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Original Article

The Implication of the Changing Forest Management Paradigms in Formulating Forestry Policies in Kenya

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ABSTRACT

Forests and related environmental assets are crucial for fostering environmental and socioeconomic development. Different forest management paradigms, such as sustainable forest management, ecosystem-based forest management, adaptive management, multiple-use forest management, and restoration ecology, have influenced the policy formulation of different countries at different times. However, while implementing forestry development reforms, few documented studies have explored the changing forest management paradigms and their implications on the sustainability of forests and societies in many developing countries. A case study design and literature review using document-content analysis was used to evaluate secondary data obtained from online sources. This paper aims to explore the changes in forest management paradigms in Kenya from 1968 to the present to contribute to a better understanding of the strategies needed to achieve sustainable forest management in the future. Results show that Kenya has implemented three formal forestry policies since independence in 1963. These include Sessional Paper No. 01 of 1968, Forest Policy of 2005, and the National Forest Policy of 2014. The evolving forest management paradigm reflects a progression from Sessional Paper No. 01 of 1968 to subsequent forest policies in 2005 and 2014. The 2005 and 2014 forest policies emphasize holistic ecosystem management and ecosystem services and integrate a human rights-based approach to community involvement. Moreover, all three forest policies have had positive and negative implications for Kenyan society. The Forest Policy and the National Forest Policy demonstrated more positive environmental and socioeconomic outcomes, such as increased forest cover, biodiversity conservation, community empowerment, poverty alleviation, and improved transparency compared to the Sessional Paper No. 01 of 1968. Unfortunately, some negative consequences include conflicting stakeholder interests, elite capture, and slow decision-making. Based on these findings, there is a need for policy impact assessment, addressing the adverse effects of policy, and long-term monitoring for sustainable future forest policies.

Keywords: Document content analysis, forest policies, sustainable forest management

Introduction

Forests are critical global sustainable development assets, serving as essential resources for sustenance, energy, and various ecosystem services for approximately 1.6 billion people (World Wildlife Fund, 2024a). Covering about 30% of the Earth's landscapes, forests, comprising both unmanaged and managed natural forests alongside planted forests, play a pivotal role in supporting life (Berlyn, 2023; Lier et al., 2022). However, escalating human demands have led to increased deforestation and forest degradation, posing a significant threat to their survival and the species reliant on them (Berlyn, 2023; World Wildlife Fund, 2024b). Recognizing the urgency for forest sustainability, global calls and initiatives, especially under the United Nations Decade on Ecosystem Restoration, have urged nations to re-evaluate their forest management policies.

The need for sustainable forest management gained prominence during the Rio Earth Summit in 1992, sparking global debates on the importance of appropriate policies (Food and Agriculture Organization, 2024). To implement sustainable forest management, forest management paradigms, encompassing fundamental frameworks, principles, and approaches guiding the planning, utilization, conservation, and overall stewardship of forests, have been emerging and evolving over the years to align with the changing perspective on forests. This shift acknowledges the intricate ecosystem services provided by forests, moving beyond viewing them solely as sources of timber (Bulkeley & Newel, 2023; Koulelis et al., 2023; Wang & Tian, 2023). Moreover, the new demand for forests requires that well-designed and effectively implemented forest policies are crucial,

embodying newer paradigms on biodiversity, climate change mitigation, sustainable resource management, socioeconomic development, protection of ecosystem services, indigenous rights, and international commitments (Lambin et al., 2014). These policies are essential for ensuring many countries' long-term sustainability and multiple benefits of forest ecosystems.

Forest policies are formulated based on unique paradigms such as integrated resource management, forest zoning management, and natural disturbance model management (Food and Agriculture Organization, 2024). Integrated resource management optimizes diverse forest resources, addressing the intricate interplay of ecological, social, and economic aspects. In contrast, forest zoning tailors approaches to different zones, supporting the preservation of sensitive areas. Combining paradigms acknowledges ecosystem diversity for comprehensive, adaptable, and sustainable forest management (Earley, 2023; Yirga et al., 2023). Participatory Forest Management (PFM) programs ensure effective and inclusive decision-making processes (Okumu & Muchapondwa, 2020a). Various factors influence global forest policy shifts, including contextual, governance, and socioeconomic considerations (Maini, 2003; Mather, 2000; Šporčić et al., 2023). Problem framing, scientific advancements, societal perceptions, concerns over benefits distribution, deforestation impacts, globalization effects, and increasing demand for sustainably managed forest products are among the key influencers (Rametsteiner, 2009; Shyamsundar et al., 2021). Evaluating interventions and paradigms for enhancing forest management is crucial for a prosperous future for both forests and people.

Changing the foundational forest paradigm has profound implications for sustainable forest management, positively influencing ecosystem conservation, resource efficiency, and stakeholder engagement. This shift sometimes fosters biodiversity preservation, responsible extraction, and inclusive decision-making, promoting socially acceptable and effective forest practices (Berchoux et al., 2023; Kleinschmit et al., 2016; Sheppard et al., 2020). However, incentives and legal frameworks are pivotal in encouraging and ensuring compliance with sustainable forest management practices. Empirical reviews worldwide highlight the adoption of varied forest paradigms catering to different needs. In Finland, the ecological modernization forest paradigm prioritizes balancing economic growth and environmental protection, fostering a bio-economy with innovative products (Pietarinen et al., 2023). Nepal faces challenges with policy implementation deviating from objectives due to limited stakeholder influence and coordination across policy levels (Aggarwal et al., 2021). Forest marketization and deregulation in Myanmar, influenced by German practices, form a hybrid forest policy, but it requires reassessment (Paing et al., 2023). Bangladesh and Nepal recommend economic and market-based paradigms amid climate change, while a systemic forestry approach is recognized in tropical forestry (Nocentini et al., 2017; Pretzsch, 2014). Despite progress, policy formulation and implementation challenges persist, necessitating a review of the implications for future sustainable forestry advancements.

