism on their livelihoods. About 89% indicated that ecotourism had impacted positively on their livelihoods. Another 9% said they were not sure of the impact of ecotourism on their

livelihoods while 2% felt it had no impact on their livelihoods. Those who said ecotourism has impacted positively on their livelihoods mentioned various livelihood and environmental benefits derived from ecotourism (Table 4.8)

Table 4.8: Positive impacts of ecotourism on community livelihoods

Positive impact	Frequency (n=384)	Percentage (%)
Increased environmental awareness	215	56
Income generation and employment creation	115	30
Improved education standards	46	12
Cultural exchange	8	2
Total	384	100

Source: Field data (2013)

According to the respondents, increased environmental awareness is the biggest benefit community members derive from ecotourism (56%). This has in turn contributed to forest conservation hence rainfall attraction and consequently improved agricultural production. Income generation ranked second at 30% followed by improved education standards (12%), and enhanced cultural exchange (2%).

Results of the study reveal that communities are now more aware of the importance of conserving the forest following the realization that they can derive long term benefits from engaging in environmentally sustainable income generating activities such as ecotourism than engaging in forest consumptive destructive activities such as charcoal production for short term benefits. These results compare with those of Collins, (2008)

which revealed that local communities are often more willing to participate in conservation initiatives when they derive tangible benefits from them.

Ecotourism generates household income through expansion of markets for local goods and direct tourist expenditure. Income generated through ecotourism has provided additional revenue for households and part of the revenue generated from ecotourism activities has been channeled to community projects such as provision of piped water, education and health. An additional advantage is that ecotourism has provided employment opportunities to locals involved in the tourism sector hence contributing to improved living standard.

Regression analysis ($p=<0.05$) revealed that community participation in ecotourism has resulted to an increase in household income ($r^2=0.6124$, $p=0.002$) (Figure 4.10). These results validate the information obtained from Focus Group Discussions and key informant interviews which indicated that ecotourism has contributed to household income through direct tourist revenues and employment creation.

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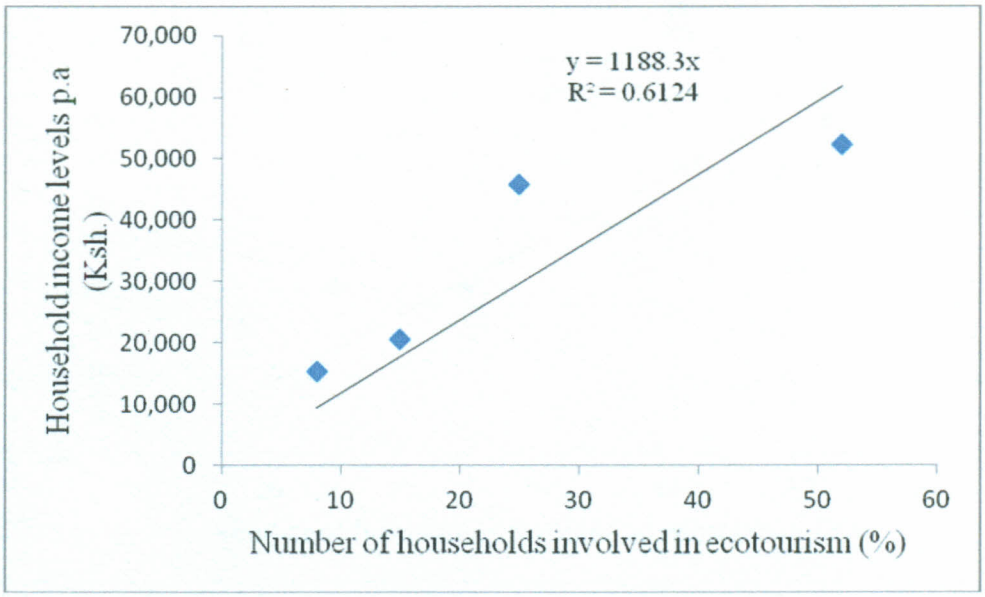

Figure 4.10: Relationship between community participation in ecotourism and household income

Source: Field data (2013)

Regression analysis ($p<0.05$) further indicated a positive correlation between community participation in ecotourism and improved education standards ($r^2=0.6273$, $P=0.0034$) (Figure 4.11) further confirming the fact that that ecotourism has improved the education standards in the area.

