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The perception of benefits from the 'adopt-a-forest' initiative in Kenya

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Abstract. *Forest resources play a crucial role in sustainable development, but they face challenges such as degradation and loss. Forest adoption has emerged as an innovative and collaborative approach to forest management to address these challenges. Kenya has implemented this approach, but the driving forces and stakeholder perceptions behind its adoption are poorly understood. This study aimed to address this problem by examining the perception of partners on the benefits of forest adoption in Kenya. The study used a literature review and 20 key informant interviews to explore the context of forest adoption in the country. The results showed that the "adopt-a-forest" approach is a multidimensional solution for improving forest management in Kenya, bringing social, economic, and environmental benefits to partnering stakeholders. The initiative fosters interagency collaboration and breaks down old inefficiencies in forest management. However, interagency collaboration is uneven across counties and regions in the country, and a robust benefit-sharing policy is lacking. The study calls for a robust monitoring and evaluation framework with clear indicators and a benefit-sharing policy, as well as more quantitative studies to better understand the motivations behind forest adoption by individuals, government agencies, non-profits, and private companies.*

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1. Introduction

Forest resources rank high as critical natural assets due to their economic, environmental, social, and cultural values. Forests furnish crucial ecosystem services, including conservation of biodiversity, management of soil erosion, preservation and enhancement of landscapes, and fortification of community resilience in the face of climate change. Forests also provide ecological stabilization to agricultural landscapes and are an important source of most energy needs for many rural and urban residents.

Kenya's natural capital biodiversity atlas of 2015 shows that Kenya's forest biodiversity provides important ecological services needed for human well-being and sustainable development (MEWNR, 2015; MENR, 2016). Environmental

goods and services have direct use values or indirect use values, which may be existing, non-consumptive, or option uses. Direct use of ecosystem services could entail basic sustenance by consuming biological resources or satisfaction and enjoyment associated with ecotourism. Trees and forests provide a livelihood base for the majority of Kenyans. It is estimated that 82% of Kenya's households rely on forests and trees for fuelwood, accounting for over 750,000 employment opportunities for Kenyans and indirect benefits for over 4 million citizens (KFS, 2014). Additionally, forests are estimated to provide an annual contribution of USD 365 million (3.6%) to Kenya's Gross Domestic Product, excluding the values of environmental services, non-timber products, contributions to other economic sectors, and household wood energy (FAO, 2014; MEF, 2018; KFS, 2022; MoALF, 2021).

Unfortunately, Kenya's forest policy before the 2000s did not involve many stakeholders in forest management. Over time as the human population grew, disparities for wealth grew, leading to an increase in the illegal harvesting of forest resources for livelihood support in the dwindling public forests. This led to the centralization of the management of public forests through state protection. Whereas this was a justifiable policy option then, an emerging body of knowledge indicates that heightened state protection of public forests places an economic burden on forests with a social burden on the local community and other stakeholders, leading to land and natural resource use conflicts. To remedy this, in 2005, collaborative forest management, which initiated the participation of stakeholders in forest management, was introduced through legislative changes to the forest law. Collaborative forest management was mutually beneficial between the government and the local community, where both shared forest management decision-making responsibilities (National Strategy for Achieving and Maintaining 10% Tree Cover, 2019). To date, collaboration in forest management is being championed as a viable tool and policy instrument for the sustainable management of public forests under the jurisdiction of the Kenya Forest Service. Hence, community involvement in forest management through signed management agreements is perceived as a strategy for cost and benefit sharing in the forestry sector (Ngatia & Thuita, 2017). Over time, the multiple and interrelated challenges of collaborative forest management are increasingly calling for multidimensional and integrated approaches that leverage the contribution of different sectoral agencies and partners as a sustainable forest resource management strategy. This condition is not natural or familiar to many partners and government institutions across the world (Elbakidze et al., 2010; Maier & Wirth, 2018; Marks-Block and Tripp, 2021; Ray-Bennett et al., 2020).

Furthermore, collaborative efforts in forest management have been criticized for being overly time-consuming and lacking in industry participation. Despite such initiatives, many agreements have proven insufficient in alleviating poverty, serving only as a supplementary source of income for local communities (Siddiquee et al., 2022). As a result, collaboration is not likely to lead to more equitable outcomes and instead reinforces the power of existing actors. Imbalanced resources and power, conflicting interests, and differing organizational cultures further impede collaboration, as societal actors can support or hinder inter-agency relationships (Sahide et al., 2020; Siddiquee et al., 2022). In order to improve partnerships for forest management, the concept of forest adoption or 'adopt a forest' is fast emerging as a special-purpose vehicle for implementing inter-agency collaboration in forest management. The concept refers to a legal process where interested forest stakeholders are granted rights and responsibilities of forest restoration and stewardship for a defined period of time.

In the Kenyan context, "adopt-a-forest" is an innovative concept of enhancing the planting and growing of trees across the country. This refers to the process of partners adopting a portion of a forest for rehabilitation, protection, and management for a period ranging from 3 to 5 years (Forester Magazine, 2021). The initiative was created by the Ministry of Environment and Forestry and Kenya Forest Service to ensure that all partners' tree planting efforts in public forests are managed in a sustainable manner (as stated by Forester Magazine, 2021). KFS has also employed the "Adopt-A-Forest" initiative to partially bridge the funding gap (Forester Magazine, 2021). Moreover, through the "Adopt-A-Forest" initiative, it has been documented that KFS has built strategic partnerships that have complemented forest restoration and rehabilitation efforts (Forester Magazine, 2021).

However, limited studies reveal the real driving motive behind the growing forest adoption by individuals, MDAs, NGOs, and Private sector agencies. There is speculation that some agencies could be positioning and selling themselves globally as 'green prophets' or scouting for opportunities to access green climate funds, amongst other opportunities. In addition, since the implementation of forest adoption, no studies have been undertaken on the cost-benefit analysis of the 'adopt-a-forest' initiative in Kenya. This study explores the perception of partners on cost-benefit sharing in Kenya's "adopt-a-forest" initiative, which aims to restore forests sustainably. It asks two questions: 1) What are the perceptions of partners on cost sharing in the initiative? 2) How can the initiative be improved for sustainable forest management? The study will review global

literature and Kenya's forest management status before offering recommendations for improving inter-agency relationships for the benefit of Kenya and the world.

Forest Adoption Partnerships and Sustainable Forest Management

Sustainable forest management requires that all forest ecosystems be managed in a manner whereby the benefits emanating from the biodiversity of forest resources are utilized at a rate and in a manner that does not compromise the ability of the resource to meet the needs of the current and future generations. Forests provide many benefits, also called ecosystem goods and services. These benefits include; provisioning, regulating, supporting, and psycho-social benefits. The forest sector globally employs over 18 million people directly and indirectly, supporting over 45 million jobs through induced impacts. It also directly contributes over $539 billion and over $1,298 billion to the world's GDP. (Yanshu et al., 2019). Due to these socio-economic contributions, many collaborative global efforts have been initiated at local, regional, and global levels to conserve and protect forest ecosystems. Many countries have committed to domesticating and implementing various international conventions and obligations under multilateral environmental agreements by adopting strategic partnerships and stakeholder collaboration. Key partnerships revolve around implementing the CBD and the Nagoya Protocol for ABS, the UNFCCC and its Paris Agreement, the UNCCD, the UNFF with its Strategic Plan for Forests (2017-2030), and CITES support sustainable forest management. Such management positively impacts multiple SDGs, including poverty eradication, zero hunger, good health, clean water and sanitation, climate action, and biodiversity.

