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# Impact of Poor Governance on Deforestation in Africa

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**Abstract**
According to the United Nations Food and Agriculture Organization (FAO), the world loses 18 million acres through deforestation each year. Africa is the only continent in the world where deforestation is on the increase threatening the continent's scarce water resources, efforts by the region to combat climate change, and exacerbating the vulnerability of rural communities to poverty and effects of climate change. Deforestation over the decades has been blamed on poverty and burgeoning population increase. Demand for wood in Africa which is a source of energy could triple by 2050, straining the continents dwindling forest resources according to UN report. The study based on library research examines the extents to which poor governance and corruption which have been pervasive in Africa and have significantly contributed to the loss of the continent's forest cover. Thirty published research papers were reviewed with the following objectives; i) analyse the extent of corruption in the forest sector, ii) to examine the extent to which corruption contributes to deforestation in Africa, iii) examine ways in which poor governance and weak institutional arrangements exacerbate corruption in the forest sector, iv) explore the extent to which corruption undermines the effectiveness of Community Forest Associations in combating deforestation in Africa, and v) explore opportunities and challenges of community forest association in combating corruption in the forest sector. The study further evaluated policy documents and frameworks previous researchers have employed to examine forest governance, compared to the emerging recent models of forest governance. From the previous research, it is apparent that corruption has the potential to decimate a nation's forests. Few studies in Africa have however examined the extent of this phenomenon. There is an urgent need for such studies that provide further explanation on the extent to which corruption plays in the continuing loss of forest cover against the backdrop of all the reforms to improve the performance of the forestry sector.
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## 1. Introduction

The world has lost about 40% of forest area to deforestation and globally and which contribute to the livelihood of 1.6 billion people according to the World Bank report (2014). Kenya has one of the highest rates of forest degradation. According to the U.N. FAO, (2015), 6.1% of Kenya was forested. Between 1990 and 2012, Kenya lost 0.32% of forest cover per year which translates to 6.5% of her forest cover. Deforestation in developing countries exacerbates the effects of climate change. Africa is the only continent in the world where deforestation is on the increase, threatening the continent scarce water resources, efforts by the region to combat climate change, and exacerbating the vulnerability of rural communities to poverty and effects of climate change.

Forests are a source of NTFPs that constitute an integral component of the household economic activities mostly among women (Chamshama et al., 2014). Deforestation trends in Sub Saharan Africa are alarming. The recent study by FAO reported that during the decade from 1980 to 1990, the world's tropical forests were reduced by an average of 15.4 million ha per year through deforestation. At the end of 1990, Africa had an estimated 528 million hectares, but the rate of deforestation exceeded the global annual rate of 0.8 per cent mainly associated with human activity. In the early 1900s, the forest cover in Kenya was at 12 per cent but reduced drastically to 2 per cent in 2000, equivalent to 3.5 million hectares of degraded land. Forest governance is often associated with principles such as transparency, participation and accountability according to GIF Framework, 2012. It was estimated that the original forest cover was approximately 6.0 billion hectares (Omoro, Starr, & Pellikka, 2013). Some of those identified causal factors are increase in the population of forest adjacent communities Mutoko, Shisanya, and Hein, (2014), demand agricultural land under the PELIS program, corruption, weak institutions, poor governance and high demand for timber (Mutune et al., 2017).

The research looked at the impact of poor governance and the strategies to combat deforestation. All governments in Africa have a forestry department. In Kenya, we have the Forest Service, a government parastatal which is the custodian of the forest as per the Constitution of Kenya 2010 and the Forests Act, 2005. More than 200 community forest associations (CFA) in Kenya in collaboration with stakeholders have managed to develop forest management plans and agreements which guide in joint forest management. The level of participation of CFA members in forest protection against deforestation activities is positively and significantly influenced by the level of perceived Participatory Forest Management (PFM) benefits and a decrease in deforestation in the forest is

associated with CFA participation in PFM. The weak institution focuses on CFA governance structures within the ecosystem.