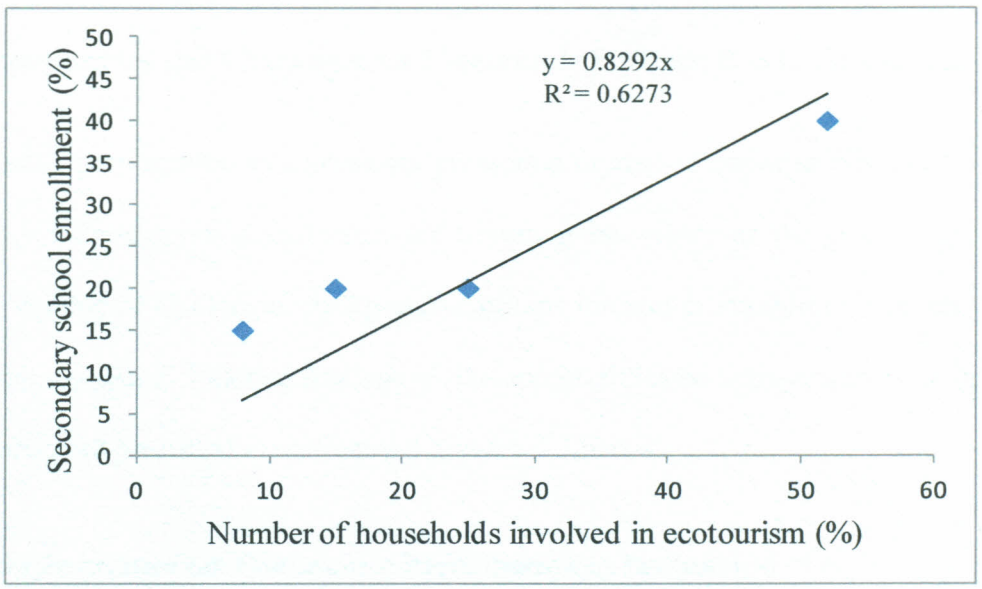

Figure 4.11: Relationship between community participation in ecotourism and education standards

Source: Field data (2013)

Results from Focus Group Discussion with members of the Dakatcha woodland conservation group indicated that Marafa Location Development initiative receives 50% of revenue generated at Marafa Hell's kitchen and uses it to provide secondary education scholarships to bright needy students. Since the inception of the project, secondary school enrollment has increased from about 6% to the current 11% with the potential for improving community livelihoods (Personal communication, DWCG, 2013).

4.5 Opportunities and Challenges for Community Participation in Ecotourism

Community participation in ecotourism presents a myriad of opportunities that can be harnessed for conservation, economic and cultural gains. However, the local community faces a number of challenges during their participation and promotion of ecotourism in Dakatcha woodland. Detailed findings on the opportunities and challenges faced by the community are presented in sections 4.4.1 and 4.4.2 below.

4.5.1 Opportunities for Community Participation in Ecotourism

The study revealed that the woodland has a rich diversity of flora and fauna which makes it highly suitable for development of ecotourism. Furthermore, the rich cultural attractions and the strategic location of the woodland near Malindi town which is a major tourist hub presents a perfect opportunity for development of ecotourism for enhanced economic, environmental and social benefits.

Results of the study show that ecotourism has had significant positive impacts on the local community and various opportunities exist for continued and enhanced community participation in ecotourism. Ecotourism provides an opportunity for long-term protection of the environment through provision of economic incentives such as income generation, employment creation and provision of secondary school bursaries to bright needy students. A similar study by Collins (2008) revealed that ecotourism has resulted in improved education levels amongst participant students living adjacent to Arabuko Sokoke forest.

