

Assessing Constraints to Sustainable Community Forestry Programmes in Kenya a Case of
Karura Community Forest Association

by

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In accordance with Daystar University policies, this thesis is submitted in partial fulfillment of requirement for Master of Arts degree

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I declare that this thesis is my original work and has not been submitted to any other college or university for academic credit.

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Strength, courage, determination and good health during the course of my studies has been a reality because of God's mercies upon me. In appreciation, I take this opportunity to thank Him for unconditional love. Recognizing and appreciating the role of family in every progress in life, a clear demonstration that I have always been accorded on the continued support, encouragement and prayers, I take this opportune time to relay many thanks to them.

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LIST OF ABBREVIATIONS AND ACRONYMS

CBFM	Community Based Forest Management
CF	Community Forestry
CFA	Community Forestry Association
CFAs	Community Forestry Associations
CFM	Community Forest Management
CFP	Community Forestry Program
CIFOR	Centre for International Forestry Research
FKF	Friends of Karura
KEFRI	Kenya Forestry Research Institute
KFS	Kenya Forest Service
KWTA	Kenya Water Towers Agency
ME&F	Ministry of Environment and Forestry
NEMA	National Environment Management Authority
PFM	Participatory Forest Management

ABSTRACT

Despite Community forestry being emphasized in different parts of the world, measures to ensure its sustainability beyond the implementation period is proving to be a challenge. Similarly, several community forestry programmes have and continue to be implemented in various countries with varying degrees of success and failure in intended program outcomes. This study sought to assess constraints to sustainable community forestry programmes using Karura Community Forest Association in Nairobi County as reference point. The study adopted a descriptive research design. Stratified random sampling was adopted to select members of the community forestry association who responded to the study questionnaires while purposive sampling was used in selecting key informants from other stakeholders. A sample size of 109 respondents obtained from two groups; Friends of Karura CFA Members and relevant government Agencies was used for data collection. Statistical Package for Social Science (SPSS) version 26 was used for data analysis. Findings indicated that 73(81.1%) of the respondents agreed that there is need to address forest/ ecological degradation in the country, 15(16.7%) were on ecological degradation, 2(2.2%) were of the contrary opinion and 79(87.8%) of the respondents agreed that the creation of enabling policies and legislations are pivotal in protecting the environment, and sustainable funding to facilitate sustainability programmes, while 11(12.2%) were neutral on the statement. In view of this, the study recommends that project initiators to collaborate and provide involvement opportunities for community members since their participation is instrumental in finding solutions necessary for supporting and implementing sustainable community forestry programmes.

CHAPTER ONE

INTRODUCTION AND BACKGROUND

Introduction

Globally, natural resources such as by forests continue to be degraded, a factor that in turn affects their distribution, quality and benefits emanating from them. According to Elías (2015), the heightened speed at which the forest cover around the globe is getting depleted has necessitated a number of countries and other stakeholders throughout the world to choose community forestry as a pivotal strategy for sustainable forest management. Roberts and Gautam (2003) noted that community forestry is premised on the trust and that communities living around forests have a meaningful and pivotal role to play in making decisions affecting their surrounding forests. It is perhaps due to the above that today among many countries around the world, the involvement of the local residents and communities in the management, conservation and utilization of forest and their resource is increasingly becoming a common practice.

In respect to the above highlighted issues, community forestry is thus regarded as a salient practice in sustainable forest management as it invokes the power, ability, capacity and authority of community members in decision making on forest resources all over the world (Benkenstein, Hengari, & Mbongo, 2014). This chapter focuses on the background to the study, problem statement, objectives of the study, research questions, justification, significance, scope, limitation and delimitation and of the study and the definition of terms.

Background of the Study

Rebugio, Carandang, Dizon, Pulhin, Camacho, Lee, and Peralta (2009) showed that the regulatory framework that entrenches community forestry, which entails legislations,

rules, policies, procedural systems, implementation manuals and guidelines have been developed in most countries that have adopted devolved forest management practices and approaches. With the backing of regulatory and legislative structures, communities living around forests are currently being granted forest management and user rights as revealed by the evolving number of community forest management groups (CFMGs) or community forest associations (CFAs) that are involved in the design, planning and implementation of different types of community forestry strategies, programmes and projects (Innes & Tikina, 2017; Koech, Ongugo, & Mbuvi, 2009).

The shift from government centralized forest management system to the involvement of local communities comes amidst the growing realization on the obligation and need for the conservation and management of forest resources. This also entails securing and strengthening the livelihoods of the rural and forest communities. As a result, a number of developing countries are pursuing and implementing different types of decentralized forest management which put more emphasis on the involvement of the local people. According to Babili and Wiersum (2010) a variety of terms have been used to describe the inclusion of local communities in forest management and such names include community forestry, collaborative forest management (CFM), participatory forest management (PFM), decentralized forest management, community-based forest management (CBFM) and joint forest management (JFM) among other common terms (Babili & Wiersum, 2010; Cusack, Hodgdon, & Montagnini, 2002; Mainka, McNeely, & Jackson, 2005).

Community forestry is hinged on the idea and belief that, the inclusion and involvement of the local community in forest management is absolutely necessary for sustainable management and utilization of forest resources since the resources are being

taken care of by people who are close to the resource and have a strong and committed vested interest in ensuring survival (Jong et al., 2010). Community forestry and engagement of local communities in forest management is increasingly being established and implemented through community forestry programmes. Community forestry programmes in parts of the world can therefore be traced to the decentralized forest government system that shifts the authority and power to manage forest resources from central governments to local governments and communities (Buffum, 2012).

The decentralized forest government system is underpinned by community forestry as a practice. As a result, many countries across the world have either established or are in the process of initiating changes to their forest management policies, guidelines and legislations that institutionalize and promote community forestry programmes. Therefore, community forestry programmes can be regarded as a government-approved forest management practice that engages and involves the direct users of forest resources in decision-making processes, development and implementation of forestry management activities an (Nath, Jashimuddin, & Inoue, 2016).

Most developing countries in the Asian Continent and the Pacific introduced various community forestry programmes as an intervention to the rampant damage and loss of biodiversity, frequent floods, droughts, and landslides, soil erosion and siltation. Other countries in the region including Nepal, India, Bhutan and Bangladesh have implemented a number of community forestry programmes with varying degrees of successful outcomes (Nath, Jashimuddin, & Inoue, 2016). However, it is important to point out that in all other countries in the world, Nepal is considered as the pioneer and the leading exemplar of community forestry programmes.

In Latin America, a notable body of research studies have revealed that enhanced environmental and improved livelihood outcomes have been attained as a result of the implementation and promotion of various community forestry programmes (Elías, 2015; De Jong, Cornejo, Pacheco, Pokorny, Stoian, Sabogal, & Louman, 2010; Pokorny & Johnson, 2008). In Nordic countries such as Finland, Sweden and Norway the need to empower communities living around forests and improve forest management and conservation has led to the implementation of various community forestry programmes (Mainka, McNeely, & Jackson, 2005).

According to the Center for International Forestry Research (CIFOR, 2005), in Zimbabwe and Botswana, there are different types of community forestry programmes that are majorly focusing on wildlife conservation. The communities involved have programmes that enable them protected the animals from outside hunters thereby enhancing the population of wildlife thus promoting tourism. With regards to Central Africa, Cameroon has an established community forestry program that is structured to give authority to communities harvest and sell timber commercially.

Other countries African such as Tanzania, Mozambique and Mali have also implement a variety of community forestry projects, programmes, and policies that are geared towards the recognition of the rights of communities over forest resources (Babili & Wiersum, 2010). In Tanzania, community forestry is one of the notable options and strategies for managing forest resources. For instance, in the Miombo Woodlands areas, local communities play active role in the management of wildlife resources and also in the generation and sharing of the resultant benefits (Campbell, 1996).

In Kenya, the devolution of authority and rights to local communities over forest management and conservation is now well on course in the form of community forestry practice. Community forestry as articulated through the forest management and conservation act 2016 has been put in practice via community forest associations (CFAs). Kenya Vision 2030 (the economic and development plan for Kenya covering the period 2008 to 2030) also acknowledges the unique opportunities that forestry sector provides in the realization of poverty reduction aspirations (National Environment Management Authority, 2011; Ministry of Environment and Natural Resources., 2016).

Statement of the Problem

Forests in Kenya are increasingly under threat due to poor forest management and deliberate change of forests to range or agricultural land among other factors (Wamae, 2011). However, community forestry programmes have the potential to save forests from further degradation, restore degraded forests, increase tree cover, and enhance the contribution of forestry sector to socio-economic benefit to communities as indicated by De Jong et al., (2010). There is a general consensus in the forestry sector that if community forestry programmes are practiced and implemented correctly, they can be sustainable (Buffum, 2012). Although community forestry as a practice is currently expanding, ensuring its sustainability beyond the implementation period has proved to be a challenge (Arwida, Maharani, Waty, & Duchelle, 2017). Consequently, the immense need to increase and ensure sustainability of community forestry programmes is a headline recommendation from various studies focusing on community forestry (Buffum, 2012; Elías, 2015; De Jong et al., 2010).

A number of community forestry programmes have and continue to be implemented in various countries with varying degrees of successful outcomes. Additionally, although

considerable funding is spent on such programmes but the expansion and sustainability of community forestry programmes continue to encounter certain inherent constraints and problems (Innes & Tikina, 2017). It is hence important to find and suggest some policy implications and strategies for sustainability of various community forestry programmes. Further, studies by Kimutai and Watanabe (2016) and Wamae (2011) have shown that after a decade of community forestry implementation in Kenya (since the enactment of Forest Act 2005), it is still unclear the extent to which community forestry programmes are sustainably managed and what factors hinder the success of these programmes.

Purpose of the Study

The study aimed at assessing the constraints to sustainable community forestry programmes using Karura Forest Association as a case study.

Objectives of the Study

- i. To examine factors necessitating the adoption of community forestry programmes in Kenya
- ii. To establish the socio-economic benefits of community forestry programmes
- iii. To assess the constraints to sustainable community forestry programmes
- iv. To suggest recommendations to enhance sustainability of community forest programmes in Kenya

Research Questions

- i. What factors contributed to the adoption of community forestry programmes?
- ii. What were the socio-economic benefits of community forestry programmes?
- iii. What were the challenges to sustainable management of community forestry programmes?

- iv. What recommendations can be made to enhance the sustainability of community forestry programmes?

Justification of the Study

The dwindling forest covers, erratic rainfall pattern and distribution and climate change impacts are realities in today's world. Furthermore, the receding forest covers continue to exacerbate siltation and sedimentation of rivers that subsequently leads to water scarcity and drought over time. While forest covers keep on reducing in many parts of the world, there is, at the same time, a growing realization that forests are important in enhancing and strengthening the livelihoods of communities living around forests.

In view of the understanding that forests and forest resources are critical in addressing deforestation, climate change, silting of rivers, changing weather patterns and community livelihoods, undertaking this study is necessary since it may play an integral role in helping to contain further damage to forests and provide other ways and means for judicious and prudent use of forest resources without compromising the needs of current and future generations. This is premised on the fact that the result of this research study will be used to inform sustainable forest management policies and strategies.

The importance of forest resources is known and cannot be underestimated. Forest resources when managed sustainably and equitably have huge potential of producing various social, economic, and environmental goods and services that in turn provide optimal benefits to citizens. While some impressive gains have been made in the implementation of community forestry programmes, unfortunately there are certain challenges and issues that are expected to suppress sustainability, longevity, future replication and expansion and further hamper the realization of the overall goals and objectives of community forestry

programmes (Assuah, 2014; Hajjar et al., 2016). It is therefore important to carry out the study to understand the critical factors that influence the sustainability and success of community forestry programmes in Kenya.

Significance of the Study

The findings of this study would help to create an understanding on the opportunities and constraints of community forestry programmes in Kenya which may provide solutions that would ensure sustainable forest management by addressing the limiting factors of community forestry programmes.

Recognizing the pivotal role of community forestry programmes on forestry ecosystems, the study would be of benefit to Ministry of Environment and Natural Resources, Kenya Water Towers Agency, Kenya Forest Service, National Environment Management Authority (NEMA), county governments, community forest associations (CFA's), forest conservation organizations, local communities like forest dependent communities, international organizations and the nation (Kenya) at large in the formulation and implementation of sustainable policies and strategies on forest rehabilitation, conservation and management.

Finally, this study may serve as reference for future research on the environmental conservation and sustainable development and for researchers, students, sustainable development practitioners and donors seeking to further understand the opportunities and constraints for sustainable forestry program in Kenya in across the globe.

Assumption of the Study

1. There were constraints to sustainability of community forestry programmes and therefore, identification of these challenges was important for adoption and realization of strategies and solutions.
2. The respondents were aware of community forestry programmes and knowledgeable on issues pertaining to community forest management
3. The target respondents would respond to the study questions truthfully

Scope of Study

The study sought to examine constraints to sustainable community forestry programmes. It targeted Karura Forest ecosystem in Nairobi Kenya. Karura Forest was chosen since it has well established CFA and different types of community forestry programmes have been implemented or are in the process of being implemented (Friends of Karura Forest, 2016). The study targeted members of the Karura Forest Association in concert with other stakeholders within the study area, personnel in government departments and private sector stakeholders whose operations focus on the forest sector. Management of the forest is through leadership of Kenya Forest Service and partnership with Friends of Karura CFA members.

This study was carried out in Karura Forest Reserve. Karura Forest Reserve is an urban forest being managed by Friends of Karura Community Forest Association, in partnership with Kenya Forest Service (KFS), the government agency in charge of managing and conserving forest resources in the country. Karura Forest Reserve is located to the north of Nairobi City County. This is an urban forest that is surrounded by a dense population including two informal settlements and several affluent settlement areas. The

forest covers has an expansive area covering 1041.3 hectares and it forms part of the Nairobi River basin (Kenya Forest Service, 2015).

Limitations and Delimitations of the Study

The study anticipated some limitations and countered the same appropriately. The first limitation was that the respondents were unwilling and restrained in providing information with the notion that such information required would be used to harass and threaten them or portray a negative picture of the organization. The researcher secured an introductory letter from the University and approvals from relevant government agencies (NACOSTI), assuring the respondents that any data and information given was to be treated with confidentiality and was to be used solely for academic purposes. Similarly, the researcher explained the reason, purpose and value of the research study to the respondents and they were satisfactorily informed of the type and nature of information the researcher expected from each of them.

Getting to the respondents' places of work and organizations was also a challenge, particularly with regards to creating and securing time with the management to supply the respondents with the research tools and materials. In this case, the researcher secured and used permit letters in accessing the institutions and planning and scheduling on meeting times.

Another limitation was insecurity in the forest during data collection. The researcher and researcher assistants were nervous to carry out data collection in the forest due to insecurity issues. They feared being attacked by wild animals like bushbucks and bush pigs. To counter this, the researcher requested the forest security guards to facilitate security and safe stay during data collection exercise.

The other limitation to the study was the erratic weather conditions in Karura Forest. One way to address this was that the researcher allocated sufficient time for field research by being stationed around the location during the research period. As a result, the researcher was able to gather data that included drop and pick questionnaires and scheduled interviews with the key informants.

Due to the covid19 pandemic crises in the country, there was a challenge to reach out to the respondents. The restriction and guideline from the ministry of health toward curbing the covid19 virus such maintaining social distance, working from home and others brought up challenges in the process of data collections. The researcher managed the limitations by following the guideline from ministry of health of maintain covid19 measures. This gave respondents assurance of their safety. The study adopted the drop and collect technique to distribute the questionnaires. For those who were working from home the researcher used email to get the data from them, the researcher emailed them questionnaire and requested them to respond accordingly. For interviews, the researcher used online meeting apps namely Google meet and Whatsapp video call to conduct interviews in certain occasions.

Definition of Terms

Community forestry: this is explained as a new form of forest management process whereby forestry is being remodeled to take into account with the broadening societal and economic changes (Center for International Forestry Research (CIFOR, 2005). In the context of the current study, the concept has been used in reference to the practice of involving the local community in the management, decision making, benefit sharing, preservation, management, conservation and restoration of forest and forest resources.