In Kenya, forests play a vital role in development by providing critical ecosystem services (Food and Agriculture Organization, 2014; Kenya Forest Service, 2014; Ministry of Environment and Forestry, 2018; United Nations Environment Programme, 2015). Forest biomass energy contributes 70% to the national energy demand (Ministry of Environment and Natural Resources, 2016; KIPPRA, 2023). The country has 5,226,191.79 ha of forest cover, which is 8.83% of the total land area. However, the forest cover is lower than the recommended minimum global standard of 10%. Population growth and agricultural expansion are the key drivers of forest loss. With a population growth rate of 2.7%, Kenya's population is anticipated to reach 66.3 million people by 2030. With the growing wood demand, the growing population presents a challenge for sustainable wood utilization in the country. Kenya's national wood deficit is expected to rise from 10.3 million m^3 in 2012 to 15 million m^3 in 2030. Farmlands and community lands are expected to provide for most of the timber demand (Keith, 2020).

In order to promote the sustainability of forests, the forest sector in Kenya has undergone significant reforms over the past century, with key legislative milestones such as the Forest Act 2005 and the Forest Conservation and Management Act 2016. These reforms aimed to address evolving challenges and enhance forest management practices. Historically, forest policies and legislation evolved from the 1911 Forest Ordinance to the Forest Act 385 of 1964, eventually leading to the development of the Forest Master Plan in the 1990s, which recommended substantial changes in policy, legislation, institutions, and governance. The Forest Act 2005 expanded the scope of forest management to include forests on non-public land and introduced provisions for community and private-sector participation (Forest Policy 2014). It established the Kenya Forest Service (KFS) as a semi-autonomous body with significant institutional reforms and decentralization efforts. The implementation of PFM resulted in the formation of Community Forest Associations (CFAs) and Charcoal Producer Associations (CPAs) to regulate charcoal production and decentralize forest governance. While PFM has yielded positive outcomes such as reduced forest dependence and improved community livelihoods, some studies have raised concerns about its effectiveness and impact on vulnerable groups (Agevi et al., 2016).

Other studies have reported improved community livelihoods (Matiku et al., 2013). Community participation in forest management reduces forest cover loss (Kimutai & Watanabe, 2016), and improved forest management in Kenya aligns with sustainable forest management principles (Kairu et al., 2021; Mutune et al., 2017). Mutune and Lund (2016) have contested that the PFM approach does not support participation in practice and recommend re-evaluating PFM outcomes. Chomba et al. (2015) claimed that PFM increases the vulnerability of disadvantaged groups by taxing access to livelihood resources and promoting the society's elite's capture of local institutions mediating forest access. This study recommends addressing vulnerability by lowering resource access fees, encouraging democratic representation, and reducing structural inequalities.

Moreover, the devolution of forest functions to county governments following the 2010 Constitution aimed to promote local governance and achieve a national target of 30% forest cover. However, challenges remain in capacity building and resource allocation at the county level. The Forest Policy 2014 was developed to promote sustainable development, management, and conservation of forest resources while ensuring a fair distribution of benefits. It aligns with national development goals and emphasizes the involvement of civil society, local communities, and county governments in decision-making and resource management. The policy underscores the importance of good governance, transparency, and accountability in forest management. To address ongoing challenges such as deforestation, degradation, illegal activities, and conflicts, the policy proposes measures like strengthening forest protection, diversifying financing sources, and tapping into private and community land. However, insufficient public investment in forests, competing priorities, and limited private-sector involvement pose

significant hurdles. More recently, the government launched a campaign to plant 15 billion trees by 2032, aligning with many key forestry policy changes that reflect changing forest management paradigms (Kenya Forest Service, 2022).

Despite the highlighted policy changes and initiatives, the forest sector still faces many sustainability challenges marked by rising demand for forest products and loss of forest land. In view of these challenges, some research advocates for a shift in forest policy toward more inclusive and ecologically balanced forest conservation initiatives that align with changing socioeconomic and ecological conditions. They emphasize the need for regulatory and non-regulatory tools to address sustainable forest conservation effectively (Chebii, 2015). Unfortunately, since 1963 when Kenya gained independence, there have been limited studies on the implications of the changing forest management paradigms that underlie Kenya's historical forestry policies. This study addresses this gap by exploring and evaluating the paradigms underlying key historical forestry policies in Kenya. It aims to provide valuable insights for guiding the development of effective policies that promote sustainable forest management, address emerging challenges, and contribute to the country's environmental, social, and economic well-being. The literature review and document content analysis seek to answer the key question: What are the implications of changing forest management paradigms in formulating historical forest policies in Kenya? Kenya's diverse forest ecosystems, its experimentation with innovative restoration forest management paradigms, and the changing societal development matrices make it an ideal location to study the effects of changing paradigms in forest management. The study strives to contribute to a more comprehensive understanding of sustainable forest management, offering insights applicable to Kenya and global efforts in preserving this invaluable resource.

Material and Methods

Research Design
This study used a case study research design. The design focused on understanding the specific contexts, processes, and outcomes of forest management policies and paradigms within the context of sustainable development. A case study design was chosen because it allows for an in-depth examination of a specific case, providing a comprehensive understanding of the complexities and contextual factors involved.

