Indigenous Knowledge Systems and Sustainable Development in Africa: Case Study on Kenya

Davis Wekesa Barasa

INTRODUCTION

Indigenous Knowledge System (IKS) is currently drawing special attention of many researchers, institutions of higher learning, pharmaceutical organisations, governments, Non Governmental Organisations (NGOs) etc. than it did just a decade ago. Recently, the World Intellectual Property Organisation (WIPO) has recognised the applications of traditional knowledge (TK) and acknowledged local systems of innovation and intellectual property (Eyzaguirre, 2001). This is a good gesture as it provides a basis on which to protect local systems of innovation through granting them intellectual property rights, whenever such innovations are discovered. But what is the link between Indigenous Knowledge Systems (IKS) and eco-tourism? As discussed in this paper, ecotourism - a fairly new concept emerged in the late 1980s to provide a firm basis for sustainable tourism principles. Indeed the emergence of ecotourism - which is arguably supposed to be sustainable was necessary given that conventional tourism popularly referred to as 'mass tourism' was becoming unsustainable and hence leading to high negative impacts/costs than earlier thought. As a result of this the world was begging for sustainable tourism development - tourism that can last and benefit future generations the way it has benefited the currents ones.

It should be noted here that sustainable tourism just like sustainable development hinges on four major pillars, namely: social, economic, environmental and cultural pillars. Ecotourism being a component of sustainable tourism is therefore analysed along theses pillars in terms of how it relates with Indigenous Knowledge System in Kenya.

This paper attempts to discuss the definitions and concepts related to IKS and ecotourism, then it presents a case study of *Kaya Kinondo* Ecotourism Project in the south coast of Kenya in the context of the role played by Indigenous Knowledge System in conservation of the sacred kaya forests. The paper then makes some recommendations and conclusion.

OBJECTIVES

The main objectives of this paper are to establish a clear link between indigenous knowledge systems on one hand, and conservation and ecotourism on the other hand. The paper also endeavours to reinforce the view that IKS and ecotourism, if well managed, can bring about sustainable resource use.

METHODOLOGY

The paper relied mainly on secondary information i.e. books, journals, newspaper reports, internet resource and personal communication with targeted people, especially with some officers from the Kenya Resource Centre for Indigenous Knowledge (KENRIK) at the National Musems of Kenya (NMK).

DEFINITIONS, CONCEPTS AND PRINCIPLES

To understand better IKS and ecotourism issues, definitions and a discussions several key concepts has be done as follows:

Indigenous Knowledge Systems

According to Nuffic and UNESCO/MOST, (2001), the definition of indigenous knowledge (IK) differs depending on the case at hand and even on the specific aspect the author would like to emphasis. They further add that indigenous knowledge, can refer to knowledge that identifies with a specific ethnic group, for example: 'indigenous knowledge is the local knowledge that is unique to a given culture or society. It is the basis for local-level decision-making in agriculture, health care, food preparation (gastronomy), education, natural resource management and a host of other activities in rural communities'. In essence, indigenous knowledge is that knowledge used to run/manage all the sectors and sub-sectors of the traditional or local or rural economies/society. Nuffic and UNESCO/MOST, (2001), analysed

various definitions of indigenous knowledge and arrived at the following aspects of Indigenous Knoweldge Systems that appear to be more or less specific to indigenous knowledge:

· Locally bound, indigenous to specific area;
· Culture and context-specific;
· Non-formal knowledge;
· Orally transmitted and generally not documented
· Dynamic and adaptive;
· Holistic in nature and;
· Closely related to survival and subsistence of many people worldwide.

The case study that is presented in this paper endeavours to reflect the above characteristics of indigenous knowledge.

So, if all these sectorial/diverse indigenous knowledges are put together, they form an integrated indigenous knowledge system that assists in the local level decision making. From the foregoing, one can say an indigenous Knowledge System is complex set of knowledge and skills, which have from time immemorial guided different ethnic groups in their day-to-day operations. However, it is colonialism together with its associated lifestyles that is responsible for the dilution of indigenous knowledge to an extent of near extinction in some countries. Before colonialism, different ethnic groups had their own distinct system of how elders passed over knowledge to the youngsters and from generation to generation. Thus intergenerational indigenous knowledge transfer was uninterrupted or guaranteed. Even during wars or inter-ethnic animosities, new knowledge was discovered to act as a survival/defence weapon and this depended on the environment surrounding the ethnic group in question.

Today, things are changing very fast and that if more efforts are not put the preservation of sustainable indigenous knowledge, sooner than later, it will be a matter of the past – only found in literature rather than in practice. For instance in most developing countries, students learn about the major inventions or innovations made by west, and rightly so, but rarely do they learn about traditional knowledge driven inventions, leave alone, those developed by local individuals, institutions or communities within their respective countries.

Sustainable Development

Sustainable development is a terminology that came to the fore after experts realised that our production and consumption patterns driven by 'greed' and the urge to keep pace with the ever changing lifestyles were becoming unsustainable. It is also important to note that "human demands in the ever-growing world population are surpassing the planet's capacity to support us. For this reason, it is crucial that businesses, industries and governments attempt, wholeheartedly to adopt sustainable development practices" (Eagles et al, 2001: 6). In other words it is upon all of us as a world society to promote and put into practice production and consumption 'culture' that is sustainable.

Sustainable development was first discussed in the 1960s with the advent of the green movement and the term came into common use parlance with the publication of the report by the World Commission on Environment and Development (1987) entitled *Our Common Future* (commonly referred to us the Brundtland Report). It was given further recognition with the United Nations' sponsored conference on the environment held in Rio de Jeneiro in 1992. According to the Brundtland report, sustainable development is defined as 'development that meets the needs of the present without compromising the ability of the future generations to meet their own needs' (World Commission on Environment and Development, 1987: 43). This definition points to the fact that the present generation has been reckless and wasteful in the use of natural resources – driven by the ego for pursuit of socio-economic and industrial growth policies that are geared to 'meeting their current needs' without due regard to the needs of future generations. The definition therefore, clearly, seeks to have production and consumption patterns which take into consideration the question of intra and inter generational equity. In this light, sustainable development calls for countries to create a balance between economic growth and ecological stability or protection. 'The concept of sustainability should be given priority as a guiding principle in their quest for social-cultural, economic and environmental development' (Barasa, 2003: 23).