Community forest association: this refers to a member of a forest community who may, together with other members or persons' resident in the same area, register a community forest association in accordance with the prescribed legislations (GOK, 2017). In this study it refers to a group of community members authorized legally to manage, make decision, share benefits accruing, protect, conserve and rehabilitate forest and forest resources within their geographical area,

Community forestry program: A joint or participatory management system in which local communities are involved and participate in the day-to-day protection, management and conservation of forest resources (Center for International Forestry Research, 2005).

Stakeholder: for this study, stakeholder is defined as any individual or institutions that have interests in community forestry programmes and also most likely to impact community forestry programmes (FAO, 2017).

Sustainability: For this study, sustainability refers to the capacity to create or sustain a desired set of conditions or things for some time into the future, but not automatically ensuring the same forever (Assuah, 2014).

Sustainable community forestry programmes: Sustainable community forestry programmes are initiatives that support the use, development, conservation, management and rehabilitation of community forests and forest resources under which the social, economic and ecological needs of present and future generations of local community are maintained and enhanced (Social Forestry Division, 2010).

Summary

This chapter has given an introduction and a background of community forestry, community forestry programmes, and their role in local communities' welfare. The

objectives of the study, research questions, justification, and significance of the study have also been discussed. In addition, the scope of study, limitations and delimitations and definition of terms in this study have also been discussed. The next chapter is on literature review.

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CHAPTER TWO

LITERATURE REVIEW

Introduction

Forest degradation and deforestation is leading to significant reduction to the provisioning of critical and valuable ecosystem services and goods from forests (Duguma et al., 2019). Various approaches and strategies aimed at saving forests from further loss have been and continue to be formulated and implemented across the world. In the pursuit to reverse and reduce the current forest degradation trends and support forest conservation and management efforts, community forestry has been singled out as one of the best available alternatives. Community forestry is instrumental in forestry conservation since the practice gives local communities the opportunities and rights to manage the forests and also make decisions on how the forests will be used. As key stakeholders that are greatly affected by forest degradation and deforestation, communities living around forests have been found to play pivotal role in managing and conserving forests.

Community forestry is premised on the proven fact that local people or communities living around forests are better placed to manage and conserve the resources on which they rely on (Arwida, Maharani, Waty, & Duchelle, 2017). And by community forestry being done sustainably, forest conservation can be achieved, deforestation trends reversed, and ecological protection of forests attained. Globally, one major factor determining the success and increased adoption of community forestry include progressive land tenure rights and forest policy reforms that encouraged the involvement of local people in forest management (Wasswa-Matovu & Maphosa, 2011).

This chapter reviews relevant literature related to the study focus of constraints to sustainable community forestry programmes. The literature is reviewed and presented in four thematic areas: rationale for adopting of community forestry, the role of community forestry in enhancing the wellbeing of local communities living around forests, constraints to community forestry, and strategies to improving community forestry. The literature review is categorized into theoretical literature, general literature and empirical literature. Besides, the chapter also presents the theoretical and conceptual frameworks that will guide the study.

Theoretical Framework

Varpio (2020) defined theoretical framework as concepts and premises developed and connected logically and derived from one or more theories that a researcher creates to support a study. Theoretical framework gives a general representation of interconnections and between things in a given phenomenon. In formulating a theoretical framework for a study, the researcher is expected to outline any concepts and theories that will give the basis and justifications of the research, and similarly indicate the nexus between the concepts and theories through logical interrelationships, while at the same time linking the concepts to the study that is being conducted. The theoretical framework underpinning the study is hinged on communicative action theory and sustainability theory.

Communicative Action Theory

Policy decisions are not only based on rational analysis but are also hinged on stakeholders such as the communities need to actively collaborate. As a result of the magnitude of the stakeholders involved in collaborative forest management, user participation especially when government structures are hierarchical is often a challenge. A key question often is

how to meaningfully achieve participation and collaboration between communities and government or related government agencies involved in forest management.

Communicative action as way of changing actions among stakeholders, and in turn producing better partnership is a model that directs the progress towards sustainable forest management. Communicative action theory therefore aims at achieving a mutual consensus, and achieving a common and mutual understanding of norms, behaviors and values and, maintaining relationships through communication (Carter & Gronow, 2005; Puri & Sahay, 2003). Furthermore, proponents of communicative action theory emphasize the need for achieving the same through participatory processes.

Puri and Sahay (2003) identified four sets of conditions that are integral in fostering communicative action, more so, in system development. They include creating of even opportunity to all participants to articulate issues, give suggestions, giving all participants equal chance and right to participate or give or refuse orders, and provide conducive environment for participants ask further questions to seek clarity and guidance. In this study communicative action theory will be used to achieve participation and collaboration between communities and government or related government agencies involved in forest management.

Sustainability Theory

Sustainability refers to the effectiveness of the management approach being implemented to achieve defined goals (Sam & Shepherd, 2011). In general, sustainability should be measured to know whether things are getting better or worse. On the other hand, Mainka, McNeely and Jackson (2005) defined sustainability as the ability to realize or

sustain intended set of conditions or things for some time into the future and not automatically achieving the same forever.

Since community forestry programmes revolve around the sustainable management of both people and resources, it is imperative to consider both institutional and ecological criteria in evaluating the outcome of the management approach. Therefore, for community forestry programmes to be implemented sustainably through forest user groups or associations, then the user groups themselves need to be sustainable and capable of implementing the provision of community forestry operational plan.

Variables with significance influence on the sustainability of community forestry programmes are socioeconomic, and management frameworks (tenure security, clear ownership) among other factors. Examples of environmental and socio-economic key pointers that outlines the overall goals community forestry programmes include forest cover changes and the health and condition of forests, community livelihood changes and changes in biodiversity, income and employment outcomes (Benkenstein, Hengari, & Mbongo, 2014; De Jong et al., 2010; Hajjar et al., 2016)). Consequently, there are other critical variables that can also represent sources of variations associated with sustainability of community forestry initiatives. They include the socio-economic and demographic characteristics of forest user groups, impact of market factors on forests, institutional and legislative factors linked to forest management (Hajjar, et al., 2016).

Sustainability in community forestry programmes is therefore based on various indicators such as forest cover improvement, equity of benefit sharing, increased income, and employment generation. Sustainability theory in this study shall enhance sustainable community forestry program through achievement of socially beneficial, economically viable

and ecological sound results. In summary, the success and sustainability of community forestry programmes should therefore entail the outcome of ecological sustainability, social and financial or economic sustainability through sustainability theory and communicative action theory which works hand in hand to sustain and develop the environment for better livelihoods.

General Literature Review

Fueled by the need to address forest degradation and degradation, community forestry is currently being implemented in several countries around the globe. The main mode of implementation is through community forestry programmes that are being done by communities living around forest areas. Community forestry programmes play significant role in the utilization, conservation, protection and management of forest ecosystems. Despite the promise of community forestry in addressing forest degradation and deforestation, there are constraints in achieving the full potential of community forestry programmes due to unsustainability. This section reviews literature relating to factors contributing to the adoption of community forestry programmes, socio-economic benefits of community forestry program and challenges to sustainable management of community forestry programmes.

Factors Necessitating the Establishment of Community Forestry Programmes

Many studies have shown that the emergence of community forestry programmes is linked to different factors. First, in the national government controlled forest management model, the government of most countries transferred the management of their forests to national entities with the reason that forest-dependent people and communities living around forests were main cause of forest degradation and deforestation, and therefore, an

exclusionary, state controlled, top-down forest management system is required to attain sustainable forest management (Babili & Wiersum, 2010; Mainka, McNeely, & Jackson, 2005). However, such assumption has failed to create the desired outcome in numerous occasions, state authorities frequently ignored or tolerated incidences of illegal forest use thereby leading to uncontrolled forest destruction and weakening of community livelihoods. Therefore, recent forest policy and legislations that reflect support for increased involvement of communities in forest management has been a major contributor towards the emergence of community forestry programmes. According to Elías (2015), the reasons for the promotion of community forestry programmes include the growing need to ensure forests are conserved and managed sustainably, the realization to provide increased and higher equitable livelihood outcomes for involved parties and decreased wrangles between government agencies and forest stakeholders.

As a result, many countries in the world today have considered the inclusion of local community as a critical component towards ensuring sustainable forest resources management. Participatory Forest Management (PFM) is therefore encouraged based on the cognizant nature of the local community's role and need. According to FAO, Participatory Forest Management is a technique aimed at protecting forests with the intention of enhancing the livelihoods of communities who use and benefit from the forest resources (FAO, 2011).

In most countries, the PFM system has been fashioned as community forestry programmes aimed at sustainable management of forest resources. The relationship and advocacy inherent in both Community forestry and participatory forest management approach are in tandem with each other, as both focuses on community involvement in management of forest resources along with improving their welfare. The successful

decentralization of forest management and governance in both developed and developing countries has further entrenched the scaling up of community forestry programmes.

Forests are being degraded throughout the world, and the only practical and viable approach to reversing this trend and achieving sustainability of the biophysical landscape, biodiversity and rural livelihoods by foresters, rural developers and environmentalists is to engage local communities. In both the developed and developing countries, many national governments have now concluded that local governments, communities, and individuals should become more active in managing forests (Pacheco, Andersson, & Hoskins, 2006). Government officials appreciate the role of local institutions in forest governance and they are increasingly transferring forest management and ownership to local communities.

As consistently argued throughout this paper, the environment in which natural resource management decisions are made is constantly growing due to ongoing global trends including interconnectedness of national economies, awareness on environmental and climate change concerns, devolution of government control and management control systems, and the need for secure property rights, and increasing democracy (Thankapann, 2008). One of the viable remedy responses to the highlighted trends is the greater willingness to consider devolve forest management as a suitable alternative to national or state control forest management approach.

A spot check around the world reveals that large numbers of forestry management and conservation activities with elements of participator or local engagement framework are being implemented. Similarly, it is increasingly being recognized throughout the world that community forestry management approaches are instrumental for sustainable forest management (Roberts & Gautam, 2003).

The community forestry management idea argues that in order to conserve forests, it is necessary to provide financial incentives by ensuring the activities and programmes being carried out generate income (Wamae, 2011). According to Roberts and Gautam (2003), the livelihoods of an estimated 300 million communities living around tropical forests depend on them for daily livelihood need. Hence, the relationship of these communities to forests is the perfect opportunity and justification for adopting community or smallholder forestry to improve their well-being and overall livelihood.

The changing of forest land to agricultural land and other land uses is common trend in Kenya. This trend is worrying since the conversion is not only restricted to private land, but also to gazetted government forests (Ongugo, Koech, & Mbuvi, 2009). Furthermore, other factors that are responsible for dwindling forest cover in Kenya illegal logging to meet timber and charcoal needs in the country, high poverty rates that leads to overexploitation and overuse of forest resources, overpopulation, Inadequate and poor enforcement of the longstanding countrywide logging ban and the non-involvement exclusion of forest-dependent communities from the management of their surrounding forests (KFS, 2015; Ongugo et al., 2007). These factors leading to forest degradation in Kenya have reinvigorated the need for proper implementation of community forestry system.

It is important to point out that the global forestry sector has witnessed tremendous changes in the last two decades. In particular, in many countries, there have been many initiatives relating collaborative resource planning and management which include social forestry and community forestry (Kimutai & Watanabe, 2016). The involvement of communities in the management of state-owned or formerly state-owned forest resources has become increasingly becoming common.

Almost all countries in Africa, and many in Asia, are promoting the participation of local communities in the management and utilization of natural forests through some form of participatory or collaborative forest management framework (Mainka, McNeely, & Jackson, 2005). This can be evidenced by the way countries have developed, or are in the process of developing, guidelines and policies to include and anchor participatory forest management changes to national policies and legislation that institutionalize the same. Currently, many developing countries have introduced devolution policies for their natural resource use and utilization. Central to these policies is the position of local communities in natural resource management and conservation.

Across the globe, community forestry has and continues to be implemented through two principal lines of action. First, it is the establishment of guidelines, legal and institutional backing, the development of national forest plans and action plans, the strengthening of governmental agencies involved in forest and environmental management, and decentralization processes to lower tier levels of government (Pokorny & Johnson, 2008).

The second strategy for implementing community forestry is through test projects to demonstrate and ascertain the feasibility of the community forestry programmes. These test projects are usually funded by donors and non-governmental organizations that initially concentrate on the capacity building of local people in sustainable forestry management methods and investments in project equipment and transport logistics (Elías, 2015).

Community forest program has its roots in the practice of local communities taking responsibility to protect their environment. In community forestry, the communities or groups usually are granted semi-autonomous rights over specific forests, including the rights to establish, use, manage, implement, and enforce rules governing access and use of the

forest resources (Center for International Forestry Research, 2005). Such rights may be either be formal legal rights or informal or traditional.

Thankapann (2008) described community forestry as the active engagement of local communities in the management, use and protection of public forest resources and public forests lands. The above definition asserts that community forestry is different from conventional forestry in that, whereas the latter focuses on the timber that emanates from the trees, in community forestry emphasis is first on the welfare of the people and community inclusion and secondly on benefits accrued from the trees (Thankapann, 2008). Community forestry is therefore founded on the belief and aspirations that local residents should play a meaningful role in decisions affecting surrounding forests. This comes in realization that communities are increasingly seeking increased influence on the ways in which local community forests are managed and utilized. Community forestry is hence one way in which sustainable forest management can be realized (Assuah, 2014).

The unique general characteristics of community forestry include the involvement and engagement of communities in decision-making process related to the activities, use and protection of forest resources (Cusack, Hodgdon, & Montagnini, 2002), involvement of indigenous and farmer communities in resource management and customizing forestry operations to suit situations and methods of farmers (Yale Forest Forum, 2002). In the last two decades, nations have developed policies and programmes aimed at re-engaging communities in forest management, governance and decision-making (Kimutai & Watanabe, 2016; Nath, Jashimuddin, & Inoue, 2016).

In countries where community forestry has been introduced as an alternative forest governance and management system, there are various forms of community forestry

programmes that are being implemented. Community forestry programmes adopt a blend of formal and informal community forest management institutions.

In Kenya, the decentralization of forest management to local communities is enshrined in the forest conservation and management act 2016. The forest act 2005 (the precursor of forest conservation and management act 2016) established the Kenya Forest Service (KFS). It stipulated that all forests in Kenya – be they State, local authority, private or provisional forests-are to be managed under the provisions of the forests act. The forest conservation and management act 2016 strongly supports the participation of stakeholders in the conservation and management of the forest resources through collaborative management. The recognition of forest adjacent communities as key stakeholders and users of natural resources is considered vital if successful management is to be attained. The act provides for communities living adjacent to forests to enter into collaborative management agreements with KFS through community forest associations (KFS, 2015).

CFAs are second-level organizations composed of several community based organizations (CBOs) forest-adjacent communities (defined as those situated within five kilometers of the forest reserves) and other actors (Kenya Forest Service, 2015). According to the forest conservation and management act 2016, section 48 (1), a member of a forest community may together with other members or persons resident in the same area register a community forest association under the society's act. According to section 48 (2), an association registered under section (1) may apply to the service for permission to participate in the conservation and management of a state forest or a local authority forest in accordance with the provisions of the act (Government of Kenya, 2017).

All of the important forest regions in Kenya, often referred to as the country's water towers, have at least one registered CFA. Currently, there are over 325 registered CFA spread across the country (Kimutai & Watanabe, 2016). To ensure that communities living around forests are empowered and involved in the phases of planning, policy, decision-making and implementation of various interventions, CFAs have three representatives in the forest conservation committees (FCCs) established within the regional conservancies. Furthermore, section 49 (2) of the forest conservation and management act 2016 gives the CFA the authority and power to the following: collection of medicinal herbs, harvesting of honey, harvesting of timber or fuel wood, grass harvesting and grazing, collection of forest products for community based industries, ecotourism and recreational activities, scientific and education activities, plantation establishment through non-resident cultivation, contracts to carry out silvicultural operations and development of community wood and non-wood forest based industries (Government of Kenya, 2017).

