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The 'Bald' Ecosystem: Indigenous Resource Governance and Restoration of Kivaa Forest, Kenya

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The Kivaa ecosystem was rich in biodiversity until the late 1940s. Following human-induced conversion through logging and uncontrolled extraction of trees for charcoal, timber, and herbal medicine, the ecosystem changed progressively between the 1950s and the early 2000s, culminating in a 'bare' landscape. For over 50 years, the hill resembled a baldhead, thus befitting its name *Kivaa* (Kamba for baldhead). Natural springs dried and could no longer supply fresh water. Increased human action completely decimated vegetation cover, and the remaining wildlife migrated in search of habitat. Conversion of the ecosystem coincided with an increase in poverty, diseases, and social problems, which the local community associated with supernatural punishment. Since the last decade, however, community-led efforts to restore the ecosystem using indigenous resource governance mechanisms have witnessed a form of landscape reorganisation. The ecosystem is increasingly regaining its former glory. In this research article, we examine the local adoption of eco-cultural beliefs and practices for the conservation of nature. Further, we interrogate questions of commitment and enforcement of traditional rules against the backdrop of rising demand for forest resources. A qualitative study under the cross-sectional research design and qualitative data collection methods were utilised in ascertaining the conservation methods used in conserving the Kivaa Indigenous Forest from purposively and non-probability sampled respondents of 100. The study revealed that some of the eco-cultural beliefs and practices adopted include the use of shrines, taboos and myths, customary laws, rules and regulations and rituals. Adherence to traditional norms and values for the conservation of nature obtains favour because the governance system builds on

traditional systems. The questions of commitment and enforcement, though linked to supernatural power, remain rather problematic, particularly due to generational problems, immigration, population increase, growing demands for natural resources, and changing attitudes.

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INTRODUCTION

Forest resources are continually coming under sharp threat. The 2015 Forest Resource Assessment Report indicates that forest cover is continually decreasing, with nearly 1% (approximately 9 million hectares) of the world's total forests harvested annually. The 2020 Global Forest Resources Assessment report notes that Africa had the largest annual rate of net forest loss in 2010–2020 at 3.9 million ha, followed by South America at 2.6 million ha (FAO, 2020). This loss is mainly due to illegal logging, deforestation, and the transformation of the forest into additional uses such as commercial agriculture or land for settlement. Despite the numerous forest management policies and laws, the deterioration of forests seems to be increasing across the world (Linser et al., 2018). Formal approaches to forest conservation and management, such as forest laws and policies, are faced with challenges of implementation, corruption, and inadequate public

awareness (Tacconi & Williams, 2020). Despite the tension between scientific and indigenous approaches in forest conservation, the latter has been proposed and popularised, particularly in the developing world, as the more sustainable remedy to forest resource management (Berkes, 2009).

According to Berkes et al. (2000), eco-cultural beliefs and systems are a subcategory of indigenous knowledge that consists of information, ideas, values, practices, and facts acquired by a group of individuals over a long period of time as a result of their livelihood and occupation of a specific area and passed down from one generation to the next through cultural transmission. According to the authors, these beliefs are linked to the supernatural (Supreme Being) and are revealed to ancestors and elders of the custodial community, who respect and ought to transfer the knowledge verbally from one generation to another. Some of the eco-cultural beliefs and practices used in conserving forests include rituals, sacred groves, taboos, and

supernatural punishments, such as the belief that cutting down various trees may lead to death or disease to the wrongdoer or misfortune even to the community and their properties (Wild et al., 2008). Globally, such beliefs have become central to the realisation of sustainable resource use, such as in India, which is home to thousands of indigenous protected forests, sacred groves, and cultural sites. In Africa, countries like Ghana and Zimbabwe have adopted this strategy too to conserve their forests, especially the use of mystical taboos and totems, sacred powers from deities and gods, and customary laws (Unuigbo, 2020). In Kenya, the Mijikenda Kaya Forests are renowned worldwide for the use of eco-cultural beliefs in conservation. The Kaya elders impose the regulations of the forest and strictly prohibit deforestation, gathering or elimination of dead and fallen wood, undergrowth, and any form of life in the forest (Adam, 2012).