Mass Tourism

While every destination's important tourism objective is to realize high tourism earnings as well as receive high tourist arrivals, a few of them

(destinations) seriously put into consideration the negative impacts that may be associated with these high tourist visitation. Conversely, the basic objective of most tourism private sector operators for a long time has been to "do business as usual and reap high returns" as opposed to thinking about the negative impacts that come with tourism. Most of these operators hide under 'beautiful terminologies or labels " for example, eco-travel, green tours, nature trails, ecotourism etc. It is this craving for huge benefits and earnings that has turned tourism into a 'cash cow' for many destinations through mass tourism. So, what is mass tourism? 'mass tourism is a phenomenon of large scale packaging of standardized services or fixed for sale to a mass clientele' (Poon 1993: 32). It is characterised by following:

1. The holiday is standardized, rigid and inflexible. It can only be altered by paying higher prices;
2. The holiday is produced through mass replication of identical units, with scale of economies as the driving force;
3. The holiday is mass marketed to an undifferentiated clientele;
4. The holiday is consumed *en masse*, with a lack of consideration by tourists for local norms, culture, or the environments of tourist-receiving destinations.
(Ibid. 1993: 32)

Mass tourism therefore, can not be very sustainable as it leads to increasing social-environmental costs. 'As tourism activity expands (through an increase in tourist population) social, cultural and environmental costs (such as crime prostitution, cultural dislocation, pollution, and biodiversity loss) increase, particularly once the carrying capacity of the destination is exceeded' (Ikiara: 2001:8-9). However, figure 1 shows that while mass tourism can be largely unsustainable, a portion of it can also be sustainable, if well managed. Likewise ecotourism just like any other form of sustainable tourism is not always sustainable. The underlying issue therefore should be whether the fundamental principles of sustainable tourism development or ecotourism are put into practice. It therefore depends on the ethical standing of those responsible for the implementation this type of new tourism. Some of them do business as usual like in the old adage "preaching water and drinking wine".

Sustainable Tourism

Given that the world was becoming threatened by the unsustainable consumption and production patterns, it became apparent that something should be done about the types of tourism being promoted by tourist destinations. Questions were being raised whether mass tourism was good for the sustainability of tourist destinations. 'The term sustainable tourism development is a derivative of the more general concept of sustainable development, brought to prominence with the publication of *Our Common Future,* the report of the World Commission on Environment and Development' (WCED) – 1987' (Blamey, 2001: 10). This is to say that sustainable tourism development is based on the general principles of sustainable development. However, sustainable tourism is based on tourism specific principles.

So what is sustainable tourism? While it is clear that there is not yet one universal definition of sustainable tourism, for the purpose of this paper, we shall rely on the following two definitions. The World Tourism Organisation (WTO) definition: *Sustainable tourism meets the needs of present tourists and host regions while protecting and enhancing opportunities for the future. It is envisaged as leading to management of all resources in such a way that economic, social and aesthetic needs can be fulfilled while maintaining, cultural integrity, essential ecological processes, and biological diversity and life support systems.*

This definition not only borrows from the Brundtland's definition of sustainable development in terms of emphasising on intergenerational equity but also stresses on the fact that sustainable tourism is envisaged to lead to management of all resources based on the social, economic, environmental and cultural pillars of sustainable development. It in fact calls for a holistic approach to the management of all tourism related resources.

Conversely, Butler (1993), defines sustainable tourism as:

Tourism which is developed and maintained in an area (community, environment) in such a manner and at such a scale that it remains viable over an indefinite period and does not degrade or alter the environment (human and physical) in which it exists to such a degree that it prohibits the successful development and well-being of other activities and processes

The above two definitions are based on conservation or sustainability aspects of tourism development that will lead to minimal negative impacts. They underline the necessity of developing tourism which in simple terms can last for an indefinite period.

However, care must be taken because not every type of sustainable tourism is in itself sustainable. The sustainability of tourism depends on how well the implementation of sustainable tourism principles and guidelines are done. It depends on the management style. As seen in Figure 1, depending on the management skills and techniques and the ethical stand of actors, a fraction of mass tourism can be made sustainable. On the other hand, types of tourism that are in fact expected to be sustainable can be indeed unsus-tainable again depending on the management techniques in place. The bigger circle shows the size of mass tourism relative to that of Alternative Tourism and supports the prior argument that the former can also be made sustainable. Clearly, alternative tourism is smaller in size and arguably sustainable (in theory). According to Fennell (1999), 'new and existing developments in the industry has attempted to encourage' sustainability for example through

'controlled use of electricity, disposal of waste etc.

According to Eber (1992), the following are some of the principles of sustainable tourism development which are useful for tourism practitioners:
· Tourism development should be initiated on broad-based host community-inputs and that the host community should maintain control and ownership of theses tourism development.
· There should be full involvement of local communities in tourism which will not only benefit them and the environment but also improve the overall tourism experience.
· Resources both should be used sustainably, with emphasis on use of renewable resources.
· Avoidance of unsustainable production and consumption patterns – reduction of over-consumption as well as waste production.
· Ensure intra and intergenerational equity.
· Integration of tourism into planning with special focus on environmental impact assessment.
· Promote stakeholders and public consultation and their involvement in decision making process. This can help in reduction of conflicts.
· Maintain tourism diversity.
· Education and training programmes to improve
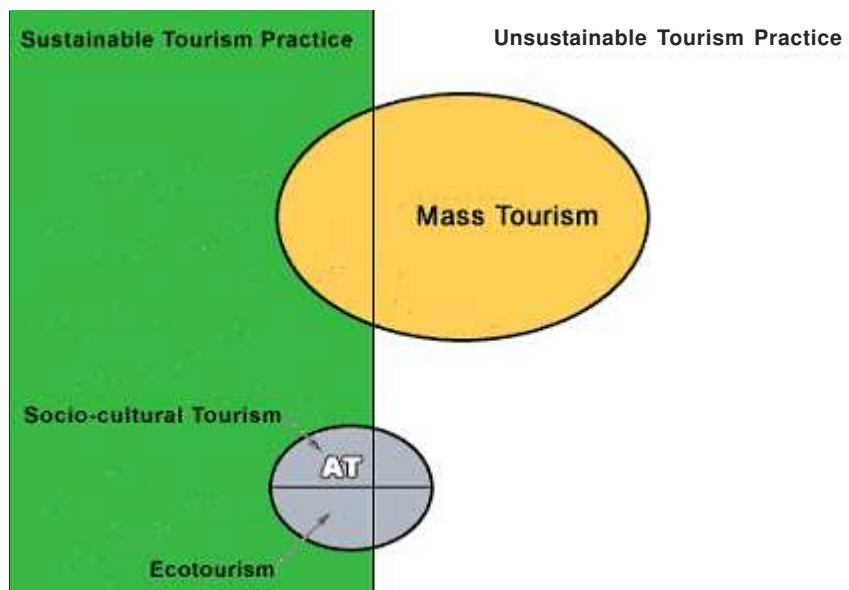
Fig. 1. Tourism relationships
(*Source:* Fennell, 1999 - Adapted from Butler 1996 in Weaver 1998)