Deforestation, degradation, and fragmentation of forests negatively impact the capacity of forests to provide important social, economic, and environmental services. These services include habitat for wildlife, carbon sequestration, water regulation, and resource production. Forest loss exacerbated by the growing human needs and the impacts of climate change continue to threaten the sustainability of forest ecosystems. Forest adoption or the 'adopt-a-forest' initiative has been touted as the most appropriate approach for enhancing forest management under these circumstances. Strategic partnerships in forest management can bring many benefits, such as increased competition advantage, access to new markets, meeting operational, social, and environmental constraints, strengthened relationships, and reduced conflict. It leads to cost and information sharing, optimization of activities implementation, and increased capacity to achieve work. The FAO recommends public-private initiatives to

improve forest resource management, and private funding of forest management is estimated to be 14% of current funding for forestry-based nature-based enterprises, with an estimated investment of $1.5-$2 billion per year in forest plantations and $6.5 billion in wood processing in Africa, Asia, and Latin America. Private funding is also seen as important for effective landscape restoration.

Successful forest management through partnerships depends on several factors, including leadership and commitment at high political and bureaucratic levels, effective governance structure, inclusiveness, mutual trust, clear mission and objectives, a sense of belonging, and careful management and administration. Communication and benefit to all partners are also crucial. Institutional capacity is important but not enough for successful multisector programs. Full control over their components by participating organizations is necessary for cooperation. An integrated approach should allow each agency to maintain its independent status while operating within a common framework.

Perceptions of Benefits in Forest Adoption Partnerships

The interaction between natural assets and socio-cultural forces influences the perception of the contribution of forestry landscapes to sustainable development and human well-being. The ecosystem services approach evaluates the environmental benefits of forests, but forests also affect human welfare through direct and indirect positive ways that utilize both use and non-use values. These values include local competitiveness, the economy, conditions that drive production, and intrinsic and extrinsic values of landscape resources.

Sustainable forest management involves the execution of many interrelated activities usually contained in management plans for a given forest. Rehabilitative activities in forest management include reforestation, raising tree seedlings, planting, enrichment planting, establishing woodlots, and social forestry approaches like hedge rows, boundary plantings, woodlots, home gardens, and conventional agroforestry. In understanding stakeholder perception about the partnership costs and benefits of these forest management activities, various methods for placing monetary benefit and cost values have been developed. By providing empirical data, economists would then understand the need to conserve forest resources so that benefits are appropriately captured and reflected in the national economic valuation system of the country (Plan, 1999; O'Neill, 1997).

Cost-Benefit Analysis (CBA) is a widely used decision-making tool developed by economists and applied to environmental management problems by academics

and policymakers. CBA compares outcomes based on the greatest benefits for most people, where benefits refer to utility. Italian economist Pareto first proposed the idea that CBA can determine if a project or policy improves social welfare. A "Pareto Improvement" is a change that makes at least one person better off without making anyone worse off. Pareto argued that most people would agree that society is better off in this situation. In practice, finding a resource allocation that does not impose costs on anyone is difficult. The general principle in monetary valuation in CBA is to value all impacts in terms of their marginal social costs or marginal social benefits, with social meaning evaluation in terms of the economy as a whole. However, CBA has faced criticism over the years. Some of the criticisms include the difficulty in monetizing non-market benefits and costs, the limitations in accounting for externalities and long-term effects, the assumption of market efficiency, and the exclusion of distributional issues. Critics also argue that CBA can lead to undervaluation of environmental and social impacts, particularly when these impacts are difficult to quantify or have long-term effects. Therefore, it is important to consider the limitations of CBA when applying it in policy and decision-making processes and to use other tools and approaches to complement CBA.

Additionally, the difficulty in evaluating the costs and benefits of forest ecosystems is also because many of the environmental benefits provided by forests are non-market goods, meaning they have no established market price and are difficult to quantify in monetary terms (Soini et al., 2010). Therefore, different methods and approaches must be considered to value these non-market benefits, such as stated preference methods, revealed preference methods, and contingent valuation (CV) (Soini et al., 2010). Despite these challenges, cost-benefit analysis remains a useful tool for decision-making in forest management, especially when combined with other decision-making tools and approaches that consider stakeholders' different values and perspectives. It is essential to consider the different perspectives of different stakeholders and the social, cultural, and economic context when evaluating the fairness of cost-benefit distribution in forest management. Achieving equity in cost-benefit distribution requires considering the different values and needs of all stakeholders and ensuring that everyone involved shares the costs and benefits fairly and justly (Soini et al., 2010).

It is worth noting that an individual's age and education can influence attitudes, values, and behaviors related to the use and management of forest landscapes, and hence the extent to which individuals and communities are willing to bear the costs and share the benefits of forest management (Zube et al., 1983;

Kaltenborn and Bjerke, 2002; Brody et al., 2004; Cantrill and Senecah, 2001; Hein et al., 2006; Cebrian-Piqueras et al., 2017).

Understanding individual stakeholder attributes and their attitudes toward costs and benefits can help develop effective and equitable forest management strategies. Such strategies consider the diverse perspectives of stakeholders, as there appears to be a correlation between individual attributes and attitudes toward sustainable forestry (Smith and Sullivan, 2014). It is because their values, beliefs, and experiences shape individuals' attitudes and perceptions towards forests, and personal goals, influencing their support for or opposition to different forest management practices. Forest managers need to understand these underlying factors to develop management strategies that effectively engage different stakeholders and build support for sustainable forest management. However, assessing people's perceptions of reclaimed landscapes remains a less studied issue (Svobodova et al., 2012). These research gaps can lead to a mismatch between human expectations and actual outcomes of ecosystem services in reclaimed landscapes, which could result in unintended consequences (van der Leeuw, 2012). Further study on stakeholder attitudes and perceptions towards forest management and ecosystem services is needed to inform the development of equitable and effective forest management strategies.

Empirical studies show mixed results on the perception of benefits from forest management partnerships. For instance, Cadman et al. (2023) found that sustainable forest management through community partnership had engendered a market for sustainably produced timber and a labeling system for good timber. However, the perception ratings for forest management partnerships were still low, especially by marginalized individuals. Partnerships in forest management appear to be affected by the low empowerment of marginalized groups, insufficient resources, and inadequate empowerment of marginalized communities. Marginalized communities have limited access to and control over human and natural resources. The issues of inequitable benefit sharing, the dominance of affluent groups, a dearth of alternative livelihood options, and insufficient support for community enterprises are evidence of the failings of existing forest management systems, necessitating a re-evaluation of forest management. Moreover, interview results revealed the diversity and conflicting perceptions among the same marginalized and non-marginalized stakeholders suggesting that perceptions are affected by the execution of the governance process and who benefits from it the most. In addition, the study established that the marginalized groups that are unhappy with partnerships might be due to their voices and opinions not being taken into account by those in positions of power.