In Kenya, this new management approach has been facilitated by legal requirements as stipulated in the Forests Act No 7 of 2005 and Forests (Participation in Sustainable Forest Management) Rules 2009. These rules were gazetted vide Legal Notice No. 165 of 2009. The rules apply to participation of the private sector and forest adjacent communities in the sustainable management of state forests (Ameha, Meilby, & Feyisa, 2016). The Forests Act 2005 that has replaced the Forest Act Cap 385, which did not recognize the participation of stakeholders in forest management and planning. The new Act introduced allows the local community to form and register Community Forest Associations (CFA) and to participate in the preparation of a Participatory Forest Management Plan (PFMP). Then the community negotiates a Forest Management Agreement (FMA) with KFS that gives the CFA forest user rights and the two organisations (KFS, CFA) better working modalities with the assumption that the partnership arrangement will contribute to enhanced ecosystem conservation and local community livelihoods through access to forest user rights. A study by Nansikombi et al (2020) on corruption, democracy, and environmental policy an empirical contribution to the debate. The study looks at corruption, democracy, institutions and the environmental policy. Chomba, Treue, & Sinclair, (2015) did a study on state failure, corruption, and warfare, challenges for forest policy. The role of stakeholders in understanding the problems in forest policies implementation and that governance weakness, corruption, and war constrain the achievement of conservation goals.

The thirty papers reviewed helped to understand the influence of state failure, corruption, and warfare concerning challenges for forest policy (Nansikombi et al., 2020). The main issue discussed was on failure by the government to implement forest policies due to ignorance and corruption. The journals focused on the link between firm characteristics, bribery, and illegal logging in wood-based industries. The main governance issue being weak institutions structures whose failure has led to enhanced bribery and corruption. These challenges have led to the manifestation of negative practices being done by the wood industries in developing countries (Magessa et al., 2020). Other journals concentrated on corruption, democracy, and environmental policy underlining the role of democracy and how corruption influence environmental policies that include the broader issue on sustainable development goals that aim to protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

To measure corruption, range the papers used the corruption perceptions index (CPI) which is based on how corrupt a country's public sector is perceived to be. It's a combination of surveys and assessments of corruption, collected by a variety of reputable institutions. The CPI which is defined as the misuse of public power for private benefit is the most widely used indicator of corruption worldwide. The CPI currently ranks 178 countries on a scale from 100 as very clean to 0 as highly corrupt. However, none of the papers went into details by naming the specific index for a particular country. One paper on the impact of corruption on deforestation, cross country evidence used corruption indices to operationalize the variables.

The study analysed the extent of corruption in the forest sector and examined the extent to which corruption contributes to deforestation in Africa. Another objective of the study was to examine ways in which poor governance and weak institutional arrangements exacerbate corruption in the forest sector and explored the extent to which corruption undermines the effectiveness of CFAs in combating deforestation in Africa. Besides, the study explored the opportunities and challenges for of community forest association in combating corruption in the forest sector.

## 2. Analytical Process

This section describes the methods used to collate, synthesize, and compile evidence on governance practices in Africa and associated impact on deforestation. The study adopted a systematic review of published literature, government documents including policies, and evaluation reports related to the key research questions.

### 2.1 Identifying and Describing Evidence.

*a) Identification of potential research and policies: search strategy*

Electronic databases, websites, government repositories, citation tracking, and personal contacts with key people in the environmental sectors (both in academia and industry) were used to identify relevant research and policies that were included in preparation of this research report. The search criteria were structured with three key words: governance, deforestation, Africa. The first phrase described the target explanatory variable, the second described the underlying theme of interest while the third described the geographical context within which the first two should be anchored. All the searching was carried out on Google search engine using English language only.

*b) Defining relevant research and policies: inclusion and exclusion criteria*

The literature identified for the review included policy documents, empirical and theoretical research on governance and deforestation, peer reviewed research papers, research commentary, and selected reputable PhD work related to the research questions. A pool of such evidence was collated from across Africa and a few from

other parts of the world with best environmental management systems for comparative purposes. The inclusion criteria for relevant evidence were based on the following.