How sustainable are these indigenous institutions of forest management? Kioko and Okumu (2021) link the ongoing erosion of indigenous norms and rules to three factors: namely, problems of generational control, by which the younger generation often considers councils of elders an impediment to resource appropriation and their own wealth-creation goals; changing socio-ecological and economic conditions; and migration and cultural diffusion, which lead to a mixture of cultures and a diversity of economic motives that increasingly impede the successful application of indigenous institutions.

Kivaa forest, located in Machakos County, in Kenya, has undergone successive phases: Phase 1, entailing conservation through indigenous norms and values; Phase 2, involving disturbance following the destruction of the forest leading to the collapse of the ecosystem; and Phase 3, involving the restoration of the ecosystem through the reintroduction of indigenous norms and values for conservation of nature—reorganisation. In this research article, we describe these phases, their mediating factors, and their outcomes. The research

article is organised as follows: First, we will give a background on the Kivaa forest and the people that constitute the ecosystem, as well as the historical period of conservation. Secondly, the focus will shift to the phase of disturbance (the destruction of the Kivaa forest) and the consequence of collapse. Finally, we will describe the reorganisation phase through the reintroduction of indigenous forest conservation beliefs and practices.

METHODOLOGY

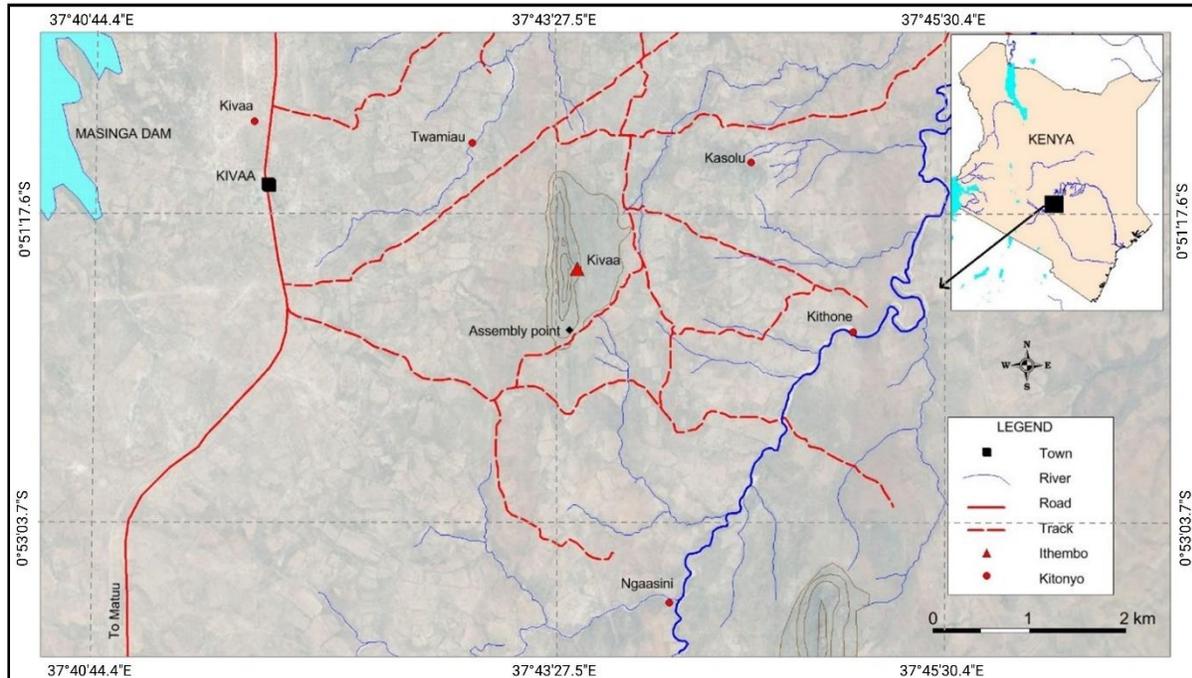
Description of the Study Area

This study was carried out in Kivaa indigenous forest. Kivaa indigenous forest is a sacred forest found in Kivaa ward, Machakos County, Kenya. It is located along the coordinates 358, 100.92E, 9,904,907.90S. Kivaa indigenous forest is in the form of a hill and covers an area of 250 hectares (Kamba Custom Conservation elder). Kivaa, which hosts Kivaa Indigenous Forest, is a ward in Masinga Constituency, Machakos County, in the Eastern part of Kenya. It has a total population of approximately 20,272 people (KNBS, 2019). The area is mainly arid and semi-arid, receiving a mean annual rainfall of about 500-1300 mm. The area temperatures range from 18-29°C. July is the coldest month with March and October being the warmest. The terrain of the area is mainly hilly. It has an area of approximately 522.50 square kilometres (MoALF, 2017).

