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Motivation towards Conserving a Rich Forest Biodiversity:

Lessons learned from Communities neighbouring the sacred Kaya Forests, Kwale County, Kenya

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Abstract

This research study interrogated the benefits that accrued to the Kaya Forest-neighbouring communities as the key motivator in the sustainable conservation of forests. While forests are threatened by deforestation and degradation worldwide due to the overemphasis of their direct economic benefits, socio-cultural considerations have in some cases, protected this rich ecosystem. A case study carried out in Kaya Forests of the Kwale County, Kenya has shown that intangible benefits, not considered in the direct harvest of forests, could be used to reverse the trend in the loss of forests. Data collected questionnaires, interviews, focus group discussions and observations has shown this to be the case. The findings of the study were such that sacred forests offered more benefits than the other forms of forests, and that there was equity in the sharing of these benefits among community members in this category. The study however, revealed that for sustainable conservation efforts, it was prudent to consider both the economic and social benefits of this resource as a whole. Consequently, the study is recommending the need to identify and repackage such benefits and to sensitize the community on the benefits that accrue from such arrangement.

Keywords: Equitable Sharing, Kaya Forests, Sacredness, Tangible and Intangible benefits,

Introduction

Linking conservation of forests to economic development is one strategy that has been used to motivate conservation of community forests, based on the view that material values and direct economic benefits motivate conservation of forests. Integrated Conservation and Development Projects (ICDPs) have implemented this strategy in many places, e.g. the Zimbabwe's Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) links conservation of forests to

economic development. There are two fundamental assumptions in the CAMPFIRE programme: one, economic benefits are the key in motivating communities to conserve forests; two, is the need for communities to have secure tenure and proprietorship over their natural forests, which motivated them to manage the forests sustainably. In achieving this, the Central Government of Zimbabwe transferred its authority of forest management to the local community, the CAMPFIRE Programme (Byers et al. 2001). In this example, however, the emphasizes was more on the economic benefits, with less emphasis on the socio-cultural (spiritual) benefits, which too are considered to be as important as the economic benefits. This study therefore went further to highlight both the economic and socio-cultural benefits of forests, filling a a gap in response to the one-sided economic valuation in forests, using the sacred Kaya forests in Kwale County, Kenya, as the sample for the study.

The Cultural Materialism theory coined by Marvin Harris in his 1968 book, titled *The Rise of Anthropological Theory*, proposed that human life is a reflection of a response to the practical problems of earthly existence. The greatest strength of this theory is its emphasis that the relationship between humans and the environment is very active; and that a society's cultural and economic activities inform the attitudes, beliefs, norms and values, which in turn shape the physical surrounding and vice versa (Buzney and Marcoux, 2023). In the case of the Mijikenda, the forests they entered from Shungwaya, as a result of insecurity, became not only sacred to them, but this also changed their view about their physical features. The sacredness of these forests, and greatly revered by the Mijikenda as sources of wellness and stability of the community, has immensely contributed to their conservation.

The biased view, which emphasized the direct economic benefits of forests, has resulted in the wanton degradation and depletion of forests, making it a global problem of a large magnitude, more so due to the additional pressure brought out by population increase (resulting into urban sprawl and the demand for land for agriculture (McVay, 2016). Other causes of forest destruction are natural disasters and high temperatures that have led to self-ignited fires in the Amazon forests (Wecker, 2018). There is fear that the forest cover of the Amazon, that of Central Africa, and Mekong, may be depleted in the next 15 years if protective measures are not taken quickly (Schwartz, 2015).

The forest loss in Africa stands at 80 percent of vegetation cover, with the highest loss taking place in the 1980s, largely from subsistence farming, collection of fuel-woods, charcoal production, mining, and logging. Such activities have led to the loss of 1.47 million hectares forest in the Democratic Republic of Congo in 2017, with West Africa retaining only 22.8 percent of its original forest cover (Butler, 2005; Fleshman, 2008). The forest cover in Malawi has fallen from 41.4 percent to 34.4 percent (RIPPLE, 2003), with Madagascar having lost 80 percent of its original forest cover (Soutter et al., 2003); followed by Tanzania, that has experienced its highest loss of forests between 2000 and 2007 (BirdLife International, 2013).

The average forest loss that took place in Kenya between 1990 and 2010 was 12,050 hectares, representing a total of 6.5 percent loss in its forest cover (FAO, 2020), an occurrence fuelled by agricultural expansion, charcoal burning, and the collection of firewood, which is in addition to the massive human increase (Ruri Consultants, 2013; African Technology Forum, 2000). In the Rift Valley and Central Kenya, tea, wheat and coffee growing had claimed a lot of forests, with Kakamega forest suffering due to timber harvesting, charcoal burning, the collection of firewood, and commercial farming (Pellikka et al., 2004); with grazing, agriculture, and livestock farming threatening Cherangany forest, and the Mau Complex (The Ministry of Forestry and Wildlife, 2013).