- Must have been published not earlier than 2012, unless it is a policy document
- Must have significant focus of matters governance and/or forestry
- The argument advanced must not entirely contain secondary sources without direct reference to the actual practices of governance.

*c) Screening research and policies: applying inclusion criteria.*

When databases offered the option to download search results in pdf format, these were download directly and saved into Mendeley software. Such documents were referenced in this study following the APA 7th Edition guidelines. When downloading any relevant evidence was not possible, the results were bookmarked on the web browser and the specific content were referenced by including a footnote(s) of the address of a web page (URL). Not all full-text copies could be retrieved in time for the review and synthesis; due to either difficulties in obtaining a copy, or in some cases the reference itself may not have been quite accurate.

### 2.2 Review and Documentation Process

*a) Assessing quality of evidence and weight for the review question*

This study was based on synthesis third published paper classified into broad classes of evidence. The first class included the theoretical review while the second class included empirical reviews. Within the second class of research class was a special class on policy and legal framework on governance and forestry. For the first class of document, quality assessment was based on two criteria. The first criterion was the year of publication was to be not earlier than 2012 while the second criteria was that it should contain theme(s) of governance and deforestation. For the second class of documents quality assessment was time and themes the first class but in addition, the document had to meet the methodological trustworthiness such as reliability and validity of the tools used, analysis methods, clarity of reporting findings and coherence between findings and conclusions made. These criteria were considered when judging the weight to place on evidence a study supplied to regarding issued of deforestation and governance and are referred to accordingly in the subsequent in-depth synthesis.

*b) Synthesis of research and policies*

Synthesis of evidence took the form of an empirical structured narrative bringing together the findings of the selected research studies and all policy documents on governance and deforestation. The synthesis of necessity has also had to take account of different approaches to the issue of governance and deforestation. Also, the count of the evidence on these themes was tracked for ten years (2012 - 2022).

## 3. Theoretical Review and Analysis

### 3.1 Theory of Compliance and the Efficiency of the Legal and Regulatory Framework

Theory of compliance deals with the fundamental question of why people obey the law the perspective of forest law compliance Tieguhong, et al (2015). It states that people are rational individuals who obey laws because of expected costs and benefits of compliant and non-compliant behaviour. The theory of compliance may have different applications in different contexts and disciplines across the world. For instance, Eisinger, (2020) used data from ESS 5 (2010) and compared country-level data from OECD (2010 & 2011) to analyse and examine the link between people's trust in courts and police, legitimacy of legal institutions and people's compliance with the law. The result from the study revealed that when people trust police and courts, legal institutions are more likely to be perceived as legitimate resulting into more compliance with the law (Eisinger, 2020). This implies that trust and the desire to comply with the law is enhanced by overall confidence in institutions that implement the law among the people. In this study, theory of compliances forms a benchmark and framework of our policy analysis.

### 3.2 Gary Becker's Theory of Crime and Punishment Behaviour

Gary Becker (1930-2014), Nobel Prize laureate in 1992, was a highly original and unconventional economist. As he saw it, economic theory is not only the science of explicit markets and prices, but a way of thinking (Conti & Justus, 2016). The scope of economics is as wide as the range of aspects of human behaviour in which two essential elements, scarce means and competing ends, are present. Becker's studies of discrimination in labour markets; investment in human capital; marriage, divorce, and fertility; drug addiction; and other apparently noneconomic dimensions of society, are outstanding examples of this 'imperialistic' approach. Becker's theory on crime and punishment provides guidelines for designing an optimal law enforcement policy (Conti & Justus, 2016).