Study Area: Location, Size, and Demography
Kenya, located in East Africa, has an estimated population of 50 million (KNBS, 2023). Straddling the Equator and situated on the eastern coast of Africa, Kenya covers a surface area of about 586,600 km², roughly one and a half times the size of Japan (Figure 1). It is a captivating study site offering a wealth of opportunities in diverse research fields. The country has a remarkable blend of geographical features, including the Great Rift Valley, savannahs, mountains, lakes, and coastal regions. Its ecological diversity supports many flora and fauna, making it an ideal setting for biodiversity, ecology, and conservation studies. Moreover, Kenya's rich cultural heritage and numerous indigenous communities present a compelling backdrop for anthropological and sociological investigations. Its history of political, economic, and social transformations also offers valuable insights for scholars examining topics such as governance, development, and resilience. Kenya's accessibility, research infrastructure, and welcoming academic institutions have further enhanced its appeal as a study site for interdisciplinary research.

The Macro-economic Context for Forest Management in Kenya
Kenya has experienced political and economic changes that have led to consistent economic growth, reduced poverty rates, and improved

Figure 1.
The Location of Kenya in East Africa (Source: Google Earth 2024).

stability. Despite the disruptions caused by the COVID-19 pandemic in 2020, the agricultural sector remained resilient, and the economy rebounded in 2021. Projections for 2022 suggest continued economic growth, but uncertainties remain, including the potential impact of global events on prices (World Bank, 2022). Kenya's economy is vulnerable to the effects of extreme weather due to its high dependence on natural resources and the prevalence of arid and semi-arid areas. Droughts in Kenya result in food shortages, decreased GDP growth, and negative impacts on the livelihoods of a significant portion of the population. The country is ranked as the 25th most affected by extreme weather conditions according to the Global Climate Change Risk Index (Africa Development Bank, 2022). Youth unemployment and high poverty rates are key challenges to Kenya's economic growth and development. The youth unemployment rate is estimated at 38.9%, with an estimated 800,000 young people entering the labor market annually and over 8.9 million people in Kenya living below the poverty line (Statista, 2022).

Data Collection
Document content analysis was used to collect data that was used to study the implications of changing paradigms in formulating forest management policies in Kenya. The method systematically examines various written and textual sources related to a topic. The initial phase encompassed the identification of relevant literature through meticulous keyword selection. Keywords such as "forest management," "paradigm shift," "policy formulation," and "Kenya" were employed to conduct comprehensive searches across academic databases. Following the compilation of a sizable dataset, the second step involved applying inclusion criteria to refine the selection of studies. Studies that explicitly addressed the transformation of paradigms in forest management policies within the Kenyan context and were published between 2010 and 2023 were deemed eligible. The subsequent step focused on excluding studies that fell outside the specified criteria, ensuring the study's precision and relevance. With a refined set of literature, the third step encompassed a thorough reading and coding process, where relevant themes and patterns associated with changing paradigms in forest management policies were identified. This systematic approach allowed for a nuanced exploration of the implications of paradigm shifts in formulating forest management policies in Kenya, contributing to a comprehensive understanding of the subject matter. The key documents reviewed in this study are listed in Table 1. These documents include policy documents, legislative acts, research reports, academic papers, and media articles.

Statistical Analysis
The textual data collected was analyzed within the sustainable forest management framework. The analysis targeted the examination of texts through the lens of ecological, social, and economic sustainability. The sustainable forest management framework facilitated the identification of key indicators, allowing for a nuanced understanding of how evolving paradigms impact sustainable practices. Applying this approach, the study aimed to unravel the intricate connections between policy shifts and their broader implications on ecological health, community engagement, and economic viability within Kenyan forest management. This methodology provided a holistic perspective, ensuring a comprehensive evaluation of the transformative dynamics in forest policy formulation. The findings from the analysis were presented in two broad parts. Firstly, a general description of forest management in a table outlining the specific forest policy, the policy context, and objectives. Secondly, a description of the emerging forest management paradigms and their positive and negative social, economic, and environmental effects. These findings were then discussed to generate the policy implications of this study.

Results

Characteristics of Kenya's Forest Management Policies from 1968
Results from document content analysis reveal that Kenya has implemented three formal policies since gaining independence in 1963. These include Sessional Paper No. 01 of 1968 on the Forest Policy for Kenya, Forest Policy (2005), and National Forest Policy (2014). Table 2 lists the policy context, objectives, and policy development methodology for each document.

The Implications of Forest Management Paradigm
The results from the document content analysis show the presence of diverse forest policy approaches that have yielded various implications. Table 3 shows the policy paradigm and the positive or negative implications for Kenya's forest management. Green governmentality appears to have dominated the forest policy approach for Sessional Paper No. 01 of 1968 on Forest Policy. In contrast, variants of sustainable forest management appear to dominate policy discourse in Forest Policy (2005) and Forest Policy (2014).