The coast region of Kenya, is thought to have lost 66 percent of its original forest between 1990 and 2011 through charcoal burning, agricultural expansion, human encroachment, and fuelwood, as the main drivers. Other forest loss causing activities were mining and scooping of silica sand; and the elephants causing havoc in Shimba Hills and Arabuko Sokoke forests (BirdLife International, 2013; Ruri Consultants, 2013; Githitho, 2004, Gathogo, 2013).

In Kwale County, charcoal burning, mining activities for building blocks and sand harvesting, to establish human settlements and the development of supporting infrastructure, have indirectly led to forest destruction (Ruri Consultants, 2013). The sacred Kaya forests have also been facing threats from human activities including logging, land grabbing, tourism development, charcoal burning, and drought (interpreted by Kaya Elders as a punishment by gods for grabbing forests). It has also affected water sources, like the Marere springs, a major source of fresh water, not only to the Kwale County residents, but also to those of the Mombasa County.

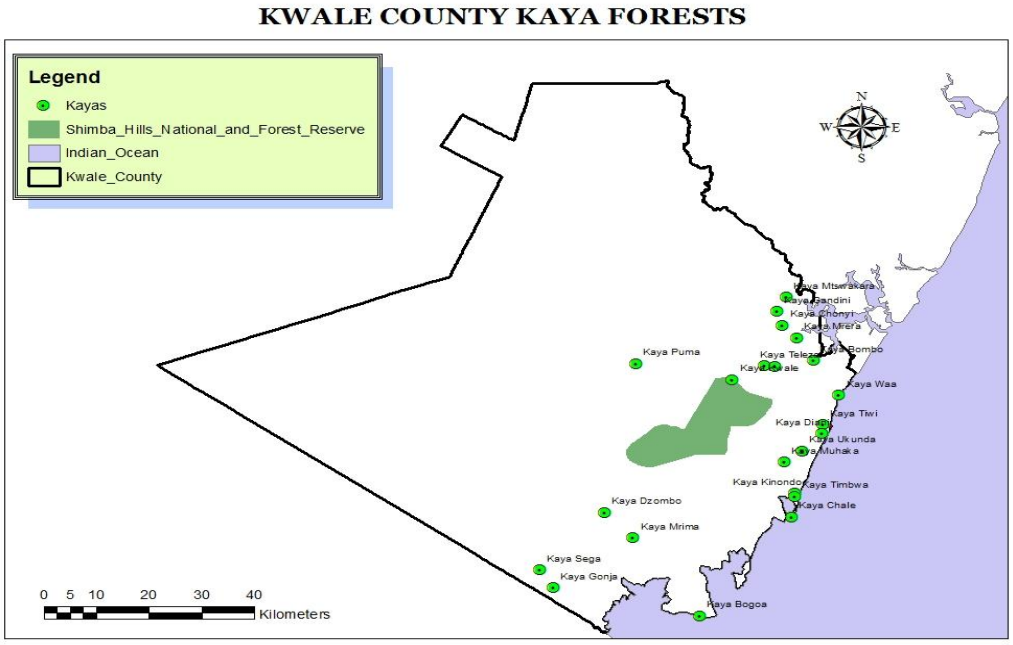
The destruction of forests discussed above, was solely for economic benefits with little regard to the other important social benefits and ecosystem functions, resulting to the global fear, as experienced in planetary melt-down from global warming. The study was therefore carried out comprehensively to bring out all the benefits that accrue to communities living

next to forests, more so the benefits derived from the symbiotic releases of carbon dioxide that enable plants to manufacture their own food, and oxygen for the survival of animals, including mankind. By highlighting the importance of the non-direct economic benefits, the study hoped to inform and motivate the communities to conserve and protect the forests due to the other intangible benefits.

1. Methodology

2.1 Study area

The study was carried out in the Kwale County of Kenya. This county lies between Latitudes 30.05º to 40.75º South and Longitudes 38.52º to 39.51º East, and covers an area of about 8,270.2 square kilometres, of which 62 is water surface. It enjoys the monsoon type of climate with bi-modal rainfall with short rains, experienced between October and December, and, the long rains coming between March/April to July. The total annual precipitation varies from 900mm–1500mm along the coast to 500mm to 600mm, per annum in the hinterland. Average temperature ranges from 26.30º C to 26.60º C in the coastal lowlands, 25.0º C to 26.60º C in Shimba Hills, and 24.60º C to 27.50º C in the hinterland. The county thus lies in the Arid and Semi-Arid region of Kenya, and therefore most of its forest cover is found within its coastal belt, away from its arid and semi-arid hinterland.