The theory states that obedience to law is not taken for granted, and public and private resources are spent in order both to prevent offences and to apprehend offenders. In the second place, the conviction is not considered sufficient punishment in itself; additional and sometimes severe punishments are meted out to those convicted. Becker's theory of crime and punishment provides a framework of analysing whether law enforcement policy is consistent with implementation guidelines stipulated in different or complementary legal documents. The theory appears to assume that policy makers are not very precise on the goals of law enforcement policy and hardly

anything is known about the effectiveness and efficiency of instruments, it turns out to be impossible to say whether law enforcement policy contributes to social welfare. This theory has been used in examining the inconsistencies in forest policies and forest management plans in Kenya.

### 3.3 Theory of Democracy and Environmental Policy

In a relatively small but growing body of literature in political science and environmental studies, scholars debate the effect of democracy on environmental degradation (Akalin & Erdogan, 2020). Some theorists claim that democracy reduces environmental degradation. Others argue that democracy may not reduce environmental degradation or may even harm the environment (Akalin & Erdogan, 2020). Empirical evidence to verify these theories has been limited especially in developing economies such as Kenya. This paper is one of the empirical efforts to attempt to address the democracy–environment debate based on policy analysis of forest policy and forest management plans in Mt Kenya.

Theoretical and empirical studies have shown that democracy and corruption influence environmental policies. Democracy could affect environmental policy stringency given that countries with a history of democratic rule tend to be less corrupted. Abidin et al. (2015) observes that countries with strong governance can manage their environments much better and those who cannot it is because of weak governance and failure of democratic institutions. Environmental degradation or problems like $CO_2$ emissions are therefore often attributed to inefective or weak governance.

The Worldwide Governance Indicators project identifed six governance indicators which included dimensions like government's accountability, political stability, regulatory authorities, democracy, rule of law and control of corruption. It was expected that countries should make these indicators a part of their national legacy and assimilate them in their policies and governance machinery (Abidin et al., 2015). It was also observed that these governance indicators, if strictly adhered to, would play an imperative role in the process of sustainable economic development of developed and developing countries.

Review of literature suggests that empirical studies related to the study of relationship between democracy and environment are mainly quantitative in nature, taking a time series models. In such contexts, much effort has been put in to study environmental degradation in terms of emissions with scanty of qualitative studies that focus on the relationship between democracy and utilization of non-timber forest productcs (NTFPs) such as livestock grazing and grass harvesting. This study explores this niche by analysing the forest policies and forest management plans in Kenya, their implementation frameworks and the impact these creates on Mt Kenya region environemnt in the context of grass harvesting and grass harveting.

### 3.4 Theory of World Systems

World-system theory is a macro-sociological perspective that seeks to explain the dynamics of the capitalist world economy as a total social system (Coccia, 2018). For Coccia "a world-system is a social system, one that has boundaries, structures, member groups, rules of legitimation, and coherence. Its life is made up of the conflicting forces which hold it together by tension and tear it apart as each group seeks eternally to remould it to its advantage. It has the characteristics of an organism, in that is has a lifespan over which its characteristics change in some respects and remain stable in others…Life within it is largely self-contained, and the dynamics of its development are largely internal" (Coccia, p. 347).

System theory talks about a group of things which have something in common and operate as a cluster can be seen as a system whereby one of the communities which together comprise an even greater system, the region or territory in which they all are located. The forest sector operates social networks and systems. Communities operate under social systems named Community Forest Associations which is an umbrella system that now forms the user groups which are involved in corruption networks and grass root institutions. KFS as the custodians of the forest operate under a system governed by the national government.

## 4. Empirical Review and Analysis

Previous researchers posed various research questions; (1) Why are forest policies simply not working having spent a lot of resources to develop them? (2) What factors contribute to the lack of commitment and ignorance to implement the policies? (3) To answer the question the main issue noted was on failure by the government to implement policies due to ignorance and corruption. Lack of commitment, state weakness and failure, corruption, and war has significantly contributed to governance issues and are well captured by the author.

