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Sustainable Forest Governance and Competing Land Use Interests: A Multi-Scale Analysis with a Case Study of Enoosupukia Forest, Kenya

—A Systematic Literature Review

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Abstract

Forest governance serves as an essential component which enables worldwide sustainable development and environmental preservation. Forests provide the base for biodiversity protection and enable local communities to thrive and drive national economic development. The worldwide approach to forest conservation depends on multiple interacting land use interests. The situation becomes more complex because different interests compete when analyzing production factors. The competition for land use includes agricultural cultivation needs together with logging operations for cheap fuels, urbanization, industrial development and biodiversity conservation. The forest land-use crisis in Kenya requires immediate attention because the sector generates 3.6% of the country's GDP annually. The Enoosupukia Forest ecosystem functions as a major forest in Narok County Kenya but faces identical problems. The forest has suffered from extensive deterioration because of economic demands for timber and charcoal production as well as agricultural expansion, livestock grazing and population growth. This review demonstrates that integrated and participatory governance frameworks act as essential tools to manage competing interests while supporting both ecological sustainability and community livelihoods.

Keywords

Competing Claims, Sustainable Forest Management (SFM), Barriers, Stakeholders

1. Introduction

Forest governance is key for the attainment of not only conservation targets but also global sustainable development goals [1]. International multilateral agreements at the global and regional level acknowledge the role of forests in serving as buffers and carbon sinks. Forest ecosystems are as well considered biodiversity conservation agents and key socioecological systems that support livelihood options [2]-[4]. Forest governance framework at the policy and legislative level is crucial for the creation of a balance between human needs and ecosystem needs thus bridging the nexus between the competing land use claims and sustainable forest management [5] [6].

The governance of forested ecosystems has shifted from a centralized approach to a decentralised model that is not only inclusive but also state-centric. Sustainable forest management is characterised by benefit sharing, community participation, transparency and accountability and there have been calls through multilateral environmental agreements and international instruments for the adoption of these elements of sustainable forest governance at the global, regional, national and local level [7] [8]. The shift in governance has been effective in shaping forest governance at the global level however gaps arising from the lack of political goodwill and immeasurable indicators as elicited in the Aichi Biodiversity targets have hindered the realization of international targets. The Kunming-Montreal Global Biodiversity Framework was developed and adopted to correct the failures of the Aichi targets hence the framework has measurable indicators and supports the monitoring and reviewing of the actionable targets [9] [10].

1.1. Forest Governance in Africa and the East African Region

The post-independence period saw African forest governance operate through centralized systems until the 1980s when decentralization became the new approach by transferring authority to local communities and subnational institutions [11]. The transfer of authority in forest governance proved successful yet progress was delayed by policy framework misalignments and weak legal enforcement and insufficient data systems for monitoring and evaluation [12].

The African Union has established two continental frameworks: the African Forest Landscape Restoration Initiative and TerrAfrica to support sustainable land use while combatting deforestation and degradation in forested areas which helps manage conflicting land use pressures through sustainable land use strategies [13] [14]. The established continental agreements support global forest governance treaties while working to maintain both community wellbeing and environmental stability [3].

The East African region has started to implement participatory forest management instead of using centralized forest management [15]. The East Africa Community (EAC) acknowledges the need for a harmonized framework especially for transboundary natural resources in its member states hence the development of regional policy that will govern and direct the management of natural resources

is underway [16]. This is expected not only to harmonise forest governance in East Africa but also to revolutionise and impact national policy and legislation of members states on forest management in East Africa [15] [16]. Participatory forest management systems have proved to be effective in enhancing benefit sharing and community participation in forest governance and management. However, gaps are still elicited in weak law enforcement and persistence in the misalignment with international norms and equity concerns [17] [18].

1.2. Forest Governance in Kenya: Decentralization and Institutional Reform

Forest governance in Kenya has faced a dramatic shift from a top-down management approach to a more devolved and participatory management system. The forest governance reforms were revolutionized by the promulgation of the 2010 constitution that demanded public participation in natural resource management [19]. The participatory management was introduced by the 2005 Forest Act that transferred forest management authority to a semi-autonomous Kenya Forest Service, and facilitated participatory forest management at the community level through Community Forest Associations (CFAs) [20]. The Forest Conservation and Management Act, 2016, further strengthens the legislative framework on forest management by defining the roles of the county governments and bolstering benefit-sharing mechanisms up to the community level. The national forest policy additionally complemented the Forest Management 2016 act by providing a national framework on forest resources benefit sharing and multisectoral engagement on sustainable forest management, a strategy on the restoration of degraded forest ecosystems, and how they can withstand climatic shocks, thus mainstreaming forest conservation into land use [20]. The strengthening of forest governance has consequently led to an increase in forest cover in the country from 6% to 8.8% in a span of 13 years (2010 to 2023) [21]. Competing land use claims continue to hamper sustainable forest management despite the changes that have taken place in the enhancement of forest governance in the country [22] [23]. The harmonization of these issues can only be achieved through cohesive inter-governmental coordination, effective benefit-sharing mechanisms, and community participation in forest management. The harmonization of these issues can only be achieved through cohesive inter-governmental coordination, effective benefit-sharing mechanisms, and community participation in forest management.

1.3. The Enoosupukia Forest Case: Governance, Land Use, and Conflict

The Enoosupukia forest, epitomizes the tension inherent in balancing competing interests in land use with forest governance. Enoosupukia forest is an extended block of the famous Mau Forest complex and a critical water tower that acts a coolant and reservoir to the geothermal downstream in Olkaria and sustaining the livelihood of communities surrounding the forest. The forest has been subjected to tremendous pressure from detrimental human activities and insecure land ten-

ure, consequently leading to forest degradation and destruction [24] [25].

The cause of the land use conflicts in the case of Enoosupukia forest has been blamed on convergent socio-economic interests. Anthropogenic activities such as the clearing of forests for agricultural expansion and uncontrolled livestock grazing have exacerbated deforestation and cases of human-wildlife conflict [26]. The competing claims in the case of Enoosupukia forest is likely to be affected by the gap between the legal forest protection and the community perception of forest conservation. The enforcement of conservation measures is taken as an obstruction to livelihood options, especially in the absence of a well-defined benefit-sharing formula and land tenure security [27] [28].