Kivaa ward comprises the following sub-locations: Kaewa, Kivaa, Liani, Kyondoni, Miangeni, Eendei, Thatha and Kithyoko. It consists of the Akamba people who are a Bantu Ethnic group. They speak the Kikamba Language as their mother tongue and are closely related to the Ambeere, Ameru, Agikuyu and Aembu. They share a lot in common and are believed to have used the same migratory route. The Akamba currently living in Kivaa migrated into this area in the year 1949 from Kithyoko, Yatta and Mwala areas. The main economic activity for the people of Kivaa is subsistence farming and livestock keeping. The food crops grown include

millet, sorghum, maize, beans, and cowpeas, among others (MoALF, 2017).

Figure 1: Map showing the Kivaa area



Source: (Institute for Culture and Ecology, 2008)

Research Design

The study was culturally anthropological in nature and thus a qualitative approach with a cross-sectional design was adopted. This research design aimed at learning about the characteristics of a population at a certain period and monitoring trends over time. The traditional methods of data collection, such as interviews, observation, ethnography, focus group discussions, case studies, and narrative, were utilised for the study. The case study involved examining and describing events of the past to gain an understanding of the present and anticipate the potential future effects. The narrative involved understanding an individual's experience and sequence.

Sampling Technique

The study used purposive and snowballing sampling methods to identify a study target sample

of 100 respondents. This is because the study targeted a specific group of people so as to derive meaningful information and data. The traditional authorities, such as leaders of the conservation group, chief, elders and stakeholders involved in the conservation of the Kivaa forest were the key informants. The other conservationists and the elderly residents of Kivaa were grouped and interviewed in four Focus Group Discussions of 10 members each. This form of interview assisted in soliciting rich views from the respondents on the phenomenon under study in an open space.

Data Analysis

The Interpretive Phenomenological Analysis was adopted for analysing the data obtained as it gave the correct interpretations of the cultural phenomena using two perspectives. The first is an interpretation of the phenomena as told by the respondents, known as the emic perspective and interpretations as cross-

checked by the respondents, known as the etic perspective (Smith & Osborn, 2008). A narrative account was developed that described and interpreted the findings of the research through intensive interrogation of the data. The Oral History Accounts recorded through an audio recorder were transcribed, and the themes were used for data interpretation. The information gathered from the questionnaires was first cleaned by checking for completeness in terms of the responses. Data from the key informant interviews were then analysed by establishing themes and through content analysis, which involves counting the frequency with which particular statements occur (Newing, 2010). Focus group discussion results were transcribed, translated, and relationships, patterns, themes, and categories were established, and conclusions were drawn based on the objectives of the study.

RESULTS

Forest Disturbance: Destruction Through Logging and Forest Encroachment (1949 – 2007)

The disturbance is part of development, and that periods of gradual change and periods of rapid transition coexist and complement one another. Kivaa forest underwent a disturbance phase between the years 1949 to 2007. This occurred due to the continued immigration of people, mostly from the Mwala, Yatta, and Kithyoko areas, into this area; the tranquillity of the forest changed, with human settlement, deforestation for firewood to create space for farming, and to burn charcoal intensifying. Other factors that led to the destruction of the forest included people's ignorance, poaching, poverty, famine, livestock grazing, and lack of forest governance.

“Some people used to come from as far as Thika to burn charcoal in the forest and transport it using Lorries. Everyone had access to the forest; some left their trees in the homestead to go and cut those in the forest. It was like a desert. Due to increased grazing, the

soil became too hard until shrubs and trees could not grow anymore. The forest became bare, and rocks and stones could be noticed from afar. The wild animals in the forest disappeared due to encroachment” Kamba Custom Elders (12.07.2019).

The traditional sacred wells dried up. These wells dried up due to human actions or taboos around the sacred wells. Some included fighting or quarrelling in the wells, making love around the water wells and construction of intakes on these wells as a way of owning the well.