Map 2.1: Location of some Kaya Forests in Kwale County (Source: WWF 2017)

The Kwale County is a host to 26 Kaya forests; 24 gazetted, 2 ungazetted, and 2 registered as UNESCO World Heritage Sites. The Kwale County officially recognizes only 18 Kaya Forests.

1.2 Sample size and sampling techniques

Eight Kaya forests were selected in this study, with two, picked from each Sub-County. The sampled 8 Kaya forests were distributed as follows: Mtswakara and Puma in Kinango Sub-County, Kaya Waa and Kaya Kwale in Matuga Sub-County, Kaya Kinondo and Muhaka in Msambweni Sub-County, and Kaya Mrima and Kaya Dzombo in Lungalunga Sub-County. The Kaya

forests were selected for sampling based on their distinct characteristics and/or geographical location, in this manner: Kaya Mtswakara is officially recognized as a Kaya Forest, while Kaya Puma, not officially recognized, as such, lacks any protective policies. Kaya Waa is strategically located in a highly populated region, with on-going mining of coral blocks and calcium for construction purposes. Kaya Kwale (situated within the Shimba Hills National Reserve), was selected due to its legal safeguard status, and as the pioneering Kaya of the Mijikenda community. Kaya Kinondo, is located in a tourism development zone, and is also the site of a trial Eco-tourism project, making it potentially susceptible to harm. Kaya Muhaka is located in an area with many ethnic communities and is also home to the ICIPE research centre. This is an opportunity to explore how the presence of multiple ethnicity contributes to the perception of sacredness. Kaya Mrima is designated as both a forest reserve and a national monument. However, it remains under risk from mining operations, particularly due to the recent identification of niobium, a highly valuable and scarce mineral that the country intends to exploit for economic development. Finally, Kaya Dzombo is in a location amidst agricultural practices. The impacts arising from such ongoing activities, and the conservation status of these Kaya forests, informed their selection.

A purposive non-probability sampling technique was applied in this research in order to ensure representatives of the population. Informants in this study was limited to individuals who could provide specific information, either because they possessed it themselves or met an established criterion. Such individuals either resided in close proximity to the Kaya forests, and/or, were either actively or indirectly engaged in the administration of the Kaya forests. Such included the Kaya Elders, National Government institutions, the County Government of Kwale Departments of Land and Environment, Trade, Culture and Talent Management, and the Department of Water were also involved. In each Kaya Forest, 30 respondents were chosen, resulting in a total sample size of 240 informants - an adequately representative size (Kothari, 2004) since the "Sampling Theory" states that a sample size of 30 is sufficient when dealing with a small sample.

1.3 Data collection tools

The main data collection tool was the questionnaire, supplemented by focused group discussions and participant observations. Questionnaires were used as the principal tool for collection of primary data from the field because they offer a fast, efficient and inexpensive means of gathering large amounts of information from sizeable sample volumes. They are particularly effective for measuring subject behaviour, preferences, intentions, attitudes and opinions. Making use of open and closed research questions, questionnaires enable researchers to obtain both qualitative and quantitative data, resulting in more comprehensive results.

For Focus Group Discussions, eight of these were held, one in each of the 8 sampled kaya forests, with participants ranging in number of between 10 and 15. This group sizes ensured their manageability and allowing all members to actively engage in conversation and express their opinions, while also promoting diversity within the group. The use of this approach allowed for the efficient collection of a substantial volume of data within a limited timeframe.

For Participant Observation, field visits to the Kaya forests were made to actively engage in observation and documentation of Kaya activities as they unfolded, and noted. The type of observation provided direct insight into the methods and motivations behind the activities being conducted within the Kaya forests. Participant observation offered two primary benefits: establishing a connection with the participants to foster future involvement, and validating the data in real-time. To facilitate the exercise, an interview guide was employed to pursue the respondents' answers, gather additional information and; elucidate ambiguous comments. The interview guide used both structured and semi-structured questions to collect detailed information on sacredness and its role in forest conservation.

1.4 Data analysis and presentation

The data was encoded and subsequently loaded into Statistical Packages for Social Science (SPSS Version 24.0) for analysis. Data analysis involved the utilization of both MS Excel 2016 and SPSS Version 24.0. The data was evaluated and presented using frequency tables, descriptive statistics, and inferential statistics to draw inferences about the population. MS Excel 2016 was utilized for bar charts, pie charts, and Pareto charts for data visualization.

2. Findings and discussions

3.1 What motivates forest conservation

The benefits derived from forest as a resource, and their mode of sharing, the study has shown, motivated community efforts towards conservation of this ecosystem. The tangible benefits that motivated the conservation efforts included: trade opportunities, the availability of materials for construction, and the tapping of plants as herbal medicine.