Benefits of Community Forestry Programmes

The rationale for central governments giving authority local communities transferring to manage natural resources such as forests to is to cut costs. Similarly, the aim of such decentralization is to enable local communities to have improved and better access to the resources they need and have greater involvement in making decisions how such resources are used (Pokorny & Johnson, 2008). The assumption is that local involvement should translate to better forest management since they are being overseen after by people who are close to the resource. Through community forestry, there is a paradigm shift from nationalization and centralization of forest management to devolution and decentralization in forest resource management (Ongugo et al., 2007).

It is widely believed that decentralizing the management of natural resources can increase both efficiency and equity. The implication here is that the efficiency and equity benefits of decentralization emanate from democratic processes that give better opportunity and avenues for local institutions and authorities to serve and deliver required services to the local people (Babili & Wiersum, 2010). Efficiency increases are a result of the input from the local people in decision making, better targeted policies and lower transaction. For example, research evidence has shown that local communities people living in the Amazon forests unlike commercial entities operating in the same forests are interested in maintaining their forest resources in the long run, because they depend entirely and directly on its resource, and have because they have zero or limited access to other attractive substitutes to forest resources (Pokorny & Johnson, 2008).

Decentralization of forest management around the globe is being implemented with alternatives strategies often named as variations in many parts of the world has taken many forms and with many names such as participatory forest management (PFM), joint forest management (JFM), community forest management (CFM) and community based forest management (CBFM) (Ongugo et al., 2007). Similarly, the human population growth and shifting patterns of economic activities have also outstripped and overstretches natural resources including forests. According to Roberts and Gautam (2003), the biggest loss of forest cover is currently being witnessed in Africa and South America. To reverse such trends, community forestry presents a potential and viable alternative.

In Asia and the Pacific region, frequent floods, droughts, landslides, soil erosion, siltation, forest degradation, damage and loss of biodiversity triggered the establishment and promotion of community forestry programmes in many countries (Nath, Jashimuddin, &

Inoue, 2016). In Nepal, efforts at maintaining forest cover and biodiversity have given rise to a variety of community forestry programmes.

Kenya forests provide food, wood fuel, housing materials, medicinal herbs and recreational sites for community living around them. In addition, Kenya's forests also offer a wide range of ecosystem goods and services. According to NEMA forests are considered the storehouse of biodiversity as they are home of more a habitat for more 60 percent of the indigenous flora and fauna, avifauna and herpetofauna species in the country (National Environment Management Authority, 2011). Furthermore, other ecological services that forests provide include recharge of groundwater, control of soil erosion and siltation, water purification, and flood control and mitigation. Finally, forests are also integral in microclimate stabilization and management by impacting rainfall production, slowing the spread of deserts and sequestering carbon sequestration, and climate change mitigation (National Environment Management Authority, 2011).

Challenges to Sustainable Community Forestry Programmes

Although there have been positive benefits on the place of community forestry programmes around the world, there are also concerns, challenges and constraints. Such challenges and constraints often inhibit the effective development, implementation and sustainability of community forestry programmes and related activities. Despite the longstanding successes of community forestry programmes amidst the heightened concern for ecological degradation, the practice still attracts resistances from entrenched interests that preserve the status quo on public forests lands (Pacheco, Andersson, & Hoskins, 2006). Although parallels can be found in relation to community forestry programmes in many countries, there are common challenges and problems that affect their sustainability.

A common constraint and concern for the sustainability of community forestry programmes is equal access to benefits that accrue from such interventions. Assuah (2014), mentioned that the sustainability of community forestry programmes is often hamstrung by infeasible profit or benefit sharing arrangements. Research studies conducted in Nepal, India and Indonesia show that lack of clear benefit and profit-sharing arrangement is a major contributor in the failure, unsustainability and infeasibility of many community forestry programmes (Rebugio et al., 2009; Nath, Jashimuddin, & Inoue, 2016).

Thankapann (2008) stated that in his research study outcomes that there is no refutation of the fact that the involvement people in forest management through the design and deployment of community forestry programmes has done a laudable job across the world; however there remain conflict in opinion about its disposition and intent. Constraints such as inequitable tenure arrangements are common in areas where community forestry is practiced. In Namibia for instance, most of the community forestry programmes and approaches have proved not to be effective and sustainable. Farmers complained that the government restricts their wish to maximize herd size (Center for International Forestry Research, 2005). Similarly, in India, some of the issues that have arisen during the implementation of community forestry programmes include restriction of such programmes only to degraded forests ecosystems that in turn limits the potential benefits that users can obtain.

Community forestry is usually based on regulatory framework encompassing a set of rules and legislation, policies, and procedural systems including implementation permits and approvals, manuals and guidelines. As such many countries require communities forming forest user groups or associations to formulate management plans and guidelines and secure

various categories of permits and licenses granting them authority or rights to manage their forests and participate in any form of community forestry programmes. The rationale behind such ideas and permitting system is to make sure that the communities utilize and conserve their forests sustainably. However, the fact of the matter is these overlapping demands on participating communities or individuals make community forestry programmes more costly (Center for International Forestry Research, 2005).

Elías (2015) asserted that communities in most cases have inadequate money often do not have the money and requisite skills and capacities needed to formulate professional management and action plans. The progress, sustainability, and a general rolling out of community forestry programmes is significantly hampered in many countries by the slow progress in preparation and formulation of the management plans.

While discussing the conditions necessary for successful outcomes in community forestry initiatives, Siteo and Guedes (2015) argued that whereas regulatory and legislative approaches measures have created opportunities for communities living around forest lands, the same approaches have also limited participation of communities since they are marred by complex paperwork.

Power and relations among multiple stakeholders are other most discussed challenge in community forestry governance and management. A study conducted by Assuah (2014) revealed that place of power is essential to participatory to joint forest management systems, since it impacts on the relationships and interactions among stakeholders. Power all influences shared decision-making process among the community forestry participants and stakeholders.

Aside from power, other critical determinants in forest management include the economic ranking or interest of participating community members. For instance, some of the forest advisory committees are controlled and reserved for elites and wealthy community members (Assuah, 2014). Similarly, other research studies have also singled out that some forest management committees are by controlled by people, mostly males, with forest-related knowledge and experience.

In cases where a few people enjoy the exclusive power as a result of their economic position or wealth ranking in society, the objectives of joint forest management can be skewed to suit the needs and interests of these elites over the broader community needs thereby failing to attain the core role of community forestry programmes (Assuah, 2014). Capture or hijacking by local elites can significantly hamper and pose challenges to the sustainability of community forestry programmes.

A section of community members who have higher economic and social rankings and often have greater control and, in most cases, to ensure community forests programmes are run in line with their demands. This can present a situation where groups of from lower societal and economic status, such as women, the very poor, and unemployed, are sidelined in community decision-making process (Elías, 2015). In a study conducted in Nepal, it was found that the promotion of own ideas and agendas against the wish forest user groups by donors supporting community forestry programmes often hamper the sustainability of community forestry programmes (Nath, Jashimuddin, & Inoue, 2016).

In Guatemala, despite community forestry being a core component of government and civil society activities, programmes and development goals, there are acknowledged substantial impediments. Findings from research studies and evaluations have shown that the

major obstacles and challenges to ensuring better community forestry programmes in Guatemala include extreme poverty and glaring societal and economic inequality that cut across agricultural areas of the country, insecurity and uncertainty of land tenure system, disregard for indigenous rights and knowledge, and competing land uses demands (Elías, 2015).

Kenya Vision 2030 acknowledges the unique opportunities that forestry sector provides in the realization of poverty reduction aspirations (National Environment Management Authority, 2011). There heightening realization that the conditions and integrity of forests is essential to climate change mitigation and is also stepping up the need for community forestry programmes in Kenya. Today, forestry is identified as a priority sector based on the growing role forest resources play in strengthening and enhancing livelihoods, providing income communities around forests and in provision and maintenance of critical ecological services and goods. Community forestry is thus largely regarded as a socially and environmentally sustainable option to forest ecosystem management.

The Kenya government, through the national forestry programme seeks to promote participatory forest management through CFAs so as to reduce degraded natural forest areas, increase provision of forest related services, increase biodiversity, well conserved public forests, increase income and living standards (National Environment Management Authority, 2011).

Strategies for Enhancing Sustainability of Community Forestry Programmes

Given the potential for community forestry programmes to have long-lasting and wide-reaching impacts, studies have and continue to be commissioned to provide learning reviews lessons from their design and implementation with the sole goal of informing how

the community forestry programmes could be further scaled, replicated and made sustainable. Research studies have highlighted that equity is critical in the process of developing regulatory framework for or implementing community forestry programmes (Arwida et al., 2017; Ongugo et al., 2007).

Fairness and justice in benefit sharing which ensures that people with low economic status are not disenfranchised should be put in place. It is true that a considerable number of regulatory frameworks underpinning community forestry programmes in different countries are generally enabling. However, Mainka, McNeely, and Jackson (2005) argued that many aspects of such laws and policies should be improved in order to make the procedural systems more comprehensible and simpler and further lead to enhanced empowerment of community forest management groups to manage their forests.

In an effort to provide more learning lessons, Buffum (2012) affirmed that the foundation of sustainable community forestry policies and programmes is an enabling legislated policy focusing on community forestry and secure land and resource tenure rights. For example, in Nepal, certainty and security of land tenure system has been integral in ensuring the sustainability and achievement of the objectives of community forestry programmes (Ohja, Persha, & Chharte, 2010). Besides the implementation of various regulatory instruments, importantly, Elías (2015) added that the success and sustainability of community forestry and by extension community forestry programmes is only possible with the cooperation of all stakeholders. This is premised on the fact that community forestry is often characterized by the involvement of many stakeholders as a result of the ecological, social and economic benefits and values that forests provide.

Just like governments, non-governmental organizations (NGOs) also continue to explore and understand factors that are critical to achieve sustainable success of community forestry programmes. For instance, a recent study conducted by CIFOR in concert with a local NGO in Indonesia with regards to community forestry, highlighted that essential contributing factor for success of the sustainability of community forestry policies and programmes is hinged on the development of clear safeguards, criteria, and indicators to ensure equitable distribution of benefits (Arwida et al., 2017). When making decisions about community forestry projects and programmes, involving diverse members of the community can help ensure the sustainability of the programmes beyond the implementation period and also ensure fairer outcomes for all participants (Ongugo et al., 2007). Forest user groups should be granted decision making autonomy especially when setting objectives, ownership of forest lands and related resources and devolve control in forest utilization, management and protection in order to achieve meaningful and sustainable community forestry initiatives (Buffum, 2012).

While discussing the pathways for ensuring sustainable community forestry, Babili and Wiersum (2010) argued that numerous challenges will need to be surmounted during the implementation phases of community forestry initiatives in order to ensure sustainability. Such issues include addressing governance and administrative issues such as empowerment and capacity building of forest user groups, accountability, inclusion of all forest stakeholders, transparency, equity and justice and just benefit sharing mechanisms.

Mainka, McNeely and Jackson (2005) opined that continuous capacity building for community forestry group members is critical to support the execution of community forestry programmes and also to address other related and emotive issues such as income

generation and benefit sharing, payment for ecosystem and environmental services and goods and poverty alleviation

Achieving sustainable community forestry management programmes also require continuous monitoring and evaluation of program activities. An identified issue with regard to challenges linked to the sustainability of community forestry programmes is that monitoring, and evaluation usually stops with expiration of program assistance. Rebugio et al. (2009) argued that continuous monitoring and evaluation activities are pivotal in fostering community forestry programmes. More broadly the authors argue that participatory or multi-party monitoring of forest management strategies is important in ensuring the success and sustainability of community forestry programmes.

Empirical Literature Review

Empirical evidence from most research studies has concluded that successful decentralization of forest governance and management through community forestry has created many benefits. Many successes have been realized from community forest programmes that have been implemented around the world. Case studies show that community forestry programmes have played an integral part in fostering conservation and management of forests, reducing forest destruction and degradation and enhancing participatory forest governance and management (Assuah, 2014; Buffum, 2012; Ongugo et al., 2007). Community forestry has been touted as a pillar for forest development around the globe and as a necessity in the process of community development. Similarly, community forestry appears to have a net positive effect in relation to other forest management practices (Jong et al., 2010).

Community forestry as a practice has been active and successful in a majority of developing countries with its key goal being poverty reduction amongst forest communities living adjacent to forest lands and improved forest conservation and management (Thankapann, 2008). Forests have also identified as integral resources contributing towards the achievement of sustainable development goals by delivering ecosystem goods and services for local communities residing near or living inside forests and also by regulating air and water quality. The Rio + 20 Declaration (the future we want) outlines that forests can make important contributions to sustainable development through production activities that are environmentally sound, enhance food security and the livelihood of the poor, and invigorate production and sustained economic growth (Siteo & Guedes, 2015). Community forestry programmes can therefore contribute to sustainable rural development since forests are almost everywhere found everywhere.

According to Buffum (2012), the foundation of sustainable community forestry policies and programmes is an enabling legislated policy focusing on community forestry and secure land and resource tenure rights. For example, in Nepal, certainty of land tenure system contributed immensely to the sustainability and achievement of the objectives community forestry programmes (Ohja, Persha, & Charte, 2010). Besides the implementation of various regulatory instruments, Elías (2015) added that the success and sustainability of community forestry and by extension community forestry programmes is only possible with the cooperation of all stakeholders. This is premised on the fact that community forestry is often characterized by the involvement of many stakeholders as a result of the benefits accrued from forest ecosystems.

As shown by various studies in the next section, community forestry program has immense contribution towards reducing poverty in rural areas. This is hinged on the certainty that through the execution of various community forestry programmes, there is a tremendous opportunity for local people to get income from the sustainable utilization and management of community forestry through the marketing and sale of timber products, firewood and non-timber forest products (Roberts & Gautam, 2003).

Drawing on several empirical studies and data, authors including Arwida et al. (2017); Buffum (2012); Elías (2015); Ongugo et al. (2007) and Rebugio et al. (2009) have suggested policy implications, strategies and recommendations for sustainability of various community forestry programmes and approaches. In view of the above, equity is cited as critical in the process of developing regulatory framework for or implementing community forestry programmes. In particular fair play and justice in benefit sharing which excludes the poor from being marginalized should be put in place.

It is true that a considerable number of regulatory frameworks underpinning community forestry programmes in different countries are generally enabling. However, Mainka, McNeely, and Jackson, (2005) argued that many aspects of such laws and policies should be improved in order to breakdown the procedural and systematic systems and further contribute towards the empowerment of community forest management groups to manage their forests.

In Latin America, considerable number of research studies have shown that enhanced environmental and improved livelihood outcomes have been attained as a result of the implementation and promotion of various community forestry programmes (Elías, 2015; Jong et al., 2010; Pokorny & Johnson, 2008). In Nordic countries such as Finland, Sweden

and Norway the need to empower communities living around forests and improve forest management and conservation has led to the implementation of various community forestry programmes (Mainka, McNeely, & Jackson, 2005).

A recent study conducted by CIFOR in concert with a local NGO in Indonesia with regard to REDD+, a community forestry program aimed at involving local people in the protection of forests, established that a critical success factor for the sustainability of community forestry policies and programmes lies in the development of clear safeguards, criteria, and indicators to ensure equitable distribution of benefits (Arwida et al., 2017).

When making decisions about community forestry projects and programmes, involving diverse members of the community can help ensure the sustainability of the programmes beyond the implementation period and ensure fairer outcomes for all participants. Buffum (2012) recommended that decision making autonomy should be granted directly to forest users in coming up with objectives of community forestry goals and ownership and control of forest resources in order to achieve meaningful and sustainable community forestry initiatives.