and manage heritage and natural resources should be established.
· Tourism marketing that provides to tourists full and reliable information about the destination.
· Tourism should provide quality employment to its community residents and a linkage between the local businesses and tourism should be established.
· A code of practice should be established for tourism at all levels - national, regional, and local - based on internationally accepted standards. Guidelines for tourism operations, impact assessment, monitoring of cumulative impacts, and limits to acceptable change should be established.
· Undertaking Research.

Ecotourism

According to Barasa (2003), ecotourism is relatively a new type tourism, which became a buzz-word in tourism worldwide in the 1990s. Honey (1999) argues that ecotourism developed 'within the womb' of environmental movement in 1970s and 1980s. Olindo (1991) reiterates that Kenya is "the old man of nature tourism". In his opinion, Kenya's wildlife based tourism or nature-based tourism is ecotourism and hence looking at its long history as a safari destination one can say that perhaps the country could be one of the first countries to practice early ecotourism. However, the question of the origin of ecotourism is a moot issue, which perhaps need to be addressed separately.

But what is ecotourism? One of the earliest formal definitions of ecotourism was put forth by Ceballos-Lascurain (1987), who defined it as: 'Travelling to relatively undisturbed or unconta-minated natural areas with the specific objective of studying, admiring, and enjoying the scenery and its wild plants and animals, as well as any existing cultural manifestation (both past and present) found in these areas'. On the other hand, the Ecotourism Society of Kenya (ESOK) defines ecotourism as 'nature culture based tourism that invests in and supports the protection of environment, respects local cultures and involves local communities to ensure equity amongst all stakeholders'. Ceballos' definition however is lacking as it doesn't reflect the aspect of ensuring that local communities do benefit from tourism. Beeton (1998:1) outlines the main fundamentals of ecotourism as follows:

· Ecotourism is nature-based (occurs in a natural setting);
· It is educative and;
· It is managed in a sustainable manner (this includes the aspect of ensuring that local communities or host communities do benefit form tourism as well as preserving the cultures of the host communities). Sustainable management of tourism also means that it negative impacts are minimised.

But is the above practiced by all tourism operators? 'Some tourism operators use the word "ecotourism" purely as a marketing and adver-tising tool without offering their customers any type of environmental experience' (Beeton, 1998:1). In an effort to guide tourism operators in implementing ecotourism to the word, the International Ecotourism Society, has proposed the principles of eco-tourism (Box 1).

Box 1: Principles of Eco-tourism

- Minimize the negative impacts of on the nature and culture that damage a destination;
- Educate the travellers on the importance of conservation;
- Stress the importance of responsible business, which works cooperatively with local authorities and people to meet local needs and deliver conservation benefits;
- Direct revenues to the conservation and management of natural and protected areas;
- Emphasize the need for regional tourism zoning and for visitor management plans designed for either regions or natural areas that are slated to become eco-destinations;
- Emphasize use of environmental and social base-line studies, as well as long–term monitoring programs, to assess and maximize impacts;
- Strive to maximize economic benefit for the host country, local business and communities, particularly peoples living in and adjacent to natural and protected areas;
- Seek to ensure that tourism development does not exceed the social and environmental limits of acceptable change as determined by researchers in cooperation with local residents;
- Rely on infrastructure that has been developed in harmony with the environment, minimizing use of fossil fuels, conserving local plants and wildlife and blending with the natural and cultural environment.

Source: International Eco-tourism Society

Sustainability

Sustainability for a long time has been basically understood to mean the increasing concern for the environmental and natural resources. However, Beeton (1998) looks at sustainability in tourism from a four dimensional

perspective thus ecologically, socially, culturally, and economically as follows:

Ecological Sustainability

Ecological sustainability is the most common way in which sustainability is viewed. It seeks to avoid or minimize the environmental impacts from tourism act cities. The most pertinent questions in this regards is: what is the recommended or acceptable ecological carrying capacity[1] for a certain tourist area or destination? Ecological sustainability seeks to ensure that tourism activities do not injure the ecological unbalance of the destination or lead to increasing environmental costs. It is argued that while carrying capacity is an important way of assessing environmental impacts, if it is not well calculated or where it is simply imagined, it is likely to be use to continue promoting tourism but at the peril of making the destinations unsustainable.

Social Sustainability

Beeton (1998) defines social sustainability as: the ability of a community, whether local or national, to absorb inputs, such us extra, people for short or long periods of time, and to continue functioning either without the creation of social disharmony as a result of these inputs or by adapting its functions and relationships, so that the disharmony created can be alleviated or mitigated.

Where social sustainability is lacking, there are bound to be social problems associated to tourism e.g. prostitution, increase in crime, skyrocketing local prices of goods and services because of different financial capacities between the tourists who are more often richer compared to largely poor local community people. Possibly social carrying capacity[2] could be used as a tool for ensuring social sustainability.

Cultural Sustainability

Culture is an important tourism attraction, which is also very fragile. Hence commoditization and commercialization of culture gradually leads to compromising its authenticity. Beeton (1988) asserts that cultural influences from tourists is inevitable and dangerous; so the control of the most harmful effects, emphasis on responsible visitor behaviour and prevention of to cultural distortion is key notions of sustainable tourism. So cultural sustainability is the ability of people to retain or adapt elements of their culture which distinguishes them from other people. It is generally accepted that cultural effects are felt over a long term period hence it is difficult to measure but it can be done.