### 4.1 Broader Perspectives of Analysing Forest Governance

There is need to consider adopting the GIF framework to assist in forest management aimed to combat deforestation. The first step is to diagnose and assess strengths and weaknesses in forest governance. This will help to navigate decisions about how to design and implement the indicators (Kahsay, & Bulte, 2019). The first action is to organise the indicators by thematic areas and sub- themes which may include land tenure, land use,

forest management, and forest revenues, cross cutting institutions and cross cutting issues. The indicators will be tailored and contextualised to fit local needs e.g., in Kenya context the forest blocks are classified as beats. Data collection technique will involve elements presented by a distinct research question guided by the GFI manual. Potential sources of data will be identified and applied appropriately. Scoring of the indicators will be done where necessary.

The GFI indicator works on the five principles of good governance which includes transparency, participation, accountability, co-ordination, and capacity. It builds on the principal of participation that involves diverse and meaningful inputs to help in decision making. It embraces accountability that exists when the actions and decisions taken by an actor meet the objectives and responds to needs of stakeholders they are meant to benefit. Coordination exists when different actors whose decisions impact forest works together and share information to advance common objectives.

The GFI works on six thematic areas which include which reflect key forest related issues of common interest and concern that includes land tenure, land use, forest management, forest revenue, crosscutting institutions, and cross cutting issues. It's imperative to adopt the GIF analytical framework since it's a global recognised framework since it promotes policies and practices that strengthen forest governance to support sustainable forest management and improve local livelihoods. The indicators under GIF will be able to help partners to carry out evidence-based advocacy for governance reforms at local, national, and international levels and it's a suitable tool to assess forest governance in Kenya, however the tool must be customised to address the local context issues.

### 4.2 Potential Benefits of Protecting of reducing deforestation from an Ecosystems Perspective

More than 1.6 billion people around the world depend on the varying degrees on forests for their livelihoods, not just for food but also for fuel, for livestock grazing areas and medicine. At least 350 million people live inside or close to dense forests, largely dependent on these areas for subsistence and income according to Villoria, Byerlee, and Stevenson, (2014). About 60 million indigenous people are almost wholly dependent on forests (World Bank, 2014). Deforestation accounts for at least 11 per cent of global greenhouse emissions, and thus the justification for the need to combat deforestation in Africa based on the importance of forests span through different ecosystem services; provisioning, regulating, supporting and cultural.

i. Provisioning Ecosystem Services

Provision of clean water by forests - access to clean water is one of the most fundamental of human rights. Forested watersheds generally offer higher-quality water than watersheds under alternative land uses.

ii. Regulating Ecosystem services

Forest in Africa regulates water governments by catching rainfall and regulating its flow through the hydrological system, maintenance of soil quality and the provision of organic materials through leaf and branch fall.

iii. Supporting ecosystem services

Forests support species diversity and ecosystem diversity which includes include plants, animals and micro-organisms that are and form the life support system Magessa, Wynne-Jones, and Hockley, (2020). They support air and water purification, pollination, seed dispersal, climate modification, soil stabilisation, drought and flood control, recycling of nutrients and habitats.

iv. Cultural Ecosystem Services

Forests play a cultural role by being home to millions of people worldwide who depend on the forest entirely for survival. In Mt Kenya, we have squatters who live in the forest and their entire livelihood is dependent on forest products. They are involved in the PELIS forest programs which involve farming in the forest and participating in forest rehabilitation programs. Forest adjacent communities have strong cultural and spiritual attachments to the forests. Mt Kenya forest has well-established shrines for prayers which are deep into the indigenous forest. This enhances the deliberate conservation of the identified sites.

### 4.3 Policy failure in forest governance in Kenya

Forest related policies including management plans plan a critical role in building sustainable forest resources. This section presents analysis of available forest legal framework, their operational scope and disconnects that contributes to the ineffective enforcement of law.

**a) Environmental Management and Coordination Act (1999)**

Even though we have many policies in Kenya, the deforestation rate continues to increase Environment and Co-ordination Act (EMCA, 1999) is a framework law on environmental management and conservation. EMCA established NEMA, which is mandated to develop regulations, prescribe measures and standards and, issue guidelines for the management and preservation of natural resources including indigenous forests and the environment. The community has the right to demand that all projects imagined encouraging deforestation must undergo Environmental Impact Assessment in consultation with NEMA.