The intangible benefits of forests as brought out by the respondents ranked in order of importance included availability of plentiful fresh air in forest surroundings, attraction of rainfall, sustenance of Kaya forests, promotion of culture, protection of soils from erosion, and preservation of areas of worship. These findings are summarized in Figure 3.1 below.

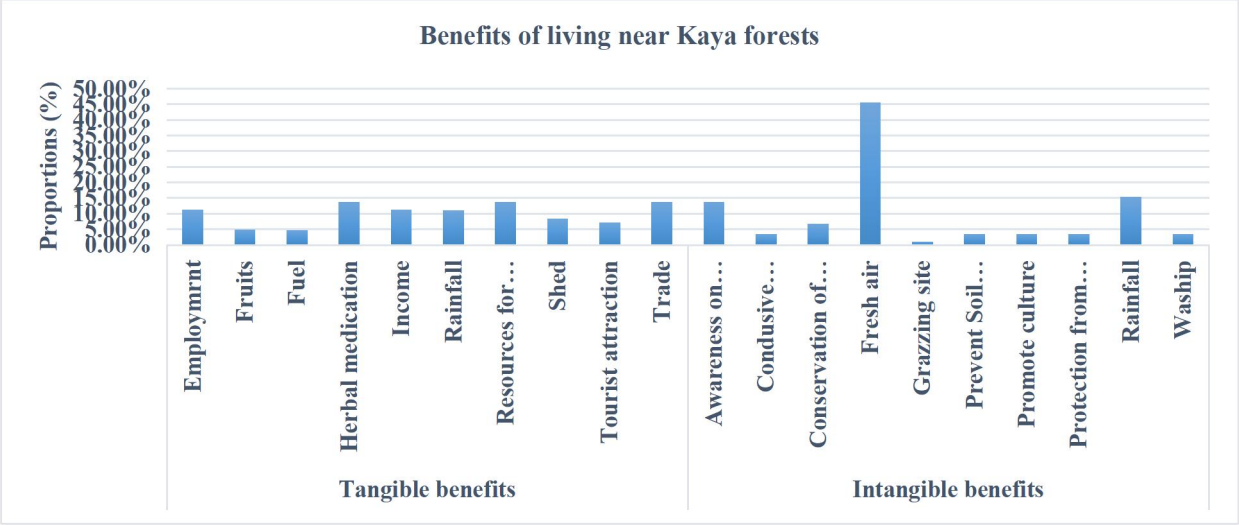


Figure 3.1: Tangible and intangible benefits of living near Kaya forests

The sharing of benefits among the community from the accrued capital of the Kaya forests, however showed a variance, as it emerged that there was a split in consensus for, while 25. 9% indicated equal sharing of benefits, 20.4% alluded that no sharing of benefits took place. These findings are summarized in Figure 3.2 below.