The case study elicits the dilemma that exists in the structural forest governance in Kenya and the need for a balance between forest management and the legal conservation mandate, acknowledging the economic imperatives and the traditional land rights. Preliminary results from the reviewed studies have exhibited the existence of institutional disconnects, vague tenure policies, and weak legal enforcement as obstacles to sustainable forest governance.

1.4. Global and Local Linkages: REDD+, Article 6, and Community Engagement

The development of forest governance systems now relies on international legal frameworks which include Article 6 of the Paris Agreement that promotes cooperative approaches to reduce emissions. The National REDD+ Strategy together with the Forest Reference Level and National Forest Monitoring System (NFMS) and Nationally Determined Contributions [29] represent operationalization of Article 6 in Kenya. These frameworks have the potential to solve conservation problems and meet the development goals of the country. The implementation of programs faces obstacles because of weak institutional capacity and governance and socio-political issues [30]. Forest-dependent communities experience defiance and governance legitimacy deterioration when formal governance systems impose access restrictions. Sustainable land-use conflict resolution requires community involvement which can be achieved through rights-based participation methods including REDD+ and community forest management [31] [32]. The REDD+ case shows Kenya's transition to participatory decentralized governance which remains within the boundaries of global sustainable development targets. The progress remains blocked by persistent conflicts between land ownership rights and limited resources and fragmented policies.

The Enoosupukia case shows that a flexible multi-scalar governance system needs to be adaptive and combine socio-economic and ecological and legal considerations. This review demonstrates forest governance which operates at multiple levels across different scales. The guiding principles from global frameworks hold significant importance. The success of national or local compliance depends heavily on well-designed policies. The legal and institutional framework of Kenya demonstrates outstanding sustainable forest governance but faces major chal-

lenges regarding compliance and implementation and equity and enforcement. The Enoosupukia Forest case study demonstrates the geographic and socio-political conflicts that arise from conservation efforts. Governance systems need to establish mechanisms which ensure meaningful participation while providing secure land tenure and clear entitlement frameworks. Forest ecosystems need sustainable development within governance frameworks that integrate environmental social and economic priorities because human destructive pressures continue to intensify.

2. Literature Review

The preservation of biodiversity together with livelihood support systems depends heavily on forests. Forest ecosystems maintain two vital roles that is enhancing ecological functions while serving as economic anchors for national development and GDP growth. Forests maintain their importance because they attract endless interest for timber products alongside non-timber goods and agricultural land expansion to support food security and population absorption. Forest governance stands as a vital factor for sustainable development and environmental protection because of its complex nature. Forests hold a central position in addressing the three planetary crises which include climate change, pollution and biodiversity loss [33]. Forest ecosystem spans approximately 31% of the land area globally, which is equivalent to 4.06 billion ha of land [30]. The United States of America, the Russian Federation, China, Canada, and Brazil have the largest forest cover, which is estimated to be more than half of the total forest cover in the world [30]. Deforestation and forest degradation have been the cause of loss of biodiversity [30] report suggests that since 1990, 420 million ha of forest cover globally has been lost, 10 million ha per year is lost to deforestation and forest degradation. Ghana maintains 35% forest cover yet faces rapid deforestation because its multisectoral approach and private sector engagement have not stopped corporate pledges and carbon-offset projects aimed at forest conservation [34].

Many of the drivers of deforestation are attributed to agriculture, mining, and wood for fuel. This is not better in Kenya with a forest cover of 6.99% [35], as it is an agriculturally dependent economy, and land is a factor of production. Kenya is facing an urgent land use issue, like all developing countries eager to industrialise. The main factors responsible for deforestation consist of agricultural activities together with mining operations and fuelwood extraction. The forest cover in Kenya stands at 6.99% [36]. The population of Kenya continues to grow at a rapid pace according to [37] further subjecting extra pressure to the sustainable land use in forested areas. The systemic literature review provides detailed information about forest sector obstacles while analysing forest governance possibilities through stakeholder and actor relationships in the sector and sustainable forest governance and management barriers.

2.1. Stakeholders

Forest governance explains stakeholders' relations, formal and informal institu-

tions, indigenous people and local communities, and organised groups (civil societies) engaged in negotiation regarding the rights of access and utilization of forest resources [3] [20]. In Kenya, the forest sector has experienced legislative and policy changes over the last few years; revising laws, setting regulations, and institution reorganisation [20] all aimed to achieve sustainable forest management and conservation. In Enoosupukia, the stakeholders range from government agencies; the Ministry of Energy and Petroleum, Kenya Forest Service (KFS), defunct Kenya Water Towers Agency (KWTA) the County Government of Narok (claimant of the land), the local community (ancestral claimant /indigenous communities) to the migrant communities. There is a need for strong relationship, synergies, and collaboration among them, including with the private sector for sustainable forest management [38].

2.2. Contested Ownership over Legal Rights

Effective forest governance and management requires sound legal and institutional framework for the protection of forests. This requires cross sectional aligned policies that have a direct impact in forest management and conservation [20]. Kenya enacted (including reviewing) laws governing the forest sector in the country, all aimed at achieving sustainable forest management (SFM), enhancing livelihoods, reducing deforestation and environmental degradation, and ensuring equitable benefit-sharing [20]. The Constitution of Kenya defined land management as either public, community or private with most of these forests are classified as gazetted or community with the former accounting for about 80% of the country's forest area [39]. The constitution empowers the county government, as an inheritor of the county council, as the sole custodian of the community trust land and holds in trust for the community [39]. However, with the local community claiming ancestral ownership of the land, no claimant has gained exclusive authority. The need to continue engaging with each other is fundamental, in ways sometimes complementary, sometimes conflictual, with reference to distinct frameworks—cultural, political, legal [40].

2.3. Climate Change Variability

Climate change has made pastoralism more vulnerable, aggravated by low and erratic rainfall disrupting their traditional grazing patterns. Africa is home to a bigger percentage of the over 200m pastoralist globally [41], and about a third of the Kenyan population depends on pastoralism for food and income security [42]. Pastoralism has been used by the local community as a climate change adaptation strategy, and the wondering of livestock in search of pastures and water in forest areas in Kenya is a survival strategy. With unpredictable rains, frequent drought poses a significant challenge to pastoral communities. This is the case in Enoosupukia where, in many years, community have used it as a grazing hold for their herds. The dependency of natural resources for livelihoods exacerbate vulnerability to climate change, thus clinging to the forest as grazing fields becomes

the lifeline hopes [43].