A qualitative study conducted at the household level in South Africa on communities' perceptions of benefit-sharing mechanisms for forest-based land reforms models showed that household beneficiaries showed a lack of knowledge of the criteria used for the disbursement of the benefits. It was largely caused by a lack of transparency, trust, and greed among actors. The study recommended the need for political goodwill and commitment from the government in order to ensure the development and strengthening of existing benefit-sharing policies for the improvement of the livelihoods of the land beneficiaries (Tshidzumba et al., 2018)

In summary, from this review, it is observed that at the global level, there is a growing appreciation of the benefits provided by forested landscapes, hence the increasing area under these forests. However, even though there are challenges in partnerships which by extension include forest adoption, information on people's perceptions of reclaimed landscapes is scarce, and the benefits of forest adoption are not well articulated. Filling this gap and generating an improved understanding of stakeholder perceptions of forest management benefits and cost-sharing is urgent and gains even more relevance for the design and implementation of sound forest management options and hence the need for this study.

1.1. The context for understanding benefits of Kenya's 'adopt-a-forest' initiative

In Kenya, the forest coverage is 7.2% of the total land area, equating to 4.18 million hectares. This forest can be divided into four main types and eight sub-types, as shown in Table 1. Most of Kenya's forests are dryland forests, covering 45.4% of the total forest area, while montane forests comprise 32.9% of the forest area. The data in Table 1 provides information on the different types of forests and their approximate areas as of 2010.

Only 5% of the total forest area in Kenya is made up of public and private plantations. The management of all public forests in Kenya is done in collaboration with the community and is overseen by the Kenya Forest Service. This is a government-run corporation established under the Forest Conservation and Management Act of 2016. Its purpose is to promote the development, conservation, and management of Kenya's forest resources in public forests and to provide technical support to county governments for the fair benefit of present and future generations

Kenya highly values forests for environmental, ecological, economic, social, and cultural importance. They provide numerous benefits, both tangible and

intangible, to Kenyan society. The annual per capita consumption of wood is one cubic meter, but the current demand for utility products such as timber, poles, pulp-wood, and fuelwood is 40 million cubic meters. However, the estimated sustainable supply of wood is only 30 million cubic meters, resulting in a deficit of 10 million cubic meters (Kagombe et al., 2020).

Additionally, forests provide a range of benefits to Kenyan society, both tangible and intangible. These benefits include preserving biodiversity, serving as critical water catchment areas, preventing soil erosion, mitigating climate change, providing habitat for wildlife, offering food and non-wood products such as resin, honey, and spices, enhancing scenic beauty, and attracting cultural, research, and tourist interests, among others. Although the intangible benefits of forests have yet to be accurately quantified, the forest sector contributes more than 20 billion Kenyan shillings worth of goods to the economy each year. It provides direct employment to over 50,000 people and indirect employment to another 300,000 (Odwori et al., 2013). Moreover, over a million households residing within a 5 km radius of forest reserves rely on forests for their livelihoods, including farming, grazing, fishing, obtaining food and fuel, wood, honey, herbal medicine, water, and other benefits (Odwori et al., 2013). Although limited research has been done to calculate the worth of ecosystem services, Silvestri et al. (2013) tried to estimate the total economic value of part of the Mau forest to be around KES 17 billion (USD 0.17 billion).

Thus, the relationship between forests and human well-being in Kenya is complex, with the ecosystem services provided by forests playing a significant role. Ongoing efforts have been made to improve forest management through policy and legislative reforms. The first forest policy was introduced in 1957 and revised in 1968. However, this policy focused only on the management of public forests and did not involve stakeholders. In response to new challenges and the need for sustainable development and biodiversity conservation, a revised policy and legislation was proposed in the 1990s, leading to the creation of the Forests Act of 2005. Despite this, the policy was not officially adopted. The implementation of the Forests Act 2005, which covered forest management outside public lands and allowed for community and private sector participation, started in 2007. However, a review of the policy and legislative framework was necessary due to decreasing forest cover caused by unsustainable utilization and conversion, as well as changes to governance structures outlined in the Constitution of Kenya 2010.

The Kenyan Constitution of 2010 mandated the need for sustainable development, fair distribution of benefits from natural resources, involvement of

stakeholders, and participation. It has created 47 decentralized units, known as counties, as a new form of governance (Draft Forest Policy, 2020). However, the most notable and recent forest sector reforms contained in the Forests Act, 2005, now repealed by the Forest Conservation and Management Act, 2016, is the introduction of Participatory Forest Management (PFM), where different forest stakeholders are recognized in forest management decisions. Under the PFM framework, communities residing within 5 Km of a state forest boundary are assigned various forest access and use rights to participate in forest management. Many studies such as Agevi et al. (2014), Ngatia et al. (2017), Matiku et al. (2013), Nthuku et al. (2016), Chisika and Yeom (2020), and Kairu et al. (2020) have demonstrated the efficiency and efficacy gains in collaborative forest management and the positive livelihoods outcomes of PFM. Consequently, the PFM policy has been lauded, given its multi-objective capabilities. On the contrary, some studies such as Okumu and Muchapondwa (2017), Thygesen et al. (2016), and Chomba et al. (2015) have contested PFM policy on account of adverse social equity outcomes, especially on the most vulnerable in society.

In this paper, the authors observe that these equity concerns will be addressed once the country develops a natural resource benefit-sharing policy and law which is currently in the advanced stages of enactment in parliament. In addition, PFM has proved to be impactful. With time, it will improve the capacity of forests to deliver ecosystem services equitably to communities once all 'silos' are broken down. Unfortunately, environmental threats persist and continue to threaten sustainable forest management in the country. For instance, deforestation is currently estimated at 50,000 hectares annually, with a consequent yearly loss to the economy of over US$19 million (MENR, 2019; UNEP, 2012a). Hence, recent studies still consider Kenya a low forest cover country (MENR, 2019; UNEP, 2012a). Reports indicate that forests are increasingly degraded due to unsustainable utilization, limited budgetary allocation to institutions managing forests, illegal logging, uncontrolled grazing, and unsustainable charcoal production (UNEP, 2012b). Moreover, there are institutional weaknesses by bodies managing forests, such as a limited commitment by the government to implement participatory forest governance (especially benefit-sharing policies), the slow pace of reviewing policies that favor sustainable use of forests, the politicization of forest resource governance, lack of accurate data on forest functions, and high poverty levels among communities, which pushes the demand for immediate and tangible benefits from forests and affects long-term commitment to forest management (Draft Forest Policy, 2020). These challenges disrupt the processes, supply, and consumption of critical ecosystem services from forests. Thus, it will be interesting to explore how inter-

agency collaboration could be fostered to break down the highlighted challenges and 'silos' through the adopt-a-forest approach.

1.2. The genesis of the 'adopt-a-forest' initiative in Kenya

In 2018, the President of Kenya pledged both domestically and internationally that the country would exceed the constitutional mandate of a minimum of 10% tree coverage nationally by 2022. The urgency informed the need to accelerate the attainment of 10% tree cover to address the unprecedented impacts of the triple environmental threats posed by climate change, biodiversity loss, and air pollution. Moreover, forests are recognized as critical in climate change mitigation and adaptation and provide a wide range of environmental, economic, and social-cultural goods and services.