Most earlier and current studies have shown that community forestry can enhance the ability of local communities especially the poor, improve household livelihood options and opportunities, encourage fair and equitable benefit sharing alternatives, act as a mitigation and adaptation measures for climate change impacts and foster democratic principles at the lower tier level. Putting local people as the forefront and primary key players in decision-making is considered as one of the best options to achieve sustainable forest management (Pokorny & Johnson, 2008; Social Forestry Division, 2010).

In Africa, according to the Center for International Forestry Research (CIFOR, 2005) in Zimbabwe and Botswana, there are different community forestry programmes that target wildlife and nature management. The participating communities have instituted programmes that enable them protect the animals from outside hunters thereby enhancing the population of wildlife and in return promoting tourism. With regards to Central Africa, Cameroon has established a well-known community forestry program that is crafted to allow forest communities to commercially utilize and sale forest wood and other non-timber forest products. Other countries such as Mali, Mozambique, and Tanzania and other African countries also have community forestry projects, initiatives and activities that are crafted to recognize and give security of tenure to forest communities over their forests (Babili & Wiersum, 2010; CIFOR, 2005).

A study done by the CIFOR and University of Kisangani (UNIKIS) in two community forestry pilot programmes in Democratic Republic of Congo (DRC) revealed that the programmes failed to yield an increase in the real income of the local communities. The researchers concluded that the business case and justification for community forestry programmes in the DRC is still at novel stages and weak. To remedy the shortcomings, the researchers advised that new community forestry programmes should put more emphasis on the productive use of forest resources and simplifying the legal constrains in order to reduce the cost related to the creation and managing of community forestry (Gonzalez, 2019).

A study conducted by Babili and Wiersum (2010) in relation to the evolution and practice of community forestry in Tanzania highlighted the major drivers and pathways to be followed. According to the study, the emergence of community forestry programmes in

Tanzania is linked to various forest management regimes that are not supportive of the conventional forest management processes.

In Kenya, a study conducted in Lembus Forest highlighted the challenges of community forestry programmes, particularly with regards to role of community forest associations. The study reported that the implementation, impact and sustainability of community forestry programmes in the area have been hampered due to several challenges including the delay in the execution of the participatory forest management (PFM), transfer of minimal forest legislative powers and control of forest resources from KFS to CFAs, inadequate capacity and skills among CFAs, conflict of interest, inadequate or lack of funding, and issues around accountability, among other factors (Kimutai & Watanabe, 2016).

A study by De Jong et al. (2010) examined the opportunities and challenges for community forestry in tropical America and noted implementation issues and identified several enablers and barriers of community forestry programmes. In particular, the study identified two types of challenges that those in charge of community forestry programmes need to address for successful and sustainable implementation, that is, legal formalization of community forestry programmes and gaining effective control over the use of the community forestry resources.

According to the researchers, eliminating legal barriers to effective execution of community forestry activities entails securing legally valid documents and permits from relevant authorities and formation of forest groups or associations as per government rules and regulations. Furthermore, the study also suggests the formulation of monitoring and control mechanisms that can prevent unauthorized use of the community forestry program

resources by outsiders or non-participating community forestry association members (De Jong et al., 2010).

A study conducted by the United States Agency for International Development (USAID) on the lessons learned from the implementation of community forestry and their relevance for REDD+ observed that the effectiveness of community forestry programmes can be enhanced with capacity building for community forestry managers, officers, field agents, supervisors and staff from government forest agency. The study recommended that such capacity building initiatives should be hinged on good governance, management competencies and technical skills (USAID, 2014).

Conceptual Framework

A conceptual framework refers to a written or visual framework that gives explanation either through graphics or in a narrative form and it outlines the primary concepts or variables to be studied and the presumed relationship among the variables (Rodger, 2015). Consequently, the conceptual framework is the understanding of a researcher on the interconnectedness and relationships of the particular variables in the study. The conceptual framework according to the educational researcher (Stratman & Roth, 2014), is organized from a set of broad ideas and theories that help a researcher to properly identify the problem in their research, structure relevant questions, and find reliable literature.

Variables with significance influence on the sustainability of community forestry programmes are socioeconomic, and management frameworks (tenure security, clear ownership) among other factors. Examples of environmental and socio-economic aspects that depicts the primary aspirations of community forestry programmes are improved forest cover and enhanced biodiversity, improved livelihood outcomes and opportunities and

increased food security, strengthened livelihoods and community income particularly for rural households, better employment opportunities and alternatives and equitable and just resource benefit distribution (Benkenstein, Hengari, & Mbongo, 2014). Consequently, there are other critical variables that can also represent sources of variations associated with sustainability of community forestry initiatives. They include the socio-economic and demographic characteristics of forest user groups, market factors linked to forest and agricultural sectors, forest governance, administration and institutional factors and biophysical aspects (Hajjar et al., 2016).

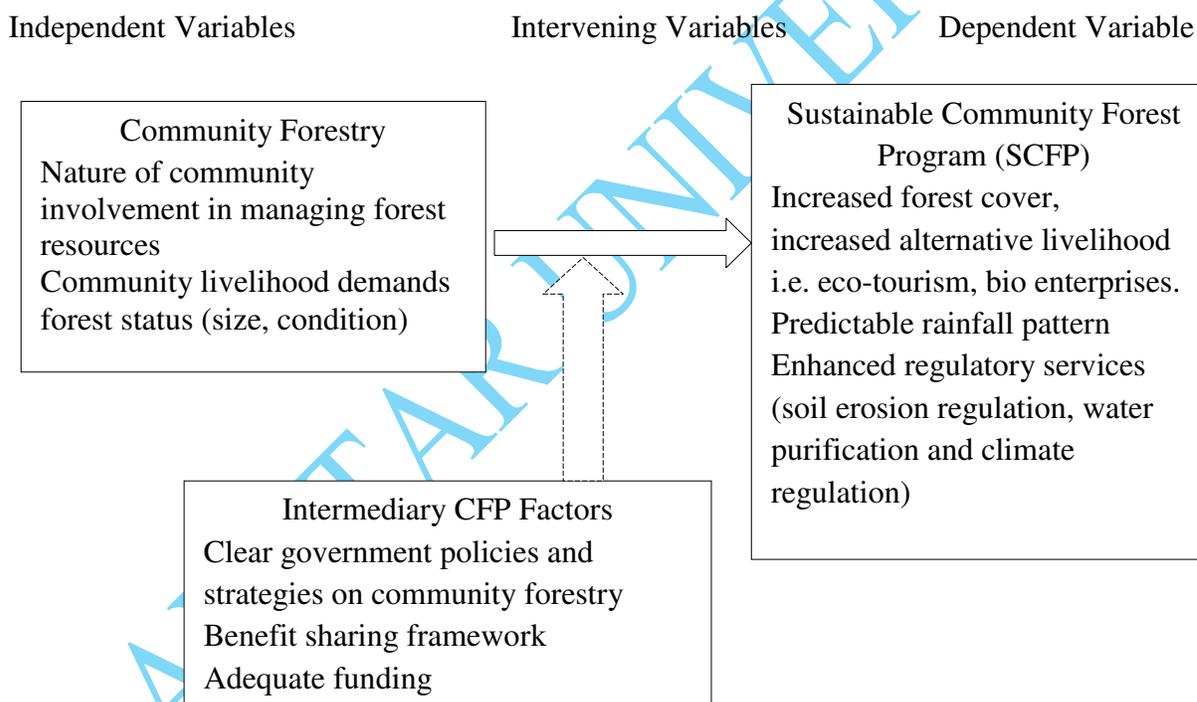


Figure 2.1: Conceptual Framework

Source: Author (2020)

Discussion

The conceptual framework depicts the practical process for sustainable community Forestry Program in Kenya creating basis for this study. The study sought to assess the

constraints to community forestry programmes. Therefore, the independent variables for this study were community forestry, Involvement of communities, associations and individuals in managing forest resources, community livelihood demands and forest status (size, condition).

The intervening variables for this study include clear government policy frameworks on community forestry, benefit sharing framework and adequate funding. On the other hand, dependent variable for the study is sustainable community forest program. The indicators for sustainable community forest programmes include increased forest cover, increases household income, and increased alternative livelihood predictable rainfall pattern and enhanced regulatory services (soil erosion regulation, water purification, climate regulation)

The core intervening variables directly influences the independent variables. For instance, benefit sharing or framework for the redistribution of benefits among forest dependent users and other stakeholders are likely to influence the overriding indicators of community forestry programmes. This will in turn affect the sustainability, longevity and expansion of community forestry programmes. Furthermore, as another intervening variable forest management and governance framework influences both dependent and independent variables by dictating the conditions, status and management of forest resources.

Summary

From the reviewed literature, it is clear that community forestry and community forestry programmes are emerging and gaining interests across the globe, particularly in most developing countries. It is currently being utilized by most counties as a new regime and tool in forest management. A number of studies have focused on the benefits of community forestry programmes, strategies and pathways to the implementation of community forestry programmes, and challenges linked to the implementation of community forestry

programmes. From the literature review, it is evident that sustainability of community forestry programmes is still a challenge. Therefore, this study aims at contributing to the gap by assessing the constraints to sustainable community forestry programmes using Karura Forest Association as a reference point. The next chapter is on research methodology.

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CHAPTER THREE

RESEARCH METHODOLOGY

Introduction

Research methodology is the approach by which is adopted for conducting research (Marczyk, David, & Festinger, 2010). The research methodology gives the pathways to get answers to subjects or things that are of concern. Therefore, this chapter describes the procedure through which data will be collected for the study. Specifically, the chapter covers the research design, population, and the sampling design. The research methods are described in three different steps: sampling, data collection and data analysis.

Research Design

Mishra (2011) explained research design as the conceptual structure within which research is carried out as it entails the roadmap for collecting, measuring, and analyzing measurement data. Research design is integral in controlling the experimental, extraneous and error variance of the research problem under investigation. Marczyk, David, and Festinger (2010) explained research design as how a researcher will find answers to research questions. Therefore, research design in fundamental is enabling research to reach at, and make valid findings, comparisons, and conclusions.

The study used a descriptive research design using survey method to give explanation on the identified issues or circumstances presents as such. Descriptive research design usually gives a description of the situation or issues as it exists at present or what happened (Mackey & Gass, 2016). The choice of this research design is premised on the fact that the researcher intends to describe the response of the people to questions about the issue,

phenomena or situation under study with the sole aim of comprehending the perception of the respondent. In this study, the phenomenon of interest is community forestry programmes.

Population

A population is defined as an entire group about which some details or particulars is required to be ascertained (Kothari, 2004). The population for this study comprised of two designated groups of community forestry program stakeholders in Kenya: CFAs and government agencies. Therefore, for this study, the population included Friends of Karura CFA, KFS, ME&F, KEFRI and KWTA.

Target Population

The target population is the group about which the researcher would like to make statements and it is usually explained based on the conditions and concerns that arise from the phenomenon being tested or examined (Kothari, 2004). The target population for this study Friends of Karura CFA which has a total of 947 members comprising of individual, family, corporate members, and residents bordering the forest (KFS & FKF, 2016). The CFA is run by a board made up of thirteen (13) members supported by a management committee and different sub-committees (KFS & FKF, 2016). Members of the CFA are the primary participants in community forestry programmes that are carried out in Karura Forest Reserve. Likewise, for government agencies (KFS, ME&F, KEFRI and KWTA), the target population will include individuals who are responsible for CFA issues and community forestry programmes.

At the time of conducting out the study, the CFA had a total of 947 members (FKF, 2016). Interview schedules were administered to five (5) Kenya Forest Service (KFS) staff who were directly involved with Friends of Karura Forest CFA, and desk officers from

different organizations involved in community partnership namely; Ministry of Environment and Forestry (2), Kenya Forest Research Institute (5) and Kenya Water Towers Agency (5). Therefore, the target study population was primarily drawn from the members of Friends of Karura Forest CFA. The primary inclusion criterion was CFA membership and hence to be counted as part of the target population, a person ought to have been a member of Friends of Karura CFA at the time of the study.

Sample Size

According to Mackey and Gass (2016) a sample is a small sub-group drawn from the larger population and it should neither be excessively large nor too small. Friends of Karura Forest Association have a total of 947 members (FKF, 2016). A sample size of between 10 - 30% is an adequate sample in a descriptive study (Neuman, 2003). Considering Neuman's recommendation, the study picked 10% of the total population.

Table 3.1: Sample Size

Category of the target population	Total Population	Sample (10% of the population)
Friends of Karura CFA		
Board Members	13	2
Committee members	50	5
Sub-committee Members	120	12
Other CFA members	764	77
Total	947	96

Sampling Procedures

Sampling is the choosing of a given number of subjects from a defined population as a representative of that population or taking any portion of the universe as a representative of that population or universe (Marczyk et al., 2010). The study used stratified random sampling technique. In this sampling technique, the population was stratified into groups

based on roles on community forestry programmes. Proportionate stratified random technique gives equal chance to stakeholders based on roles on community forestry programmes hence no part of the population was left out of the study. The respondents were randomly selected from the latest membership master list that was obtained from the management Friends of Karura Community Forestry Association. After the random selection of respondents, a sample size was drawn.

Proportionate stratified sampling was conducted to establish the number of respondents that will represent each category of interviewees from the Karura Community Forest Association. The respondents were randomly selected from the list of membership provided by CFA office or officials. Purposive sampling was adopted in selecting key informants from other stakeholder as follows: Kenya forest service staff (5), Ministry of Environment and Forests (2), Kenya Forest Research Institute (5) and Kenya Water Towers Agency (5). This gave a total sample size of 113 respondents.

Data Collection Instruments

Data collection instrument is defined as the tool that is used to collect data from the field when conducting research ((Mishra, 2011). The data was using a semi- structured questionnaire by interviewing the selected participants and interview schedules. The questionnaire comprised of both open questions and close-ended questions. The close-ended questions gave opportunity to accommodate more structured responses to facilitate tangible recommendations. On the other hand, the closed ended questions were used to check the rankings of various attributes and this assisted in reducing the number of linked responses in order to obtain more varied responses. The open-ended questions gave additional qualitative information that may not be captured in the close-ended questions.

Questionnaires are appropriate since the data collected were quantitative and qualitative in nature. They also gave the real data from the respondents who respond to the questions. The use of questionnaires and interview guide was useful in obtaining a substantial amount of data. Questionnaire is economical and provides less biased data and also provides quantitative data which is very easy to collect (Kothari, 2014).

Interview guide is an effective tool of data collection as it assisted the researcher to have a broader comprehension about the phenomenon under investigation and to complement questionnaires. Key Informant Interviews entails interviewing people who know or have particularly, relevant knowledge, expertise, informed perspectives and insight on an aspect of a program being assessed.

The study also adopted observation to ascertain trends in size of the forest cover during and community forestry program activities undertaken by the CFA during the field visit. Simple observation checklist was used to document activities of the CFA in order to corroborate with respondents' responses obtained through interviews. Observation allows a researcher to access naturally occurring data. Simple observation checklist was used to document activities of the CFA in order to corroborate with respondents' responses obtained through interviews.

Secondary data was also obtained and used for this study. This data was useful in generating additional comprehensible information for the study from existing documented data or available reports. Marczyk et al. (2010) further gave explanation that secondary data is an important quantitative technique for assessing historical, contemporary confidential or public records, reports, government documents and opinions.

Types of Data

This study sought for information relating to the present and historical performance status of the Karura Forest Association. Specifically, the research aimed to establish factors contributing to the adoption of community forestry programmes, the socio-economic benefits of community forestry programmes, the challenges to sustainable management of community forestry programmes and recommendations that can be made to enhance the sustainability of community forestry. The study produced quantitative data and qualitative data, which was obtained through the use of structured (open and close ended) questionnaires, interview schedules and observations. Additionally, secondary data was collected through review of relevant literature including reports.

Data Collection Procedures

After getting the necessary approvals to collect data and using a trained research assistant, Drop and collect technique was used to administer the questionnaires. For those who were working from home the researcher used email to get the data from them, the researcher emailed them questionnaire and requested them to respond accordingly. For interviews, the researcher used online meeting namely Google meet and Whatsapp video call to conduct interviews.