***The weakness of the policy***

There have been challenges in the implementation of EMCA, framework law due to lack of political goodwill and

poor governance structures that offer lenient penalties to illegal destructors involved in deforestation.

**b) The Forest Act (2005)**

The key elements of the Forest Act are to contribute to poverty reduction, improve livelihood through sustainable use and conservation of forests and other allied resources and contribute to sustainable land use, water, soil and preservation of biological diversity.

***The weakness of the Forest Act 2005***

The Forest Act 2005 has limitation since it does not explicitly outline benefit-sharing mechanisms between the community and the Kenya Forest Service who are the custodians of the forest. Community benefits are weak and joint forest management plans is to some extent a theoretical blueprint.

**c) Constitution of Kenya, (2010)**

The chapter on the environment and natural resources emphasises on the obligations in respect of the environment, enforcement of environmental rights geared towards the protection of the natural resources including forests.

***Weakness in implementation***

Poor governance, corruption and weak institutions have made the effective implementation of the 2010 constitution a dream.

**d) Indigenous Forests Policy (2009)**

It's an emphasis on community participation in sustainable forest management. The rules apply to enhance the involvement of the Community Forest Associations in the sustainable management of indigenous forests aimed at strengthening rural communities' capacity as per the Kenya Forestry Master Plan (2004)**.**

***Weakness of the policy***

The policy implementation is under Kenya Wildlife Service which is more concerned with wildlife protection rather than deforestation matters which has mainly targeted indigenous forest in which KWS is a custodian.

**e) Wildlife conservation and management Act (2013)**

The Act recognises indigenous forests as a habitat for flora and fauna, and it's also a habitat for wildlife especially the threatened ones like the bongo in Mt Kenya Forest. According to the Act, the conservation of indigenous forest is from Kenya Wildlife Service (KWS).

***Weakness of the Act***

Community participation in the wildlife Act is weak. Communities perceive that KWS values wildlife more that forest protection and human farms protection. This has led to consistent human wildlife conflict between KFS and forest adjacent communities.

**f) The Forests (Charcoal) Rules (2009)**

This policy helps CFAs and rural communities to regulate charcoal burning with the forests sustainably

**Weakness of the policy**

Under these regulations, all commercial charcoal producers are expected to organise themselves and form Charcoal Producer Associations. However, this does not happen, and charcoal burning is done illegally by cartels that target indigenous forest hard wood. Kenya Forest Service, on the other hand, is supposed to register and issue a registration certificate to Commercial Charcoal Associations to regulate and restrict the use of indigenous trees to make charcoal.

**g) The Indigenous Forests (Harvesting) Rules, 2009**

The joint forest management plan and Forest Act 2005, gives communities powers to deny harvesting of indigenous forest if they were not involved in tendering process. The Forests (Harvesting) Rules, 2009 were gazetted vide Legal Notice No. 185 of 2009.

**Weakness of the rules**

Under the rules, no person is permitted to harvest timber or bamboo in any of the forests without a valid license approved by all stakeholders, but this rarely happens, and forest managers and leaders allow illegal harvesting to happen and the perpetrators walk free.

### 4.4 Legal framework for utilization of NTFP in Mt Kenya

This section presents a conceptual analysis of the legal procedures that guide the implementation, monitoring and evaluation of livestock grazing and grass harvesting in protected areas in Kahurura, Hombe and Cheche Forest blocks of Mt Kenya west. Regarding ecological services, Hombe Forest Management Plan describes several threats to the Mt. Kenya Ecosystem ranging from lack of felling and planting plans, lack of strategies for management of plantation forests, illegal removal of forest resources in the natural forest, inadequate resources to provide credible security of the forest and unclear procedures and working rights in engaging the local communities in the joint forest management. Among these threats uncontrolled grazing may affect the extent of grass glades and grass cover which is estimated at 21% percent of the area under plantation.