Against this background, "[the] National Strategy for achieving and maintaining over 10% Tree Cover by 2022" was developed and approved by the Cabinet in August 2019 to operationalize the Presidential Directive. The strategy outlines several interventions, namely: rehabilitation of degraded natural forests and mangrove ecosystems; restocking of industrial forest plantations; establishment of private commercial forests; establishment of bamboo; establishment of trees on a farm; tree planting in schools; rehabilitation of degraded dryland forest landscapes; and, green spaces in the urban areas. The strategy requires the production and planting of 2 billion tree seedlings in addition to protecting and conserving the existing 4.18 million Ha. The total estimated cost for implementing the strategy was Kshs 48.7 billion. The Ministry of Environment and Forestry was coordinating its agencies and departments to implement the strategy. These are Kenya Forest Service (KFS), Kenya Forestry Research Institute (KEFRI), National Environment Management Authority (NEMA), Kenya Water Towers Agency (KWTA), National Environment Complaints Committee (NECC), National Environment Trust Fund (NETFUND) and Kenya Meteorological Department (KMD). Kenya Forest Service, as the lead agency in forest conservation, protection, and management established under the Forest Conservation Management Act, 2016 has undertaken several interventions toward implementing the strategy.

Among the key interventions were forest restoration through 'Adopt-A-Forest' and building and nurturing strategic partnerships and linkages for forest land reclamation, protection, and security. In the Kenyan context, "adopt-a-forest" is an innovative concept of enhancing the planting and growing of trees across the country. It means implementing a plan where partners take responsibility for the restoration, preservation, and administration of a section of a forest for 3 to 5

years (Forester Magazine, 2021). This concept was devised by Kenya's Ministry of Environment and Forestry and Forest Service to ensure that all partners' tree-planting efforts in public forests are conducted in a responsible and sustained manner (Forester Magazine, 2021).

KFS has also employed the "Adopt-A-Forest" initiative to partially bridge the funding gap (Forester Magazine, 2021). Moreover, through the "Adopt-A-Forest" initiative, it has been documented that KFS has built strategic partnerships that have complemented forest restoration and rehabilitation efforts (Forester Magazine, 2021). It will thus be interesting to explore these findings in order to generate the policy implications of advancing inter-agency collaboration through the adopt-a-forest initiative. Hopefully, this initiative will help Kenya actualize its forest sector development aspirations espoused in recent sector development plans and policies. For example, forest adoption will be key in implementing the Kenya Forest and Landscape Restoration Implementation Plan 2021-2026 (FOLAREP), an initiative by FAO GEF 6 restoration initiative project. Kenya intends to restore 2.55 million hectares of deforested and degraded landscapes by 2026. The plan, informed by the prevailing national and local circumstances, will focus on all the landscapes. The five-year ambitious plan to accelerate actions to restore deforested and degraded landscapes in Kenya will focus on strengthening policy, institutional and governance, strengthening research and monitoring instruments and resources mobilization and improving communities' livelihoods.

The initiative will enhance the attainment of a number of Constitutional obligations. In Article 42, the State is required to provide a clean and healthy environment for every person; and Article 43 (1) (d) states that every person has the right to clean and safe water in adequate quantities. It is further to Article 69, which requires the State to ensure sustainable management of the environment and natural resources and achieve and maintain a 10% minimum national tree cover. The initiative also conforms to International Conventions and Obligations, including Sustainable Development Goals (SDGs), Africa Forest Restoration Initiative (AFR100) and the Bonn Challenge, Paris Climate Change Agreement, and Land Degradation Neutrality (LDN) by 2030, among others. The initiative, therefore, enhances the attainment of the Constitutional target of 10% minimum national tree cover by 2022, mitigation of the climate change effects, as well as enhancing the achievement of the Big 4 Agenda.

By the year 2022, there were 49 agencies from both Government, Ministries, Department, and Agencies (MDAs), Non-Governmental Organizations (NGOs), and Private Sector Organizations participating in forest restoration

through 'adopt-a-forest across' counties and regional forest conservations areas in the country as shown in Table 1.

No.	Category of Institutions	No. of Institutions	Area Adopted (Ha)	No. seedlings Planted	Financial Contribution (Kshs.)
1	Government Ministries, Departments and Agencies	27	2,255.00	373,825	12,520,290.00
2	NGOs and Private Sector organizations	22	16,131.10	368,410	24,342,498.00
Total		**49**	**18,386.10**	**742,235**	**36,862,788.00**

Table 1: Summary of forest restoration through the "Adopt-A-Forest" Initiative between 2019-2021. *Source*: KFS Office Records, 2023

MDAs had implemented and distributed forest adoption activities in 18 (38%) counties across the country. In the Financial year (FY) 2019/2020, Nyeri and Kiambu counties had the highest number of MDAs participating in forest adoption, while the rest of the counties, namely; Elgeyo Marakwet, Kericho, Kisumu, Kwale, Murang'a, Turkana, Uasin Gishu, Nakuru, Vihiga, Meru, Kajiado, and Nairobi had a total of one MDA participating in the implementation of forest adoption (Figure 1). In the FY 2020/2021, Nairobi county has the highest number (5) of MDAs participation in forest restoration and rehabilitation, followed by Kajiado (3) and Meru (2), and Mombasa (2). Five counties, namely; Bomet, Laikipia, Nandi, Nakuru, and Vihiga, had one MDA each participating in forest rehabilitation (Figure 1).

In appreciating the urgency to attain 10% tree cover by 2022, and further recognizing that this can only be achieved through individual actions and collaborative efforts, the government, through KFS, invested in engaging partners and developing strategic linkages with state and non-state organizations. Some of the partners include but are not limited to the ones shown in Table 2.

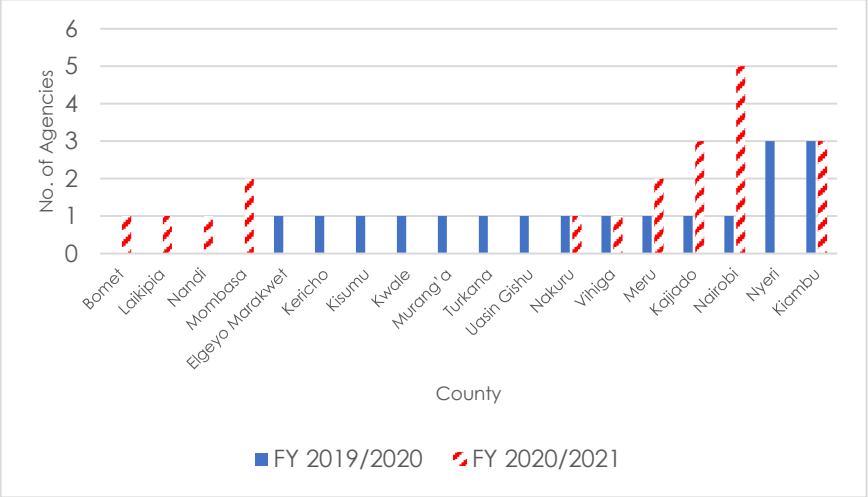

Figure 1: Number of MDA agencies participating in forest adoption. Source: KFS Office Records, 2023

No	Name of Organizations	Partnership Activity
1.	The Cabinet of Kenya	Forest management adoption
2.	Ministry of Interior and Coordination of National Government	Coordination of multi-agency forest operations (reclamations) and tree planting
3.	Ministry of Defense/Kenya Defense Forces (Environment Soldier Programme)	Forest adoption, forest conservation, infrastructural support and multi-agency security operations
4.	County Governments	Tree seedlings production, tree planting, joint restoration of green spaces/arboreta, infrastructural support
5.	Nairobi Metropolitan Services	Green spaces restoration
6.	Kenya Wildlife service	joint enforcement
7.	Kenya Prisons Service	Seedlings production and tree planting
8.	National Youth Service	Tree seedlings production and planting
9.	Foreign embassies	Forest adoption and support towards conservation programme
10.	Safaricom Kenya Ltd	Forest adoption
11.	Rhino Ark Charitable Trust	Forest fence installation
12.	Mt. Kenya Trust	Forest fire response and forest restoration
13.	WWF	Landscape restoration and Community scouts support
14.	NCBA Bank	Tree nursery development in Karura forest
15.	Kisima Farm	Forest fire response

Table 2: Strategic partners in forest restoration. Source: KFS Office Records, 2023

2. Materials and Methods

2.1 Study area: The territory of the Republic of Kenya

Kenya is a unitary multi-party democracy located in the horn of Africa. The country is located between latitude 0.0236° S and longitude 37.9062° E with an estimated land area of 580 367 Km^2.