Due to their applicability and usefulness in the achievement of the research study objectives, the following techniques were used to collect primary data; questionnaire, interview and observation. A survey questionnaire, with a semi-structured format (with both closed and open-ended questions) was used to obtain information from the respondents.

Key-informants interviews were held in the program implementation site with selected staff from KFS, Ministry of Environment and Natural Resource, KEFRI and Kenya

Water Towers Agency on various issues including community forestry program history, impacts of community forestry programmes on socioeconomic conditions of participants, challenges and problems hindering sustainable community forestry programmes and recommendations for improving the sustainability of community forestry programmes.

Simple observation checklist was used to document activities of the CFA in order to corroborate with respondents' responses obtained through interviews. Forest visit was undertaken to observe community forestry programmes and practices that the CFA engages in. During the forest tours, the researcher took field notes and photographs that form part of the study's data. Direct observation and vegetation site/forest cover analyses was also used in the study.

This study also relied on secondary data. Secondary data was obtained through a number of strategies including review of appropriate and relevant literature from libraries and internet, resource materials such as journals, reports, books, workshop proceedings, KFS reports on participatory forest management (PFM) or community forestry and periodicals. In particular, a thorough review of the Friends of Karura CFA documents such as annual reports, constitution, the memorandum of understanding with KFS, Karura Forest Reserve operation and management plan (that is submitted to KFS for approval), financial and administrative records, and audit reports.

Pretesting

In every research, pretesting is key in helping the researcher to assess the efficacies and clarity of the tools for the study (Kothari, 2004). To ensure and confirm whether the tools were correct for the intended purpose and are understood by those individuals who are likely to respond to them, questionnaire was pretested in Ngong Road Community Forest

Association which is also an urban forest located in Nairobi City County. This consisted of 10% of the total study sample size of 96 translating to 9 respondents, Neuman (2003). The interview guide that was used to for key informant interviews was also pretested. The draft questionnaire and interview schedules then were pretested and piloted before use. The precision and coherence of the questionnaire and interview schedule to the respondents were also ascertained so as to enhance their validity and reliability. Appropriate modifications depending on the response were then done.

Data Analysis Plan

Data analysis is defined as the systematic application of statistical and or logical methods to report and display data so as to ensure it brings order, structure, and meaning to many data and information collected from the field (Mugenda & Mugenda, 2003). The qualitative and quantitative data collected was first checked for existence of incomplete questionnaire and possible no responses. Since the primary mode of data collection instrument for the study was a semi-structured questionnaire, the study generated both qualitative and quantitative data.

The resulting data were analyzed using the thematic analysis technique, which is an inductive approach to qualitative data analysis and refers to the process of identifying and interpreting patterned meaning within the collected data. Before processing the responses, the completed questionnaires were edited for completeness and consistency. Quantitative data collected were entered into SPSS and analyzed. Descriptive statistical analysis was done by measures of central tendencies which include frequencies, means and standard deviations.

The results were presented by use of charts, graphs and tables. This was done by tallying up responses, computing percentages of variations in response as well as describing

and interpreting the data in line with the study objectives and assumptions through use of statistical package for social sciences (SPSS) software. Content analysis was used on data that were qualitative in nature collected from the open ended questions. This offered a systematic and qualitative description of the objectives of the study.

Ethical Considerations

According to Mugenda and Mugenda (2008), protecting the rights and welfare of the participants should be a major ethical obligation of all parties involved in the research. An introductory letter was sought from the Department of Development Studies, ethical clearance and approval were sought from Daystar University's Ethics and Research Board (DU-ERB) while the National Commission for Science, Technology and Innovation (NACOSTI) issued a research permit before conducting the research.

The researcher explained the relevance and importance of the research study to the respondents, and they were made sufficiently aware of the type of information the researcher expected from them. The potential research participants were fully informed about the procedures involved in the research and were asked to give their consent to participate. Further, the researcher sought permission and clearance to carry out the research from the Friends of Karura CFA, Kenya Forest Service, and other relevant organizations. The researcher developed an introductory statement assuring the research participants that the information given would be treated with confidentiality and it will be used solely for academic purposes. Finally, the participants remained anonymous throughout the study and even to the researchers themselves to guarantee privacy. The participants signed informed consent forms before filling the questionnaire.

Summary

The study aimed at assessing the constraints to sustainable community forestry programmes using Karura Forest Association as a reference point. The chapter has highlighted the research methodology that the researcher used in carrying this study. It has given the details on the research design and relevant research tools that were used in collecting the required data especially the primary data for the study, the sample size and the sampling methods that were used. The chapter has also provided the ethical considerations with regard to the study.

DAYSTAR UNIVERSITY

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

Introduction

The main aim of this study was to assess constraints to sustainable community forestry programmes in Kenya using Karura Forest Association as a case study. The study pursued four objectives which included examining factors necessitating the adoption of community forestry programmes, establishing the socio-economic benefits of community forestry programmes, assessing the constraints to sustainable community forestry programmes, and proposing recommendations to enhance the sustainability of community forest programmes. The findings on these objectives were presented in the form of pie charts, bar charts and tables.

Presentation, Analysis and Interpretation

Response Rate

The researcher administered a total of 96 questionnaires to the respondents out of which, 90 were dully field and returned to the researcher. This resulted to a response rate of 93.75%. This response rate is adequate to draw a statistical conclusion. Boelhouwer and Priemus (2014) indicated that a response rate of above 70% is adequate to describe a statistical phenomenon.

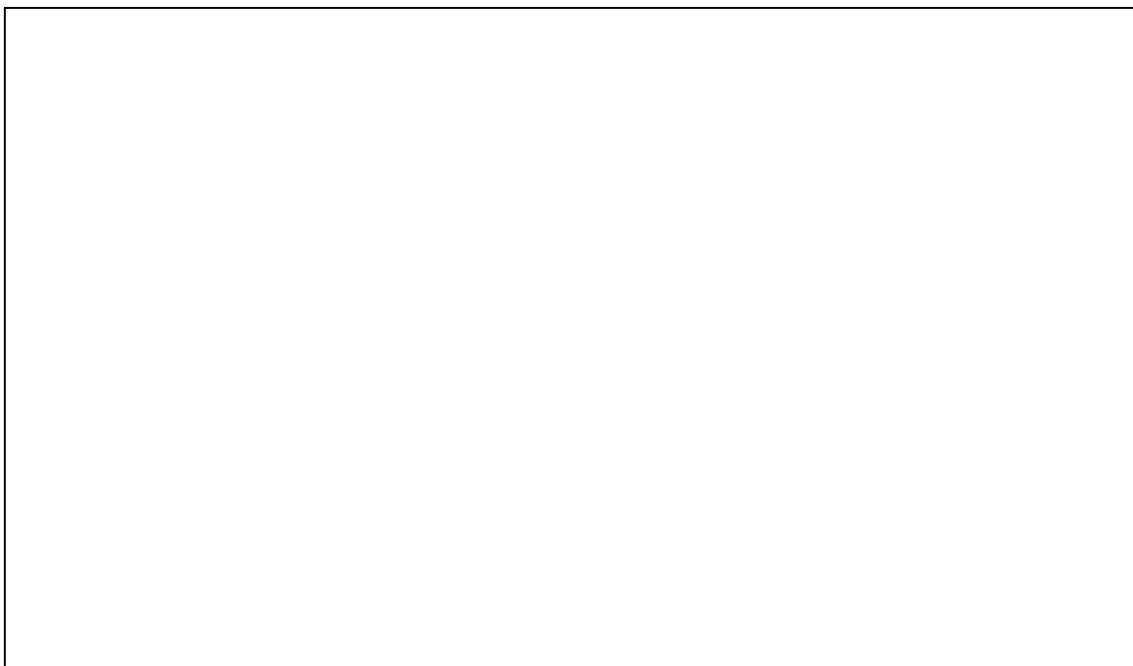


Figure 4.1: Response Rate

Demographic Characteristics

The study sought to establish the socio-economic characteristics of the respondents as these are seen as key in the understanding factors that can act as obstacles to effective community forestry in Kenya. The focused socio-economic characteristics included age, gender, marital status, level of education occupation and work duration.

Age of the Respondents

The study sought to find out and document the age of the respondents with findings being presented in Table 4.1.

Table 4.1: Distribution of Respondents in Terms of Age

Age	Frequency	Percent
20-30	45	49.9
31-40	26	28.9
41-50	12	13.3
50 and above	7	7.8
Total	90	100.0

From the information presented on Table 4.1, the majority of the respondents at 45(49.9%) were aged between 20 and 30 years those between 31 and 40 years accounted for 26(28.9%), 41 to 50 were 12(28.9%) while 7(7.8%) were aged above 50 years. The age category gave a strong indication that most of the forest activities are done by the youth who are of the working age. The findings could also be due to the fact that dependency of youths on these activities is as a result of high and rising levels of unemployment in the country which has forced the youths to engage into community forestry activities to earn living as pointed out by Kimutai and Watanabe (2016).

Distribution of the Respondents in Terms of Gender

The study also sought to establish the distribution of the respondents in terms of gender and obtained information presented in Table 4.2.

Table 4.2: Gender Distribution of Respondents

Gender	Frequency	Percent
Male	46	51.1%
Female	44	48.9%
Total	90	100.0%

Findings presented in Table 4.2 reveal that of those who participated in the study, 51.1% were males while the remaining 48.9% were females. This shows there was a good gender balance. This finding indicates that slightly more males than females were engaged in forest conservation as means of income to support their families. Men were also observed to be more involved in casual labor than women making forestry conservation more attractive.

Marital Status

This study also attempted to shed light on the distribution of the respondents in terms of marital status which in some cases determines an individuals' involvement in certain community activities. Findings are presented in Table 4.3.

Table 4.3: Marital Status of Respondents

Marital Status	Frequency	Percent
Single	25	27.8
Married	49	54.4
Separated	7	7.8
Divorced	7	7.8
Widowed	2	2.2
Total	90	100.0

In terms of the respondents' marital status, the study found out that 49(54.4%) of the respondents were married 25(27.8%) were single, 7(7.8%) were separated 7(7.8), were divorced, while 2(2.2%) were widowed. This shows that a considerable number of the respondents have families that depend on them. This could explain why they are involved in forest conservation activities.

Level of Education of the Respondents

The study also sought to establish the respondents' highest level of educational attainment and found out the information presented in Table 4.4.

Table 4.4: Respondent's Level of Education

Education Level	Frequency	Percent
Primary	12	13.3
Secondary	25	27.8
Certificate	11	12.2
Diploma	27	30.0
Bachelor's degree	15	16.7
Total	90	100.0

The study revealed that 27(30.0%) of the respondents had a college diploma, 25(27.8%) had attained secondary level, 15(16.7%) had a bachelor's degree, 12(13.3%) had

attained primary certificate as the highest level of education while 11(12.2%) had college certificate. This is a clear indication that the respondents had attained some good literacy level and able to answer the research questions appropriately. Thus, the respondents who participated in the study were generally knowledgeable and thus could read and interpret research questions as sought by the study. It was also noted that majority of the respondents had some training in different areas of forestry which included tree nursery establishment, seedling management, tree planting, conservation of plants, appropriate tree harvesting, bee keeping all organised by Kenya Forestry Services as means to encourage the members to conserve the environment.

Occupation

In terms of occupation, the study sought to find out the nature of employment of the respondents and the respondents as presented in Table 4.5.

Table 4.5: Occupation of Respondents

Occupation	Frequency	Percent
Formal Employment	50	55.6
Self-Employment	38	42.2
Student	2	2.2
Total	90	100.0

The results presented in Table 4.5 revealed that 50(55.6%) of the respondents had formal employment, 38(42.2%) were self-employed while 2(2.2%) were students. For the members when they referred to formal employment, they meant that they were fully engaged by the community forest associations who pay their wages on weekly or monthly basis depending on the financial status of the association.

Duration at the Association

The study sought to determine the duration the respondents had been involved in Karura forestry conservation activities. The results are as presented in Table 4.6

Table 4.6: Work Duration of Respondents

Work Duration	Frequency	Percent
1-5 years	38	42.2
6-10 year	28	31.1
11-15 years	19	21.1
Over 16 years	5	5.6
Total	90	100.0

The findings indicated that many of the respondents 38(42.2%) had worked for 1 to 5 years, 28(31.1%) had worked for 6 to 10 years, 19(21.1%) had worked for 11 to 15 years while those who had worked for over 16 years accounted for 5(5.6%). The findings imply that a good number of respondents had been involved in forest conservation activities for a long time hence having experience on matters of community forestry programmes. Therefore, the study was able to obtain detailed information due to the fact that the respondents had a wealth of knowledge regarding the benefits of community forestry programmes, the challenges experienced and factors affecting community forestry programmes. This is so because most of them had worked for the organization for many years.

Membership to the Programmes

The respondents were asked to indicate whether they were members of the community forestry programmes. The results are presented in Table 4.7.

Table 4.7: Distribution in Terms of Membership in Community Forestry Programmes

Membership of community forestry programmes	Frequency	Percent
Yes	79	87.8
No	11	12.2
Total	90	100.0

The findings reveal that the majority 79(87.8%) of the respondents were members of community forestry programmes against 11(12.2%). This implies that there was high level of awareness on community forestry programmes undertaken at Karura Forest. The membership helped the study to get right information from right sources to make study conclusions.

Involvement in Community Forestry Programmes and Activities

The study further sought to establish some of the community forestry programmes and activities the respondents have been implementing or involved in the past or currently.

The results are presented in the Table 4.8.

Table 4.8: Community Forestry Programmes and Activities

Activity	N	Percent
Tree planting	68	86.10%
Tree Nursery establishment	49	62.00%
Ecotourism	42	53.20%
Payment for ecosystem services	42	53.20%
Carbon trading	32	40.50%
Controlled fuel- wood extraction	31	39.20%
Bee keeping	24	30.40%
Controlled hunting	2	2.50%

The results in Table 4.8 indicated that 68(86.10%) of the respondents had been involved in tree planting, 49(62.00%) had been involved in tree nursery planting, 42(53.20%) had been involved in payment of ecosystem services and involved in ecotourism, respectively, 32(40.50%) had been involved in carbon trading; 31(39.20%) had been involved in controlled fuel-wood extraction, 24(30.40%) had been involved in bee keeping while 2(2.50%) had been involved in controlled hunting.

In addition, the in-depth interviews with key informants, revealed some of community forestry programmes that have been or are currently being implemented. They

include the following: rehabilitation of degraded forest, community-based nurseries, advocacy program, community scouts, beekeeping, ecotourism, propagation of seedling, protection of forests, dissemination of research findings on forest management, and promotion of forest management technologies.

From the analysis, there is an agreement that community forestry programmes are great avenues towards achieving forest conservation and management while at the same sustaining and providing livelihoods to communities living around the forest. Muttaqin et al. (2019) explained that communities surrounding or living within forest areas usually have various priorities in the utilization and protection of forest resources. In relation to the utilization of forest resources communities are interested in timber utilization, cultivation, non-timber forest products and environmental services.

Factors Necessitating the Adoption of Community Forestry Programmes in Kenya

The first objective of the study was to examine factors necessitating the adoption of community forestry programmes in Kenya. The respondents were asked to indicate to what extent they agreed or disagreed with the statements presented that was seen to have necessitated the establishment of community forestry programmes in Kenya. The findings are presented in the Table 4.9.

Table 4.9: Factors for Establishment of Community Forestry Programmes

Factors for establishment of Community Forestry Programmes		1	2	3	4	5	Total
The need to address forest/ ecological degradation in the country	N	22	51	15	1	1	90
	%	24.4	56.7	16.7	1.1	1.1	100
The inability of the state to properly manage forest resources/ ineffective coordination of forest governance and management	N	40	42	5	3	0	90
	%	44.4	46.7	5.6	3.3	0.0	100
The creation of enabling policies and legislations i.e. constitution and forest management act	N	45	33	11	0	1	90
	%	50	36.7	12.2	0	1.1	100
The need for the state to provide local communities with social and economic benefits from forests	N	55	27	7	0	1	90
	%	61.1	30	7.8	0	1.1	100

The results in Table 4.9 indicate that the respondents' response in indicating their level of agreement on the factors for establishment of community forestry programmes. According to the findings, 22(24.4%) respondents strongly agreed and 51(56.7%) agreed that one of the factors for establishment of community forestry programmes is the need to address forest or ecological degradation in the country. Another, 40(44.4%) were of the strong opinion that the other factor is the inability of the state to properly manage forest resources or ineffective coordination of forest governance and management while those who agreed on the same statement were 42(46.7%).