Discussion

Forests are important for ecosystem services promoting sustainable development (Berlyn, 2023; Chisika & Yeom, 2023; Lier et al., 2022; World Wildlife Fund, 2024a). However, the sustainability of forests is increasingly being threatened by degradation and deforestation (World Wildlife Fund, 2024b). Consequently, there are concerted global efforts to enhance the sustainability of forests (United Nations Educational, Scientific and Cultural Organization, 2024). One of the approaches for improving sustainability has been changing the forest management paradigms that underlie key global forest policies as informed by the evolving societal perspectives on the role of forests in the process of sustainable development (Bulkeley & Newel, 2023; Koulelis et al., 2023; Lambin et al., 2014; Raum & Potter, 2015; Wang & Tian, 2023). Despite progress, challenges persist in forest policy formulation and implementation, necessitating a review of the underlying paradigms in these policies and the implications for future sustainable forestry advancements (Maini, 2003; Mather, 2000; Pietarinen et al., 2023; Šporčić et al., 2023). Forest management paradigms are influenced by many factors, such as context, governance structure, and available resources (Bäckstrand & Lövbrand, 2006; Elomina & Pülzl, 2021; Halla et al., 2023; He & Xiao, 2023; Sadik-Zada & Gatto, 2023; Shyamsundar et al., 2021; Takala et al., 2021). Hence, a country's adoption of a specific forest management paradigm is context-specific, necessitating the need for more case studies to understand the influence of paradigms on forest policy adoption (Cubbage et al., 2007; Janota & Broussard, 2008; Kleinschmit et al., 2016; Sheppard et al., 2020; Tedesco et al., 2023; Winkel et al., 2022; Winkel, 2012).

This study sought to present Kenya's case by textually evaluating the implications of the paradigms that underlie forest policies in Kenya's historical forest policies to expand knowledge, inform decision-making, improve policy design, and contribute to the academic understanding of forest policy, ultimately aiming to achieve more effective and sustainable forest management. The study results show that forests are important for sustainable development in Kenya (Chisika & Yeom, 2019, 2023; Food and Agriculture Organization, 2014; KIPPRA, 2023; Kenya Forest Service, 2014; Ministry of Environment and Forestry, 2018; United Nations Environment Programme, 2015). In order to promote forest management, Kenya has implemented three formal policies since gaining independence in 1963. These include Sessional Paper No. 01 of 1968 on the Forest Policy for Kenya, Forest Policy (2005), and National Forest Policy (2014) (Table 2).

Table 1.
Key Reviewed Documents

No.	Document	Key Findings	Source
1	Constitution of Kenya, 2010	Explicitly recognizes community participation and involvement in the management of forests. The constitution emphasizes the importance of local communities in decision-making processes related to forest resources, fostering a more inclusive and collaborative approach.	Kenya Law Reporting website
2	Forests Act No. 7 of 2005	Reflected a comprehensive approach to forest management in Kenya, emphasizing sustainable practices, community engagement, and the conservation of vital ecological functions.	Kenya Law Reporting website
3	Forest Policy (2005)	Emphasized sustainable forest management, recognizing the intricate link between forests and environmental conservation. The policy prioritized community participation in forest management, fostering collaborative efforts with local communities.	NEMA Website
4	National Forest Policy (2014)	Addressed issues such as sustainable harvesting, biodiversity conservation, community participation, and the integration of traditional knowledge. They may also focus on combating deforestation, promoting afforestation and reforestation, and ensuring a balance between economic interests and environmental preservation.	FAO Website
5	Sessional Paper No. 01 of 1968 on a Forest Policy	The policy highlighted the need for organized and systematic management of forests, incorporating scientific principles and traditional knowledge. Additionally, it called for the establishment of forest reserves to safeguard vital ecosystems.	KIPPRA website
6	Forest Act Cap 385 (1969)	The Act emphasized the importance of sustainable forest management practices, recognizing the ecological, economic, and social significance of forests. Key findings included provisions for establishing and managing forest reserves, aiming to conserve biodiversity and protect vital ecosystems.	Kenya Law Reporting website
7	Forest Master Plan (1994)	Focused on promoting community involvement and participation in sustainable forest management. It underscored the significance of incorporating traditional knowledge and practices into modern forestry approaches, fostering a collaborative and inclusive approach to decision-making.	Google Search
8	Kagombe (2023)	Established that Kenya faces a wood deficit of 10 million m³ due to population growth, with only 70% of demand met sustainably, and proposed the need for private sector engagement. Public–private partnerships can enhance financial capital, technology transfer, employment, and poverty alleviation. The paper assesses Kenya's policy framework, highlighting gaps and opportunities for future commercial forestry implementation, emphasizing the need for secure land tenure, transparent governance, and efficient conflict resolution.	Google Search
9	Wanyanga (2021)	Despite an existing institutional and legal framework for sustainable timber harvesting, there are gaps leading to high forest degradation due to illegal activities. Urgent review and enhancements are proposed to achieve Kenya's 10% tree cover target and ensure effective regulation for societal needs while preserving the environment for future generations.	Google Search
10	Okumu (2017)	Forest sector reforms, outlined in Forest Act (2005) and Forest Act (2016), decentralized forest management to community forest associations (CFAs) and introduced incentives like plantation schemes and eco-tourism. Despite efforts to enhance community involvement and welfare, the success of participatory forest management (PFM) has yielded mixed results in terms of efficiency, equity, accountability, and environmental outcomes.	Google Search
11	Cheboiwo et al. (2018)	While investigating the potential of smallholders to supplement public plantations, it was found that high wood demand is sustained. Still, the study reveals challenges like juvenile wood harvesting and inadequate silvicultural knowledge. Recommendations include capacity building and supportive policy frameworks.	Google Search
12	Kagombe et al. (2020)	The sudden moratorium adversely affected the sustainable management of public forests, with no significant planting or silvicultural operations. Private tree growers and timber importers benefited, leading to increased incomes. Recommendations include reviewing logging licenses, expediting forestry sector reforms, establishing good governance structures, implementing effective monitoring systems for sustainable forest management, and encouraging investment in secondary forest product processing for wealth creation and employment.	Google Search
13	Cheboiwo et al. (2015)	A review of farm forestry evolution for the last 100 years in Kenya, looking at some key phases and driving factors, found that In the 1930s, *Acacia mearnsii* became a profitable cash crop for Kenyan farmers, fostering tree adoption. Post-1963 independence, policies aimed at environmental conservation and subsistence needs further promoted tree growing. The evolution culminated in the commercialization of farm forestry, driven by market demands, making it a thriving multibillion-dollar sector in Kenya. Lessons highlight the diverse factors influencing farm forestry development and the pivotal role of market incentives.	Google Search
14	Muthike and Githiomi (2017).	A review of the wood industry in Kenya on technology development, challenges, and opportunities found that The establishment of the National Forestry Programme (NFP) has enhanced sector coordination, emphasizing private forestry for job creation and wealth. Challenges include insufficient funding, limited County Government capacity, and weak organizational support for on-farm tree growing. Despite revitalization, the wood industry faces technological and skill gaps, while climate change disrupts forestry development, especially in Arid and Semi-arid Lands.	Google Search