2.4. Barriers in Forest Conservation and Governance

Sustainable forest management is a dynamic and complex process driven by several factors [44]. These factors have potential to impact the environment and forest sector. The factors range from agricultural expansion, wood for fuels, population growth, poverty, industrialization and weak institutional frameworks for enforcements [45] [46].

i. Policy Governance Conflicts: Conflicting policies are contributing to forest loss in Kenya. This is more escalated by agricultural expansion as Kenya is a food insecure country and the need for more production is on the rise. The demand for more production creates a constant conflict between forest conservation and agricultural growth. This is common in highly productive regions where forests are found [47].

ii. Technological. Forest conservation is hampered by lack of use of modern technology. The lack of integration of modern and real time technology, such as satellites imaging, and use of GIS can significantly help in forest monitoring to reduce deforestation. The use of modern technology helps track forest conservation efforts [48].

iii. Capacity building. Strengthening the capacity of local institution and communities is essential for sustainable forest management. This will strengthen their participation as well as being able to respond to the issues of forest degradation. The identification of the user groups, community forest associations (CFAs) and other claimants is important for long term gains on sustainable forest management [49].

iv. Institutional legal Framework. Despite the effort of putting up the necessary legal laws supporting sustainable forest governance in Kenya, institutional capacity remains weak. This is hampered by the lack of adequate financial support to Kenya Forest Service to enforce the necessary legal provision. This stems from inadequate human capital, resources mobilization and modern technology to monitor forest status in the country [20].

v. Claimant rights/customary township. Community have pegged their hopes that the forest land will be subdivided in their interest. Community have always, either encroached the forest boundaries in Enoosupukia, or pushed the forested lands as for grazing field for their livestock or future settlements [50].

3. Methodology

Enoosupukia is located in Narok County between 36.7˚ to 36.10˚E and 0.52˚ to 1.2˚S (**Figure 1** & **Figure 2**) and it borders Hell's gate to the East, Suswa to the South, Keekonyokie to the west and Kongoni Sub locations to the North. The area has varied topography that consists of highlands rising over 2300 Metres and lowland between 1000 - 1500 Metres above sea level [51]. The diagram below shows the location of Enoosupukia in Narok County [51].

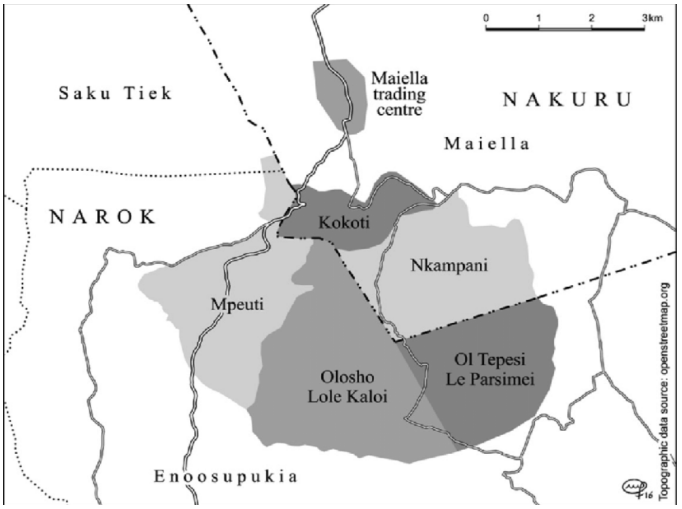

Figure 1. Location of Enoosupukia (derived from [51].)

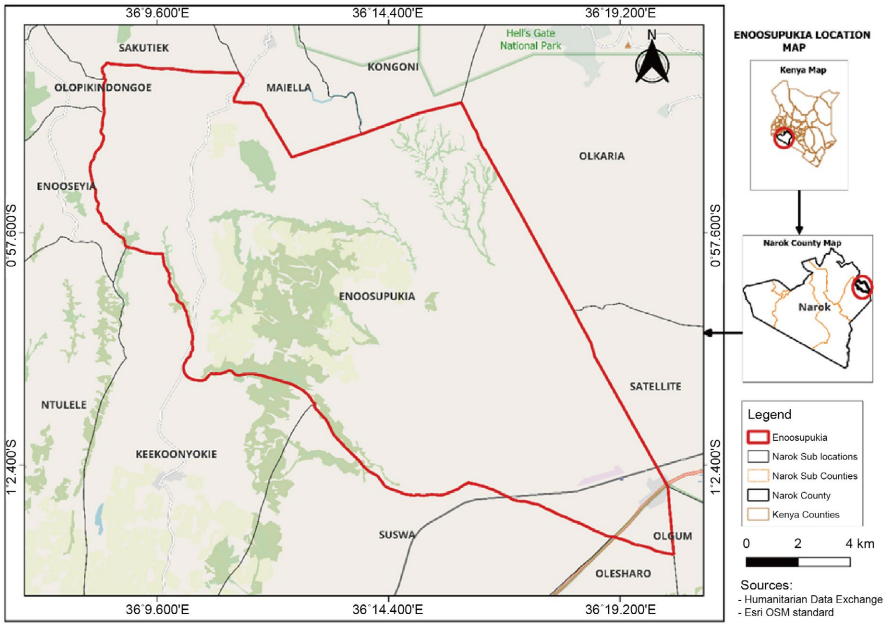

Figure 2. Derived from satellite imagery (source: Humanitarian Data exchange and Esri OSM standard).

3.1. Inclusion and Exclusion Criteria

To ensure the relevance and quality of the studies included in the review, the following inclusion and exclusion criteria were applied:

Inclusion Criteria:

1. **Publication Date:** Studies published between 2010 and the present were included to ensure the review reflects the most recent research and developments.

2. **Focus:** Studies that specifically addressed competing land use interests in forest conservation governance were included.

3. **Language:** Only studies published in English were considered.

4. **Accessibility:** Full-text articles that were accessible through the selected da-

tabases were included.

Exclusion Criteria:

1. **Publication Date:** Studies published before 2010 were excluded to maintain the currency of the review.

2. **Focus:** Studies that did not address the specified topics of local knowledge adaptation strategies, institutional frameworks, or barriers to adaptation were excluded.

3. **Language:** Studies published in languages other than English were excluded.

4. **Accessibility:** Articles for which full texts were not available were excluded.

3.2. Data Extraction and Analysis

The extraction of data was conducted through a standardized form designed to capture all the pertinent information from each study which includes the study's methodology, objectives and key findings. The collected data was then analyzed identifying the gaps, patterns and common themes in the literature.