Majority of respondents (98%) were of the opinion that by providing these economic incentives, ecotourism had considerably shaped community members' attitudes towards conserving the woodland. This followed the realization that conserving Dakatcha woodland which is a key attraction for ecotourism in the area has the potential to provide more long term benefits to local communities as opposed to the short term benefits derived from destructive forest activities. Long term conservation, income generation and employment creation were the most prominent opportunities presented by ecotourism (Table 4.9).

Table 4. 9: Opportunities for community participation in ecotourism

Challenge	Frequency (n=384)	Percentage (%)
Long term conservation	184	48.0
Income generation	123	32.0
Employment creation	46	12.0
Development of markets in handcrafts	12	3.0
Community projects	19	5.0
Total	384	100

Source: Field data (2013)

Key informant interviews further revealed that ecotourists have played a significant role in raising awareness of the environmental problems facing the woodland. According to Wunder (1999), tourists often raise awareness about the conservation of ecosystems and play an advocacy role that helps raise the profile of environmental resources in the

planning process hence providing an economic rationale for ecological stewardship. This presents an opportunity for better conservation of Dakatcha woodland.

Ecotourism provides an opportunity for long term community development. Results of the study show that ecotourism has helped generate household income through employment creation in the ecotourism sector and development of markets for native handicrafts and artwork. Additional funds generated from ecotourism have been diverted to poverty reduction programs and community development projects such as provision of education bursaries and construction of schools and health centres.

An additional opportunity is for the local community to engage in cross cultural exchange with ecotourists from different backgrounds hence promoting global integration. In addition, by sharing their knowledge of the local terrain and ecology with visitors, communities develop a stronger sense of community pride and a global perspective that recognizes the value of culture in conservation of biological diversity. Results from this study shows that 2% of the local communities recognize the role played by ecotourism in promoting cultural heritage and enhancing sense of pride of the local communities.

4.5.2 Challenges to Community Participation in Ecotourism

According to the study, the main challenges faced by local communities during their participation in ecotourism include high poverty levels, weak forest management regime, seasonal nature of tourism, poor infrastructure, inadequate technical skills to

manage ecotourism enterprises, poor marketing of the woodland and language barrier (Table 4.10).

Table 4. 10: Challenges to ecotourism in Dakatcha woodland

Challenge	Frequency (n=384)	Percentage (%)
Poverty	73	19.1
Seasonal nature of tourism	71	18.6
Weak forest management	60	15.6
Poor infrastructure	64	16.7
Inadequate technical skills	35	9.0
Poor marketing	36	9.3
Language barrier	45	11.7
Total	384	100

Source: Field data (2013)

The high poverty levels have posed a significant challenge to ecotourism development in the area. Poverty is interrelated to environmental degradation (UNWTO, 2008). According to the respondents, the pressing need for survival has forced the majority poor to engage in environmentally degrading activities such as illegal logging and charcoal production. These results compare with those of Ruuska (2012) who established that the biggest contributor to illegal logging in Dakatcha woodland is poverty. The lack of formal protection of the woodland has further rendered it vulnerable to the same anthropogenic activities which have compromised the ecological integrity of the woodland on which ecotourism depend.

Moreover, seasonal nature of ecotourism has been a major setback to ecotourism. The main tourism season in the area is between the months of August to April with minimum tourist flow during the rest of the year. This translates to loss of jobs and consequently loss of income for the many people involved either directly or indirectly in the ecotourism sector. This trend has made majority of the locals to turn to more regular but forest destructive activities such as charcoal production as alternative sources of income.

The study revealed that poor infrastructure such as poor road network has resulted in low tourist flow as most tour operators shy away from the area due to high operation costs. The woodland has also not been adequately marketed as an ecotourism destination hence low number of ecotourists visiting the area. This has in turn translated to low income generated which is below the actual potential.

Analysis of the technical and management capacities of the community to participate in ecotourism revealed that only a few people can communicate in either English or other foreign languages such as Italian and German that are commonly used by the visiting tourists. They therefore require an interpreter for them to communicate with the tourists. Although the local tour guides and handicraft dealers have made attempts to learn English and other foreign languages in order to effectively communicate with the tourists, majority (96%) of the community are still oblivious of the languages.