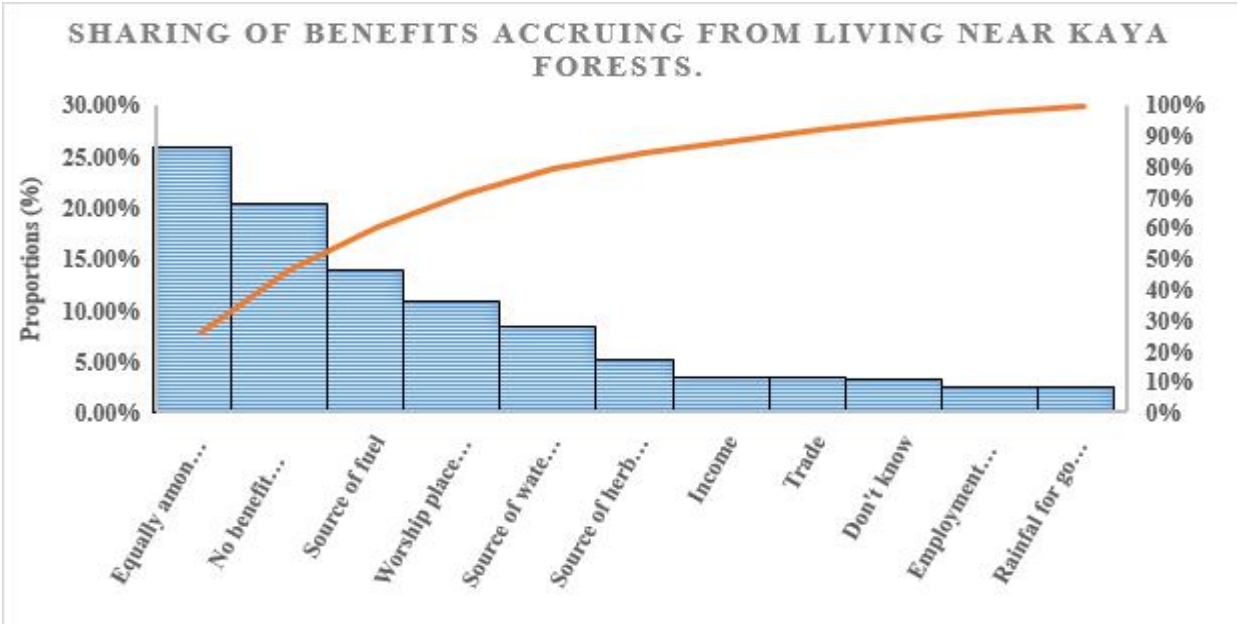


***Figure 3.2:** Sharing Mode of the benefits among the community members*

Communities residing in close proximity to Kaya forests benefitted immensely. Forest resources directly provided prospects for trade, the abundance of construction materials, availability of herbal medicine nearby, and consistent rainfall. Support for equitable distribution of benefits among community members was premised and inspired by the notion that each member contributed to the sustainable conservation of the Kaya forests. Non participants in the conservation efforts were oblivious of the sharing of the benefits that took place, insinuating that the benefits from such efforts were exclusively distributed among the leadership of Kaya forests. If the absence of benefit sharing is indeed accurate, it implies that there is potential for enhancing the distribution of such benefits in the future, since forest conservation efforts were driven by both the sharing of both real and intangible benefits.

Kandari et al. (2014) determined that the religious association with medical herbs and practices has had a significant impact on Indian traditional communities, leading them to engage in acts of selflessness in service to their deities. This mirrors the findings of Chebii (2015), who noted that indigenous forests, including Kaya forests, provide significant economic, environmental, recreational, scientific, cultural, and spiritual benefits. The respondents' perspective on the equitable distribution of benefits also aligns with the findings of Byers et al. (2001), who observed that land and its resources in Africa were considered community property, belonging to both the present and future generations.

3.2 Richness in Biodiversity

A comparison of richness in biodiversity between the Kaya forests and State forests, indicated that the Kaya forests were richer in resource biodiversity, as indicated by the presence of hardwoods; attraction of tourists, and the presence of indigenous trees. A small proportion of respondents did not know anything about the richness of the Kaya forests, as summarized in Figure 3.3 below.

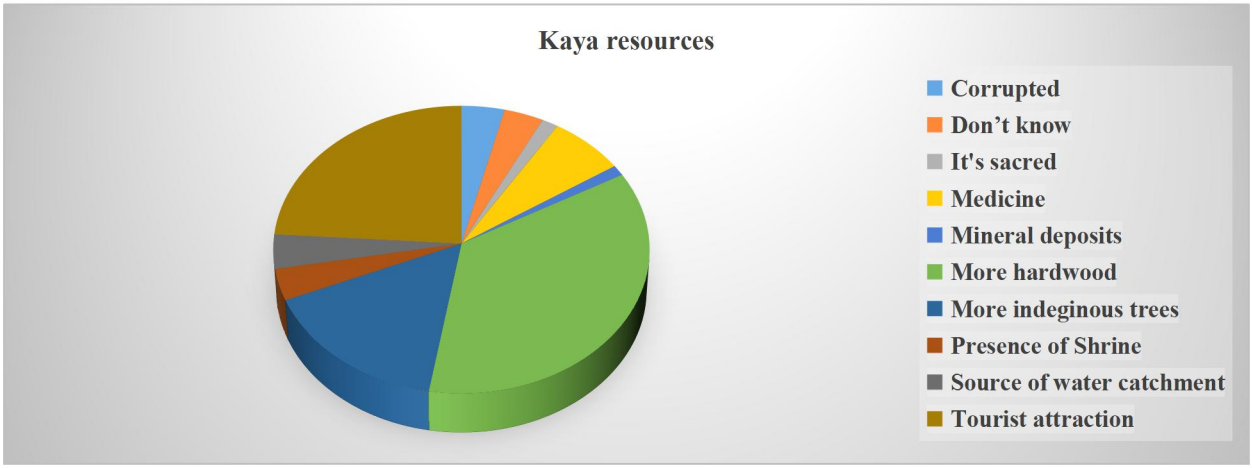


Figure 3.3: Resources within Kaya forests

However, both the State and Kaya forests have suffered significant damage over time, but the State forests have experienced more severe destruction, an indicator in policy failure, whereas, reverence of sacredness of the Kaya forests, seem to have minimized the destruction. This finding is confirmed by Kipkemboi et al. (2019), and by The African Report, on the forest cover, 2022.