3.3. Quality Assessment

The studies underwent quality assessment through evaluation criteria that included research question relevance and methodological strength and findings. The final analysis included studies that met quality standards. The review implemented a systematic approach to produce an extensive and trustworthy summary of forest conservation governance papers on competing land use interests across global to local scales.

Scope and limitation.

- The study primarily focused on competing land use interests and belonging versus sustainable forest management.
- The language used in the household survey required translation into the local language.

The PRISMA flow diagram (**Figure 3**) presented in the figure shows the complete process of study selection through identification and screening and eligibility assessment and final review inclusion.

3.4. Identification

The records found through academic journals searches, websites, and databases of published reports (n = 300): This represents total count of articles found through systematic searches in websites, institutional reports and academic databases relevant to the research question. There were additional records found through manual searches or other alternative sources (n = 50) hence indicating that there were additional articles that were found through other approaches, for instance references from grey literature or publications from other known papers.

3.5. Screening

Following the removal of duplicate articles, 300 distinct articles are left available

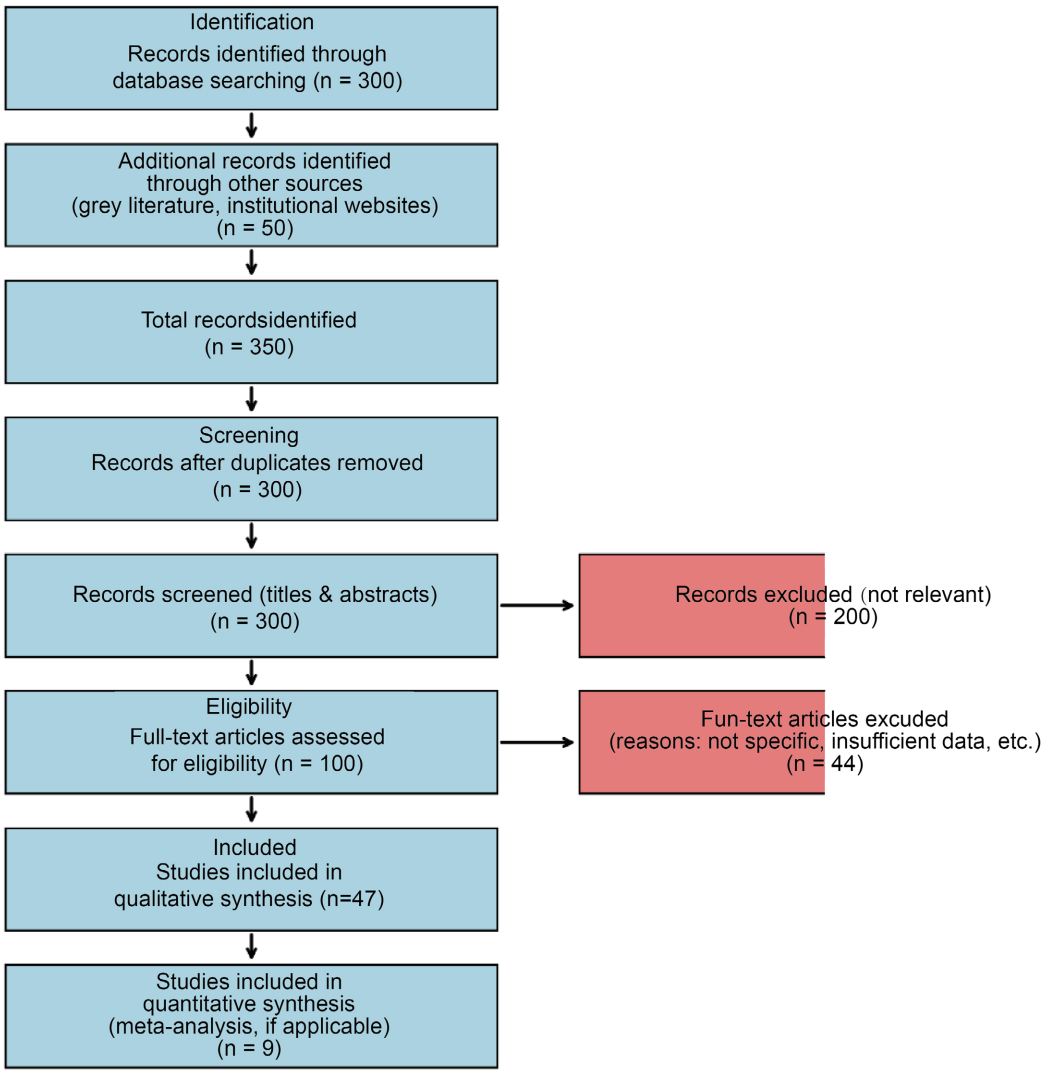

Figure 3. Adapted from PRISMA 2020 statement [52].

for further screening hence n = 300. The 300 articles are subjected to further screening based on their abstracts and titles thus determining their relevance to the review. The process of further screening leads to the exclusion of 200 articles (n = 200) which are eliminated for not meeting the inclusion criteria.

3.6. Eligibility

The articles that were evaluated for eligibility were 100 (n = 100) to confirm whether they meet the inclusion criteria for the review. Full-text articles excluded, along with reasons (n = 44): Following the evaluation of the full texts, 44 articles are excluded as they do not fulfill the criteria for inclusion in the review. Possible reasons include inadequate data, incorrect study design, or methodological issues.

3.7. Inclusion

Studies that have been considered in qualitative synthesis is 47 studies signifying

that n = 47. The studies are discussed narratively and analyzed. The studies that have been included in quantitative synthesis that is meta-analysis is 9 signifying that n = 9 and statistical methods are employed to aggregate the findings of these studies. The summary of the total studies included the total of 9 studies included in the final quantitative synthesis with the previous qualitative synthesis including 47 studies leading to a total of 56 studies.

3.8. Table of Findings (Table 1)

The detailed table has effectively compiled the various studies related to competing land use interests in forest conservation governance. Each entry in the table offers insights into the scope and conclusions of the corresponding articles. This structured format succinctly encapsulates the existing research landscape and prepares for an in-depth analysis in the following sections of the review. Articles indicated with ✓ are pertinent to competing land use interests in forest conservation governance or associated areas as inferred from their titles.

Table 1. Findings.