Kenya has two tiers of government, the National Government and 47 County Governments, each with distinct responsibilities and duties. In this governmental setup, the counties of Nairobi, Kisumu, and Mombasa have maintained their city-county status. The National Government is responsible for formulating policies that ensure the country achieves and maintains a 10% tree cover besides establishing programs for delivering its international obligations and agreements. According to the 2019 census report, Kenya had 47 million people, and the population was projected to reach 60 million by 2030 (Kenya's NDC, 2020).

Kenya's HDI value for 2019 is 0.601; this is a medium-level human development category, placing Kenya at position 143 out of 189 countries and territories. In 1990, Kenya's Human Development Index (HDI) was 0.482. Over the period from 1990 to 2019, life expectancy at birth in Kenya increased by 9.3 years, average years of schooling rose by 2.8 years, and expected years of schooling increased by 2.3 years. Kenya's Gross National Income (GNI) per capita increased by approximately 37.1% from 1990 to 2019.

The Kenyan economy relies on industries susceptible to the climate, such as agriculture, tourism, wildlife, and water, and these vulnerabilities are intensified by climate change. The country has a relatively favorable climate for farming and forestry. Arid and semi-arid areas comprise 89% of Kenya's land and a third of its population. However, due to a history of political neglect, a pastoral lifestyle, and low population density, many practical difficulties have resulted in a lack of economic activity.

Drought and flooding are the primary weather-related threats affecting lives and sources of income. In 2011, a drought caused over $11 billion in damage. In 2018, floods resulted in the displacement of over 230,000 individuals, including 150,000 children, leading to the closure of more than 700 schools, the drowning of over 20,000 heads of livestock, the destruction of over 8,500 hectares of crops, and the loss of crucial infrastructure. From 2014 to 2018, 23 counties were affected by drought, causing 3.4 million people to experience food shortages and over 500,000 to lack access to water (Kenya's NDC, 2021).

2.2. Data Collection

This study seeks to explore Kenya's adopt-a-forest initiative in order to document the perception of adoption partners on sharing the management benefits and costs with the view of improving the approach. As such, primary from 20 key informant interviews from a workshop and secondary data from the literature review were gathered.

Primary Data collection

For primary data collection, 20 key informant interviews were conducted. Table 3 shows the key informants consulted during the research process. Key informants included government agency representatives, community residents, community leaders, local business owners, and private entities and individuals. In order to adequately address the research aims of this study, the prior steps involved gathering and reviewing existing forest adoption data, determination of the kind of information required, determining the target population and thinking about the key informants, choosing the key informants, choosing the interview method, developing an interview tool, developing a documentation process, conducting the interview and compiling the findings.

For purposes of identifying and selecting the key interview respondents, a random selection of 20 workshop attendees from a pool of 50 attendees who have adopted various forest blocks in the country was made. Random selection was used because it helps ensure that the sample represents the population being studied. Random selection was used in this study because it ensures that every member of the target population has an equal chance of being selected. It helps minimize bias in the sample selection process and increases the generalizability of the findings.

Face to face interview approach adopted in this study entailed: setting up a private and quiet room from where to conduct the interview, doing a round of self-introduction to explain the purpose of the interview and how the interview responses will contribute to the study, asking open-ended questions in order to provide a chance to interviewees to give detailed descriptive responses, listening actively and encouraging elaboration of responses, note taking in order to capture important information and themes arising from the interview and finally returning gratitude to the interviewees. Face-to-face interviews with key informants were preferred in order to get more candid and in-depth answers. Moreover, forest adoption is an upcoming subject in the country, and therefore, it was prudent to conduct this study by utilizing interviews with community experts in this pioneering study. This study draws on the methodological

approach from similar perception studies conducted elsewhere, including; Pour et al. (2023) and Girma et al. (2023).

No.	Key Informant Name	Category of the Organization
1.	A	Government Ministries, Departments and Agencies
2.	B	Government Ministries, Departments and Agencies
3.	C	Government Ministries, Departments and Agencies
4.	D	Government Ministries, Departments and Agencies
5.	E	Government Ministries, Departments and Agencies
6.	F	Government Ministries, Departments and Agencies
7.	G	NGOs and Private Sector organizations
8.	H	NGOs and Private Sector organizations
9.	I	NGOs and Private Sector organizations
10.	J	NGOs and Private Sector organizations
11.	K	NGOs and Private Sector organizations
12.	L	NGOs and Private Sector organizations
13.	M	NGOs and Private Sector organizations
14.	N	NGOs and Private Sector organizations
15.	O	NGOs and Private Sector organizations
16.	P	NGOs and Private Sector organizations
17.	Q	Individual
18.	R	Individual
19.	S	Individual
20.	T	Individual

Table 3: Key Informant Consulted

A general interview tool targeting any of the present participants was developed. The interview questions were tailored to respond to the key study aims, including the status of forest adoption, the benefits and costs of forest management activities, the challenges and opportunities that exist, and ways of improving forest adoption in the country.

The interview tool included a brief introduction to explain the interview's needs. The specific benefits and costs were drawn from the management responsibilities allocated to identified partners involved in the 'adopt-a-forest' initiative as contained in their respective framework for collaboration documents. The management responsibilities of each partner were to maintain and protect a natural forest area within a public forest in Kenya.

Examples of key questions asked regarding forest adoption during the face-to-face interview were: In your opinion, are forested ecosystems important for the

sustainable development of Kenya? Does forest adoption as an intervention for sustainable forest management bestow benefits to partners involved in adoption? Does forest adoption bestow some costs to the partners involved in forest management? How can benefits from forest adoption be enhanced for sustainable development in Kenya? Does forest adoption as an intervention for sustainable forest management bestow benefits to partners involved in adoption? Does forest adoption bestow some costs to the partners involved in forest management? How can benefits from forest adoption be enhanced for sustainable development in Kenya? An opportunity was also provided for each interviewee to provide additional information related to the subject of the study. Interview responses were recorded through note-taking. The detailed interview tool is shown in Appendix 2.

Secondary data collection

The process of secondary data acquisition involved visiting official websites and review of documents sourced from the office at Kenya Forest Service Headquarters. In order to search key literature on the study topic, key search databases, including; JSTOR, ScienceDirect, and Web of Science, were consulted through the Google search engine. Keywords such as "forest adoption," "perceived benefits," and "stakeholders." Where necessary, Boolean operators "AND," OR, "NOT" were used to refine searches with synonyms or related terms that could help broaden your search. For example, the terms "forest adoption AND perceived benefits AND stakeholders" were used during one of the searches.

With regard to secondary data from Kenya, a number of documents were consulted. In particular, the progress report on implementing the Presidential Directive on 10% tree cover provided most of the quantitative data used in this report. Other key documents consulted are highlighted in Table 4. These documents provided key contextual data and information to this study.