Economic Sustainability

Sustainability is also viewed in the economic context. Beeton (1998), posits that the tourism business should be sustainable in terms of the ability of its economic gains to cover the overall costs of sustainably operating it (including covering the costs of mitigating the effects of the tourist's presence or compensate the community for carrying the burden of the said inconveniences). This should not be misconstrued to mean that the other sustainability conditions are not important and that so long as the economic considerations are big enough to cover the other damages, it is acceptable. One of the tools of measuring economic sustainability is the economic carrying capacity[3].

ECOTOURISM IN KENYA

Kenya is endowed with a unique diversity of tourist attractions, comprising tropical beaches, and abundant wildlife in natural habitats, scenic beauty, geographically diverse landscape and cultures. Kenya's tourism is nature-based and so, some of the destinations in the country have very fragile ecosystems that require sustainable management. Most of these fragile ecosystems can rely on eco-tourism for sustainable use and for the benefit of the communities around them. Thus, 'Kenya can truly be promoted as a destination that offers the visitor an unparalleled variety of travel experiences' (Barasa and Njiraini, 2004:3). However, they note that inadequate marketing and lack of affordable credits to the would be local community invetors are some of the stumbling blocks that threaten to alienate them from fully participating in ecotourism projects.

The coastal part of Kenya is the most frequented tourism destinations accounting for about 60% of the country's annual total tourist bed-nights. Other popular destinations are: Masai Mara National Reserve, and Nairobi, Lake Nakuru, Tsavo and Amboseli national parks. The country

has about 59 national parks and reserves, most of which are located in arid and semi-arid areas. Tourism therefore, becomes the most cost effective economic activity that can thrive in such marginal areas. These areas also border communities who are rich in indigenous knowledge. This indigenous knowledge is exhibited in their cultures; in their relationship with the environment or nature; in their art; in their songs and dances; in their medicines etc. Kenya has about 42 tribes - a scenario that explains the vast indigenous knowledge systems that has not been fully tapped for sustainable development of the country. Ecotourism as a market segment focuses on low volume-high-yielded tourism.

It is worth noting that the modern tourist favours destinations with sound environmental conservation practices. Thus a new trend is emerging where a series of new innovative products and market niches, mainly founded on sustainable tourism principles in general and in particular eco-tourism principles are becoming more popular within some market segments in Europe and North America. In fact, Kenya is famed to be one of the first tourist destinations in the world to implement ecotourism principles especially in regard to revenues sharing in the Masai Mara and Amboseli National park (downgraded to a National Reserve in October 2005). Olindo (1991) argues that Kenya is "the old man of nature tourism". In his opinion, Kenya's wildlife based tourism or nature-based tourism is ecotourism and hence looking at its long history as a safari destination one can say that perhaps Kenya was one of the first countries to practice early ecotourism.

Recent Tourism Performance Trends

After impressive growth in the 1960s to 1980s, Kenya's tourism sector experienced an unprecedented decline in the 1990s due to both internal and external factors, exacerbated by security concerns. Both the number of visitor arrivals and earnings peaked in 1994 - at just over one million arrivals and earnings of KSh. 28 billion. After that the trend steadily declined, with arrivals falling to 988,000 in 2002. The fall in earnings was even steeper - from KShs. 28.1 billion in 1994 to KShs.19.5 billion in 2002. In 2003, the country received 1,147,000 visitor arrivals and Kshs. 25.7 billion, which improved to 1,320,000 visitors and Kshs. 39.2 billion respectively (Table 1).

SACRED GROVES OR KAYA FORESTS IN KENYAN COAST

Historical Background of the Kayas in Kenya

Kaya Kinondo is one of the many sacred forests or sacred groves in the Kenyan Coast. 'The *Kaya* forests are examples of a phenomenon that has been observed over wide areas and through much of human history, namely scared forests, also known as sacred groves' (Nyamweru, 1998). In Africa sacred forests are known to exist in Ghana, Nigeria, Tanzania, Uganda, The Gambia, Zambia and Kenya (ibid: 1998: 4-5).

In Kenya, the *Kaya* forests are located in Kilifi and Kwale districts in the Coast province. These districts have been inhabited for more that one hundred years by the *Mijikenda*[4] people who comprise of nine sub tribes namely: *Digo, Giriama, Duruma, Rabai, Chonyi, Kauma, Kambe* and *Jibana.* Counts by this author from the map produced in 2001 by the Eastern African Database and Atlas Project (AEF/14) of UNEP (see: Appendix I) yielded 61 kaya forests widely spread at the Kenyan Coast of which 21 are found in north coast (North of Mombasa city), while 40 are situated in the south coast (South of Mombasa city). Their size varies from 8 to about 80 hectares. This could be one of the reasons why they are frequently referred to as 'relict patches of once extensive and diverse Zanzibar-inhambane lowland forests' (Peltorinne, 2004: 10).

According to Spear (1978), the *Mijikenda* people migrated from Somalia to the Kenyan coast in the 16th century, where they formed the above nine distinct clans. The word *Kaya* means a village or settlement in the *Mijikenda* languages and it is believed that the *Kaya*s originated as a fortified village long ago. Originally, *Kaya* settlements in the middle of forests acted as defence barriers during war/or against hostile neighbouring communities. In the words of Spear (1998: 1), 'Over a century ago, the whole area was covered with dense forest and acacia woodlands and *Mijikenda* settlement was confined to small villages on top hills dotted along the ridge'. This was indeed a survival military strategy in a hostile environment. The *Mijikenda* were protecting themselves from the attacks of Galla pastoralists tribe. 'It is thought that *Kaya*s flourished during the 17th and 18th Centuries. The entire tribe lived in their traditional thatch grass houses within the *Kaya* boundary

(Fig. 2) protected from the marauding Galla tribe by a palisade/poles and a forest penetrable only by two narrow paths' (UNEP/BADC, 1998: 88). Indeed this is a good example of how the *Mijikenda* tribes used indigenous knowledge on *Kaya* forests as a defence tool. The *kaya* settlements were completely camouflaged from view by the surrounding forests.

The paths had three wooden gates were heavily defended. Kayas (homesteads) were located within central area of the forest for protection and safety. There was a charm buried in the middle of the *kaya* to protect the whole community. Meetings were held at the centre of the *kaya* called *moro*.