Article Number	Author years	TITLES	Sentence Summary (Link)	Relevance
1	A. Hailu, S. Mammo, and M. Kidane. (2020) [44]	Dynamics of land use, land cover change trend and its drivers in Jimma Geneti District, Western Ethiopia.	Examines land use and land cover changes in Jimma Geneti District, Western Ethiopia, highlighting the trends and identifying the main drivers behind these changes.	✓
2	A. Salaton, (2025) [50]	State to protect forest land from encroachment.	The article by Salaton (2025) reports that the Kenyan government has pledged to protect forest land from encroachment through stricter enforcement and conservation measures.	✓
	Afele, J. T. (2024) [34]	*Ghana's forests are being wiped out: What's behind this and why attempts to stop it aren't working*. The Conversation.	This paper highlights the failure of forest governance in Ghana to combat and manage competing land uses.	✓
3	Aguilar-Tomasini, M. A., West, J. J., Gebrekirstos, A., Eid, T., Meressa, A. M., & Rannestad, M. M. (2025). [35]	Knowledge gaps on drivers of change in East African dry forests: Insights from a systematic literature review. *Ecological Processes*, *14*(1), 40.	The study underscores the competing land use pressure in East Africa highlighting the existing gaps in East Africa.	✓
4	Ahrens, D., Benedikter, S., & Giessen, L. (2025). [38]	Rethinking Synergies and Trade-Offs at the Forest-Sustainable Development Goals (SDGs) Nexus—A Systematic Review. *Sustainable Development*.	Highlights the nexus between forest governance and the Sustainable Development goals.	✓
5	Albertazzi, S., Bini, V., Lindon, A., & Trivellini, G. (2018). [26]	Relations of power driving tropical deforestation: A case study from the Mau Forest (Kenya). *Belgeo. Revue Belge de Géographie*, *2*, Article 2.	The article highlights the role of political systems in balancing competing land uses and also demonstrates how community-based forest governance can help reduce forest encroachment at the local level.	✓

Continued

6	AUDA-NEPAD. (2022). [13]	AUDA-NEPAD Natural Resources Governance Programme	The article underpins a continental level governance depicting a multi-scale management of competing land-use interest	✓
7	Bekele, B., Wei Wu, Yirsaw, E., & Negussie, W. (2019). [45]	CLIMATE CHANGE AND ITS EFFECT ON LAND USE CHANGE IN THE CENTRAL RIFT VALLEY OF ETHIOPIA.	The paper examines how climate change affects land use transformations in the Central Rift Valley of Ethiopia by showing changes in farming methods and worsening land conditions and increased strain on available resources.	✓
8	Collaborative Partnership on Forests. (2025) [54]	Global partnership to intensify efforts to meet 2030 goals on forests.	Emphasizes the importance of global land-use governance frameworks in promoting the expansion of protected areas, the restoration of forests, and the integration of land-use planning to effectively address the competing needs of agricultural growth, urban development, and conservation.	✓
9	Convention on Biological Diversity. (2020). [9]	Global Biodiversity Outlook 5	Sets the framework for global governance concerning trade-offs in forest land use, highlighting the critical importance of transformative land-use changes (particularly the balance between forest restoration and other land-use needs) in reversing the trends of biodiversity loss.	✓
10	Convention on Biological Diversity. (2024, October 1). [10]	Kunming-Montreal Global Biodiversity Framework	The global framework establishes land-use goals, such as benefit-sharing reforms and clearly defined financial mechanisms, which influence the national forest governance of countries that have ratified it. This integration into their policies and laws promotes institutional reforms that address conflicting land uses.	✓
11	Dlamini, C. (2020). [12]	*Enhancement of national forest governance to respond to the Paris Agreement and related global climate change policies and initiatives in Eastern and Southern Africa | afforum.*	Analyzes the influence of governance frameworks on the execution of forestry measures outlined in the Paris Agreement crucial for comprehending how disjointed or ineffective policies struggle to reconcile forest conservation with conflicting land-use pressures.	✓
12	E. Mwangi, P. Cerutti, C. Doumenge, and R. Nasi. (2018) [36]	*The current state of Eastern Africa's forests," State-of-forest-EAfrica.*	The paper investigates Eastern Africa's forest condition and current trends and management obstacles which affect deforestation and forest degradation.	✓
13	Earth, database (2024) [37]	Population Growth Rate of Kenya 1950-2025 & Future Projections	Population pressure affects the primary drivers of land use (such as agricultural expansion and fuelwood demand), underscoring the indirect governance issues faced in the context of forest conservation.	✓

Continued

14	East African Community. (2025). [16]	Biodiversity & Forestry	Presents a regional governance perspective that illustrates how coordinated policies and planning efforts are designed to address the conflicting demands associated with agricultural expansion, infrastructure development, forest conservation, and the protection of biodiversity within transboundary ecosystems.	✓
15	FAO. (2020). [30]	State of the World's Forests 2020.	Highlights the lessons of global governance: the ways in which conflicting land-use sectors, such as agriculture and infrastructure, contribute to deforestation, and the necessity for integrated policies, restoration efforts, and innovative governance to reconcile land-use trade-offs.	✓
16	Felistus Kandi, M. (2025, January 21) [15]	*Forest Conservation for Climate Resilience in East Africa—Mashariki Research and Policy Centre*.	Highlights the conflicting land-use issues (such as agriculture, logging, and urban demands) faced by East African forests and positions forest governance as a crucial strategy for climate resilience, stressing the importance of community involvement, cross-border collaboration, and incentive-driven approaches.	✓
17	Garrett, L., Lévite, H., Besacier, C., Alekseeva, N., & Duchelle, M. (2022). [2]	The key role of forest and landscape restoration in climate action.	The paper investigates how restoration practices support climate action efforts while promoting biodiversity and sustainable land management practices.	✓
18	Gregersen, H., Dewees, P., Singer, B., & El-Lakany, H. (2020). [1]	Global forest governance and sustainable development: Reflections on the life and times of John Spears	Provides a critical perspective on the historical and ongoing influence of global forest governance structures in shaping the institutional context of trade-offs related to forest land use, connecting forest policy with issues of poverty, equity, and diverse land-use landscapes.	✓
19	Griffin, G. (2024). [48]	*The Role of Technology in Modern Forest Management*	Illustrates the ways in which technology-driven governance instruments can improve enforcement, facilitate landscape-level monitoring, and promote participatory forest management, thereby aiding coordination among land-use stakeholders and alleviating conflicting land-use demands.	✓
20	Habel, J. C., Schultze-Gebhardt, K., Maghenda, M., Shauri, H., Kioko, E., Mwagura, L., & Teucher, M. (2023). [27]	Harmonizing multi-stakeholder interests to improve forest conservation in Southern Kenya.	Offers an empirical case of competing land-use pressures agricultural expansion vs exotic plantations vs conservation where governance coordination and institutional reform can harmonize conflicting interests in biodiversity hotspots.	✓