Document	Key findings	Source
Constitution of Kenya, 2010	Establishes the three organs of government which are meant to coordinate the development of policies and strategies for forest management. Article 69 provides for the need for collaboration toward achieving 10% tree cover in the country.	Kenya Law Reporting Website
Vision 2030	Establishes the social pillar as the foundation that drives successful partnerships for inter-agency collaboration in forest management	Vision 2030 website
Forest Conservation and Management Act, 2016	Establishes the regulatory framework and infrastructure for sustainable management of forests through participatory approaches ad establishes institutions for managing all forests for socio-economic development.	Kenya Law Reporting Website
Draft Forest Policy, 2020	Provides policy direction on the creation, management, and utilization of forest resources by providing opportunities for inter-agency collaboration	Kenya Law Reporting Website
Environmental Management and Coordination Act, 1999	It is the framework of environmental protection law that sets the parameters for innovations toward environmental sustainability in the country, including inter-agency collaboration.	Kenya Law Reporting Website
Forester Magazine of 2021	Outlined progress made on implementing the Presidential Directive on 10% tree cover where adopt-a-forest is listed as one of the interventions	KFS Office, Nairobi
Template for Framework of Collaboration	Establishes the legal process for delivery of Inter-Agency Collaboration in forest restoration through the Forest Adoption framework. It spells out the forest management activities, roles, and responsibilities that are assigned to agencies participating in forest adoption.	KFS Office, Nairobi
National Strategy for Achieving and Maintaining 10% Tree Cover	Highlights the Presidential Directive on increasing tree cover in the country	KFS Office, Nairobi
The Public-Private Partnership Act, 2013	Establishes the wider framework from private sector participation in national development projects	Kenya Law Reporting Website

Table 4: Key Documents Consulted

2.3. Data Analysis

This study was carried out with the understanding that the benefits and costs analyzed can be either tangible or intangible, direct or indirect, fixed or variable. Tangibility refers to the ease of measuring the costs or benefits in this study. Costs that are known to exist but cannot be quantified accurately are referred to

as intangible costs. Sometimes, intangible costs can be recognized but are challenging to measure. In other cases, intangible costs may be hard to even identify, and in such instances, decision-makers often tend to handle them irrationally by disregarding them. Nevertheless, in this study, the broad facets of sustainable development, including social, economic, and environmental, were used to classify and analyze the interviewee responses on the perception of forest management costs and benefits by partners. Where numerical data was obtained, the data was exported to an Excel spreadsheet and analyzed to generate the visualizations used in this study. Later, the results were evaluated on the backdrop of findings from reviewed literature to draw the policy implications of this study.

3. Results

3.1. Respondent characteristics

The study achieved a 100% response rate from the targeted 20 interviewees. Half of the respondents (50%) were from NGOs and private sector organizations. Government Ministries Departments and Agencies had 30% representation, while individuals had 20%, as shown in Figure 2.

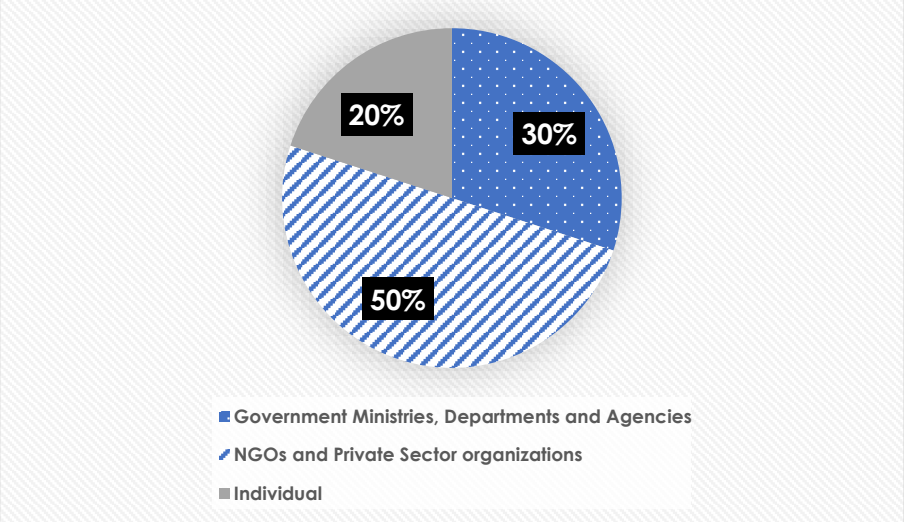

Figure 2: Interviewee Classification

The results of the perception of interviewed partners on the key benefits of the 'adopt-a-forest' initiative are shown in Table 5.

Respondent	Organization	Perceived Benefit
A	Government	Improved communication and coordination among stakeholders
B	Government	Improved knowledge and sharing of expertise on implementing forest management activities
C	Government	Bridging of the forest conservation funding gap
D	Government	Bridging of the forest conservation funding gap
E	Government	Improved knowledge and sharing of expertise on implementing forest management activities
F	Government	Bridging of the forest conservation funding gap
G	NGO	Bridging of the forest conservation funding gap
H	NGO	Bridging of the forest conservation funding gap
I	NGO	Improved communication and coordination among stakeholders
J	NGO	Improved communication and coordination among stakeholders
K	NGO	Improved communication and coordination among stakeholders
L	NGO	Improved knowledge and sharing of expertise on implementing forest management activities
M	NGO	Improved knowledge and sharing of expertise on implementing forest management activities
N	NGO	Bridging of the forest conservation funding gap
O	NGO	Bridging of the forest conservation funding gap
P	NGO	Bridging of the forest conservation funding gap
Q	Individual	Bridging of the forest conservation funding gap
R	Individual	Improved communication and coordination among stakeholders
S	Individual	Improved communication and coordination among stakeholders
T	Individual	Improved knowledge and sharing of expertise on implementing forest management activities

Table 5: Perception of the key benefits of forest adoption Partnerships

The results on the perception of challenges by adoption partners are shown in Table 6.

Respondent	Organization	Perceived Challenge
A	Government	Lack of a natural resource benefit-sharing policy
B	Government	Lack of a robust monitoring and evaluation protocol
C	Government	Lack of data on the number of people lifted from poverty
D	Government	Lack of a robust monitoring and evaluation protocol
E	Government	Bureaucratic and administrative challenges
F	Government	Lack of a robust monitoring and evaluation protocol
G	NGO	Lack of a natural resource benefit-sharing policy
H	NGO	Lack of a natural resource benefit-sharing policy
I	NGO	Lack of a natural resource benefit-sharing policy
J	NGO	Lack of a robust monitoring and evaluation protocol
K	NGO	Limited political goodwill
L	NGO	Lack of a natural resource benefit-sharing policy
M	NGO	Lack of a robust monitoring and evaluation protocol
N	NGO	Lack of trust and communication among partners
O	NGO	Lack of a natural resource benefit-sharing policy
P	NGO	Resistance to change and adaptation to new management approaches
Q	Individual	Power imbalance and unequal participation of stakeholders
R	Individual	Inadequate financial resources and lack of data on the number of people lifted from poverty
S	Individual	Difficulty in measuring and evaluating intangible conservation benefits such as soil conservation
T	Individual	Lack of a natural resource benefit-sharing policy

Table 6: Perception of key challenges facing forest adoption

The results of the perception of adoption partners on ways of improving the 'adopt-a-forest' initiative are shown in Table 7.