In addition, there is the problem of lack of technical or entrepreneur skills by members of the community to effectively manage ecotourism ventures in the area. High level of

illiteracy was cited as a major setback that has limited the community's capacity to effectively manage and market ecotourism enterprises. The study found that 23% of the population is illiterate while only about 4 % of the residents have post- secondary school education.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

The summary of findings, conclusion and recommendations of the study are presented as per the study objectives. Objective one sought to determine the relationship between community participation in ecotourism and forest conservation; objective two assessed the contribution of ecotourism to poverty reduction; and objective three identified the opportunities and challenges to community participation in ecotourism.

5.1 Summary of Findings

The key findings of the study are highlighted in the sub-sections 5.1.1, 5.1.2 and 5.1.3 below;

5.1.1 Relationship Between Community Participation in Ecotourism and Forest Conservation

The study showed that ecotourism has indeed contributed to the conservation of the woodland (r^2=0.1515, p=0.041). The contribution was mainly through generation of additional alternative income for the households (64%), as well as through enhancing community awareness on the importance of conservation (11%). Residents have significantly reduced destructive forest activities such as illegal logging and poaching as a result of enhanced conservation awareness, as well as the realization that they can obtain economic benefits from ecotourism. This has in turn provided an incentive for local communities to conserve the forest. Conservation of the woodland which is a key biodiversity hotspot has ensured the protection of threatened and endemic fauna and flora such as Clarke's Weaver, Golden rumped – Elephant Shrew and *Warbuhgia stumalnii* among others.

5.1.2 The Contribution of Ecotourism to Poverty Reduction

The study revealed that ecotourism has resulted in poverty reduction hence improved livelihoods amongst communities living adjacent to the woodland. It has led to improved living standards mainly through contribution to household income (r^2=0.6124, p=0.002), and improved education standards through provision of secondary school bursaries (r^2=0.6273, p=0.0034). Additional revenue generated from ecotourism has also been channeled to community projects for infrastructure development such as construction of schools and health centres.

5.1.3 Opportunities and Challenges to Community Participation in Ecotourism.

According to the study, ecotourism presents diverse opportunities and challenges. The strategic location of the woodland in the coast region and specifically near Malindi town makes it favourable as an ecotourism destination. In addition, the area has rich biodiversity and rich cultural attractions that makes it a preferred tourism destination. The development of ecotourism in the area presents various opportunities for local communities which include long term conservation of the woodland (48%), contribution to household income (32%), employment creation (12%), development of markets in native handicrafts and artwork (3%), and cross cultural exchange (2%). Besides, through increased foreign exchange earnings, additional funds can be diverted to poverty reduction programs and community development projects in education and health sectors (5%).

Communities however face various challenges in participating and promoting ecotourism. These include the high poverty levels (19.1%), seasonal nature of tourism (18.6%), poor infrastructure that discourage tourists from visiting the area (16.7%), weak forest management framework (15.6%), language barrier that hinder effective communication between foreign tourists and local communities (11.7%), poor marketing of the woodland as an ecotourism destination that has resulted to low visitor numbers (9.3%), and lack of skills to manage ecotourism ventures (9.0%). Inadequacy in the legal framework for protection of the woodland coupled with high poverty levels that drive residents towards environmental degradation further exacerbate the problem.

5.2 Conclusion

The conclusion of the study is discussed in sub-sections 5.2.1, 5.2.2 and 5.2.3 below;

5.2.1 Relationship Between Community Participation in Ecotourism and Forest Conservation

The study revealed that community participation in ecotourism has not effectively contributed to forest conservation; the contribution was minimal. This could result to continued forest degradation in the absence of an effective forest management regime and conservation strategy. These findings could help inform the design of an appropriate management and conservation strategy for the woodland. The level of community participation in ecotourism was low and was said to be partly contributing to poor forest conservation status. Awareness creation aimed at increasing community participation in ecotourism could be enhanced by relevant agencies including County

government, KFS, research institutions, CBOs and local NGOs, with an aim of ensuring better forest conservation.