The area around the *Kaya* forest was intensively farmed with sorghum and millet while lad was communally owned (UNEP/BADC, 1998). There were burial sites within the *Kaya* and graves were marked with either plants or posts (Fig. 3). Some of these posts still remain in the *Kaya* forest while others were stolen by ethnic art collectors.
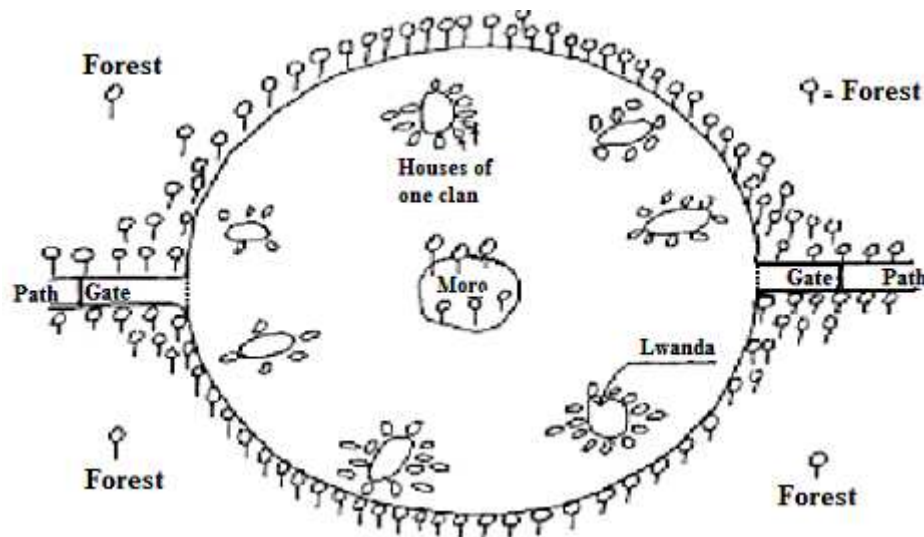

Fig. 2. A generalised plan of *Kaya* – protected from the marauding Galla tribe by a palisade/posts and a forest only by two narrow paths *(Source: UNEP/BADC)*

Fig. 3. Grave Makers of the *Mijikenda*, Giriama Tribe
Source: East African Atlas of Coastal Resources

Some graves have been excavated by sand miners who also also destroyed the *Kaya* forests.

It is believed that during 19th century the *Kaya*s ceased to be the residence of the whole tribe, however people returned to them for rituals and as a place for hiding during the frequent attacks by the Maasai people who had eclipsed the Galla and "taken over their marauding role". But why did this happen, interaction with other people like the Arabs and Swahili traders, the coming of Christianity, the western education system are thought to be some of the factors that led to the *Mijikenda* abandoning the *Kaya*s, which then decayed slowly because of lack of interest in preserving them. Spear (1998) confirms that *kayas* today are only relics of the bygone era although are still used for ceremonies and that there has been a shift from 'communal hill-top *kaya* to individual life'. *Kaya* forests therefore, continue to be destroyed by commercial loggers and land grabbers who cut it down for setting up of individual investments. Despite this, *Kaya* forests are still highly valued by the *Mijikenda* who consider them as part of their cultural heritage as they are also their sites of prayers, sacrifices and burials. *Kaya* forests are also rich in biodiversity are believed to be home to some of the rarest flora with important medicinal value courtesy of the *Mijikenda* Indigenous Knowledge Systems. It is estimated that about 50% of Kenya's rare plant species are found at in the coastal ecosystem most of them, in Kaya forests thus making these forests great repositories of plants species.

Threats to Kaya Forests

As earlier mentioned in this paper, the abandoning of the *Kayas* by the *Mijikenda* people exposed *Kaya* forests to a major threat of destruction by loggers, sand miners, farmers and ethnic art collectors. The *Kaya* forest are traditionally exclusive zones and only community elders are allowed to access them.

These forests are now on public land and that means protection is not in the community's hands as was the case before Kaya forests ceased to be used for residential purposes. According to Nyamweru (1998:9), the land around the *Kaya* forests has changed hands from communal to individual freehold system of ownership and so, with the increasing population to feed, and the rising unemployment, *Kaya* forests have been exposed to encroachment by the landless or squatters and other degradation e.g. illegal logging and "land grabbing".

Those *Kaya forests* on the Indian Ocean shoreline like *Kaya Waa forest,* for example, face a major threat as they are the most sought for development of "eco-hotels", lodges and holiday cottages. Other threats are that *Kaya* forests are sources of firewood, materials for wood carving, and traditional indigenous herbal medicine. Cultural attachment to *kaya* forests by the younger generations is slowly and painfully being eroded (Samuel Mwangi personal communication), who look down upon their traditions as primitive hence not willing to associate themselves with them. Religious fanatics have also been a threat to the perpetuation of the *Miijkenda* cultures as they tend to perceive the traditional ritual as satanic and unchristian. Therefore, they more often do not hesitate to intrude into the forests against the wishes of *kaya* elders. This raises the pertinent issue of modernists versus traditionalist and the need for peaceful coexistence. Because of the above threats, some *Kaya* forests are believed to have been completely destroyed.

In view of the foregoing and considering the fact that socio-economic pressures i.e. encroachment on these forests by a growing population and erosion of culture have exposed them to a really danger of desecration and destroyed to near extinction, they no doubt needed protection by somebody. The *Kaya* elders not only needed financial support to help protecting their sacred, but more importantly, they also needed government support in protecting their sacred groves from the well-to-do money-minded land prospectors, and corporate and individual developers. It is against this background that the National Museums of Kenya, World Wide Fund for Nature through the Coastal Forests Conservation Unit (CFCU) and *Kaya* elders themselves came together to conserve these forests, of course using the local communities age long indigenous knowledge. For example, in 1992, through the initiatives of the National Museums of Kenya, the *Kaya* forests were gazetted and designated as national monuments and work is ongoing to prepare an appropriate policy and legislative framework that will guarantee their conservation. These processes must be all inclusive, consultative and participatory, if they are going to serve the purpose of integrating indigenous conservation method with the modern conservation policies. The fact that the aforementioned actors in conservation are

working together in a kind of co-management arrangement also highlights the need for active participation by local communities in natural resource base conservation. A lot of research is on-going within the acceptable terms of the local elders to collect scientific data on the vast biodiversity resources found in these forests.