Table 1.
Key Reviewed Documents (Continued)

No.	Document	Key Findings	Source
15	Gatama and Omondi (2020)	Evaluated the factors influencing good governance in forest management and protection: a case study of Mt. Elgon Forest Reserve, Kenya. The study found that local communities near the forest are aware of conservation but lack technical forestry training, hindering effective involvement in management. Limited funds impede the full implementation of sustainable strategies by trained staff. Economic dependence on the forest, cultural practices, and insufficient community engagement contribute to overexploitation and degradation. The study recommends multi-sectoral planning and inclusive representation for successful forest management.	Google Search
16	Ngatia and Thuita (2017)	Examined participatory forest management as a case of equity in the forest plantation establishment and livelihood improvement Scheme in Gathiuru and Hombe forests in Central Kenya. The study found that Equity ratio analysis for KFS (2012–2014) showed average ratios of 3.2:1, timber companies at 3.0:1, and communities at 2.7:1. Results suggest similar benefits across stakeholders, supporting the use of equity theory ratios to address inequity in participatory forest management.	Google Search
17	Thygesen et al. (2016)	Examined the implementation of Participatory Forest Management in Kenya in the case study of Karima Forest. The study found that The established Community Forest Association (CFA) lacks significant powers, with all authority and benefits retained by the local government. The CFA poorly represents forest communities and exhibits weak downward accountability. The paper recommends PFM policy reforms in Kenya focusing on CFAs' role, benefit sharing and enhancing participatory and inclusive processes.	Google Search
18	Chisika et al. (2019)	Examined the impact of legislation on the sustainability of farm forests in Kenya in the case of the Lugari sub-county in Kakamega County. The study found that Between 2009 and 2019, Tree on Farms (ToF) initiatives yielded social, economic, and environmental benefits for surveyed landowners. Online surveys revealed increased adoption of farm forestry by young people (18–35 years). However, challenges and the unpopularity of the 10% rule suggest that observed impacts may not necessarily be a response to the rule. The paper recommends addressing inconsistencies, transcribing rules in various languages, developing inventory protocols, and raising awareness for effective implementation.	Google Search
19	Kagombe et al. (2017)	Studies the role of devolved governance in enhancing incentives in participatory forest management in Kenya. The study found that Despite ongoing community participation, they have not fully benefited, with the government being the primary beneficiary of natural resources. To address this, the Constitution of Kenya 2010 Article 69 emphasizes equitable sharing of benefits and costs in natural resource management. This paper reviews the current Participatory Forest Management framework and proposes enhancements for equitable benefit distribution among the central government, county government, communities, and other stakeholders. It suggests incorporating value addition to traditional benefits and payment for environmental services nationally and internationally through initiatives like Reducing Emission through Deforestation and Degradation, ensuring a balanced approach between livelihoods and forest management under devolved governance.	Google Search
20	Onyango (2021)	Assessed constraints to sustainable community forestry programs in Kenya, a Karura community forest association case. The study found that 81.1% of respondents agreed on the need to address forest/ecological degradation, with 87.8% supporting creating policies and legislation for environmental protection. The study recommends collaboration and community involvement for successful sustainable community forestry programs.	Google Search
21	Kiprono et al. (2024)	The study examines gender relations among indigenous Ogiek in Mau Forest, Kenya, employing cultural ecofeminist theory. It finds patriarchal structures influence forest management, recommending gender-sensitive forest empowerment interventions and equality measures in CFAs.	Google Scholar
22	Chisika and Yeom (2023)	The study explored the case of four forested ecosystems in Kenya to contribute to a better understanding of the strategies to achieve sustainable forest management. The study highlighted the need to optimize awareness strategies by leveraging the existing educational infrastructure, increasing stakeholder engagement, and addressing outstanding challenges inhibiting sustainable forest management in the examined ecosystems.	Google Scholar

However, forest management paradigms have been changing in response to societal needs at local and global levels, depending on different national circumstances at a given time. Table 3 shows that the overriding paradigms for forest policy formulation have mainly been sustainable forest management, multiple-use forestry, ecosystem services, PFM, and state-run forest paradigms through forest reservation. Sustainable forest management emphasizes responsible practices that balance the utilization of forest resources with long-term ecological and social considerations, ensuring the health and resilience of the forest ecosystem. Multiple-use forestry advocates for the diverse and simultaneous utilization of forests for various purposes, such as timber production, recreation, and conservation, aiming to optimize the benefits derived from the forest. The ecosystem services paradigm recognizes

forests for the vital services they provide, including clean water, carbon sequestration, and biodiversity conservation, emphasizing the need to sustain these ecological functions. Participatory forest management involves involving local communities and stakeholders in decision-making processes related to forest resources, fostering collaboration, and ensuring that their perspectives are considered. The state-run forest paradigm, particularly through forest reservation, highlights centralized government control and regulation of forest areas to achieve conservation objectives and manage resource extraction.