Climate Change Re-Awakening: Reintroduction of Indigenous Beliefs and Practices for Conservation of Nature.

Before 1949, the Kivaa area was largely unoccupied with few people sparsely populated. However, in 1949, people started migrating into the Kivaa area from neighbouring areas such as Mwala and Yatta. As the population increased the Kivaa, forest destruction increased.

‘Due to increased grazing, human settlement, farming, charcoal burning and logging, Kivaa indigenous forest had massive destruction. All wildlife that lived in the forest fled away. The forest become bare; the soil became too hard until shrubs and trees could not grow anymore. Rocks and stones could be noticed from a far’ Kamba Custom Elder (12.07.2019).

As recent studies have proven, there are many cultural manifestations of resilience all over the world. Researchers have noted that many of the resilience processes identified in international studies manifest locally (Theron et al., 2015, p. 54) but have also observed that local research draws attention to processes that are embedded in indigenous worldviews and values, notably ‘interdependence and spirituality’. This was the same case in Kivaa. The custodians realised that Kivaa indigenous forest resiliency could only be restored through indigenous means.

A prophet (Muoti) from Kitui received a message from the deity that if the Kivaa people failed to conserve the Kivaa forest, the whole community would suffer. After some time, without any conservation action being taken, the situation became devastating; eventually, the hill on which the forest had developed had a fault and broke into two pieces. This was the revelation for the people of Kivaa that the forest was not just a forest but also a sacred one, a home to the spirits and the deities and that people's actions angered the deities.

She (Muoti) delivered this message to Munguti Kavivya of Kivaa and asked him to conduct a ritual on the hill to appease the gods who were angered by the extent of degradation on the hill. Munguti first went back to his original area Mwala (he had just migrated to Kivaa), to consult the older men on how to respond to the information he had received from the seer. With this information, he went back to Kivaa and mobilised elders from different villages that had "Itonyeo" (the smaller sacred sites). Soon he had a group of custodians who were ready to participate in the ritual practice, "Ithembo".

Disgruntled by the turn of events and comparing the state of the forest across time, a group of 11 local Kivaa custodians formed what they nowadays refer to as the Kamba Customs Conservation Group (KCCG), which became the indigenous umbrella association for collective action on resource conservation. With assistance from the Institute for Culture and Ecology (ICE), a local non-governmental organisation, the elders conducted rituals to their gods in the form of slaughtering bulls and goats at the Kivaa forest shrine, locally known in the Kamba language as Ithembo. Rules were set out regarding the requirements for one to be a member of the group. For a man to be recruited as a Kamba custom member, he has to offer a goat to the elders and be initiated into the traditional religious ranks of the Akamba people. He has to be married and has children.

The women, known as *iveti sya ithembo* have to be past the childbearing age.

This is because a woman past the childbearing age is believed to be pure, not to be engaging in sex and not experiencing monthly periods

One has to be a wife of a man who has offered a goat to the elders and is part of the Akamba traditional religion.

The ritual offered was to sanctify the forest and to please the gods or deities who were angry with the people for destroying the environment. After the sacrifice was carried out in 2008, the KCCG declared the forest a sacred forest once more after 60 years of destruction, and they took over the responsibility of conserving the forest. The group created awareness among the Kivaa community members that the forest was now a sacred area and that Mathembo (plural for Ithembo) existed in it; thus, no one should encroach, cut any tree or graze in the forest. Since then, the KCCG has been offering a burnt sacrifice every year at the 'junior' shrines, and after two years, a major sacrifice is offered at the major shrine, which is the Kivaa forest. A goat is slaughtered at the minor shrine and a bull is offered as a sacrifice in the major shrine.

In reviving the use of eco-cultural beliefs and practices strategy to conserve the Kivaa forest, five stakeholders were involved; they played different roles that were key to reviving this strategy. However, Institute for Culture and Ecology (ICE Kenya) was reported to be the organisation that played the most prominent role and has been working with them to ensure that the Kivaa forest is continually being conserved.

