

**SUSTAINABILITY OF REFORESTATION PROJECTS IN KODERA AND
WIRE FORESTS IN RACHUONYO SOUTH SUB-COUNTY, HOMA BAY
COUNTY – KENYA.**

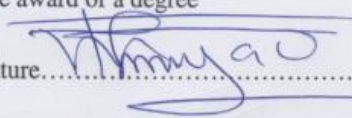
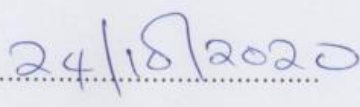
TOBIAS OUMA MBOYA

**A Research Project Report Submitted in Partial Fulfillment for the Requirements of the
Award of A Degree of Master of Arts in Project Planning and Management of the
University of Nairobi.**

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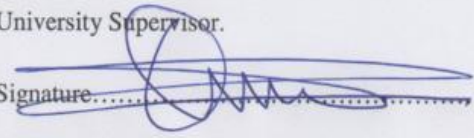
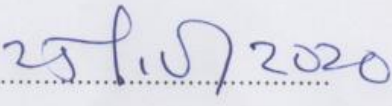
DECLARATION

This Research Project report is my original work and has never been presented to any university for the award of a degree

Signature.......... Date..........

TOBIAS OUMA MBOYA,
REG NO.: L50/25178/2019.

This research project report has been submitted for examination with my approval as the University Supervisor.

Signature.......... Date..........

DR. MOSES OTIENO, (PhD)

Lecturer,

Department of Open Learning,

University of Nairobi.

DEDICATION

I dedicate this study to my beloved father, Mr. James Mboya, who instilled in me the culture of hard work and dedication. My mother Mrs. Hulda Mboya and brothers Kennedy, Peter, Dennis, and Brian – not forgetting my sisters Linda and Lorine, for their unwavering support and love.

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ABBREVIATIONS AND ACRONYMS

IUCN: International Union for Conservation of Nature

CBD: Convention for Biological Diversity

FLR: Forest Landscape Restoration

FAO: Food and Agricultural Organization of the United Nations

IUCN: International Union for Conservation of Nature

UNEP: United Nations Environment Program

WWF: World Wide Fund for Nature

NEMA: National Environment Management Authority

ABSTRACT

Despite substantial financial investment on reforestation projects, they fail to realize their fundamental goal of biodiversity conservation, carbon emission reduction, and support to livelihoods, leading to wastage of funds. The research was focused on determining the factors influencing the sustainability of reforestation projects in Kenya, focusing on Kodera and Wire forests in Rachuonyo South Sub-County in Homa Bay County. The objectives were; to assess the influence of public participation on the sustainability of reforestation projects, to assess the influence the economic benefits on the sustainability of reforestation projects, to evaluate the influence of government policy on the sustainability of reforestation projects, and to assess the influence of community awareness on the sustainability of reforestation projects in Kodera and Wire forests. Consequently, the study sought to fill the knowledge gap on the factors influencing the sustainability of reforestation projects in Kodera and Wire Forests. The theories of participation and conservation guided the study. It adopted a descriptive design. Through stratified and simple random sampling, 92 respondents were selected from a target population of 920. The collection of quantitative data was done using closed-ended questionnaires. Validity was enhanced through piloting, while reliability was enhanced through the split-half method. The quantitative data was measured in an interval scale, coded, and fed into the SPSS for analysis. Inferential and descriptive statistics were used to analyze data. Tables were used to present the data. There was a statistically significant relationship between public participation, economic benefits, government policy, and community awareness and the sustainability of reforestation projects (P-value < 0.05 = 0.001843785, 0.009802, 0.040775, and 0.000692 at 95% confidence level respectively). The study concluded that public participation, economic benefits, government policy, and community awareness have a significant influence on the sustainability of reforestation projects. Project implementers should enhance public participation, community awareness, and provide economic benefits to local communities. Government policies on projects should focus on the community and promote equality. Further research should be done to assess the influence of politics, income levels, literacy levels, and tree species on the sustainability of reforestation projects.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Forest degradation continues to be a global problem affecting millions of lives. The International Union for Conservation of Nature (IUCN) (2020) records that deforestation and degradation of forests have affected the lives of 1.6 billion people globally who rely on woodlands for their survival. Out of the 1.6 billion people who derive their livelihoods from forests, one billion make up the world's poorest (IUCN, 2020). Deforestation occurs when forests are converted to non-forest uses like agriculture and road construction. Forest degradation occurs when forest ecosystems become unable to provide important services and goods to nature and people (IUCN, 2020). More than half of the forests in the tropics have been lost since the 1960s, and every second, one hector of tropical forests is degraded. Degradation is not limited to only tropical forests, in Europe; more than 3.7 million hectors of forest land have been lost through destruction by human activities, forest fires, diseases, insects, and livestock (IUCN, 2020).