Forest classification has shown that only a mere 2% consisted of native forest, while the remaining portion comprised of cultivated forests. Kaya forests, which are also native, have to a great extent managed to preserve most of their original state, albeit significant destruction since Kenya's independence. The higher level of preservation of Kaya forests in comparison to the State managed forests, explains their greater biodiversity and abundance of resources.

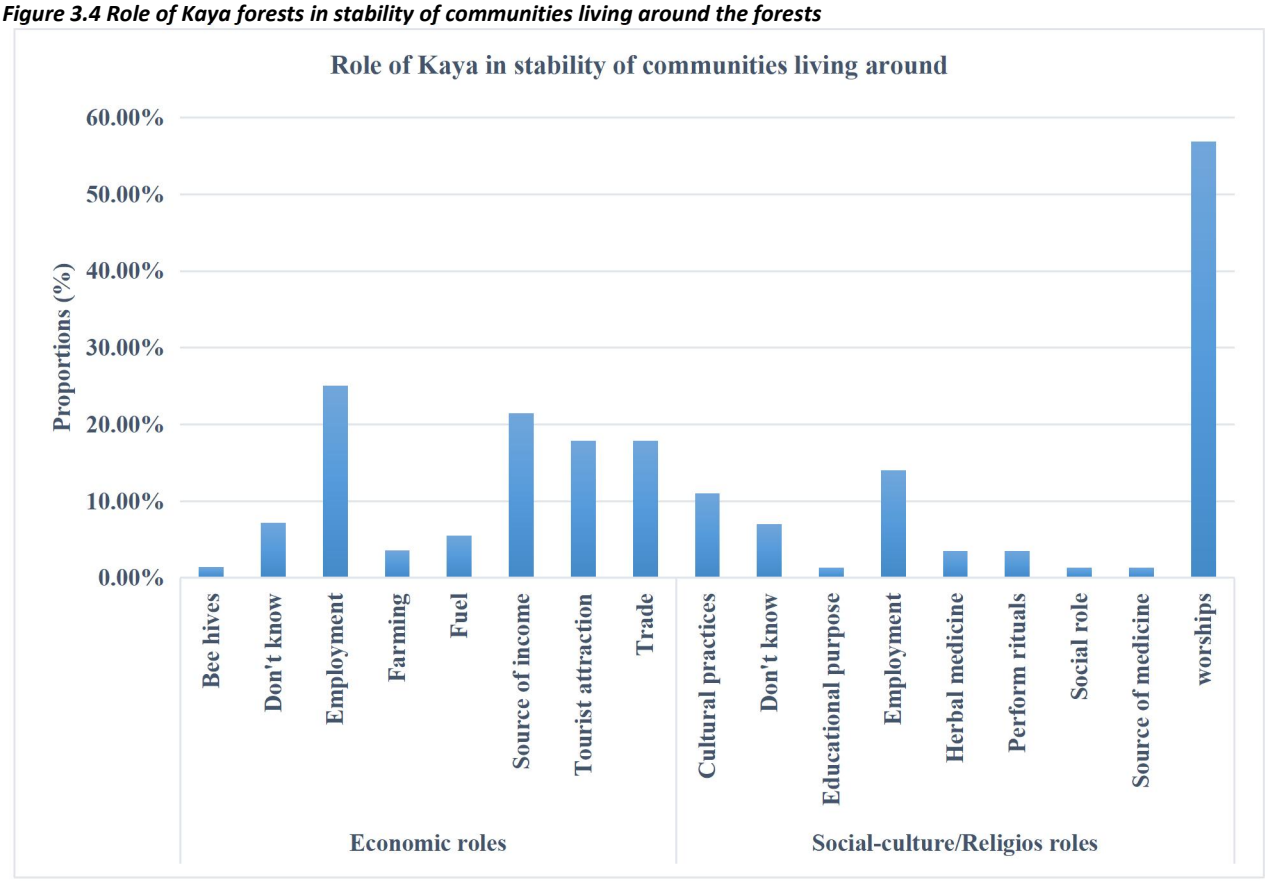
The sanctity of the Kaya forests compared to the State forests, has provided the prolonged lifespan of its trees. Community-based management of Kaya forests seems to be more effective than the National Government management of the State forests. The abundance of resources and richness in Biodiversity in the Kaya forests motivated the Kenya Medical Research Institute (KEMRI) and the International Centre for Insect Physiology and Ecology (ICIPE) to establish their research facilities within or in close proximity to these forests. The ICIPE Centre at Kaya Muhaka, and the KEMRI Centres in Kwale and Kilifi

Counties are such on the ground examples to further understand why sacred forests were less degraded than community forests without the sacred status in the same area.