Eco-Cultural Beliefs and Practices Adopted in The Conservation of Natural Resources by Akamba Community

Revival of the Social-Ecological Systems- Through Declaration of the Kivaa Forest as a Sacred Area (Ithembo)

A sacred area or a shrine is regarded as an essential point on earth which connects people to their deity or *Ngai*, even today. According to Singhal et al. (2017) and Cardelús et al. (2013), indigenous people preserve sacred forests for the purpose of conservation by the deities and are of unique spiritual associations with the community. These places should never be encroached on or destroyed. This strategy is adopted to keep indigenous forests from interference and degradation. Adom (2018) states that sacred items are treated with reverence and high esteem and ought to be protected from misuse and exploitation.

Kivaa community refer to a sacred area as *Ithembo* in singular and *Mathembo* in the plural. Kivaa indigenous forest has five sacred sites. These include the Kitonyeo Kya Kivaa, Kitonyeo Kia Twamiao, Kitonyeo Kya Kasolu, Kitonyeo Kia Kithoni, and Kitonyeo Kya Ngaasini. These are referred to as the junior sacred sites, and the Kivaa forest as the senior sacred site. Any interference done on one of the sacred sites directly affect the others.

“Mathembo are places of worship where we pray and perform rituals to our God through invoking the spirit of our ancestors and all of creation. The first Mkamba named Mukambaa (owner of the shrine), established it. We recognise Mathembo (sacred natural sites) as pure areas where the spirits of our ancestors dwell. Just as the holy places of other faiths are respected, so are the Mathembo, together with the associated spirituality. They are not disturbed by other activities at all, other than the actual spiritual practices. Human interference, structures, electricity, machines,

and their noise are believed to disturb ancestral spirits. Trespassing, bringing modern equipment or making noise is not allowed. They are respected because they are the foundation of our life as communities of the living” (KCCG elder, 13.07.2019).

This act of declaring the Kivaa forest a sacred area instilled awe in the Kivaa community residents who greatly feared encroaching on the forest as they could be punished by the ancestral spirits and gods if they did so. An elder gives an example of one man who decided to disobey and took the cows and goats to graze in the forest at night. After he entered the forest and left the cattle to graze, he sat somewhere to rest; he reports that the next thing he heard was his cattle running away from the forest and himself being beaten with strokes of canes by unseen people and voices of people that he could not see. He says that the canes were too many and painful and the voices too disturbing until he left the forest. Since that day, he swore never to encroach on the forest again.

Rituals

The rituals in Kivaa indigenous forest are carried out once per year at the junior or minor shrines and once after two years at the major shrine (Kivaa Forest). However, this period is not definite; it changes from time to time; for example, if there is a calamity such as a drought or a disease or famine, the elders go to the sacred sites and offer sacrifices to appease the gods. At the minor or junior shrine, a goat is offered, while at the major or senior shrine, a bull is offered. The goats and the bulls are not just any goat or bull, but the goat and bull must be of one colour as guided by the prophet or Muoti in Kamba and with no deformity at all. The elders first test the animal to be sacrificed. They do so by holding it at the nose or mouth three times, by which it is supposed to produce a sound three times. The sound during the third time is used to indicate whether the animal has agreed to be slaughtered or not; if it is a

no, the animal is released, and they search for another one.

Other items required for the sacrifice include milk, traditional beer, and tobacco, which are provided by the women (*Iveti sya Ithembo*); the tobacco is used to sprinkle at the exact point where meat and other offering are placed, which is next to the sacred area. Tobacco serves the purpose of awakening the gods or their ancestors. The elders performing the sacrifice are supposed to be away from their wives for ten (10) days before the actual day of sacrifice and ten (10) days after offering the sacrifice.

After all the required items are available, the bull or goat to be slaughtered is driven to the sacred site by the younger elders who have not yet become elders, and they help in slaughtering the bull or goat and burning the meat. The custodians select which meat will be taken to the sacred site and which will be eaten. Three custodians then carry the meat to the sacred site while the rest stay a few meters behind them. Only three of the custodians are allowed at the sacred site. The three offer the meat while stating or offering their prayers or wishes to the gods or deities through words and sayings. After the ritual ceremony and the rest of the meat has been eaten, the bones are supposed to be left at the actual point of sacrifice, and if the burnt meat remains, it is carried home. The meat is not supposed to be added additives, even salt itself.