Respondent	Organization	Perceived Ways of improving forest adoption
A	Government	Sharing forest management information and data among stakeholders.
B	Government	More studies on the real driving motive behind the growing forest adoption are needed
C	Government	More studies on the real driving motive behind the growing forest adoption are needed
D	Government	More studies on the real driving motive behind the growing forest adoption are needed
E	Government	Developing clear and effective communication channels
F	Government	Encourage participatory monitoring of forest management activities
G	NGO	Incorporating traditional knowledge and local perspective in forest adoption
H	NGO	Create incentives for collaboration through the adoption
I	NGO	More studies on the real driving motive behind the growing forest adoption are needed
J	NGO	More studies on the real driving motive behind the growing forest adoption are needed
K	NGO	Facilitating joint decision-making and problem-solving
L	NGO	Establish a robust monitoring and evaluation framework
M	NGO	Establish a robust monitoring and evaluation framework
N	NGO	Create incentives for collaboration through the adoption
O	NGO	Create incentives for collaboration through the adoption
P	NGO	Facilitating joint decision-making and problem-solving
Q	Individual	Facilitating joint decision-making and problem-solving
R	Individual	More studies on the real driving motive behind the growing forest adoption are needed
S	Individual	More studies on the real driving motive behind the growing forest adoption are needed
T	Individual	Create incentives for collaboration through the adoption

Table 7: Perception of key improving forest Adoption in Kenya

4. Discussion

Results from this study indicate that 'adopt-a-forest' in Kenya has established a multidimensional and integrated approach that has improved forest management in Kenya. The inter-agency collaborative framework is breaking down forest management 'silos' by fostering interagency collaboration, yielding multiple positive social, economic, and environmental impacts on Kenyan society. Results show that up to 49 MDAs, NGOs, and private sector agencies participated in implementing the 'adopt-a-a forest' initiative that arose in 2018 following a Presidential Directive on the need to address the triple environmental threats being experienced in the country (Table 1). Up to 55% of the agencies comprised government Ministries, Departments, and Agencies that adopted 12% of the entire forest area adopted in the country between 2019 and 2021. Approximately 50% of the total seedlings planted were planted by MDAs, who channeled up to 33.9% of direct financial contribution into forest restoration between the years 2019 to the year 2021. This investment and support in forest conservation and management should improve the country's ecological integrity of forest infrastructure.

The adoption efforts are being promoted against the backdrop that forests in Kenya are under the constant threats of deforestation and degradation due to the growing human demands in the country. For instance, in 2019, Kenya's population was 47 million people and is expected to grow to 60 million by 2030 (Kenya's NDC, 2020; Draft Forest Policy, 2020). Therefore, these forest adoption results demonstrate that collaborative initiatives such as forest adoption, which promote investment in forest conservation and management, are part of the solution for addressing the triple planetary environmental threats currently facing many countries across the globe. This study believes that programs like forest adoption in Kenya should be expanded, replicated, and its lessons shared widely among countries that have made significant commitments and support for forest and landscape restoration (FLR) by 2030 through initiatives like the Bonn Challenge, New York Declaration on Forests, Aichi Target 15 of the Convention on Biological Diversity (CBD), and Sustainable Development Goals (SDGs), particularly SDG 15 on Life on Land, which aims to achieve land degradation neutrality by 2030. These countries have a good opportunity to meet their goals by learning from Kenya's successful forest adoption case.

Moreover, even though results have shown fewer private sector and NGO agencies were participating in forest restoration between the years 2019 and 2021, these agencies have adopted the most forest area (88% of the entire adopted area)

and had the highest direct financial contribution of 66% of the total contributions by agencies between 2019 and 2021. This financial support and investments arising from 'adopt-a-forest' have boosted the overall forest management efforts in the country. The key informants consulted in this study agree with these findings. From Table 5, up to 45% of interviewees composed of both Government, Ministries, Departments, NGOs as well as Private organizations, and individuals attest to the fact that one of the key perceived benefits of 'adopt-a-forest' is bridging the forest conservation and management funding gap. These findings agree with studies by FAO (2022) and Löfqvist and Ghazoul (2019), who found that private financing in forest management is important and is rising in various regions of the world. As such, this paper calls for improving the working relationships between the government and the private sector in pursuing 'adopt-a-forest' as a tool for sustainable development. Other key benefits of adoption, as listed by interviewees, include; improved communication and coordination amongst partners and sharing of knowledge and expertise, amongst other benefits. However, reviewed literature also shows that evaluating stakeholder sensitivities and perceptions of benefits and costs is an arduous task because various factors affect forest management outcomes in collaborative arrangements, such as staff turnover and capacity, local leadership, and collaborative history among the partnering agency's leadership and commitment at the highest political and bureaucratic levels, an effective governance structure, a combination of top-down and bottom-up approaches to execution, presence of a collaborative culture, mutual communication, mutual trust, inclusiveness, benefit to all, a clear mission, objectives and sense of belonging (Andereck, 1997; Siddiquee et al., 2022; Table 5). Whereas this study calls for further investigations into these factors in the case of forest adoption in Kenya, this study also lauds the ongoing positive attempts across the globe to use the concept of cost-benefit analysis in monetizing the benefits and costs of collaboration which should also extend to emerging concepts such as adopt-a-forest.

Results from the literature review also indicate that the Kenyan government is desirous of enhancing forest adoption relationships and has developed the requisite legal and policy environment for fostering collaboration, as highlighted in Table 1, which provides a legally binding framework for 'adopt-a-forest' in the country. The framework outlines the rights, roles, and responsibilities of parties engaged in forest adoption. The range of activities from the implementation of the existing forest adoption includes; collaboration in the coordination of multi-agency forest security operations geared towards protecting the forest boundary integrity, especially through forest reclamations, tree planting, rehabilitation of

degraded forest areas, infrastructural development support, tree seedlings production, joint restoration of arboreta and green spaces, forest fence installation, forest fire response, community scout support among other activities (Forester 2021). However, the tree planting activity appears to be the most dominant activity being actively implemented. It is also interesting to note that Private Sector Agencies and NGO organizations are actively involved in landscape restoration that supports community livelihoods and rural development, such as the provision of employment to community scouts and providing contracts for maintaining already planted sites to community groups. These actions contribute directly and indirectly towards enhanced forest security, protection, and livelihood improvement and Kenya's socio-economic development in line with the development aspirations enshrined in key policy documents to achieve and maintain 10% tree cover in the country (Table 4). These collaborative benefits, albeit not holistically quantified in monetary terms, agree with the finding from reviewed literature which shows that collaboration in forest management enhances costs and information sharing, thereby providing the opportunity to optimize the logistics of activities implementation (World Bank 2018; Siddiquee et al. 2022; Gereghty 2012; Bardach 1996; Andereck 1997). It is worth noting that under forest adoption, the choice of activities largely depends on government policy and priorities, the nature of the forest, the needs of the collaborative agency or party, and the needs of the adjacent forest communities, amongst others. Kenya Forest Service provides the technical guidance required to actualize the collaboration by establishing a joint technical and management committee with representation from both parties.