The study further revealed that 45(50%) of the respondents strongly agreed that the creation of enabling policies & legislations that constitution & forest is another factor for establishment of community forestry management act, this was supported by 33(36.7%) of the respondents who agreed on the same statement. other factor was the need for the state to provide communities living near forest with socio-economic benefits from forests which was presented by 55(61.1%) who strongly agreed and 27(30%) who agreed on the factor.

In addition, in-depth interviews with key informants were conducted, the findings revealed how key factors have affected establishment of community forestry. For instance, KI 1 had the following to say:

Livelihood demands such as poverty and high unemployment rates are some of the core reasons leading to the establishment of community forestry programmes with the aim of enhancing the livelihoods of communities living within or surrounding forests. Communities living close to forests depend on the forests for food, and other non-timber products. Through utilization of forest resources, forest provides a critical safety net for communities. Besides, the current state and conditions of the forests in most parts of the country has further pushed the concerned authorities to put more emphasis on the need to engage grass root communities to take part in the management and protection of the forest resources.

KI 2 also responded by stating the following:

Awareness on the role of tree nurseries in forest conservation and management is providing the impetus towards the establishment of community forestry programmes. Similarly, the respondent also highlighted the obligation of the county governments on forest conservation and protection. This has seen the establishment of various community forestry programmes within the jurisdictions of the devolved units.

Another key informant added that “the national government and county governments are banking on nurseries established by community forestry associations to help contribute towards afforestation efforts”.

KI 3 added that

Kenya has a national strategy of achieving a 10 percent forest cover by year 2022. Coupled with the exacerbating impacts of climate change such as erratic weather, drought, and flooding, the need to roll out forest conservation and management projects to help achieve the 10% target and mitigate the effect of climate change. Furthermore, the decentralization in forest management through the forest management and conservation act 2016 has been put in practice via community forest associations (CFAs) is also significantly driving the establishment of community forestry programmes. County governments especially in Rift Valley are now encouraging and supporting communities around forest areas within their jurisdictions to carry out tree planting and other forest conservation activities aimed at increasing tree cover and protecting the water catchment areas.

KI4 noted that

The respondent noted that the 10 percent tree cover target, part of the measures involves collaborations and partnerships with county governments and community forest associations (CFA's). This is pivotal in management and conservation of the water towers since community scouts are engaged in rehabilitation, protection and conservation of forests. Further, the overall water towers management cost has been reduced through community involvement in conservation of these ecosystems.

Benefits of Community Forestry Programmes

The study's second objective sought to identify the potential benefits of community forestry programmes. The respondents were asked to indicate whether or not they benefit from community forestry programmes. The findings from the study showed that majority (98%) of the respondents agreed with the statement that they benefit from the community forestry programmes against the minority 1.1% who said that they do not benefit from community forestry programmes. This is not surprising since several studies have documented the benefits of engagement in community forestry (Benkenstein et al., 2014). The benefits of community forest programmes to local communities include livelihood improvement and empowerment (Wamae, 2011). This implies that the community members who engage in community forestry projects receive several benefits and advantages.

Direct and Indirect Benefits of community Forestry Programmes

The study further sought to find out the direct and indirect benefits the community members get from the community forestry programmes. The findings are shown in Table 4.10.

Table 4.10: Direct Benefits of Community Forestry Programmes

Direct benefits	N	Percent
Employment opportunities	73	82.00%
Improved forest management	80	89.90%
Reduced forest degradation	68	76.40%
Provision of alternative livelihood options	66	74.20%

The findings in Table 4.10 show that there are certain direct and indirect benefits the respondents get from community forestry. Accordingly, the majority of the respondent 80 (89.90%) indicated improved forest management, 73(82.00%) of the respondents indicated employment opportunities, 68(76.40%) indicated reduced forest degradation and 66(74.20%) indicated provision of alternative livelihood options to both individuals and community members at large.

Table 4.11: Direct and Indirect Benefits of Community Forestry Programmes

Provisional Services	Frequency	Percent
Fresh water	73	82.00%
Fuelwood	70	78.70%
Natural medicine	75	84.30%
Regulatory Services		
Soil erosion regulation	74	84.10%
water purification	71	80.70%
climate regulation	61	69.30%
Cultural Services		
Ecotourism		
cultural heritage	68	76.40%
Educational values	72	80.90%
Support service	65	73.00%
Honey production	82	91.1

According to the findings presented in Table 4.11, 73(82.00%) of the respondents indicated fresh water, 70(78.70%) as one of the indirect benefits, indicated fuel-wood while 75(84.30%) indicated natural medicine. The study sought to establish the regulatory services respondents got due to community forestry programmes. The results show the regulatory services the respondents enjoy due to community forestry programmes. The majority of the respondents at 84.10% indicated soil erosion regulation, 71(80.70%) of the respondents indicated water purification and 61(69.30%) indicated climate change. The results corroborate those of Ongugo et al. (2007) that community forestry programmes have a wide array of direct and indirect benefits such as provision of improving and stabilizing

livelihoods of communities, supply of fuel wood and other forest products, fodder for livestock and employment opportunities.

The study sought to know the cultural services respondents get as a result of community forestry programmes. According to the findings presented in Table 4.11, 68(76.40%) of the respondents indicated ecotourism, 72(80.90%) of the respondents indicated cultural heritage while 65(73.00%) indicated educational values. The study sought to establish the support services the respondents got from to community forestry programmes. According to the results presented on table 4.11, 82(91.1%) of the respondents indicated honey production as a support service while 8(8.9%) did not respond. From the findings, it is clear that is a wide range of direct and indirect benefit the community member gets from participating in community forestry programmes.

In-depth interviews revealed the benefits of community forestry program. For instance, the key informants were in agreement that community forestry programmes play integral role in not only improving the wellbeing of communities but also contributes immensely to the regeneration, conservation and management of forests. Community forestry program helps to enhance ecosystem health by providing fodder and grass for livestock. It was also evident from the results that community forestry programmes enhance recreational facilities and activities through which our children are able to play and even a centre for adult recreation. It also increased publicity of community groups. The key informant also noted that community forestry programmes have facilitated the construction of infrastructure such as roads networks, capacity enhancement and development of participatory forest management plan (PFMP). This has improved transportation and reduced the cost of doing

business within the community members. With good infrastructure, the members can easily access the project site without any difficulty.

Challenges to Sustainable Community Forestry Programmes

The study sought to find out the challenges experienced in engaging in community forestry programmes, by doing so, the respondents were asked to indicate whether or not there are challenges encountered in the process of working or implementing community forestry programmes. The results showed that all the respondents indicated that there existed challenges to sustainable the community forestry programmes.

In view of this, the study further sought to establish and document these challenges as expressed by respondents engaged in community forestry programmes. In order to gather precise and accurate information, the researcher designed statements that show common challenges experienced worldwide by people working in the forest sector with the respondents being asked to indicate the extent to which they agreed or disagreed with the statements. This was shown on a Likert Scale (where 1= strongly agree, 2 = agree, 3 = neutral, 4 = disagree and 5 = strongly disagree). The results were as shown in Table 4.12.

Table 4.12: Challenges of Engaging in Community Forestry Programmes

Challenges of engaging in community forestry programmes		1	2	3	4	5	Total
Un-preparedness of forestry service officers to change probably for fear of loss of jobs.	N	28	46	11	3	2	90
	%	31.1	51.1	12.2	3.3	2.2	100
Poor funding of forestry activities	N	34	42	8	3	3	90
	%	37.8	46.7	8.9	3.3	3.3	100
Lack of commitment to the goals of partnership	N	23	53	12	2	0	90
	%	25.6	58.9	13.3	2.2	0	100
Lack of sustained awareness and communication	N	44	33	11	2	0	90
	%	48.9	36.7	12.2	2.2	0	100
Absence of mutual understanding and transparency	N	45	30	12	3	0	90
	%	50	33.3	13.3	3.3	0	100

Table 4.12 illustrates the perceptions of respondents on the challenges of engaging in Community Forestry Programmes. According to the findings, 28(31.1%) and 46(51.1%) strongly agreed and agreed that one of the challenges of engaging in community forestry program is Un-preparedness of forestry service officers to change probably for fear of loss of jobs. The forest officers may find that much of the work which they are employed to do is done by the community forest restoration team. The department of environment or the NGOs supporting environmental conservation programmes may choose to engage community programmes directly and stop funding the government. This could affect the employment status of the forestry guards hence leading to loss of jobs or redeployment.

The majority of the respondents at 76(84.5%) indicated to 'totally agreed' and 'agreed' that poor funding of forestry activities is a challenge they are facing while 6 (6.6%) indicated that there was sufficient funding for forestry activities. Besides, 77(85.6%) of the respondents indicated that Lack of sustained awareness and communication was a challenge to engage in community forestry with other few respondents at 2(2.2%) having a different opinion; 75(83.3%) said that absence of mutual understanding and transparency was another challenge hindering them to engage in community forestry. From the findings, it is clear that there are challenges hindering the smooth engagement in community forestry programmes. The community forestry program stakeholders need to address the challenges to enhance effective and sustainable engagement in programmes pertaining community forestry sustainability. These results concur with McNeely and Jackson (2005) that many aspects of laws, policies and procedural systems hamper the effectiveness and sustainability of community forestry programmes.

Study findings from in-depth interviews with the key informants also revealed more challenges experienced in engaging community forestry. The challenges were mentioned by a number of key informants. KI 1 responded as follows:

Lack of community involvement, conflict of interest in forest management and imposed targets is a common challenge. There is over reaching problems of non-involvements by the community members, who are in most cases, do not want to engage in forestry management because they don't see any benefit at all. Some forestry officers are engaged in forestry logging and charcoal burning or they collude with middlemen to destroy the environment.

KI 2 noted that:

There are weak policies and legislation of forest right, and Lack of technical experts. The member lamented that there were never security personnel on patrol to check on people who cut trees at night. Also, the respondent said that there is no elaborate mechanism in place to allow the sharing of information regarding community forestry among participating community members.

KI 3 noted the following:

Weak monitoring systems, lack of community sharing framework, political interference and skewed donor interest. The respondent was of the view that those in charge of forests care less on the implementation of projects since some stakeholders may plan to do some activity within the forest but end up doing nothing apart from embezzling the funds if at all they were funded for the said project.

KI 4 added that:

There is exploitation of community labors and attitude towards conservation. Some community members are usually exploited by working in the forest for long hours and also when there is funding little or no sharing of information is about the fund, the program officers then use the laborers to do the work and claim that the money has been spent on the project which is not the case.

Strategies to Enhance Community Forestry Programmes

The study sought to determine the measures that can be put in place to ensure the best applicable strategies for community forestry programmes with the proposed measures by the respondents presented in Table 4.13. This was in a scale of 1 to 5 (where 1= strongly agree, 2 = agree, 3 = neutral, 4 = disagree and 5 = strongly disagree).

Table 4.13: Strategies to Enhance Community Forestry Programmes

Strategies to enhance community forestry programmes		1	2	3	4	5	
Strengthen the policies and legislations on forestry management	N	36	43	11	0	0	90
	%	40	47.8	12.2	0	0	100
Security of tenure for communities implementing forest sustainment programmes	N	33	47	10	0	0	90
	%	36.7	52.2	11.1	0	0	100
Ensure there is economic benefit for the available resources for all stakeholders	N	28	51	9	1	1	90
	%	31.1	56.7	10	1.1	1.1	100
Ensure there is adequate and sustained funding to facilitate sustainability programmes	N	39	40	11	0	0	90
	%	43.3	44.4	12.2	0	0	100
Effective conflict management among stakeholders	N	28	47	13	2	0	90
	%	31.1	52.2	14.4	2.2	0	100
Research and capacity building for stakeholders	N	47	28	15	0	0	90
	%	52.2	31.1	16.7	0	0	100

Findings in Table 4.13 illustrate the view of the participants regarding possible strategies to be adopted to enhance community forestry programmes. Most of the respondents at 36(40%) strongly agreed and agreed 43(47.8%) that strengthening the policies and legislations on forestry management will help to enhance community forestry. However, few respondents (12.2%) were undecided whether strengthening the policies and Legislations on forestry management will help to enhance community forestry. Another strategy which was proposed by the respondents was security of tenure for communities implementing forest sustainment programmes supported by 33(36.7%) and 47(52.2%) of the respondents who strongly agreed and agreed respectively.

Further the findings show that 28(32.2%) strongly agreed that one of the strategies to enhance community forestry is to ensure that there is economic benefit for the available resources for all stakeholders. This was reported by 51(56.7%) who agreed on the strategy. However, only a minority 9(10%) were undecided whether ensuring there is economic benefit for the available resources for all stakeholders is the best strategy to enhance

community forestry while few 2(2.2%) disagreed that is not best strategy to enhance community forestry.

Other strategies to enhance community forestry included ensuring that there is adequate and sustained funding to facilitate sustainability programmes as indicated by 79(87.9%) respondents, effective conflict management among stakeholders at 75(83.3%) and research and capacity building for stakeholders at 75(83.3%).

Further findings from in-depth interviews with key informants revealed other measures that have been put in place or can be put in place to curb the challenges. There should be a benefit sharing framework where all stakeholders benefit from the proceed of community forestry programmes equally, enhance community capacity through training on environmental conservation and sustainability and have a proper exit plan for the projects and initiation of new ones.

The KI further indicated that there should be good relationship between communities who are environment stakeholders, promotion of multi-agency approach in forest management, and establish environment sustainability framework for future conservation activities like Payment for Ecosystem services where communities are paid for keeping their forest standing. The respondent was quick to note that proper implementation of participatory forest management practices are necessary to enhance conservation of the environment, he also indicated that enhanced access to forest resources and proper planning will help to curb community forestry challenges and mitigation for better livelihoods husbandry.

Furthermore, that sensitivity to cultural values of a given location will go a long way in conserving the environment also stakeholders should target projects that have impact on

community livelihoods and engage county governments during their environment conservation activities. The income generation through environment conservation activities and tree planting and ensuring community involvement in all activities you are engaged in, this makes community members to own the initiatives and feel that they are part of the process of restoring the forests.

Summary of Key Findings

The study established that the major factors necessitating the adoption of community forestry programmes in Kenya include the establishment of legal and institutional framework through the forest and conservation act 2016 that put more emphasis on community forestry as a remedy for addressing land and forest degradation, drought, desertification and deforestation.

The legislation gives guidelines on the formation and running of community forestry association (CFAs) through which community forestry programmes are executed. Similarly, from the study, the realization by government that participatory forest management approaches together with the involvement of communities living around forest and other forest stakeholders is absolutely necessary for success and sustainability of community forestry programmes.

The majority of the respondents at 73(81.1%) strongly agreed and agreed that one of the factors for establishment of community forestry programmes is the need to address ecological degradation in the country.

Further, 82(91.1%) of the respondents were of the strong opinion that the other factor is the inability of the state to properly manage forest resources or ineffective coordination of forest governance and management. Consequently 78(86.7%) of the respondents strongly

held the opinion that the creation of enabling policies and legislations, that is, the Kenyan 2010 constitution and forest management and coordination act 2016 is key factor for establishment of community forestry management act.

Another factor was the need for the state to provide local communities with social and economic benefits from forests which was presented by 82(91.1%) who strongly agreed and agreed on the factor.