KAYA KINONDO ECOTOURISM AND INDIGENOUS KNOWLEDGE IN *KAYA* FOREST CONSERVATION

Background

Kaya Kinondo forest is one of the oldest sacred forests of the *Mijikenda* people situated in Msambweni division in Kwale just along the Diani beach in the south coast of Kenya (see Fig. 4). This is one of the most developed tourist destinations at the Kenyan coast. The forest is believed to have about 187 plant species, 45 species of butterflies and more than 48 bird species, of which two are endemic and one threatened. According to Joliffe (April, 2005), the forest has also two unique and endangered plants *Ziziphus robertsoniana* and an undescribed species only known in *Kinondo* and one nearby forest. In addition, local mammals are the endangered Zanj elephant shrew (*Rhynchocyon petersi*) and primates, namely the colobus monkey.

Kinondo kaya forest is also where the *Digo* community carry out the following things:

· Communicate with their ancestral spirits to intercede in their problems through worship and sacrificial offerings;

· Conduct rituals/prayers for the sick and troubled, for rain and good harvest, for wisdom and strength, as well as atonements for offences against nature.

It is the above important roles played by these forests in their indigenous religious beliefs and culture of the *Mijikenda* people that largely contributed to the conservation of the that *kaya* forest as opposed to the destruction directed to other indigenous forests in Kenya.

So, how is the ecotourism project working and how is the IKS of the *Digo* people used as an input to this ecotourism project? Firstly, based on the understanding of the concept of ecotourism in the context discussesd earlier in this paper, it is clear that by the remaining *Kinondo* elders participating in the *Kinondo* ecotourism project, they are indeed facilitating the passing over of their highly valued IK not only to the young generations but also to visitors alike. Meaning that forests are not only conserved on the basis of spiritual, medicinal, cultural, defence uses but also on the premise of enabling the community reap some economic benefits and thereby encouraging them to continue conserving this important biodiversity bank. Indeed, this is one of the tenets of ecotourism projects. This type of conservation can also be perceived as non extractive economic activity, where tourists/visitors come to enjoys the natural aesthetics of the forests.

Ecotourism and IKS

Kaya Kinondo Ecotourism Project was established with support from the Ford Foundation to promote sustainable resource use as a way of contributing to improved community livelihoods. Mutang'a (personal communication) argues that ecotourism is the best way to integrate indigenous knowledge with the modern ways of conservation as it has non-use value that will ensure survival of the *kaya* forest. This is true as ecotourism emphasises on aesthetics, and conservation. *Kaya Kinondo* forest project is fully owned and managed by the *Digo* people themselves in two villages. This notion aims at testing the viability of ecotourism in the *Kayas* forests a means of linking indigenous knowledge in conservation with socio-cultural, economic, and environmental benefits for local communities. Joliffe (1998) states that integrating modern and traditional conservation *Kaya Kinondo* forest is as it involves community consultation with oracles or foretellers. Life long taboos prohibit looting and removal of other forest vegetation from the *Kaya* forest. So, ecotourism is used as way of rejuvenating these beliefs educating visitors about them and above all conserving this important ecological heritage for posterity (Box 2 lists some the key activities carried out by the *Kaya Kinondo* Ecotourism Projects).

From the conservation perspective of ecotourism, *Kaya Kinondo* endeavours to integrate the modern and the traditional knowledge, which revolves around conservation driven taboos. Some of these taboos are:

· Restricted paths in the forest which were kept secret and used only by the *Kaya* elders during certain rituals. Villagers used the designated paths with a lot of strictness ensuring that there were no 'off-path walking' hence avoiding the destruction urbing of vegetation.
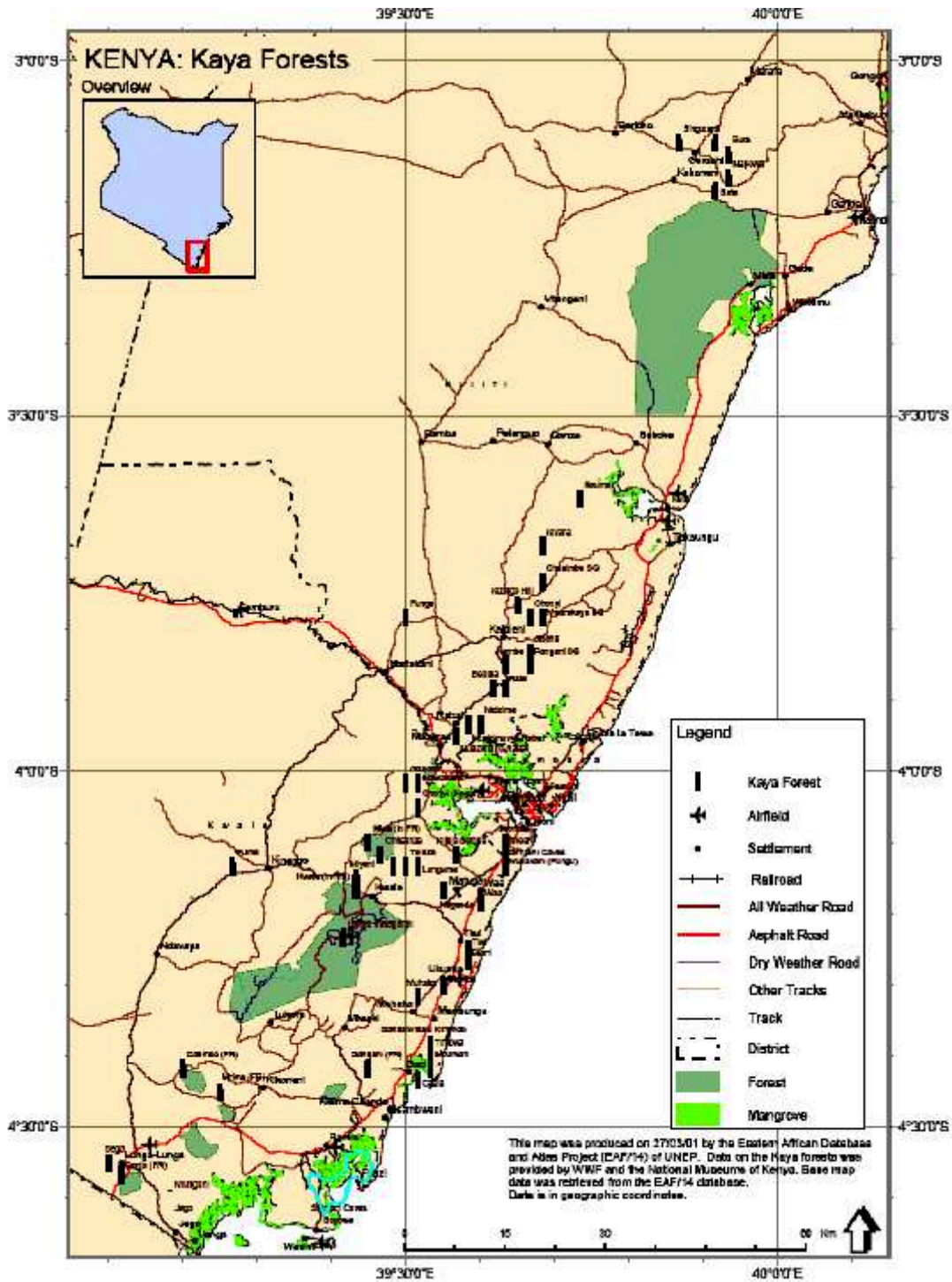
Fig. 4. Kaya forests of kenyan Coast
Source: UNEP: available at http://www.unep.org/eaf/PDF_maps/kaya_overview.pdf