5.2.2 The Contribution of Ecotourism to Poverty Reduction

Ecotourism was found to contribute to increased household income and improved education standards. The increase in household income is expected to enhance the socio-economic wellbeing of the community while improved education levels could play an important role in enhancing the local communities' bargaining power in accessing formal employment opportunities further improving their socio-economic status. Promotion of ecotourism could be prioritized as a key development strategy in the area.

5.2.3 Opportunities and Challenges to Community Participation in Ecotourism.

The study indicated that ecotourism presents numerous opportunities for communities living in Dakatcha woodland. These include long-term protection of the environment, enhancing community development and preserving cultural heritage. The enhancement of these opportunities shall go a long way in increasing the conservation and socio-economic gains made from ecotourism. Communities however face a number of challenges including poor infrastructure, inadequate marketing of the woodland as an ecotourism destination, language barrier, seasonal nature of tourism and lack of technical/entrepreneur skills to manage ecotourism ventures. These challenges should be addressed to maximize the benefits derived from ecotourism. The findings could be used to inform the development of an appropriate ecotourism industry through

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maximization of the existing opportunities in order to address the existing poverty and environmental degradation.

5.3: Recommendations

The study made a number of recommendations as elucidated in the sub-sections below;

5.3.1 Relationship Between Community Participation in Ecotourism and Forest Conservation

There is need for capacity building of the community by the lead government agencies including KFS, KWS and KEFRI, County government and local NGOs such as Nature Kenya and ACTION AID, on the link between ecotourism and forest conservation in order to promote sustainable use of the forest and shape their attitudes towards forest conservation. The woodland should also be gazetted by KFS in order to give it a formal protection status so as to mitigate the anthropogenic threats such as illegal logging and charcoal production. Furthermore, there is need for speedy completion of the management plan for the woodland which is currently under development by KFS, KEFRI and Nature Kenya in order to ensure sustainable management of the woodland. The management plan will allow the community to effectively participate in the management of the forest resulting to sustainable use.

Collaboration among stakeholders working in the woodland should be enhanced so as to create synergy for development and conservation of the woodland. This collaboration should bring on board community groups such as Dakatcha Woodland conservation

group, local CBOs, NGOs such as Nature Kenya, World Vision, Arocha Kenya, East Africa Wildlife Society, private sector such as tour operators and government institutions such as KFS, NMK and KEFRI.

5.3.2 The Contribution of Ecotourism to Poverty Reduction

The study recommended the need for enhanced awareness creation to local communities by relevant agencies including County government, KFS, research institutions, CBOs and local NGOs, on the importance of ecotourism as a development tool, so as to encourage more community participation for maximum economic gain. Furthermore, there is need for these agencies to initiate alternative income generating activities including non-forest based income generation activities with a view of supplementing the income earned from ecotourism hence reducing the high poverty levels in the area. A social Impact Assessment should be conducted in the area in order to identify community needs and initiate projects that will best address their needs. This will further require capacity building of the local CFA by KFS and other lead government agencies as well as the County government and local NGOs to enable it effectively coordinate and manage development and conservation activities in the woodland.

5.3.3 Opportunities and Challenges to Community Participation in Ecotourism.

There is need to enhance the various opportunities that ecotourism presents to the communities living adjacent to Dakatcha woodland. The provision of secondary school bursaries and initiation of community development projects such as construction of schools and health centres should be enhanced by the National and County governments

to ensure long-term socio-economic development and provide economic incentives for long term protection of the environment. Furthermore there is need for relevant government agencies such as the Kenya Tourism Board to collaborate with the tourists and their countries of origin in order to raise awareness of the environmental problems facing the woodland hence providing a rationale for sustainable development in the area.

The existing challenge of inadequate infrastructure should be addressed by the County government. This includes improvement of road network, provision of adequate piped water and electricity and construction of good accommodation and entertainment facilities such as hotels and tourist resorts. This will ensure longer stays by ecotourists in the woodland hence more revenue generated to local communities since currently, there are no decent accommodation facilities in the area and ecotourists have to commute from as far as Malindi where there are adequate accommodation facilities.