A key feature identified by the research study was the socio-economic benefits of community forestry programmes. The study has shown that community forestry programmes not only yield socio-economic benefits but also environmental benefits. The majority of the respondent 80(89.90%) indicated improved forest management, 73(82.00%) indicated employment opportunities, 68(76.40%) indicated reduced forest degradation and 66(74.20%) indicated provision of alternative livelihood options as the direct benefits they get from community forestry.

According to the results, some of indirect benefits from community forestry includes fresh water at 73(82.00%), fuel-wood at 70(78.70%), natural medicine at 75(84.30%), soil erosion regulation at 74(84.10%), water purification at 71(80.70%), climate change at 61(69.30%), ecotourism at 68(76.40%), cultural heritage at 72(80.90%), educational values at 65(73.00%) and honey production at 82(91.1%)

From the study, it was evident that the conditions for achieving sustainable community forestry programmes are hampered by various challenges. Currently, it is impossible for communities to achieve the full benefits of community forestry programmes due to challenges and constraints.

According to the findings, 28(31.1%) and 46(51.1%) strongly agreed and agreed respectively that one of the challenges of engaging in community forestry program is unpreparedness of forestry service officers to change probably for fear of loss of jobs.

The majority of the rethan half of the respondents at 76(84.5%) 'totally agreed' and 'agreed' that poor funding of forestry activities was a challenge they faced while 6 (6.6%) were of contrary opinion.

Further, 77(85.6%) indicated that lack of sustained awareness and communication was a challenge to engage in community forestry with other few respondents at 2(2.2%) having a different opinion; 75(83.3%) said that absence of mutual understanding and transparency was another challenge hindering them to engage in community forestry. Therefore, to foster the uptake and ensuring effective and sustainable implementation of community forestry programmes, the identified challenges need to be addressed.

The study identified that strengthening the policies and legislations on forestry management will help to enhance community forestry, security of tenure for communities implementing forest sustainment programmes supported, enhancing community forestry as key strategies to sustain forests.

Other strategies is to enhance community forestry include: ensuring there is adequate and sustained funding to facilitate sustainability programmes, effective conflict management among stakeholders and research and capacity building for stakeholders.

Summary

This chapter has given the research findings in detail as the respondents provided, summarizing, and presenting the data in a manner that can be understood. Chapter five entails discussions, conclusions and recommendations of the study.

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter presents a discussion of the research findings, conclusions and recommendations. The study sought to determine constraints to sustainable community forestry programmes, a case of Karura Forest Association. The study was guided by four objectives namely: to examine factors necessitating the adoption of community forestry programmes in Kenya to establish the socio-economic benefits of community forestry programmes, to assess the constraints to sustainable community forestry programmes, and to make recommendations to enhance the sustainability of community forest programmes. The chapter also provides recommendations for areas of further research.

Discussion of Key Findings

The discussion of the key findings is guided by the research objectives, which were to examine factors necessitating the adoption of community forestry programmes in Kenya, establish the socio-economic benefits of community forestry programmes, assess the constraints to sustainable community forestry programmes and suggest recommendations to enhance sustainability of community forest programmes in Kenya

Factors Necessitating the Adoption of Community Forestry Programmes in Kenya

The study findings revealed that some of community forestry programmes that have been or are currently being implemented by community forest associations are derived from the forest and conservation act 2016 that give prominence to community forestry practice and establishment of community forestry association (CFAs). Some of the programmes include, PELIS, rehabilitation of degraded forest, community-based nurseries, advocacy

program, community scouts, beekeeping, ecotourism, propagation of seedling, protection of forests, dissemination of research findings on forest management, and promotion of forest management technologies.

Joint or collaborative forest management in Kenya as envisioned in the forest conservation and management act 2016 has immensely enhanced on the management of forests by engaging the local communities. Similarly, it is increasingly being recognized throughout the world that community forestry approaches are essential for sustainable forest management (Roberts & Gautam, 2003). Community forest associations or joint forest user groups in the country continue to improve on their roles and responsibilities in alleviating poverty, supporting livelihoods and also using and conservation of forest resources. This is in line with the forest act 2005, which has mandated CFAs to carry out different activities within forests. This has led to improvement of forest conditions and status while at the same time bolstering the livelihoods of members.

The study sought to find out the factors necessitating the adoption of community forestry programmes in Kenya. According to the findings, 73(81.1%) of the respondents strongly agreed and agreed that one of the factors for establishment of community forestry programmes is the need to address ecological degradation in the country. Ecological degradation has been experienced at Karura forest which needs to be addressed before it gets worse. The respondents agreed that there is inadequate management of forest resources by the stakeholders. The inability of the state to properly manage forest resources or ineffective coordination of forest governance and management was further supported by 82(91.1%) of the respondents. Stronger and willingness of donors and development partners to support

forest conservation and management activities have motivated the establishment and involvement of community forest associations in Karura Forest (NEMA, 2019).

Another factor for establishment of community forestry programmes was legal framework and policies. The forest act 2005 has a provision for allowing income generation activities such as harvesting of forest produce in more sustainable manner and also promoting ecotourism and recreation activities. These are geared towards improving and securing the livelihoods of members of the forest association for their commitment to protecting the forests. This was supported by 78(86.7%) of the respondents who agreed that the creation of enabling policies and legislations i.e. constitution and forest act 2005 were among key motivators for establishing community forestry management activities. These findings agree with Buffum (2012) that the sustainable community forestry policies and programmes and enabling legislated policy focusing on community forestry and secure land and resource tenure rights have increased community forest associations across the country. For example, in Nepal, security of tenure has played important roles in ensuring that there is sustainability and achievement of the objectives of community forestry management programmes (Ohja et al., 2010).

Another factor that necessitated the adoption of community forestry programmes in Kenya was the need for the state to provide local communities with social and economic benefits from forests which was presented by 82(91.1%) who agreed on the factor. In addition, the key informants revealed how key factors have affected establishment of community forestry include the increasing need for livelihood stabilization and assurance.

One key informant said that some of the factors, which have affected establishment of community forestry, include livelihood demands, degradation of forest areas and water

towers. According to another key informant, the other factor was awareness on conservation (tree nurseries) and constitution requirement on devolved function. Two key informants agreed that attainment for of 10% tree cover, climate change and decentralization in forest management and protection of water towers; effective governance structure and lowering management cost are the major drivers necessitating the establishment of community forestry programmes. The findings correspond with the views of Roberts and Gautam (2003) that large numbers of forestry activities with participatory, regional, or community forest components are being implemented.

Socioeconomic Benefits of Community Forestry Programmes

The second objective of the study was to determine the benefits of community forestry programmes. The study provides important evidence that community forestry programmes yields social, economic and environmental benefits. According the study there are multiple social and economic benefits that are associated with community forestry programmes. Majority of the respondent 80(89.90%) indicated improved forest management, 73(82.00%) of the respondents indicated employment opportunities, 68(76.40%) indicated reduced forest degradation and 66(74.20%) indicated provision of alternative livelihood options as the direct benefits they get from community forestry.

In line with the study findings, literature have shown that community forestry program has a great potential to contribute towards reducing poverty in rural areas. This is hinged on the fact that through the implementation of different community forestry programmes, there is a tremendous scope for local people to generate income from the sustainable management of community forestry through the marketing and sale forest resources (Roberts & Gautam, 2003). Community forestry programmes have been found to

contribute to seasonal and regular employment opportunities and fulfilling livelihood outcomes to communities living around forest areas (Thankapann, 2008).

According to the results some of indirect benefits from community forestry include fresh water, fuel wood, natural medicine, soil erosion regulation, water purification, climate change, ecotourism, cultural heritage, educational values, and honey production. These findings agree with Thankapann (2008) that community forestry has been active and successful in many developing countries with its main purpose being alleviation of poverty amongst local forest communities and forest conservation. Forests have also been recognized as important resources to contribute to achieving the sustainable development goals by providing goods and services for people living inside forests and also by providing air and water quality for the global community.

The overwhelming benefits of community forestry programmes are proven and can be linked to several positive outcomes. From the findings of key informant, they highlighted some of the benefits of Community forestry program including enhancement of ecosystem health, enhanced recreational facilities and increased publicity of community groups, construction of infrastructure such as roads, networks, establishment of eco-tourism centres capacity enhancements and development of PFMP. The study findings implied that community forestry programmes are crucial in community development and growth in many ways. So there is need to empress the programmes to promote development, growth and wellbeing of community and community members.

According to the National Environment Management Authority (2011), Kenya's forest has provided communities living near forests with food, fuel, wood, medical herbs, materials for house construction, and site carry out cultural activities. It also provides

ecosystem goods and services. They are home for more than 60% of indigenous flora and herpetofauna species in the country. Other ecological services that forest provide are flood control and mitigation, purification of water, groundwater recharge, soil erosion and stabilization, and siltation control. Forests also play a vital role in controlling local climates by influencing rainfall patterns and production, reversing desertification, and carbon sequestration, and climate change mitigation (National Environment Management Authority, 2011). The findings buttress the overwhelming need for rolling out various community forestry programmes in the country. According to McDermott and Schreckenber (2009), while community forestry can reduce social inequity, it generally does so by generating positive change at community and higher levels, rather than by delivering benefits directly to poor and marginalized households.

Challenges and Constraints to Sustainable Community Forestry Programmes

The results of this study indicate particular challenges and constraints to sustainable community forestry programmes. Addressing or mitigating the identified constraints is hence a key feature that determines the way of community forestry practice implementation. According to the findings, 74(82.2%) agreed that one of the challenges of engaging in community forestry program is un-preparedness of forestry service officers to change probably for fear of loss of jobs. This jeopardized the cohesion of forest service officers and community forest association members who never wanted to share responsibilities and the accruing benefits.

The Kenya Forestry Services is one of the government agencies faced with challenges in ensuring all members of their staff are well trained in broad areas of management, conservation and use of genetic forest resources (Uraiwan, 2010). Also

communication hindrance and lack of goodwill between officials and local people and with various stakeholders is another challenge that hinders the success and sustainability of community forestry programmes. The respondents expressed lack of clear procedures on how they would go about sharing responsibilities and benefits in the forest management activities.

From the study, one of the main constraints to sustainable community forestry programmes is inadequate or insufficient funding and financing. A majority of the respondents at 76(84.5%) agreed that inadequate funding of forestry activities was a challenge they were facing while 6(6.6%) indicated that there was sufficient funding on forestry management programmes. Funding in the area of training and awareness creation will improve effective implementation of environmental conservation activities.

Training is important in order to be able to identify various methodologies of forest management, trees management and harvesting procedures. Without such knowledge it will be difficult to manage the forests effectively. Further, 77(85.6%) respondents indicated that lack of sustained awareness and communication was a challenge to engage in community forestry while (2.2%) of the respondents indicated that communication was not such important; 75(83.3%) said that absence of mutual understanding and transparency was another challenge that hinder them to engage in community forestry. The consequences arising from co-management arrangements may involve lack of sharing the benefits and responsibilities as intended or promised (Assuah, 2014). These misunderstanding derails the successful execution of community forestry programmes.

Study findings from in-depth interviews with the key informants also revealed more challenges experienced in engaging community forestry association activities. For example,

KI I said some of the challenges was lack of community involvement, Conflict of interest in forest management and imposed targets. KI II mentioned weak policies and legislation of forest rights, and lack of technical experts, weak monitoring systems affect conservation efforts of forest associations. Local people faced a lot challenges while working together towards forest resource management that they depend on for cultural needs, economic and numerous other benefits accrued to people including food, wood, firewood, medicine, building materials and livestock feed (Barret et al., 2012).

According to KI III, there was lack of community benefit sharing framework which hindered adequate procedures for working for the forest and its benefits. Also, KI IV said political interference and skewed donor interest was another challenge. Some political leaders had interest in grabbing the forest land which still they are pursuing to see if they can get a bite of the forest land for their own benefits. Finally, KI V said exploitation of community labors and attitude towards conservation has affected the way community members engage in forest conservation activities. The members see themselves as providing cheap labor at the expense of benefits they get from the forest.

Kimutai and Watanabe (2016) highlighted community forestry programmes challenges, particularly regarding to the role of community forestry associations. They reported that the implementation, impact, and sustainability of community forestry programmes in the area faced many challenges including the slow performance of the PFM, the Kenya Forest Service (KFS) ceding minimal forest legislative powers and control of forest resources to CFAs, the weak organizational structure of CFAs, conflict of interest, inadequate or lack of funding, and issues around accountability, among other factors.

Different applicable strategies for enhancing community forestry programmes have been mooted. As per this study's findings, the applicable strategies included but not limited to strengthening the policies and legislations on forestry management will help to enhance community forestry 79(87.8%) agreed, the respondents also indicated that security of tenure for communities implementing forest sustainment programmes at 33(36.7%) be guaranteed and assured that through their daily work in the forest and assurance of livelihoods. Respondents at 75(86.2%) agreed that one of the strategies to enhance community forestry is to ensure there is economic benefit for the available resources for all stakeholders. This was supported by 51(56.7%) who agreed on the strategy of equal economic benefits for all stakeholders. However, 9(10%) of the respondents were undecided whether ensuring there is economic benefit for the available resources for all stakeholders is the best strategy to enhance community forestry while 2(2.2%) of the respondents disagreed that it was not the best strategy to enhance community forestry husbandry.

Other strategies which respondents suggested included ensuring there was adequate and sustained funding to facilitate sustainability programmes at 79(87.9%), effective conflict management among stakeholders at 75(83.3%) and research and capacity building for all stakeholders at 75(83.3%). Based on the results, it was evident that the measures suggested would be beneficial to sustain the community forestry program and there would need to be implemented to curb the challenges experienced. This is the step path to strength the community forestry programmes and associations.

Further strategies were revealed from the in-depth interviews with key informants. For instance, KI I had the following to say about measures to curb the community forestry challenges; "there should be benefit of sharing framework with clear mandate and guidelines,

enhance community capacity and proper exit plan for the projects and programmes”. KI II revealed that measures to be put in place to enhance community forestry program such as good relationship between communities, promotion of SLM, multi-Agency approach in forest management, and establish PES framework.

According to KI III, there should be proper implementation of participatory forest management practices, enhanced access to forest resources and proper planning to help curb community forestry challenges. Other measures as per the KI IV include sensitivity to cultural values, target projects that have impact on community livelihoods and engaging county governments in conserving the environment and forest resources. Finally, but not the least, KI V’s verdict indicated that income generation through NBE, valuation of forest resources and community involvement as key measure to enhance community forestry programmes activities. The findings agree with Pokorny and Johnson (2008) that the best strategies to curb community forestry challenges is to establish a legal and institutional framework, including the revision of traditional norms and regulations for forest management, the development of national forest plans, the strengthening of governmental environmental agencies, and decentralization processes to sub-national levels of government.

Conclusion

Kenya is on the right path towards the promotion of community forestry practices. The government is not opposed to community forestry as it is evident from the study that there is partnership from the Kenya Forest Service (government agency) and the community forestry associations.

Community forestry program contributes to community development and growth. Also, if communities are incorporated through community forestry programmes that were

meant to transform their lives; the most likely scenarios were the sustainability of forests. PFM is a mechanism for enhancing people's livelihoods by protecting the forest. Therefore, seeking community forestry programmes in development issues, which have a significant influence on the transformation of their lives, was critical because they are involved in defining the solutions to issues affecting the communities surrounded by forests.

A wide array of significant direct and indirect benefits can be derived from community forestry programmes. Such benefits include the provision of forest products, creation of seasonal and regular employment opportunities, and improvement of community livelihoods after rolling out the community forestry programmes.

There are tremendous social, economic and environmental sustainability benefits that accrue from the implementation of community forestry programmes. Despite the immense benefits of community forestry programmes and the existing policy and legal frameworks promoting the same, there are certain challenges impeding the success and sustainability of such programmes.

The major reasons for the limited success of most community forestry programmes include inadequate funding and financing, lack of full and sustained awareness and communication of community forestry practices, lack of commitment to the goals of partnership and benefit sharing mechanism, and absence of mutual understanding and transparency in sharing the benefits that accrue from community forestry programmes particularly, awareness among institutions involved in the community or participatory management of forest resources.