In addition, uncontrolled fires are also implied as a threat to the grasslands. Kahurura Forest Management Plan (2018) describes various development activities to be carried out to improve conservation and sustainable utilization of forest and its resources. These sustainable development initiatives include tree planting in the

degraded habitats, bee keeping and water harvesting, and major emphasis is made on community participation. Although the document records the intention to develop a restoration plan for degraded forest sites with respect to the Natural Forest Management Program, specific measures and methods to enhance the conservation of forest grass glades and the grass cover are not outlined. Chehe Forest Management Plan describes livestock carrying capacity as neither established in the plantations nor in the forest glades. This creates a challenge particularly because while grazing is allowed in the plantations, the domestic animals occasionally browse in the natural forest, which makes regeneration of natural tree species difficult. As a result, there is need to establish the carrying capacities in the plantations and forest glades in order to accommodate the number of livestock that can optimally graze sustainably in the habitats. The exercise will involve a census of wildlife to ensure proper carrying capacities. Meanwhile zero grazing is encouraged instead of free-range grazing and the communities adjacent to the forest are offered controlled rights through licensed grazing.

On the same aspect, Mt. Kenya Ecosystem Management Plan, critical concepts such as carrying capacity are presented in relation to tourism and livestock and while the former is more detailed with respect to specific measures, a discussion of the latter is more elaborate than that found in the Hombe Forest Management plan. The tourist carrying capacity is affected by factors such as waste management and the current level of visitation is reported to be currently below the carrying capacity assuming a carrying capacity of 100 visitors at point Lenana per day because the Limited Acceptable Use (LAU) for summit bound visitors would be set at a maximum of 10,000 per year which would limit the daily summit bound visitors to 26 per day. Such detailed figures defining the carrying capacity in relation to livestock are not provided in the MKE forest management plan but the intention to establish a livestock carrying capacity for each forest. The divergence observed in the ecological viewpoints described in Hombe, Kahurura, Chehe forest blocks and the Mt. Kenya Ecosystem Management Plans introduced the point of departure in policy, and other legal frameworks.

### 4.5 Indirect drivers of deforestation in Africa

***a) Economic drivers of deforestation***

The demand for forest products has contributed to the disappearance of forests in Africa. There is high demand for timber/wood, carvings, commercial herbs, Non-Timber Forest Products and commercial wild fruits.

***b) Social and political drivers***

Accelerated forest disappearance through destruction occurs when institutional configurations allow abuse and create an opportunity for forests to become incorporated into patronage networks which create incentives for state actors to increase accumulation of indigenous forest resources for political purposes with no concern for sustainability in the long run.

***c) Cultural and religious drivers***

Cultural factors influence consumption behaviour of forest and values related to environmental stewardship, and it's an important driver of environmental change. Forests play a cultural role by being home to millions of people worldwide who depend on the forest entirely for survival.

***d) Science and technology drivers***

The impact of scientific and technological on the forest is most evident in the case of flora and fauna. Forests are unique sources of scientific knowledge and essential for research purposes and in some ways, it has contributed to the disappearance of forests in Africa. A lot of the investigation is done on herbal medicine and requires accessing the plan roots, stem and leaves.

### *4.6 The direct drivers of deforestation in Africa*

***a) Logging / Deforestation***

Illegal logging or commercial logging/ deforestation involve cutting indigenous trees for sale as timber or pulp without proper permission or guidelines. The indigenous timber is used to build homes, furniture, carvings. There is high demand for timber/wood since indigenous forests form the basis for a variety of commercial industries.

***b) Drought/ Climate change***

Drought affects indigenous forests directly by slowing or arresting growth and by increasing their susceptibility to wildfire, insect pests and disease. Prolonged drought results to weak radial growth in post-drought years because food stores are quickly used up resulting to dieback of the crown of the tree.