Box 2: Activities of *Kaya Kinondo* Ecotourism

- Establishment of community-based conservation groups for targeted awareness creation and capacity building
- Conservation awareness meetings and exchange visits for community members
- Marketing outreach activities such as advertisements and talks to other stakeholders including hoteliers to promote the site
- Developing communication materials namely a brochure and information for various websites including WWF Eastern Africa and Alliance Hotels
- Construction of a community *banda* for community meetings and a cultural centre for visitors
- *Kaya Kinondo* site management and maintenance of traditional hut, ponds, gates and paths
- Establishing systems for ecological and cultural monitoring of the *Kaya Kinondo* site
- Develop the community's capacity for, and mechanisms of revenue collection and management

Source: http://www.enchanted-landscapes.com/ ecotourism/kaya.htm

· Cutting of trees, grazing livestock and collecting of other forest materials were forbidden. However, the collection of medicinal plants and use of forest materials to build ritual shrines were allowed.
· Those who committed the above taboos were fined ranging from paying livestock to fowls.

It is also interesting to know that in the event of conserving the *Kaya forest* resources beliefs have been created and promoted. For instance, it is believed that some of the big trees in the *kaya forests,* if listened to very careful, can communicate to one about what the future holds for him. However, the rule is that one must not tell any body about the communication from the tree.

In terms of visits to forest, only places designated by *Kaya* elders can be visited. The nature trails follow paths designated by *Kaya* elders lest one is found guilty of consecrating the spiritual grove. Indeed, as per the ecotourism principles about visits to natural areas, one is not allowed to carry any alien seeds to the forest or take anything out as a souvenir. This ensures that the forest remains are indigenous as possible and that those who are bent to *bio-piracy* do not have a chance to carry, whatever medicinal plants or any other genetic material that may have been explained to them by their guides. In addition, not just everyone can be allowed, into the middle of the *Kaya forest.*

Even among the MijiKenda themselves, not everyone is allowed to go to the middle of the *Kaya.* It is made abundantly clear from the beginning that those who came out of their mother's womb feet first or those who grew their lower set of teeth first and, worse still, those who had sex the previous night, are not allowed into the heart of the forest, where the black ram is slaughtered to the accompaniment of ritual dancing by elders in traditional attire (Fig. 5). (Kwena, 1996)

Only allowed cultural dances/ceremonies are

Fig. 5. A procession enters the Kaya Forest
Source: http://www.safariweb.com/safarimate/forest1.jpg

done in the presence of foreigners. Other ceremonies are carried out in strict are carried in confidence/secrecy

It is noteworthy to mention that these traditions continue even today and in fact according to Joliffe (2005), Mr. Elia Kimaru an officer working with the National Museums of Kenya, who has been instrumental in establishing the *Kaya Kinondo* Ecotourism Project was once fined a goat. His offence was that, while they cleared a path in the *kaya* forest together with the *kaya* elders, he invited someone from another community to help to clear some rocks without permission from the elders. In fact, Joliffe adds that for the elders to make a decision on whether or not to do a certain activity in the forest, they have to consult widely even to people (foreseers) in far places like Tanzania.

Critical Ecosystem Partnership Centre (CEPC) helped in funding the building of a tourist centre at *Kaya Kinondo* Forest Project. The tourist traffic to the project is increasing and the management is optimistic that the project will soon become self-sustaining. However, care should be taken as such project which originally was based on sustainable tourism principles is too much commercialized hence forgetting all about the four sustainable development pillars. The various

carrying capacities must be observed, otherwise becomes unsustainable (Fig. 6).

Some of the achievements of the project are:
· From April 2004 to April 2005, the project had collected about US$ 7000 in revenue;
· A tree nursery has been established for forest rehabilitation, and commercial tree seedling production;
· Marketing of the project is done through brochures, posters, T-shirts, and a newsletter which are distributed to hotels in the nearby resort of Diani. A Website to promote the project is under construction;
· Organising of talks in schools has been successful and local guides are being trained in various foreign languages to assist in educative and interpretive guided tours. This also helps in educating the youth about their cultures and ways of life, especially in relation with the Kaya forest, which kaya elders have been tirelessly fighting to protect. It is a way of passing over indigenous knowledge to the younger generations;
· Women from the community have been taught how to make neem and aloe vera products for visitors, including oils, shampoo, herbal tea and muscle cramp ointment, as well as medicated soap, mosquito repellents, and candles.