Continued

21	Habel, J. C., Ulrich, W., Rieckmann, M., Shauri, H., & Nzau, J. M. (2022). [53]	Lack of benefit sharing undermines support for nature conservation in an Eastern Afromontane biodiversity hotspot.	Highlights how misaligned governance specifically failures in benefit-sharing undermines legitimacy and support for conservation, illustrating critical trade-offs between livelihood needs and protected area expansion in forest governance.	✓
22	Jackson, C. M., Durowoju, O. S., Adelabu, S. A., & Adeniyi, S. A. (2025). [20]	An assessment of Kenya's forest policy and law on participatory forest management for sustainable forest management: Insights from Mt. Kenya Forest Reserve. *Trees, Forests and People*, *19*, 100770	Demonstrates how legal and governance design affects trade-offs between conservation and community land-use rights, highlighting barriers within PFM structures that undermine inclusive forest governance.	✓
23	Janpeter Schilling, & Luise Werland. (2023). [42]	Facing old and new risks in arid environments: The case of pastoral communities in Northern Kenya	The paper examines how pastoral communities in Northern Kenya experience both historical and modern threats stemming from climate change and competition for land and weak governance systems.	✓
24	Kadipo Kaloi, F. (2023). [21]	*Enhancing Policy and Legislative Framework for Augmenting Forest Cover in Kenya – KIPPRA*	Directly relates to national forest governance strategies addressing competing land-use pressures (cropland expansion, charcoal demand, infrastructure) and clarifies legislative and institutional needs to manage trade-offs and support large-scale restoration.	✓
25	Kengen Foundation. (2025). [24]	*Enoosopukia Adopt – a – Forest Project*	This model exemplifies a public–private partnership that addresses conflicting land uses such as conservation, agriculture, energy infrastructure, and local livelihoods by employing integrated governance, engaging community participation, and utilizing climate finance mechanisms.	✓
26	Kibukamusoke, M., & Alemiga, J. (2018). [17]	Civic and political rights of the Batwa ethnic minority in local governance at village level: The case of Kanungu District.	Illuminates how exclusionary governance undermines indigenous land-use rights, creating tenure insecurity and forest land-use conflicts essential context for understanding governance trade-offs in conserved forest areas.	✓
27	Koocheki, A., & Gliessman, S. R. (2008). [41]	Pastoral nomadism, a sustainable system for grazing land management in arid areas	The paper demonstrates that pastoral nomadism functions as a sustainable grazing system for arid lands when implemented correctly.	✓
28	L. A. Duguma *et al*., (2019) [46]	Deforestation and forest degradation as an environmental behavior: Unpacking realities shaping community actions	The paper examines deforestation together with forest degradation as environmental behavior results that stem from social elements and economic conditions and institutional frameworks.	✓
29	Lalisa A, D., Mathew Mpanda, Alemayehu N, A., Atela 2, J., & Dieudonne Alemagi 4. (2018). [11]	*Community forestry frameworks in sub-Saharan Africa and the impact on sustainable development*	This study directly assesses the CBFM policy frameworks and their effects on the Sustainable Development Goals (SDGs) in various sub-Saharan African nations.	✓

Continued

30	Land Act, Cap. 280, (2022). [39]	*Land Act, Cap. 280*	The legal framework of Kenya's land management and administration system includes provisions for land tenure and registration and use and dispute resolution.	✓
31	Larson, A. M., Monterroso, I., Liswanti, N., & Tamara, A. (2023). [22]	What is forest tenure (in)security? Insights from participatory perspective analysis.	Enhances comprehension of forest tenure (in)security via participatory, multi-national analysis, which is essential for research in policy and governance.	✓
32	Lipton, G. (2018, November 29). [14]	*100 million hectares in Africa under restoration by 2030 / AFR100.*	This study outlines the continental-scale restoration commitment relevant to policy, sustainable development, and governance frameworks in Africa.	✓
33	Mbeche, R., Ateka, J., Herrmann, R., & Grote, U. (2021). [49]	Understanding forest users' participation in participatory forest management (PFM): Insights from Mt. Elgon forest ecosystem, Kenya.	Provides granular empirical insights into PFM uptake in Kenya, directly relevant to governance and community engagement within sustainable forest frameworks.	✓
34	Meshack Omega. (2024).	*From Tree Planting to Tree Growing: A Paradigm Shift Towards* 30% *Tree Cover – KIPPRA.*	Directly addresses Kenya's national forest governance strategy amid competing land-use pressures and restoration targets.	✓
35	Mude, Andrew G., Barrett, Christopher B, McPeak, John G., Kaitho, Robert, & Kristjanson, Patti. (2009). [43]	*Empirical forecasting of slow-onset disasters for improved emergency response: An application to Kenya's arid north.*	Develops an empirical forecasting method to predict slow-onset disasters (like droughts) in Kenya's arid north to improve emergency response.	✓
36	Müller-Koné, M., & Kioko, E. M. (2024). [25]	Chapter 11 Frontier Dynamics: Cross-Cutting Ties, Conflict and Contestation on Agricultural and Conservation Hinterlands of Lake Naivasha.	Provides a vivid case of how agricultural expansion and conservation imperatives intersect and conflict within forested landscapes under governance pressure.	✓
37	Muok, B. O., Mosberg, Marianne, Siri Ellen Hallstrøm, & Dennis Onyango. (2021). [5]	The politics of forest governance in a changing climate: Political reforms, conflict and socio-environmental changes in Laikipia, Kenya.	This study demonstrates how the dynamics of land-use politics, conflicting claims of authority, and the enforcement of conservation measures can create tensions with the livelihood systems of local communities situated at the edges of forests.	✓
38	Nasi, R. (2025, June 3). [55]	*Africa has the highest rate of forest loss in the world – what the G*20 *can do about it.*The Conversation.	Underscores continent-wide land-use pressures driving deforestation and points toward high-level governance opportunities to reconcile competing demands.	✓
39	Njathi, I. (2022). [19]	REVIEW OF THE FOREST CONSERVATION AND MANAGEMENT ACT.	The central legal instrument for sustainable forest management enables both environmental protection and community involvement in forest management.	✓
40	Nzunda, E. F., Yusuph, A. S., Nzunda, E. F., & Yusuph, A. S. (2022). [56]	*Forest Degradation in Tanzania: A Systematic Literature Review* (IntechOpen)	Offers comprehensive insight into drivers of forest degradation in Tanzania, key for understanding governance challenges amid competing land-use pressures.	✓