3.3 Role of Kaya forests in the stability of communities

The contribution of Kaya forests to the stability of the communities in the study area, were seen in terms of the economic and socio-cultural roles. The major economic roles were seen in terms of employment opportunities, alternative source of income, tourist attraction and enhancement of trade. On the socio-cultural aspects, Kaya forests providing places for worship, places for the enhancement of cultural practices, and places for the performance of rituals. The results of which are summarized in Figure 3.4 below.

Figure 3.4 Role of Kaya forests in stability of communities living around the forests



The benefits that were obtained by the communities living near the Kaya forests had a direct impact on their livelihoods. As eco-tourism project in Kaya Kinondo served as a real demonstration of how Kaya forests may be utilized as tourist attraction sites and as sources of income to the community. Unfortunately, the eco-tourism project appeared to be poorly maintained, the surrounding area was neglected, and despite not being financially viable at its current state, Kaya Kinondo has undeniably emerged as a popular tourist destination, with visitors coming to seek insights into the Mijikenda's practices and customs, conserved in the Kaya forests, while also experiencing the tranquility in the forest environment.

In their study, Msuya and Kideghesho (2009) found that the communities living near sacred forests had a greater tendency to collect dead wood for firewood rather than cutting down live trees. This practice was observed to be a customary user right among the villages bordering the forest reserves. Nevertheless, the gathering of decaying firewood from Kaya forests for use as fuel in Kwale County was banned to prevent additional harm to the Kaya forests, an intervention borrowed from the Benin experience, Lokossou (2010), where sacred forests were categorized based on their various functions: socio-

cultural, religious, and economics, with the forests utilized only for sacred hunting, honey extraction, and selective logging permitted only for specific type of tree. These forests were dedicated to the spirits of ancestors, for individuals who died under unusual or violent circumstances, left as forests for gods and spirits, and forests for secret societies for initiation rituals.

In contrast however, the Kaya forests in Kenya are less officially designated as sacred compared to those in Benin. Irrespective of this, they have resemblances in terms of being locations dedicated to their deities and forefathers, as well as serving as sites for religious devotion. A major difference is that while the collection of dead-wood in the Kaya forests, is banned for fear that it could lead to their annihilation, such an activity is permitted in Bennin. Similarly, while hunting was prohibited in the Kaya forests, since all living beings therein were regarded as sacred, it was allowed and regulated in Benin.

Regarding the influence of Kaya forests on rainfall, it is indeed accurate that the regions where Kaya forests were present saw consistent and dependable precipitation, which resulted in successful agricultural yields for the surrounding communities. It is acknowledged that Kaya forests have developed micro-climatic conditions that are exclusive to the places where they are found. Such climatic conditions have resulted in the enhancement of food security, and overall standard of living. Thus, locations like Mangwei, Mrima, and Dzombo, were experiencing regular rainfall because they are near Kaya Mrima and Dzombo.

The Kaya forests provided a refreshing atmosphere and peaceful surroundings as exemplified by the Kaya Kinondo Eco-tourism Centre, which offered a stark contrast to the hot and humid environment of the lower coast region. Enders, 2019 opined that the Kaya forests have generated tranquil surroundings akin to a peaceful setting.

In the Shimba Hills Forest Reserve, which serves a dual purpose of a State Forest and a sacred forest, Kaya Kwale, the first Kaya Forest of the Mijikenda, community benefits were derived benefits from the collaboration between the Kenya Forest Service (KFS) and Kenya Wildlife Service (KWS) and the Community Forest Associations (CFAs). The Shimba Hills Forest Guides Association (SHIFOGA), a Community Based Organization (CBO), was granted the opportunity by the Kenya Wildlife Service (KWS) to serve as guides for visitors to the game reserve.

This initiative aims to provide benefits to the youth. These CBOs office spaces and eco-tourism accommodation Bandas, constructed with external support of partners. Additionally, KWS collects bed taxes from tourists who opt to stay in the Banda's within the Game Reserve. Such revenue is shared with the community.

Another aspect of community engagement that proved beneficial was the permission granted to the local population to engage in beekeeping activities within the forest. In addition to the projects within Shimba Hills Forest, there were also other initiatives outside the forest such as the Mikoko Pamoja project in Vanga, which focuses on carbon credit as a source of revenue generation.

The evaluation of the capacity of sacred forests to store carbon, as outlined by Maru et al. (2022), was being tested at Kaya Dzombo in Kwale County and Kaya Kauma in Kilifi County. The objective was to expand this assessment to other Kaya forests, providing the community with a financial benefit from these forests and contributing to the development of Kenya. The inherent benefit of sacredness lies in its ability to guarantee the long-term utilization of natural resources, hence fostering the stability of the ecosystem. Moreover, it aligns with the United Nations Sustainable Development Goals (2015-2030). Consequently, the study also contributes to the achievement of the Sustainable Development Goals and efforts to mitigate climate change.