Results also indicate that in the FY 2019/2020 and 2020/2021, MDAs, NGOs, and private sector agencies have implemented and distributed forest adoption activities across various counties and regions in the country (Figure 1). Overall, Nairobi and Kiambu counties had the highest number of MDAs (each with 6) participating in forest adoption, while ten counties, Elgeyo Marakwet, Kericho, Kisumu, Kwale, Murang'a, Turkana, Uasin Gishu had a total of one MDA participating in the implementation of forest adoption. Nairobi (6), Kiambu (5), and Kajiado had the highest participation of private sector and NGOs in forest adoption, while Embu, Kisumu, Elgeyo Marakwet, Meru, Lamu had one non-state agency participating in the implementation of forest adoption activities. Nyeri county had the highest total adopted forest area by MDAs in the two financial years (957.5 Ha), and Nandi, Uasin Gishu, Murang'a, and Kwale had the lowest area adopted each with 1 Ha in the two financial years. In the non-state category, Meru and Narok have the highest adopted area measuring over 5,000 Ha. Meru county experienced the highest tree seedling planting. Meru

county had the highest MDA financing of forest adoption activities. Laikipia county had the highest non-state agency funding for forest adoption activities in the two financial years. These observations indicate the potential for forest adoption to address forest management challenges by breaking down 'silos' and expanding the livelihood options for Kenyan society. It is evident from these findings that interagency collaboration is beneficial in helping the government to respect operational, social, and environmental constraints, as alluded to by Siddiquee et al. (2022). Various factors may likely have contributed to the success of forest adoption in Kenya. Still, the enabling environment provided by key policies documents, the need to join the global community in addressing the triple existential planetary crisis posed by climate change, biodiversity loss, and pollution, the Presidential Directive of 2018 where all government agencies were required to set aside 10% of their corporate social responsibility budget for forest conservation and management, availability of research evidence on good partnerships from participatory forest management as well as the deliberate involvement of stakeholders in forest management by the KFS leadership in the country appear to be the core factors behind the growth of forest adoption.

However, more studies are required to document the real driving motive behind the growing forest adoption by individuals, MDAs, NGOs, and Private sector agencies. There is speculation that some agencies could be positioning and selling themselves globally as 'green prophets' with unknown interests. Moreover, given that the country has already implemented participatory forest management where adjacent forest communities are already partnering with Kenya Forest Service to conserve and manage forest resources. There is no formal natural resource benefit-sharing law, so evaluating the community perception towards forest adoption by public and private agencies will be interesting since this initiative introduces a third partner to the existing KFS-community partnership. Such a study will help to build synergy amongst collaborating parties for greater forest protection, conservation, and management.

Results also show that interagency collaboration through forest adoption is unequally distributed across counties and regions (Figure 1). Results show that some counties have as many as six agencies implementing forest adoption while most have none. If the status quo remains, forest adoption is likely to exacerbate unbalanced regional development with far-reaching negative equity outcomes despite the good intentions of forest adoption. There is thus the need for studies that evaluate the impacts of collaboration in detail by applying newer analytical tools such as sequential power analysis, which examines collaboration in three phases to determine whether interagency collaboration is increasing mutual trust

and stronger relationships amongst collaborating agencies, enhancing balanced regional development, enhancing social equity through sharing benefits, costs and information sharing thereby providing the opportunity to optimize the logistics of forest management in Kenya or not. This study is important because reviewed literature has shown that Kenya has not had a good history of stakeholder collaboration and involvement in forest management (Draft Forest Policy, 2020). Therefore, it will be important for the country to implement a robust mechanism for monitoring and evaluation where the achievements on key interventions pursued by parties are evaluated and precise indicators developed. Such monitoring of activities for sustainability will demand the need for joint planning of programs, data acquisition on benefits and losses of forest restoration programs on parties, sustainable financing of activities, an evaluation of innovations and technologies being deployed by parties, evaluation of challenges, and the disaggregated evaluation of socio-economic impacts of forest adoption on forest adjacent communities for instance, the impact of adoption on community employment opportunities, livelihood enterprises, opportunities for training amongst other dimensions of social sustainability.

However, the lacks of a robust monitoring and evaluation protocol which ought to highlight the kind of social, economic, and environmental variables that should be monitored in the course on implementation and the lack of a natural resource benefit sharing policy are the key challenge affecting forest adoption in Kenya as evidenced by the totality of interview responses in Table 6. Monitoring and evaluating adoption initiatives is crucial for understanding the complex factors involved in interagency collaboration by tracking implementation and outcomes systematically and assessing program effectiveness. Monitoring allows for determining when adjustments may be needed and provides a basis for modifying interventions and evaluating the quality of activities. It also provides decision-makers, managers, planners, policymakers, and donors with the information they need to make informed choices about program operations. It also provides data to guide strategic planning, design programs, and allocate resources effectively. Besides monitoring, study respondents have also suggested more studies on forest adoption, creating more incentives to attract the private sector besides incorporating traditional knowledge and local perspective in forest adoption. The use of incentives to promote forest adoption as a tool for sustainable forest management has been lauded in reviewed literature such as FAO (2022). Whereas this study agrees with these findings, especially on using forestry incentives such as tax cuts and other exemptions, it is important to generate new knowledge and understanding of forest adoption by testing these improvement strategies using specific case studies.

5. Conclusion and Recommendations

Forest resources are important strategic assets for their economic, environmental, social, and cultural values. In Kenya, forests constitute an important natural capital that provides many important ecological services needed for human well-being and sustainable development. However, these resources are constantly threatened by degradation and loss due to multiple interrelated environmental, economic, and social challenges, especially the growing demand for forest products occasioned by population growth. As such, many policy and legislative reforms have been embraced with deliberate attempts to try new innovative approaches for promoting sustainable forest management, such as forest adoption are increasingly being tested to generate a new understanding of their practicality on various scales.

Results from Kenya have shown that 'adopt-a-forest' as a multidimensional and integrated approach for improving forest management in the country has many social, economic, and environmental benefits to partnering stakeholders. The initiative is helping Kenya break down the 'old' forest management 'silos' and challenges by fostering interagency collaboration, yielding multiple benefits to Kenyan society. Government Ministries, Departments, Agencies, the Private sector, and NGOs have pooled resources for forest conservation and management between 2019 and 2021. Approximately 50% of the total seedlings planted were planted by MDAs, who channeled up to 33.9% of direct financial contribution into forest restoration between the years 2019 to the year 2021. Even though fewer private sector and NGO agencies were participating in forest restoration between the years 2019 and 2021, these agencies have adopted the most forest area (88% of the entire adopted area) and had the highest direct financial contribution of 66% of the total contributions by agencies between 2019 and 2021. These supports have boosted the overall forest management in the country.

However, interagency collaboration in forest adoption appears to be unequally distributed across counties and regions in the country. Results have shown that some counties have as many as six agencies implementing forest adoption while a majority of other counties have none. If the status quo remains, forest adoption is likely to exacerbate unbalanced regional development with far-reaching negative equity outcomes despite its good intentions. There is thus the need for studies that evaluate the impacts of this collaboration in detail by applying newer analytical tools such as sequential power analysis to determine whether interagency collaboration is increasing mutual trust and stronger relationships amongst collaborating agencies, enhancing balanced regional development,

enhancing social equity through sharing benefits, costs and information sharing thereby providing the opportunity to optimize the logistics of forest management in Kenya or not. Moreover, besides the need for a robust monitoring and evaluation framework with clear indicators, more quantitative studies are required in order to document the real driving motive behind the growing forest adoption by individuals, MDAs, NGOs, and Private sector agencies.

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