Continued

41	Okumu, B. & Muchapondwa, E. (2020) [23]	Determinants of successful collective management of forest resources: Evidence from Kenyan Community Forest Associations.	Provides empirical evidence on how collective forest governance performs under competing land-use pressures, especially in Kenyan forest areas.	✓
42	Osewe, I., Coman, C., Talpă, N., Osewe, E. O., Ndalilo, L., Kagombe, J. K., Abrudan, I. V., & Popa, B. (2025). [28]	Balancing conservation and community needs: challenges, threats, and socioeconomic disparities in Kakamega	Offers a nuanced empirical case of how conservation governance interacts with socioeconomic disparities, land-use pressures, and community rights in a Kenyan forest frontier.	✓
43	Pezdevšek Malovrh, Š., Bećirović, D., Marić, B., Nedeljković, J., Posavec, S., Petrović, N., & Avdibegović, M. (2019). [7]	Contribution of FSC Certification to Sustainable Forest Management of State Forests in Selected Southeast European Countries	The paper investigates how FSC certification promotes sustainable forest management by strengthening governance systems and increasing transparency and environmental standards.	✓
44	R. A. Alusiola, J. Schilling, and P. Klär, (2021) [31]	*REDD+ Conflict*: *Understanding the Pathways between Forest Projects and Social Conflict*	The paper examines how REDD+ forest conservation initiatives create or intensify conflicts through their impact on land ownership rights and their effects on local communities.	✓
45	Scott Matter. (2010). [40]	*Clashing Claims*: *Neopatrimonial Governance*, *Land Tenure Transformation*, *and Violence at Enoosupukia*, *Kenya*	The paper examines how neopatrimonial governance systems together with disputed land ownership rights created violent conflicts in Enoosupukia.	✓
46	Sotirov, M., Pokorny, B., Kleinschmit, D., & Kanowski, P. (2020). [3]	International Forest Governance and Policy: Institutional Architecture and Pathways of Influence in Global Sustainability	Provides critical insight into how global governance frameworks interact with competing land-use sectors (e.g. agriculture, mining), exposing gaps that challenge forest governance effectiveness.	✓
47	T. Campbell. (2014) [56]	Community Based Natural Resource Management and Political Capital; Lessons from Asia and Africa.	The paper investigates how CBNRM operates through political capital by studying local governance systems and social capital networks and informal institutions across Asia and Africa.	✓
48	T. T. Pham et al., (2023) [47]	*A Review of Forest-Food Linkages in Kenya*	The paper examines forest-food system relationships in Kenya through their impact on food security and their vulnerability to different land use demands.	✓
49	Tebkew, M., & Atinkut, H. B. (2022). [18]	*Impact of Forest Decentralization on Sustainable Forest Management and Livelihoods in East Africa.*	The study investigates forest decentralization effects on management practices and local people's living conditions by demonstrating positive outcomes from community involvement and enhanced responsibility yet facing difficulties with capability development and competing stakeholder interests.	✓
50	Tsioumani, E. (2024) [8]	Linkages and Synergies Between International Instruments on Biodiversity and Climate Change.	This paper analyzes how international frameworks governing climate and biodiversity intersect with land-use governance and how synergies can strengthen conservation policy coherence.	✓

Continued

51	Ukeje, C. & Obi, C. (Eds.) (2020). [51]	State, Non-State Actors and the Emerging Trajectories of Conflicts in Africa	Offers insight into the power and institutional dynamics between state and non-state actors, relevant for understanding governance and competing land-use tensions where natural resources and land are contested.	✓
52	UNFCC. (2020). [4]	UN Climate Change Process Steps up Action on Deforestation	The paper outlines worldwide initiatives to stop deforestation through forest integration into climate change reduction plans that use policy systems and international partnerships.	✓
53	UNFCC. (2024). [29]	Protecting Forests: Vital to Tackling the Climate Crisis	The article demonstrates how worldwide climate priorities affect forest governance in Kenya which makes it essential to address local land use challenges.	✓
54	United Nations. (2024) [33]	Department of Economic and Social Affairs (DESA).	The global approach of DESA works to achieve a balance between nature protection and human economic activities and land management which corresponds to the trade-offs observed in Enoosupukia.	✓
55	Wang, L., Wei, F., Tagesson, T., Fang, Z. & Svenning, J.-C. (2025) [6]	Transforming forest management through rewilding: Enhancing biodiversity, resilience, and biosphere sustainability under global change.	Offers a transformative governance lens for forest management, relevant where land-use competition and intensive forestry undermine ecosystem function and social resilience.	✓
56	Xin Shen. (2020). [32]	*Balancing Ecological and Economic Development through Sustainable Forest Management – Regional Knowledge Sharing Initiative*.	Addresses integrated governance strategies that mediate forest protection and socioeconomic goals amid competing land uses.	✓

4. Results and Discussion

The systematic literature review focused on identifying the nexus between forest governance and competing land use interests spanning from the global level to the local level. The review also examined the role of global, regional and national frameworks in supporting forest governance to shape competing land use interests. This includes looking at how policies, regulations, and governance structures impact sustainable forest management despite the competing land use pressures. The review as well highlighted barriers to the implementation of the existing frameworks and strategies to manage forest sustainably for instance the lack of institutional support and equity in benefit sharing, weak policies and the lack of political goodwill to implement the global framework at the national and local level or socio-economic constraints as a result of the exclusion of local and indigenous communities in forest management. Conversely, it also identified factors that facilitate successful forest management and governance, such as inclusion of indigenous community and the acknowledgement of their rights, equity in benefit sharing and the integration of global and regional frameworks into national policies.