***c) Invasion of forest by alien species***

Invasive species threaten indigenous forest biodiversity by causing disease, acting as predators or parasites, and acting as competitors. They also alter the habitat severely affecting growth.

***d) Land use change***

This involves the clearing of indigenous forests to create land for farming. More than 80,000 farmers are involved in the PELIS system in central Kenya converting indigenous forests to plantation forests

## 5. Summary of Key Findings and Conclusions

Forest concession can work to sustain forest, economies, and livelihoods in the 21st century and it should be adopted**.** Concession refers to the process whereby the governmment confers user rights of state owned forests to a private entity through a contractual agreeement aimed at enhancing sustainable forest management. A study done by Andong and Ongolo, (2020) on corruption, democracy, and environmental policy an empirical contribution to the debate looks at role of forest concession in sustainable forest management. The study underlines the need to embrace the pillars of participation of stakeholders, forest concession, capacity development and empowerment of grass root institutions like the Community Forest Associations. The forces behind the demand for timber products that fuel deforestation cannot be overlooked. This means that the forests in Africa are under threat.

The stakeholders have a role in combating deforestation in Africa. The role of stakeholders in understanding the problems in forest policies implementation and that governance weakness, corruption, and war constrain the achievement of conservation goals. The research looked at stakeholders in the sector and how they determine the appearance of forests in a country. Non-Timber Forest Products projects can be an alternative to reduce pressure on timber products. Poverty is one of the factors exacerbating deforestation in Africa and exploration on potential of NTFPs can be a solution. Forests are a source of NTFPs constitute an integral component of the household economic activities mostly among women (Chamshama et al., 2014).

Comparative analysis of policy papers, forest management plans and other legal frameworks on forest management reveals that over grazing and grass harvesting are not considered high level threats to the forest ecosystems, community participation, and institutions on forest monitoring and evaluation. Community participation as a mechanism for managing the forest is well acknowledged at every level of policy and implementation guidelines, however, proxy measures with information on interaction levels (allowed and actual), the number of user groups and number of adjacent communities engaged in grass harvesting are not included in the policy documents. Several activities to be implemented in the respective forest areas are proposed under different programs but their sources of funding are not certain or matched and neither are their fully developed monitoring and evaluation frameworks.

Additionally, a few stakeholders are mentioned, some specific to certain functions; the most common and perhaps an indication of their level of significance are the community forest associations representing the communities adjacent to the forest; government agencies particularly the Kenya Forestry Services and Kenya Wildlife Services, and the respective management teams. The study reveals that forest policies do not mention or document any guidelines some critical NTFPs such as grazing and grass harvesting despite acknowledging that there's a high demand for fuel wood and grazing, which have put pressure on land. Environmental conservation and sustainable utilization policies are focused on afforestation and conservation of bio-diverse ecosystems.

## 6. Recommendations

### 6.1 Policy implications

There is need to consider adopting the GIF framework to assist in forest management aimed to combat deforestation. The first step is to diagnose and assess strengths and weaknesses in forest governance. This will help to navigate decisions about how to design and implement the indicators. The first action is to organise the indicators by thematic areas and sub- themes which may include land tenure, land use, forest management, and forest revenues, cross cutting institutions and cross cutting issues. The indicators under GIF will be able to help partners to carry out evidence-based advocacy for governance reforms at local, national, and international levels and it's a suitable tool to assess forest governance in Kenya.

### 6.2 Future research

Future research should explore the relevance of forest concession as important tool for sustainable forest management considering that majority of forests in the developing countries are government owned. Forest concessions embrace private sector participation in forest management and if implemented well can help to sustain forests, economies, and livelihoods in Africa. The future research should address the relationship between weak governance and implementation of forest laws.

Future research needs to explore the level of involvement of communities in the development of forest laws. Community participation can help to combat deforestation especially where benefit sharing model balance sustainable conservation and sustainable livelihoods. Future research should confirm whether Community Forest Association members involved in the evidenced ecosystem degradation and if the current forest user right for livelihood improvement contributes towards ecosystem degradation.

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