3.4 Contribution of Kaya forests to Kenya's development

Kaya forests contribution to Kenya's development as revenue sources through tourist attraction and therefore, a source of employment for livelihood of its citizens. Several respondents were unaware of the significant role that Kaya forests play in the development of Kenya. The Shimba Hills Forest, which includes Kaya Kwale, served as a significant water source, namely through Marere Springs, and played a role in supplying water to Kwale and Mombasa Counties.

The Kwale Water and Sewerage Company (KWAWASCO), tapping from the Marere Springs in the Shimba Hills Forest Reserve has led to the employment of several individuals to oversee the management of the water company. This resulted in increased income levels for both the employees and the community members. The rise in earnings within the community enhanced their purchasing power and stimulated demand, hence resulting in further augmentation of the community's income. This contribution to development is summarized in Figure 3.5 below.

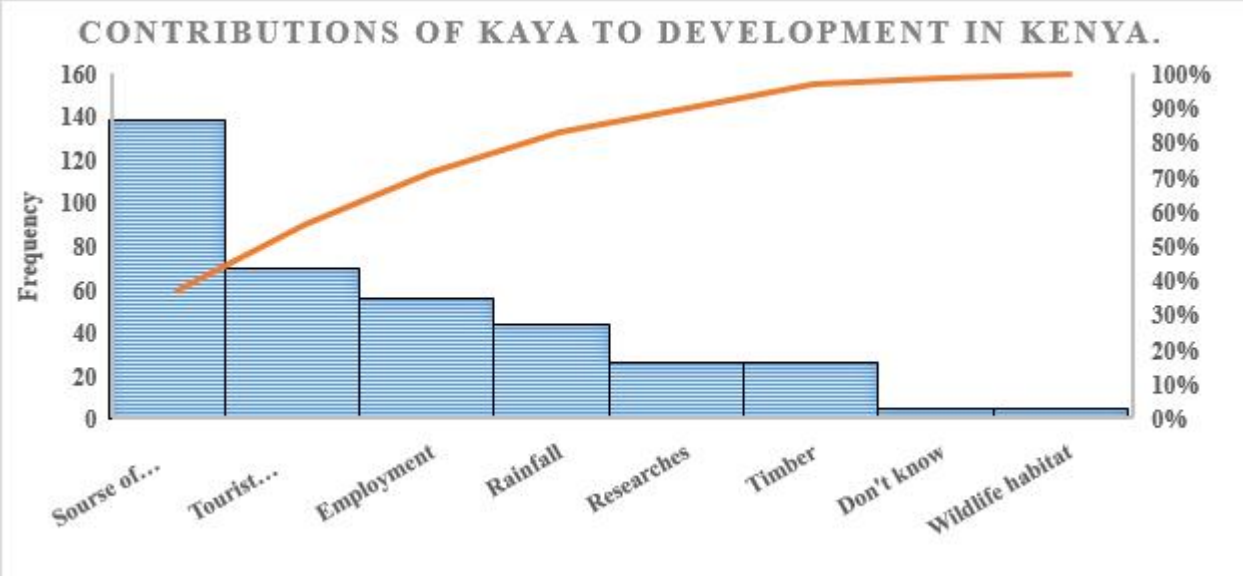


Figure 3.5: Contributions of Kaya forests to Kenya's development

Kenya is categorized as a water-scarce country due to the limited availability of freshwater resources. The ongoing push to designate the Shimba Hills Forest as one of the nation's water towers is a step in the right direction. Upon completion, this project would provide an extra layer of safeguarding for the forest and guarantee the sustained access to water from Marere springs for industrial and household purposes by the communities in the Kwale and Mombasa counties.

3. Conclusion and Recommendations

Communities residing in close proximity to forests, be they sacred or not, experienced tangible and intangible benefits. The benefits that communities gained from maintaining the forests served as a motivation for them to continue conserving those forests. The Kaya forests were the most diversified ecosystems and were less degraded compared to the State forests. Their contributions to Kenya's development encompassed the provision of fresh water, mitigation of climate change are recognized, so is their enhancement of community health through the availability of medicinal plants.

From the study findings, it is very clear that sacred forests offered more benefits to the surrounding communities, thereby motivating them to conserve and protect those sacred forests. Consequently therefore, it is recommended that more research is carried out on both the tangible and intangible benefits so that these are repackaged and integrated into a very comprehensive programme that would educate Kenyan communities on their local traditional and innovative strategies of conserving forests for their own benefits, and for contribution to world heritage and sustainable development.

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The researchers concede that they are the sole authors of this research article that creatively contributes to the world of academia.

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