In addition, the woodland should be aggressively marketed by the Kenya Tourism Board and County government as a unique ecotourism destination so as to attract an optimum number of both local and international tourists as currently visitor number is still very low. Avenues such as print, electronic media and social networks can be used to achieve this.

5.3.4 Areas for Further Research

Further research should be done to establish appropriate policies that shall help foster responsible ecotourism development and create an institutional framework that

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regulates and controls ecotourism enterprises, and ensures equitable benefit sharing mechanisms. There is further need to determine the effects of global political environment including unequal trading relationships and dependence on foreign interests on the distribution of ecotourism benefits, in order to determine the economic and environmental impacts of these ventures on poor and developing countries.

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APPENDICES

Appendix 1: Household Questionnaire

Dear Sir/ Madam,

My name is Leila Akinyi, a Masters Degree student at Kenyatta University carrying out a research on the subject: **The contribution of Ecotourism to forest conservation and community livelihood improvement in Dakatcha Woodland.** As an important stakeholder, you have been selected to participate in the study by answering some questions related to the study. All information offered will be kept strictly confidential and used for academic purposes only.

Household Location

Village..... Sub-location: ..... Location: .....

District: .....County: .....

Section 1: General Household Information

1. Name of respondent.....
2. Name of Household head .....
3. Age of Household head (Tick appropriately)

Age in years	Below 15	15-25	26-35	36-45	46-55	56-65	66 and above

4. Sex of H/head.....

Section 2: Resource use and Management

5. Do you have access to Dakatcha woodland?
6. If yes, what products do you derive from the forest?
7. What are the household forest uses?
8. What benefits do you derive from Dakatcha woodland?

9. What is the level of forest conservation? Tick where appropriate.

Very low	Low	Moderate	High	Very high

10. Is forest conservation important to you? Yes/No. Give reasons for your answer.

11. What nature based Income generating activities do you derive from the forest?

12. Do you support sustainable management of Dakatcha woodland? Yes/ No. Give reasons for your answer.

13. List the destructive forest uses in Dakatcha woodland?

14. What are the threats to the woodland and how can they be mitigated?

15. According to you what would be the best use of Dakatcha woodland? Give reasons for your answer.

Section 3: Livelihood status

16. Level of education of household head (tick where appropriate).

Illiterate [ ] Primary [ ] Secondary [ ] Diploma [ ]
University degree [ ]

17. Type of housing (tick where appropriate).

Permanent house [ ] Semi permanent house [ ]
Mud walled and grass-thatched house [ ]

18. a) How many children are there in the household?

b) How many children have attained the following levels of education?

Primary [ ] Secondary [ ] Diploma [ ]
University degree [ ] Others (specify) [ ]

19. What are the household sources of livelihood?

20. What are the main sources of household income (Tick where appropriate), and indicate their annual monetary contribution to household incomes?

Sources of household income	**Annual contribution (Ksh)**
Sale of farm products	
Salary	

Casual work	
Sale of forest products	
Kiosk/ other business	
Ecotourism	
Remittance from relatives	
Other sources (specify)	

21. What is the total annual household income?

22. Do you have a title deed for the land you use? Yes/No

23. What is the size of land that you use disintegrated into various uses?

Total acreage of land used	
Area used for homestead	
Area under crops	
Grazing land	
Area under woodlot	

24. Name the food crops cultivated on your farm for the last five years and indicate whether the harvest was adequate, inadequate or surplus for household consumption?

Food crop	**Sufficiency (Adequate, Inadequate or surplus**

25. Name the cash crops cultivated on your farm for the last five years and indicate their annual monetary contribution?

Cash crop	Annual contribution (Ksh)

26. Are there any challenges to agriculture in your area Yes/No? If Yes name them.....

27. What are the household water sources?.....

28. a) Is there adequate access to social amenities such as schools, hospitals and markets? Yes/No .....

    b) Give reasons for your answer.....

Section 4: Community and Ecotourism

29. a) What ecotourism activities are you involved in? Yes/ No.

    b) What challenges do you face?

    c) What benefits do you derive from ecotourism?

    d) What is the annual contribution of ecotourism to your household income?