The implementation of the three forest policies (Table 2) in Kenya has had both positive and negative implications (Table 3). However, the Forest Policy (2005) and the National Forest Policy (2014) have shown

Table 2.
Forest Policy Contexts and Objectives

No.	Name of Forest Policy	Policy Context	Policy Objectives
1	National Forest Policy (2014)	The 2010 constitution necessitated a revised Forest Policy in line with current politics and national values, advocating for decentralization. The Ministry of Environment adopted a consultative approach, engaging in discussions and workshops for consensus.	This policy aims to sustainably develop, manage, utilize, and conserve Kenya's forest resources, ensuring equitable benefits for present and future generations. It outlines six objectives addressing social, economic, and environmental aspects, guided by 12 principles, including an ecosystem approach and international cooperation.
2	Forest Policy (2005)	The policy recognizes forests as vital for Kenyan livelihoods and aims to increase the country's forest cover from less than 10% to a minimum of 10% within ten years. It emphasizes farm forestry, arid region management, and private sector involvement.	The policy aims to boost the forest sector's contribution to economic, social, and environmental well-being. It outlines seven objectives: introducing new elements like legislation, expanded mandates, community involvement, ecosystem-based management plans, incentives, and transforming the Forest Department into the semi-autonomous Kenya Forest Service.
3	Sessional Paper No. 01 of 1968 on Forest Policy for Kenya.	Kenya was transiting from colonial rule to self-rule as a republic. There was, thus, the need to modify and restate the forest policy to meet the new circumstances.	The policy recognizes Kenya's forest estate as a high-ranking national asset in its protective aspects of climate, water, and soil, as the source of supply of forest produced for all uses by the inhabitants of Kenya, and as a revenue earner of high potential. As such, the object of the policy was to lay down the basic principles that shall guide the development and control of forestry in Kenya for the greatest common good of all.

Table 3.
Policy Approach and Impacts

Policy	Forest Management Paradigm	Positive Implications	Negative Implications
Sessional Paper No. 01 of 1968 on a Forest Policy for Kenya	• Anthropocentrism • Green governmentality • Public goods	• Improved revenue generation for the government • Recognition and reservation of forest land (Cheboiwo et al., 2015)	• Declining forest cover • No stakeholder participation in forest management decisions (Cheboiwo et al., 2015)
Forest Policy (2005)	• Sustainable forest management • Civic environmentalism • Multiple use forestry • Anthropocentrism • Ecosystem approach • Human rights-based approach	• Increased forest cover and biodiversity conservation (Cheboiwo et al., 2015) • Established institutions to facilitate forest management. • Community empowerment (Muthike & Githiomi, 2017) • Poverty alleviation (Muthike & Githiomi, 2017) • Resolved conflicts of resource use and access • Contributed to climate change mitigation (Cheboiwo et al., 2015) • Improved transparency and rule of law	• Conflicting stakeholder interests • Elite capture • Unequal representation • Lack of long-term commitment • Slow decision-making • Limited capacity and low resource allocation to forestry functions (Cheboiwo et al., 2015; Muthike & Githiomi, 2017)
Forest Policy (2014)	• Anthropocentrism • Sustainable forest management • Civic environmentalism • Ecosystem approach • Ecosystem services approach • Human rights-based approach	• Increased forest cover and biodiversity conservation (Okumu, 2017) • Community empowerment • Poverty alleviation (Ngatia and Thuita, 2017) • Resolved conflicts of resource use and access (Ngatia & Thuita, 2017) • Contributed to climate change mitigation • Improved transparency and rule of law	• Conflicting stakeholder interests (Thygesen et al., 2016) • Elite capture • Unequal representation and equity (Ngatia & Thuita, 2017) • Lack of long-term commitment (Chisika & Yeom, 2023) • Slow decision-making • Conflict of institutional mandates (Wanyanga, 2021) • Limited capacity and low resource allocation to forestry functions (Chisika & Yeom, 2023; Gatama & Omondi, 2020)

more positive outcomes than the Sessional Paper No. 01 of 1968. The Forest Policy of 2014 resulted in increased forest cover community empowerment (Ngatia & Thuita, 2017; Okumu, 2017). However, other studies conducted during the policy period have castigated the policy for negatives outcomes such as conflicting stakeholder interests (Thygesen et al., 2016), elite capture, unequal representation, conflicting institutional mandates, and lack of resources (Chisika & Yeom, 2023; Gatama & Omondi, 2020; Ngatia &Thuita, 2017; Wanyanga, 2021). The Sessional Paper No. 01 of the 1968 policy approach is characterized by green governmentality, emphasizing the provision of public goods and revenue generation for the government. Green governmentality refers to the application of governmental practices and techniques

to regulate and influence environmental behavior and sustainability. It is a concept that extends the Foucauldian notion of governmentality, which explores how governments exercise power and control over populations. In the context of green governmentality, the focus is on environmental governance and the ways in which governments shape and manage ecological concerns. This involves the use of policies, regulations, and techniques to encourage individuals, businesses, and institutions to adopt environmentally friendly practices, reduce ecological impact, and contribute to overall sustainability goals. Green governmentality encompasses various strategies, including environmental policies, eco-labeling, incentives for sustainable practices, and public awareness campaigns, all aimed at steering behavior toward environmentally responsible actions. The positive implications of green governmentality include improved revenue generation and the recognition and preservation of forestland (Cheboiwo et al., 2015). However, the negative implications include declining forest cover and limited stakeholder participation in forest management decisions (Cheboiwo et al., 2015).