Overview of Literature

The evaluation of the references (**Figure 4**) for this study reveals a distinct pattern regarding the chronological distribution of the literature and institutional reports. As shown in the graphical representation, only a small portion of the references (around 2%) is from the year 2015 to 2017, which includes seminal works tackling the conceptual and policy frameworks of forest governance and social-ecological systems. There is a gradual increase starting from the year 2018 onward due to context-specific case studies, for example [26] concerning tropical deforestation in Kenya's Mau Forest and the related governance analyses. The peak is in 2020 and is marked by around 20% of total references which coincide with global assessments and policy documents such as: State of the World's Forests 2020, Global Biodiversity Outlook 5 and the REDD+ reports, along with some regional governance analyses [12]. There is a surge with the greater international climate policy framework as well as a more active Paris Agreement. The following years (2021-2023) show a modest but consistent output which features the studies on the Eastern African regional implementation issues, collaboration with multiple stakeholders, and forest tenure security [22] [53]. The years 2024 and 2025 show the greatest concentration of references with more than 40% contribution and this is indicative of recent publications filling critical gaps such as the comprehensive literature reviews and the integration of forest governance into the Sustainable Development Goals [38] [35]. Moreover, the current institutional frameworks and policy position papers [54] [55] also emphasize the need to address the 2030 biodiversity and climate targets. This pattern also emphasizes the dependence on recently published and geographically pertinent literature which, as reported, proves the focus of the study on the fast-changing narrative of sustainable forest management and governance in Africa as dominated by strategic global policy considerations.

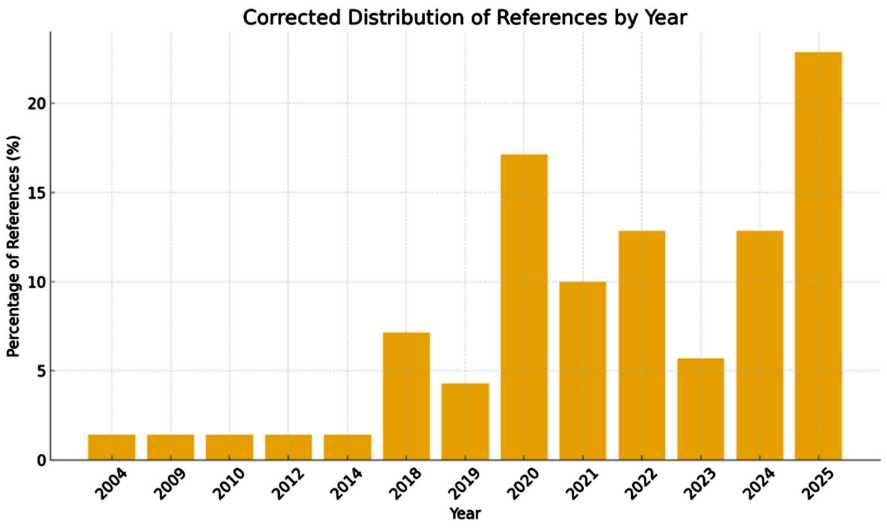

Figure 4. Percentage distribution of references by year graph.

Figure 5 illustrates that the majority of sources focus on Kenya and the broader East Africa/Africa region, while individual country-specific references for Ghana, Uganda, Tanzania, Ethiopia, Cambodia, and Viet Nam appear less frequently. This reflects the study's primary emphasis on Kenyan and regional East African forest governance contexts. The references categorized by country shows a clear concentration in Kenya and the whole of East Africa. Kenya represents almost one third of all country-specific references, which demonstrates her critical role as a case study for addressing forest governance, community forestry, deforestation, and participatory forest management (PFM). This is evident from comprehensive site-specific studies like those conducted on the Mau Forest, Mt. Kenya Forest Reserve, and Kakamega Forest, Laikipia, as well as several policy documents on forestry and local livelihood integration. Besides Kenya, over one third of the sources have a continental or regional scope. This underscores the importance of transboundary policies, the AU and EAC frameworks, as well as global sustainability contexts that touch on of several countries at a time.

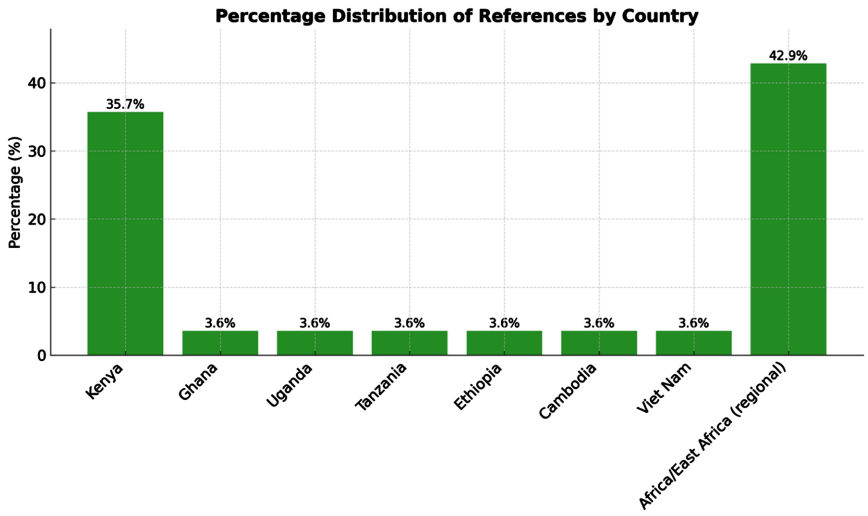

Figure 5. Percentage distribution of references by country and region.

Countries like Uganda, Tanzania, Ethiopia, and Ghana have lower coverage but focus on narrower aspects of community governance, deforestation, and the governing silos. This is exemplified by forest loss in Ghana as analyzed by [34] and forest degradation in Tanzania studied by [56]. In addition, while the African scope is dominant, Cambodia and Viet Nam are also contributing to the global understanding of deforestation. The analysis draws literature from the East African region and Kenya ensuring this paper is not only regionally grounded but also context rich with case studies that correlates with the area of study. This enhances the policy relevance of the study for local governance and the discourse on sustainable development

5. Conclusion

Devolution and decentralization of forest management in Kenya are major policy

shifts since the enactment of the 2010 Constitution. Counties often lack the capacity and the required human capital to manage the county owned forest. The benefits of the devolution and decentralization of forest governance are yet to be felt or rather ambiguous, at the community levels. The state and county management of forest does not bring any incentives towards sustainable forest conservation to the communities in Kenya, rather, it becomes a center of protracted interest. The constitution envisaged forest governance as change of property right, creating a benefit sharing mechanism, empowering local institution of self-regulatory, creating leadership accountability and resource mobilization to accrue maximum benefits to the county and the communities. This agrees with [23] [57] that communities adjacent with access rights are incentivised in the management and conservation of the forest for their own maximum benefits.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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