Fig. 6. Kaya Kinondo Ecotourism project Tourist/Visitors centre funded CEPC
Source: http://www.enchanted-landscapes.com/ecotourism/kaya.htm

Table 1: Average Visitor Expenditure per capita, 1988-2005

Year	Average length of stay	Visitor arrivals	Tourism earnings in Kenya Shillings. millions	Annual mean exchange rate	Visitor earnings in US$ millions	Average expenditure per visitor in Kenya Shillings	Average expenditure per visitor in US$	Expenditure per visitor per day
1988	16,0	694.9	6980	18.60	375	10045	540	33,8
1989	13,6	734.7	8640	21.60	400	11760	544	40,0
1990	14,4	814.4	10660	24.01	444	13089	545	37,8
1991	13,7	804.6	11900	28.07	424	14790	527	38,5
1992	13,4	781.5	14260	36.22	394	18247	504	37,6
1993	13,9	963.5	24440	68.16	359	29581	434	31,2
1994	13,6	1008.3	28100	44.84	627	27869	622	45,7
1995	13,0	973.6	25000	55.94	447	25678	459	35,3
1996	14,2	1000.3	25600	55.02	465	25523	464	32,7
1997	11,8	1000.6	22640	62.68	361	22626	361	30,6
1998	9,6	894.3	17500	61.83	283	19568	316	32,9
1999	9,4	969.3	21360	69.7	306	22037	316	33,6
2000	8,7	1036.5	16860	75.6	223	16266	215	24,7
2001	8,4	993.6	20650	78.6	263	20783	264	31,4
2002	8,5	1001.3	17970	78.9	228	17947	227	26,7
2003	8,4	1146.1	25700	75.8	339	22424	296	35,2
2004	13,0	1360.6	39200	79.44	493	28811	363	27,9
2005	-	1500.0	48900	76.38	640	32600	427	-

Source: Central Bank of Kenya, Various Economic Surveys and the Author's computation

RECOMMENDATIONS AND CONCLUSION

From the foregoing, we wish to make the following recommendations:

· The indigenous knowledge systems should be natured to form the backbone of ecotourism in Kenya. It should be packaged and integrated in ecotourism policies, plans and strategies;

· That the forestry policy should include a section on integrated ecotourism as one of the ways of sustainably using forestry resources thus reducing the incidence of relying on consumptive utilization or such resources;

· That the tourism sector should work together with the Kenya Resource Centre for Indigenous Knowledge (KENRIK) in order to harness the diverse IKS in the country for the purpose of building an IKS driven ecotourism;

· That learning cultures of the local community people living around forests and involving them in conservation activities which also benefits them directly of indirectly is a crucial for biodiversity conservation in Kenya;

· Indigenous knowledge should be protected to afford local communities the rights to use the same. Other IK especially of medicinal value and even the art and craft, for example,

beading, weaving, etc should be patented to avoid being illegally used or being patented elsewhere as if it was unique and owned by the country, company or person patenting it;

· More governments, Non Governmental Organisations and other international funding agencies, i.e. the United Nations etc. should consider funding ecotourism project and capacity building in sustainable tourism development as a contribution to the overall sustainable development of Kenya.

In conclusion, IKS and ecotourism are inseparable and that further research in the two areas can add value to sustainable tourism development in Kenya. The integration of IKS into ecotourism practices will help in ensuring that such treasured knowledge does not disappear. It is also important to mention that ecotourism is not always sustainable (see Figure 1) because it all depends on practitioners, some of whom use it purely for business interests (as a marketing tool) as opposed to implementing its underlying principles. It is therefore, important to have benchmarks for measuring or monitoring ecotourism. Therefore, care should be taken against seeing ecotourism as being an automatic remedy to unsustainability issues in tourism. Sustainable sustainable eco-tourism coupled with co-management with the local communities could be the most suitable non-use (non

consumptive untilization) way of *Kaya forests.*
The successful implementation of *Kaya Kinondo*
forest eco-tourism projects based on the IKS and
ecotourism tenets could encourage replication
of the same ideas in other *Kaya forests* with similar
conditions. However, for fully local community
owned ecotourism projects to flourish, issues to
with adequate marketing, capacity building, and
provision of affordable credits must be addressed.

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NOTES

1   Watson and Kopachevsky (1996) in Beeton (1998),
    defines ecological carrying capacity of a destination
    as the level of tourist development or recreational
    activity beyond which the environmental as
    previously experienced is degraded or compromised
2   Watson and Kopachevsky (1996) in Beeton (1998)
    calls it social-perceptual capacity and defines it as
    "the level reached when local residents of an area no
    longer want tourists because they are destroying the
    environment, imaging the local culture or crowding
    them out of local activities".
3   Watson and Kopachevsky (1996) in Beeton (1998)
    defines it as 'the ability to absorb tourist functions
    without squeezing out desirable activities. Assumes
    that any limit to capacity can be overcome, even if
    at a cost-ecological, social, cultural or even political'.
4   The word 'Miji Kenda literally translates to mean
    "nine villages or nine homesteads"

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ABSTRACT Sacred forests worldwide have existed for many centuries and have been used by different communities for different purposes. *Kaya* forests at the Kenyan coast have been in existence since the 16th century and were used by the *mijikenda* people as burial grounds, for habitation and defence barriers during times of war, and as worship places among others. Today, *Kaya* forests are faced with threats of extinction, if issues of their sustainable management and utilization are not addressed. The use of *Kaya Kinondo* forest for ecotourism based on mijikenda *(digo)* indigenous knowledge systems (IKS) points to the fact that IKS can play an important role in resource base protection. Concepts related to IKS and sustainable tourism development are briefly discussed to set the ground for understanding their link with *Kaya* forests conservation through IKS and ecotuirsm. The paper also attempts to look at the emergence and historical uses of *Kaya* forests in Kenya, their current uses, and the link between these forests on one hand, and tourism on the other. The institutional framework of this forest is examined. A case study of *Kaya* Kinondo forest ecotourism project is then presented. The paper suggests that sustainable eco-tourism coupled with co-management could be the most suitable non-use (non consumptive untilization) way of these forests and that the successful implementation of *Kaya Kinondo* forest eco-tourism could be replicated in other *Kaya* forests with similar conditions.

Author's Address: **Davis Wekesa Barasa**, Ministry of Tourism and Wildlife, Department of Tourism, Box 54666 - 00200, Nairobi, Kenya.

Telephone: +254 20 313010 (Office), *Fax:* +254 20 217604, *E-mail:* dwbarasa@yahoo.co.uk

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