30. How do you rate the level of community involvement in ecotourism? Tick where appropriate.

Very low	Low	Moderate	High	Very high

31. In your opinion has ecotourism contributed to environmental conservation? Yes / No. Give reasons for your answer.

32. How has ecotourism impacted on your livelihoods? Positively/Negatively. Explain how.

Appendix II: Observation Checklist Used During Transect Walks

Parameter	Observation
Conservation status of Dakatcha woodland	-Low forest cover -Loss of indigenous tree species -Loss of wildlife habitats -Accelerated soil erosion
Forest uses	-Farming, grazing and hunting
Products obtained from the forest	-Timber, poles, charcoal and fuel wood
Threats to Dakatcha woodland	-Charcoal production, overgrazing, illegal logging, conversion for agricultural production
Household sources of income	-Salaries and wages, small businesses, forest products, farming
Human settlement patterns	Sparsely distributed population
General status of households and well-being indicators such as housing conditions, food security and school enrolment levels.	-Most houses are mud walled and grass thatched with a few iron roofed and mud walled -School enrollment is low -Social amenities are very few/inadequate -Food insecurity; most families have 1-2 meals a day
Ecotourism activities in the area	Bird watching, tour guiding and handcrafts making
Land use systems	-Land is either communal or trust land -Haphazard land use -Land use conflicts
Agricultural production	-Soil infertility/poor soils -Shifting cultivation -Low yields
Benefits of ecotourism	-Employment creation, construction of schools and health centres, income generation
Challenges to ecotourism	-Poor road network to ecotourism sites, language barrier

Appendix III: Key Informant Interview Schedule

Dear Sir/ Madam,

My name is Leila Akinyi, a Masters Degree student at Kenyatta University carrying out a research on the subject: **The contribution of Ecotourism to forest conservation and community livelihood improvement in Dakatcha Woodlands.** As an important stakeholder, you have been selected to participate in the study by answering some questions related to the study. All information offered will be kept strictly confidential and used for academic purposes only.

1. For how long have you been working in this area?
2. In your opinion, what has been the conservation status of Dakatcha woodland forest over the time you have been here?
3. What is the current conservation status of the forest?
4. What role does your organization play with regard to conservation of Dakatcha woodland if any?
5. What benefits do communities derive from Dakatcha woodland?
6. What are the threats to Dakatcha woodland? How can these threats be addressed?
7. What is the socio-economic status of communities living in Dakatcha woodland?
8. What are their sources of income?
9. What role does your organization play with regard to poverty reduction in Dakatcha woodland area if any?
10. How would you rate the level of community engagement in ecotourism?
11. Has ecotourism contributed to the conservation of Dakatcha woodland?
12. What benefits do communities derive from ecotourism?
13. In your opinion how has ecotourism impacted on community livelihoods? Explain your answer.
14. What challenges do communities face in their involvement in ecotourism?

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Appendix IV: Permission to conduct research

REPUBLIC OF KENYA

OFFICE OF THE PRESIDENT
PROVINCIAL ADMINISTRATION AND INTERNAL SECURITY

Telegrams: "DISTRICTER", Magarini
Telephone:
Email: dc magarini@yahoo.com
When replying please quote:

DISTRICT COMMISSIONER,
MAGARINI DISTRICT,
P.O BOX 1 – 80207,
MADINA.

Ref: No. MAG/ENV/VOL.2/33

DATE: 08/02/2013

LEILA AKINYI,
P.O BOX 87-80200,
MALINDI.

RE:PERMISION TO CONDUCT MASTERS DEGREE RESEARCH.

Reference is made to your letter dated 8th February, 2013 on the above subject matter regarding carrying out research on the contribution of Eco tourism to forest conservation and community livelihood improvement in Dakacha woodland.

This office has noted your request with a lot of concern. This is therefore to inform you that your request has been accepted and permission granted to carry out your research.

VICTOR K. KAMONDE,
FOR: DISTRICT COMMISSIONER,
MAGARINI DISTRICT.

KENYATTA UNIVERSITY LIBRARY