The Forest Policy (2005) focuses on sustainable forest management, civic environmentalism, multiple-use forestry, anthropocentrism, ecosystem approach, and human rights-based approach, which translated into increased forest cover, biodiversity conservation, the establishment of forest management institutions, community empowerment, poverty alleviation, conflict resolution, climate change mitigation, improved transparency, and the rule of law (Cheboiwo et al., 2015). The negative implications during this policy approach era included conflicting stakeholder interests, elite capture, unequal representation, lack of long-term commitment, slow decision-making, limited capacity, and low resource allocation to forestry functions (Cheboiwo et al., 2015). The National Forest Policy (2014) adopted approaches similar to the Forest Policy (2005), including anthropocentrism, sustainable forest management, civic environmentalism, ecosystem approach, ecosystem services approach, and a human rights-based approach, with positive implications, such as increased forest cover, biodiversity conservation, community empowerment, poverty alleviation, conflict resolution, climate change mitigation, and improved transparency and the rule of law (Ngatia & Thuita, 2017). The negative implications include conflicting stakeholder interests, elite capture, unequal representation, lack of long-term commitment, slow decision-making, conflict of institutional mandates, limited capacity, and low resource allocation to forestry functions (Ngatia & Thuita, 2017; Thygesen et al., 2016).

Based on these findings, the authors opine that although forest management paradigms for Kenya have generally been diverse, evolving, and context-specific, based on the country's circumstances, the desire for a sustainable forest management paradigm appears to be an overarching paradigm in the formulation of the Forest Policy (2005) and the Forest Policy (2014). Sustainable forest management is a good forest policy approach because, unlike other alternatives such as anthropocentrism, ecological modernization, purely environmental governmentality, and strongly civic environmentalism, it caters to policy formulation's social, environmental, and economic attributes. An effective forest policy approach should prioritize sustainable forest management, ecosystem conservation, and community participation. It should emphasize the holistic protection and restoration of forest ecosystems, biodiversity conservation, and equitable distribution of benefits. The policy should promote the integration of environmental, social, and economic considerations, ensuring that forest resources are used to meet present needs without compromising the ability of future generations to meet their own needs. Additionally, it should engage local communities and stakeholders and recognize their rights and knowledge

in forest management. Effective implementation, regular monitoring, and adaptive management should be integral to the policy approach to ensure the long-term sustainability and resilience of forests.

Implementing a sustainable forest management paradigm has enabled Kenya to establish new and somewhat effective forest management institutions, such as the Kenya Forest Service, a semi-autonomous government agency implementing government forest policies. The country has made several social, economic, and environmental achievements. The forest sector now contributes 3.6% of the annual GDP, provides fuelwood for 82% of the population, and employs over 750,000 people directly and 4 million indirectly. It provides immense ecosystem services that remain economically undervalued. Additionally, it supports other sectors, such as agriculture, energy, and tourism (Food and Agriculture Organization, 2014; Kenya Forest Service, 2014; Ministry of Environment and Natural Resources, 2016, Ministry of Environment and Forestry, 2018; United Nations Environment Programme, 2015). Kenya now has 12.13% tree cover and 8.83% forest cover, compared to a low of approximately 5% in the 2000s. Increasingly, a sustainable forest management policy approach is being implemented through policy tools such as "adopt-a-forest," emphasizing the need for public–private partnerships in forest restoration and the heightening of civic environmentalism through PFM. This participatory tool has formed over 250 CFAs around public forest blocks and 290 CPAs around public and community forests. The decentralization of forest management has also established government–community engagement platforms, including the establishment of 10 forest conservation committees in ten regional forest areas across the country. These structures have led to reduced forest dependence, improved community livelihoods, increased forest cover, and improved forest management (Agevi et al., 2016; Kairu et al., 2021; Kimutai & Watanabe, 2016; Kiprono et al., 2024; Matiku et al., 2013; Mutune et al., 2017).

A poor forest policy approach neglects sustainability, conservation, and community involvement. It focuses primarily on short-term economic gains, often prioritizing extraction and exploitation over long-term forest health. Such an approach lacks adequate safeguards for biodiversity, ecosystem services, and the rights of indigenous communities. Additionally, it may involve unsustainable logging practices, illegal deforestation, and inadequate enforcement of regulations. Such a policy disregards the cumulative impacts on forest ecosystems, contributing to the destruction of habitat, loss of biodiversity, and degradation of ecosystem services. It undermines the well-being of local communities dependent on forests. It fails to address the broader social and environmental implications of forest management, leading to long-term ecological and societal consequences. The Forest Policy of 1968 was deemed inadequate, and its approach resulted in negative outcomes characterized by stakeholder exclusion.

In contrast, the Forest Policies of 2005 and 2014 are considered good policy options with sustainability at the heart of the policy approach; however, the country continues to face forest management challenges. Studies have shown that the relentless pursuit of civic environmentalism through PFM has resulted in limited participation of certain stakeholders, increasing the vulnerability of disadvantaged groups by taxing access to forest-based livelihood resources and promoting elite capture. In devolved units, establishing a two-tier government system has denied capacity and resource allocation to forestry functions in most counties nationwide. However, approximately 18 counties have established forestry departments with relevant personnel. Counties are responsible for achieving the national target of 30% forest cover by increasing their individual forest cover.