Taboos

These refer to the moral or cautionary restrictions that have been or are placed against specific actions by designated people such as kings, priests, and elders (Aniah, 2014). Kivaa community uses taboos to conserve the indigenous forest where everyone is cautioned against destructive practices towards the forest and invasion of the sacred areas. Taboos such as suffering from several calamities including famine, crop failure, death, barrenness, disappearance, and mental disorientation are inflicted on a person for failure to observe the

customary laws and regulations. Some indigenous trees once used as firewood produce smoke that causes total blindness. A bad omen of death or disaster for the wrongdoers. This instils awe in the community members and keeps them away from the forest, just as Asante et al. (2017) state that taboos control regulate and forbid the collecting, unfavourable use, and utilisation of forest resources.

Mzee Munguti Kavivya gives an example of a man in the area who never heard what he was being warned concerning encroaching on the forest and:

'He continued with his bad habits of grazing livestock in the forest. Cutting down trees which led to the custodians speaking curse upon him of becoming insane and up to date he is insane', stated Munguti.

This agrees with Bhagwat and Ormsby (2010) who noted that these gods disliked actions which interfered with the community's harmony and administered punishment to those who went against the beliefs, rules, and regulations of the community. Diawuo and Issifu (2017) also reported instances where community members suffered from misfortunes such as mental disorientation, barrenness, and death for going against cultural injunctions in the Ashanti kingdom. Social taboos exist in almost all cultures throughout the world and represent a class of informal institutions where traditional, religiously governed norms or taboo system defines human behaviour. These taboos guide people's conduct towards the misuse and over-exploitation of natural resources. However, Janaki et al. (2021) note that the unique role played by these informal systems of taboo in the conservation of biodiversity has not been given due importance.

Indigenous Tree Planting

Kamba Community has been encouraging and doing tree planting, especially the indigenous trees such as the mpingo tree (*Dalbergia malenoxylon*), which is listed as a protected tree species due to its

overexploitation. They are putting more effort into restoring the indigenous trees in the forests. These indigenous trees represent and communicate more of the cultural traditions and are viewed as sacred trees; thus, no one can dare cut such trees compared to the exotic trees. These trees are also highly conserved as the Akamba community members extract medicinal herbs from them. Further, rituals conducted in the sacred natural sites demand that only indigenous crops or seeds are used; thus, this augurs well for biodiversity. These seeds are well adapted to the local climate and are able to resist pests and diseases, thus ensuring the community against calamities such as drought, pests, and diseases that exotic or hybrid seeds may be unable to withstand.

Customary Laws and Regulations

The Kivaa community has rules and regulations that ensure conservation and better management of the forest. These laws and regulations can be grouped into two laws relating to access and laws relating to use.

Access

Laws and regulations relating to access include:

Entry to the forest is forbidden to anyone without permission or guidance from an elder. Anyone who wishes to enter the forest has to seek permission from the elders first. Access and entry to the forest are only allowed during the ritual performance, environmental activities, and learning occasions and a boundary is set past which only a selected few are allowed into the forest. Women and girls are strictly forbidden from entering the forest, especially during their menstruation periods. By entering the forest, it is believed to anger the gods and interfere with the sacredness of the forest.

Use

No one is allowed to cut any tree and if done, it is under exceptional circumstances and with authorisation from the elder. These exceptional circumstances might be if a tree is needed during the performance of the ritual or when a medicine man wants to extract medicinal herbs for the community from a particular tree. When the bushes become too thick, community members, especially the elderly, are allowed to graze along the edges of the forest under the supervision of an elder. When doing so, a particular type of knife or panga (Mung'ei) is used for grazing to avoid cutting trees. Lighting fire in the forest or near the forest is forbidden to avoid forest fires. This is implemented by controlling access to the forest.

Grazing cattle in the forest is strictly forbidden. This is to prevent the hardening of the soil, which allows roots to grow. Collecting firewood or even dead logs is also forbidden. These dead logs are allowed to wither on the ground to enhance the fertility of the soil and ensure the growth of the undergrowth vegetation. Strictly, no charcoal burning is allowed to carry on in the forest and if caught doing so, a large amount of fines such as a cow or cash is placed on you depending on the extent of the act.