Several strategies can help remedy the problems. Amongst the strategies aimed at enhancing community forestry programmes include further strengthening of legislations and

policies that promote community participation and involvement of local communities in forest management, ensuring security of tenure for communities implementing community forest programmes and ensuring there is economic benefit for the available resources for all stakeholders. Real success in community forestry program requires the involvement of forest stakeholders more so the forest dependents who live near or within the forests.

Recommendations

1. Analysis of the factors necessitating the establishment and increased adoption of community forestry programmes lead to the conclusion that the creation of enabling legislations and regulations is a major contributing and determining factor. From the study it is evident that the legal and institutional framework of community forestry has been established in Kenya. This is notable through the creation of community forestry enables such as community forestry associations (CFAs). Community forest associations have continued to contribute towards conservation and management of the forest and thus continued engagement of CFAs and creation of community forestry infrastructure is important for promotion of sustainable forest management. Similarly, it also evident from the study that community forestry associations and groups need to operate in an enabling environment in order to be able to function well and generate socio-economic benefits of community forestry programmes. Therefore, the research recommends the government to create a viable department or unit within the ministry of Environment and Forestry to be responsible for implementing the community forestry aspects of the Forest and Conservation Act 2016. Furthermore, the government should not only create the unit but also ensure the capacity of the unit to carry out its mission is strengthened.

2. The suggestions made by the key informants were used as a basis for soliciting recommendations on the best ways of ensuring the sustainability of community forestry programmes. Guided by the insights and views from the key informants corroborated by the members of the community forestry association, the government should come up with policies to increase level of awareness and proliferation of community forestry practice. This can be achieved through creation of an enabling environment, policy and legislative guidelines that support community-based forest management practices more so those that encourage agreement between government and local forest communities and benefit sharing mechanisms.
3. The study has pinpointed the benefits and challenges facing sustainability of community forestry programmes. The key areas that require attention in order to address and mitigate the challenges include strengthening of CFAs through capacity building, managerial and administrative training, and development of guidelines for good community forestry programmes implementation.
4. The study has shown that finance or funding directed towards community forestry programmes are insufficient for promoting sustainable community forestry programmes. Recognizing the extreme importance of funding in facilitating the work of community forest associations and user groups, the study recommends the government and relevant government agencies such as Kenya Forest Services and NEMA to continue mobilizing for resources to support sustainability of forests through CFAs and establishment of bigger community forestry programmes. There is a clear need to establish community forestry financing strategy and bring diverse financing and funding mechanisms to support sustainable community forestry programmes.

5. Based on the fact that there are several players whose operation and roles impacts on forest ecological health, there is need for the government to come up with forest and water towers regulatory authority to coordinate and oversee activities in line with enhancing integrity of forest ecosystem. The regulatory authority will; ensure implementation of policies and strategies allied to forest and water towers management, advocate for establishment and implementation of benefit sharing framework like Payment for ecosystem services and carbon credit, enhance research and build capacity for stakeholders and conduct resource mobilization for sustainable management of forest and Water Towers.
6. There are several unforeseen circumstances which affect the natural capital including but not limited to forest fires which affect the sustainability of community forestry programmes, hence the government should establish forest and water towers insurance cover to cushion such effects towards sustainable management of these natural resources. The insurance scheme will address the aspect of compensation in the event of such eventualities.

Areas for Further Research

This research's major focus was at Karura Forest Association. Therefore, the findings might not be representative of the whole country. Thus, a further research is recommended to cover many parts of Kenya in order to provide a generalized perception of the country. Another study should be done on the impact of community forestry program on community development. A study on the design on framework for forest and water tower insurance cover and its implementation will proof critical in the area of forest protection.

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APPENDICES

Appendix A: Questionnaire

Hallo!

I am Desmond Junior Onyango, a student at Daystar University pursuing Master of Arts in Monitoring and Evaluation. As a requirement of the course, I'm conducting a study on Constraints to Sustainable Community Forestry Programmes in Kenya.

This questionnaire is for the purpose of the research only and the information you give will be treated with utmost confidentiality. Please answer all the questions provided for as honest as possible, to the best of your knowledge.

Thanks in advance.

Questionnaire for the members of the Karura Forestry Association

Section A: Socio Demographic and Socio Economic Characteristics

(Tick (√) the appropriate option (bracket)

1. Gender: Male [] Female []

2. Age:

a) 20 -30 [] b) 31-40 [] c) 41 -50 [] d) 51 and above []

3. Marital Status:

a) Single [] b) Married [] c) Separated [] d) Divorced [] e) Widowed []

Other (specify).....

4. Highest level of education:

a) Primary [] b) Secondary [] c) Certificate [] d) Diploma []

e) Bachelor's degree [] f) Master's degree []

g) Others (specify) _____

1. Occupation:

a) Formal employment []

b) Self-employment [] c) Other (Specify).....

2. Duration you have been involved in Karura forest conservation activities

- a) 1 – 5 years [] b) 6 – 10 [] c) 11 – 15 [] d) over 16 Years []

Section B: Establishment of Community Forestry Programmes

3. Are you a member of Community Forestry Programmes/ associations?

- Yes [] No []

8. If yes to the question above what are some of the community forestry programmes and activities that you have been implementing or involved in the past or currently? (You can Tick (√) more than one option)

- a) Ecotourism [] b) Bee keeping [] c) Payment for Ecosystem Services []
 d) Tree planting [] e) Carbon trading [] f) Controlled Hunting []
 g) Tree Nursery [] h) Controlled Fuel-wood extraction / Collection of firewood []
 i) Others (specify)

9. Indicate the extent to which you agree or disagree with the following statements in contributing to the establishment of community forestry programmes in Kenya

In a scale of 1 – 5

(Where 1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree)

Factors for establishment of Community Forestry Programmes	1	2	3	4	5
The need to address forest/ ecological degradation in the country					
The inability of the state to properly manage forest resources/ ineffective coordination of forest governance and management					
The creation of enabling policies & legislations i.e Constitution & Forest Management Act					
The need for the state to provide local communities with social and economic benefits from forests					

Section C: Socio-Economic Benefits of Community Forestry Programmes

10 Are there benefits accruing from Community Forestry Programmes?

Yes [] No []

11 If yes to the question above kindly mark the benefits within the following categories

a) Direct Benefits of community Forestry Programmes

i) Employment opportunities [] ii) Improved forest management []

iii) Reduced Forest degradation [] iv) Provision of alternative livelihood options []

iv) Others

.....

.....

.....

b) Indirect benefits of community Forestry Programmes

1. Provisional services i. Fresh water [] ii. Fuel-Wood [] iii. Natural Medicine []	2. Regulatory services i. Soil erosion regulation [] ii. Water purification [] iii. Climate regulation []
3. Cultural services i. Eco-tourism [] ii. Cultural Heritage [] iii. Educational values []	4. Support services i. Honey production []

Other indirect benefits (Specify).....

12 Within the context of benefits of community forestry Programmes, kindly indicate your opinion on the following

In a scale of 1 – 5 (where 1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree)

Socio-Economic Benefits of Community Forestry Programmes	1	2	3	4	5
Increased forest goods and services such as provisional, cultural. Regulatory and support services					
Improved sustainable management of Karura forest					
Created employment opportunities and income generating activities					
The local community now has greater control over and access to the forest					
Improved of community infrastructure					

Section C: Constraints to Sustainable Community Forestry Programmes

13 Are there challenges to sustainability community forestry Programmes?

Yes [] No []

14 If yes, kindly indicate the extent to which you agree/ disagree to the challenges below

In a scale of 1 – 5 (where 1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree)

Challenges of engaging in Community Forestry Programmes	1	2	3	4	5
Un-preparedness of forestry service officer to change probably for fear of loss of jobs					
Poor funding of forestry activities					
Lack of commitment to the goals of partnership					
Lack of sustained awareness and communication					
Absence of mutual understanding and transparency					

a) Other challenges kindly specify

.....

Section D: Strategies to enhance community forestry programmes

15 Kindly indicate whether you agree or disagree with some of strategies that could be adopted to enhance for sustainable community forestry programmes with respect to the following

In a scale of 1 – 5 (where 1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree)

<u>Strategies to enhance community forestry programmes</u>	1	2	3	4	5
Strengthen the Policies and Legislations on forestry management					
Security of tenure for communities implementing forest sustainment programmes					
Ensure there is economic benefit for the available resources for all stakeholders					
Ensure there is adequate and sustained funding to facilitate sustainability programmes					
Effective conflict management among stakeholders					
Research and capacity building for stakeholders					

Other strategies
(Specify).....
.....

Thanks for your Participation

Appendix B: Key Informant Interview

I am Desmond Junior Onyango a student at Daystar University pursuing a Masters of Arts degree in Monitoring and Evaluation. This research study is in partial fulfilment for the award of the Master of Arts degree. My purpose in talking with you today is to learn more about your thoughts, feelings and experiences with community forestry programmes. Anything you tell me will not be personally attributed to you in the final study report. This is purely an academic research and all information will be treated with utmost confidentiality.

1. Interviewee representation ,

- Kenya Forestry Service staff [] Ministry of Environment & Forestry Staff []
- Kenya Water Towers Agency staff [] Kenya Forestry Research Institute staff []

2. What are some of the community forestry programmes that have been or are currently being implemented in Karura Forest?

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3. As a person who oversees the Community Forestry Program/ CFA affairs what are some of the factors contributing to the adoption of community forestry program

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.....

4. How does the community forestry programmes benefit local communities/ forest dependent communities?

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.....
.....
.....

5. What are some of the challenges/ constraints to sustainable management of community forestry programmes?

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.....
.....
.....

6. What are some of your suggestions / best practices that can be used to enhance the sustainability of community forestry programmes?

.....
.....
.....

Thank you for your time!

Appendix C: Informed Consent Form

ASSESSING CONSTRAINTS TO SUSTAINABLE COMMUNITY FORESTRY PROGRAMMES IN KENYA. A CASE OF KARURA COMMUNITY FOREST ASSOCIATION

INFORMED CONSENT FORM**STUDY LOCATION: Nairobi County**

PURPOSE OF STUDY/PROJECT: The study aims at assessing the constraints to sustainable community forestry programmes using Karura Forest Association as a reference point.

DESCRIPTION OF THE RESEARCH STUDY/PROJECT:

The research team will distribute questionnaires and take notes, which will help them to explain our findings. The form used to collect information will not have your name but will be assigned a number that cannot be traced back to the person who responded. The data collected will be secured through an online platform and computer systems that are protected with passwords.

Participation in this study is voluntary and you are free to terminate interview at any point. If you agree to be a participant in this study, we will give you a questionnaire/ take an interview.

RISK/BENEFITS: There is no risk of participation in this study. You will not be expected to give your name to the person collecting data from you. The benefits of this study may be of significance to various parties including friends of the forest, Government of Kenya, the community, the Ministry of Environment and County governments, policy makers, among others.

CONFIDENTIALITY: No personal identifiers will be taken in the course of this data collection process. Your participation remains anonymous.

CONTACT INFORMATION: If you have any queries now or in future regarding this study, kindly contact **Daystar University School of Human and Social Sciences**

DECLARATION OF CONSENT: I have understood the content of this consent form; the details of the study and the basis for my participation. I also understand that I am free to choose to be part of the study and I can withdraw my participation at any time. I have therefore agreed to participate in this study without any coercion whatsoever.

Participant's Ref. No.:

Signature

(Participant).....Date.....

Name of person obtaining consentSignature

.....

Date.....

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Appendix D: Ethics Review Approval

VERDICT: APPROVAL WITH COMMENTS
Daystar University Ethics Review Board



Our Ref: **DU-ERB/13/01/2021/000482**

Date: 13th January 2021

To: Desmond Junior Onyango

Dear Desmond,

RE: ASSESSING CONSTRAINTS TO SUSTAINABLE COMMUNITY FORESTRY PROGRAMS IN KENYA. A CASE OF KARURA COMMUNITY FOREST ASSOCIATION

Reference is made to your ERB application reference no. 141220-01 dated 14th December 2020 in which you requested for ethical approval of your proposal by Daystar University Ethics Review Board.

We are pleased to inform you that ethical review has been done and the verdict is to revise to the satisfaction of your Supervisors and Head of Department before proceeding to the next stage. As guidance, ensure that the attached comments are addressed. Please be advised that it is an offence to proceed to collect data without addressing the concerns of Ethics Review board. Your application approval number is **DU-ERB-000482**. The approval period for the research is between *13th January 2021 to 12th January 2022* after which the ethical approval lapses. Should you wish to continue with the research after the lapse you will be required to apply for an extension from DU-ERB at half the review charges.

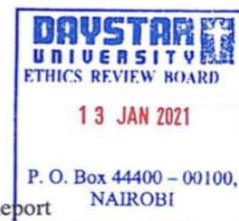
This approval is subject to compliance with the following requirements;

- i. Only approved documents including (informed consents, study instruments, MTA) will be used.
- ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by Daystar University Ethics Review Board.
- iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to Daystar University Ethics Review Board within 72 hours of notification.
- iv. Any changes anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to Daystar University Ethics Review Board within 72 hours.
- v. Clearance for export of biological specimens must be obtained from relevant institutions.
- vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- vii. Submission of a signed one-page executive summary report and a closure report within 90 days upon completion of the study to Daystar University Ethics Review Board via email [duerb@daystar.ac.ke].

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) <https://oris.nacosti.go.ke> and other clearances needed.

Yours sincerely,

Sr. Prof. A. L. Lando PhD
Chair, Daystar University Ethics Review Board



Encl. Review Report

Appendix E: Research Permit


REPUBLIC OF KENYA


**NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY & INNOVATION**

Ref No: **511016** Date of Issue: **24/December/2020**

RESEARCH LICENSE



This is to Certify that Mr.. DESMOND Junior Onyango of Daystar University, has been licensed to conduct research in Nairobi on the topic: Assessing Constraints to Sustainable Community Forestry Programs in Kenya. A Case of Karura Community Forest Association for the period ending : 24/December/2021.

License No: **NACOSTI/P/20/8380**

511016
Applicant Identification Number


Director General
**NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY &
INNOVATION**

Verification QR Code



NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

Appendix F: Plagiarism Index Report

Desmond Onyango Thesis

ORIGINALITY REPORT

14%	12%	5%	6%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	ir-library.ku.ac.ke Internet Source	3%
2	erepository.uonbi.ac.ke Internet Source	1%
3	www.coursehero.com Internet Source	1%
4	www.kenyaforestservice.org Internet Source	1%
5	www.onlinejournal.in Internet Source	1%
6	Submitted to Daystar University Student Paper	<1%
7	mafiadoc.com Internet Source	<1%
8	www.mdpi.com Internet Source	<1%
9	en.wikipedia.org Internet Source	<1%

Appendix G: Introduction Letter from Head of Department

15th January 2021

National Commission for Science, Technology and Innovation
P. O. Box 30623-00100
Nairobi
KENYA

Dear Sir/Madam,

RE: DESMOND JUNIOR ONYANGO (14-0878)

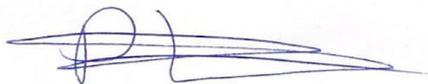
The above named is a student in the Master of Arts, Monitoring and Evaluation at Daystar University Nairobi Campus. He is about to complete his coursework for the master's program and is required to do research as part of his final requirements. The topic of study is '*Assessing Constraints to Sustainable Community Forestry Programs in Kenya. A Case of Karura Community Forest Association*'. His proposal has been passed and approved by the Department of Development Studies.

He is hereby authorized by the University to carry out his study by collecting data from the field. He requires your authorization such that he can be able to access and identify his target population.

Thank you in advance for your willing to give this opportunity. We are truly grateful for your partnership in this, and for your organization's contribution in the education of Daystar University students.

If you have any queries, please do not hesitate to contact me.

Yours faithfully,



Dr. Philemon Yugi
HOD, DEVELOPMENT STUDIES

Ref:hd/ministry letter



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"...until the day dawn and the
daystar
arise in your hearts"
2 Peter 1:19 KJV