Considering the implications of the current forest policy approaches, the rapidly changing socioeconomic development matrices, including the population growth rate of 2.7%, the growing national wood deficit of 12 million m³ in 2014, and predicted to rise to 34.4 million m³ by 2030. With the rising youth unemployment, the "good" and most appropriate policy approach for Kenya would be an integrated forest policy approach that builds on the positive aspects of sustainable forest management as enshrined in the Forest Policy (2005) and the National Forest Policy (2014). The integrated approach has many similarities with other emerging policy prescriptions worldwide. After experiencing forest management challenges similar to Kenya's, which included the paradox of pursuing sustainability amidst a changing socioeconomic environment, an evolving understanding of the interplay between ecological and social systems, the acknowledgment of forest ecosystems as complex adaptive systems, the imperative to integrate social and ecological aspects of forestry within a unified framework, and the increasing recognition of the ethical dimensions of forest management, Nocentini et al. (2017) recommend the concept of systemic thinking as a paradigm that promotes public action at different levels. Systemic thinking has many similarities to the concept of sustainable forest management. Systemic and sustainable forest management is more complex, diverse, flexible, and capable of adapting to the growing external influences arising from human interactions and the ecological system.

Based on this discussion, advancing the integrated forest policy approach should prioritize recognizing the ecological, social, and economic value of forests. It should involve stakeholders' active participation and representation in decision-making to ensure equitable access and benefits for all stakeholders. Additionally, long-term commitment and capacity building should be prioritized to overcome challenges such as slow decision-making, conflicting interests, and limited resources. When developing policies, an integrated policy formulation approach is a holistic and coordinated approach considering multiple interconnected factors and perspectives. It integrates various sectors, disciplines, stakeholders, and objectives to address complex issues effectively. By adopting an integrated approach to policy formulation, policymakers can address complex challenges more comprehensively and increase the likelihood of achieving the desired outcomes. An integrated approach promotes a more inclusive, informed, and coordinated decision-making process, improving policy outcomes and sustainable development. However, a key weakness of the integrated approach to forest policy formulation is the inherent complexity and challenges of its implementation. Coordinating diverse sectors, stakeholders, and objectives can lead to bureaucratic hurdles, conflicting interests, and slow decision-making processes. The need for collaboration and consensus building among different actors can prolong policy formulation and hinder its effective implementation.

Furthermore, integrating diverse perspectives and interests may result in compromises and tradeoffs that do not fully address the complexities of sustainable forest management. Overcoming these weaknesses requires strong governance, adequate resources, and proactive efforts to streamline the coordination and decision-making processes within integrated forest policy frameworks. To ensure the successful implementation of such an integrated approach, it is crucial to address the issues of elite capture and unequal representation by promoting inclusivity, transparency, and accountability in forest governance. Strengthening institutional coordination and collaboration will help resolve conflicts in institutional mandates and improve resource allocation to forestry functions. Furthermore, investment in research and technology, along with the involvement of local communities and indigenous knowledge, can enhance the effectiveness of forest management strategies.

Continuous monitoring, evaluation, and adaptive management should be implemented to track progress, identify emerging challenges, and adjust policies and practices.

It is also noteworthy that although the intentions of a certain policy approach may be good, the practices that implement the policy may yield completely different results depending on the context. In Finnish forestry, where sustainability underlies the various paradigms of forest management, industrial forestry was legitimized (Pietarinen et al., 2023). In Nepal, poor implementation of policies affected the desire for a chosen forest policy approach (Aggarwal et al., 2021). In Myanmar, although there is a need to re-evaluate the effects of the forest policy approach, positive forest marketization, deregulation, and voluntarism in forest management due to blending market principles and historical German forest practices have developed a hybrid forest policy (Paing et al., 2023).

Conclusion and Recommendations

The study on historical forestry policies in Kenya reveals significant policy implications. The analysis of three key policies—Sessional Paper No. 01 of 1968, Forest Policy (2005), and National Forest Policy (2014)—underscores the prominence of sustainable forest management as a guiding paradigm. Positive outcomes, such as increased forest cover and economic contributions, align with the emphasis on sustainable practices. Notably, the more recent policies, Forest Policy (2005) and National Forest Policy (2014), have demonstrated superior results to Sessional Paper No. 01 of 1968, particularly in fostering increased forest cover and community empowerment. Despite successes, challenges persist, including conflicting stakeholder interests, elite capture, unequal representation, conflicting institutional mandates, and limited resources. As forest management paradigms evolve, addressing these challenges becomes imperative for effective and sustainable policy implementation. Several recommendations are crucial to address the persisting challenges in forest management in Kenya effectively. Firstly, fostering transparent and inclusive stakeholder engagement is essential to mitigate conflicting interests and promote collective decision-making. Implementing measures to prevent elite captures, such as robust governance structures and equitable representation, will help ensure fair and unbiased policy outcomes. Addressing unequal representation requires affirmative action to amplify the voices of marginalized groups in decision-making processes. Harmonizing conflicting institutional mandates through collaborative efforts and clear communication channels can enhance policy coherence.

Moreover, tackling the issue of limited resources necessitates exploring innovative funding mechanisms, forging partnerships, and advocating for increased budget allocations dedicated to sustainable forest management initiatives. Overall, a comprehensive and collaborative approach, grounded in transparency, inclusivity, and resource mobilization, is essential for overcoming these persistent challenges and advancing the goals of sustainable forest management in Kenya. The study acknowledges the limitation of relying on document review as a data source. It suggests future research expand the scope, incorporate interviews, and explore quantitative aspects for a comprehensive understanding. It contributes to the discourse on sustainable development.

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