Anyone caught degrading the forest is reported to the authorised institution (chief and the custodians) and fined with goats and cows depending on the wrong he or she has done. Punishment, fines, bad omen, curses, or destruction is placed on anyone who invades or destroys the forest. The kind of punishment, however, depends on which act one has committed. The bigger the offence, the severer the punishment; if one fails to comply with the first stated punishment, more profound actions are then taken, such as bad omens and curses.

Community Dialogues

Community dialogues are an important aspect of coming up with an agreement and local governance. Most community processes require a broad-based

agreement for their effective implementation. This was the first step towards the revival of eco-cultural beliefs and practices. Dialogues present a good opportunity for joint reflection among the community members and enable them to come to a consensus. In the case of Kivaa, dialogues were conducted with custodians and farmers separately. This was significant as most of the farmers were of a different faith group from the traditional religion, while the custodians were indigenous. Fortunately, they came to an agreement as all had a testimony of incidences where indigenous knowledge has worked for them collectively. Curiously, some of them would secretly remind custodians to do rituals when they were needed. These dialogues too were important to enable the community to remember and validate the different eco-cultural beliefs and practise used to conserve forests.

The relationship between vulnerability and negative outcomes is not universal. While many people have negative outcomes in response to vulnerability, not all do. Some dip and recover, others show little or no deterioration in functioning, and still, others appear to achieve higher levels of adaptation than they had before (Masten, 2011). This was the same

case with Kivaa Indigenous Forest, after reviving the use of eco-cultural beliefs and practises to conserve Kivaa indigenous forest. It has been 14 years, and the forest has been restored to its beauty and its ecological systems, and the surrounding community are now enjoying ecosystem services offered by the forest. Some of these services are provisioning services where the Kivaa community draw water from rivers inside the forest; the community benefits from the medicinal herbs due to many tree species in the forest. For example, Uthekethe (Amaranthaceae) is used to stop bleeding, headache, and constipation in children, and its ash is applied on boils; its roots are used to heal venereal diseases.

“We refer to the forest as ‘our hospital’ or ‘our cure’ as that is where we get all our medicines from. As a result, incidences of diseases and deaths in this area have reduced”. (Respondent, 13.07.2019).

The mediating processes, which in this case was reviving the use of eco-cultural beliefs and practises, enabled it to achieve better-than-expected outcomes.

Plate 1: State of Kivaa Indigenous Forest before restoration



Source: (Institute for Culture and Ecology, 2008)

Plate 2: State of Kivaa Indigenous Forest after conservation

Source: (Author, 2019)

CONCLUSION

This study focused on eco-cultural beliefs and practices in the Kivaa indigenous forest. Though an essential step towards sustainable resource management, the application of indigenous norms and rules for the conservation of nature still receives little attention, especially in practice. Even with increased efforts towards commodifying the wild and the benefits thereof, especially in the commons, discussions around increasing the effect and application of traditional norms and rules are rare. Scientific knowledge takes precedence over indigenous knowledge, especially in matters relating to nature conservation (Makondo & Thomas, 2018). The conservation of the Kivaa forest using eco-cultural beliefs and practices is also a clear indication that this strategy can be incorporated with modern strategies and together produce amazing results of forests highly conserved and increased forest cover, which is a common goal, and especially for Kenya, which is still below the

required 10%. It has been demonstrated that no conflict exists between traditional religion and modern religion; if any arises, they have dealt with it through interfaith dialogues, which have ended up being successful. This strategy has proven that little cost and minimal resources, which are readily available and highly accepted within the community, can be used to conserve degraded forests and produce effective and permanent results. The Kivaa indigenous forest restoration has proven that community ownership of natural resources is a key and vital element in conserving resources, especially the forests. They have been able to achieve this with very little intervention by the government and with little being the chief and the sub-chief. This strategy not only benefits forest conservation but also ensures the continuity and preservation of Kamba culture, which is especially important these days when traditional practices are eroding at an alarming rate.

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Competing Interest

The authors declare no conflicts of interest

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Author's Contribution

Jane Ng'ang'a contributed to conceptualisation, data curation, investigation, methodology, validation, visualisation, writing of the original draft, and review and editing of the paper. Dr. Eric Kioko contributed to conceptualisation, visualisation, and review. Dr. Chege Wairuri assisted with a review, proofreading, and editing. Dr. Innocent Ngare contributed to proofreading and editing.

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