Forests are essential for biodiversity protection, sustainable livelihoods, and climate mitigation and adaptation. More than 80% of the global biodiversity is found in the forests (IUCN, 2020). Forests loss threatens the survival of thousands of plant and animal species. It limits the ability of forests to provide important services like fertile soil for agriculture and clean water and air. Deforestation poses a real threat to the lives of poor people who depend on the forests for survival. For instance, 52% of all agricultural land is severely destroyed through soil erosion, which occurs when trees are cleared. This causes food insecurity. Globally, forests take in over 2.4 billion tons of carbon dioxide that originates from the combustion of fossil fuels (IUCN, 2020). Destruction of forests further releases substantial amounts of carbon into the atmosphere, further compounding the problem of climate change. Protecting and restoring forests, which are important carbon sinks, can help in mitigating climate change. They also play a vital role in enhancing programs designed to combat climate. They are food safety nets in the event of climate shocks, minimize risks associated with disasters like the flooding of coastal areas, and help regulate water flows and microclimates. Enhancing the health of forest ecosystems and

introducing sustainable reforestation projects enhances humans and natural systems ability to withstand climate change (IUCN, 2020).

Reforestation projects like Forest Landscape Restoration (FLR) by the IUCN and the United Nations' Billion Trees Campaign can help nations mitigate the effects of degradation and deforestation and resuscitate the economic, ecological, climatic, and social, significance of forests. Yet, the sustainability of these reforestation projects continues to be the greatest challenge to many nations (Cao et al., 2010). For instance, the government of China invested billions of dollars in several reforestation projects like the Grain for Green and the Three North Shelter projects to solve forest degradation. Despite the massive financial investment, these projects have proved to be ecologically unsustainable. Most of the trees planted either died or are dying now (Cao et al., 2010). In their research, Cao et al. (2010) concluded that poor government policies on reforestation could have been the major cause of the unsustainability of the reforestation projects in China.

China holds about 5% of the global forest cover; hence challenges of sustainability of its reforestation projects have a significant global impact. According to De Li et al. (2013), China has invested \$47.82 in its reforestation programs since 1999, yet these projects remain unsustainable. The Sloping Land Conversion Project is one example of those projects, and it is also the largest reforestation project globally. Assessment of the project by De Li et al. (2013) in Hainan Island in China showed that its implementation produced adverse effects on natural forests in the area. The study established that pulpwood and rubber plantations had replaced natural forests. Grasslands, shrubs, and natural forests decreased by 65%, with natural forests losing the most significant land at 21,063 hectares. The project converted a more substantial part of the natural forest into rubber and pulpwood plantations. The authors concluded that replacing natural forests could lead to higher carbon emissions (De Li et al., 2013)

Deforestation rate in Africa is twice that of the global average, with more than 4 million hectares of forest lost annually. For instance, reports indicate that Ghana had lost 23% of its 715,500 hectares of the original forest land through human actions like illegal logging. Deforestation contributes around 6-17% of the total carbon dioxide emission through anthropogenic sources (Appiah, Fagg & Pappinen, 2015). In 1992, the Convention for Biological Diversity (CBD) and

the United Nations Framework Convention for Climate Change (UNFCCC) were signed. This led to the development of Reducing Emission from Deforestation and Degradation Plus (REDD+) projects aimed at reducing carbon emissions through reforestation initiatives. However, major donors like the African Development Bank and World Bank continue to doubt the sustainability of such projects, which are normally implemented on huge costs. Implementation of these projects, mostly in Africa, usually starts well, but sustaining them becomes difficult.

Consequently, many reforestation projects in Africa fail to realize their fundamental goal of biodiversity conservation, carbon emission reduction, and enhanced forest governance (Appiah, Fagg & Pappinen, 2015). This implies that while implementers of reforestation projects incur a significant amount of money, lack of sustainability hinders them from benefiting from these projects' returns. Lack of sustainability of these projects is attributed to insufficient legal frameworks for shared equitable benefits and joint-management, resulting in social conflicts, inadequate participatory approaches, and failure of access rights of the local communities (Appiah, Fagg & Pappinen, 2015). In Kenya, reforestation projects like the Mau Forest reforestation project initiated by retired President Kibaki and former Minister Raila Odinga, who was the former prime minister, underwent serious community resistance problems. This affected the sustainability of the project even after millions of shillings had been pumped into the project. Reforestation projects in Koderia and Wire Forests also face similar problems of lack of sustainability due to factors such as community resistance and illegal logging. Therefore, there is an urgent need to investigate the varied factors that influence the sustainability of reforestation projects in Koderia and Wire Forests.

1.2 Statement of the Problem

Even with the substantial financial investment on reforestation projects, their sustainability continues to be a major problem. The sustainability of these projects is vital to ensure that forests remain viable. Forests have a vital role in mitigating climate change, watershed protection, soil erosion prevention, and air quality regulation. Forests also help in biodiversity conservation, providing home to many animal and plant species. They also provide essential resources such as wood and food, thus supporting millions of livelihoods. According to the World Wide Fund for

Nature (2020), more than two billion individuals derive fuel security, water, food, shelter, and livelihoods from forests. Forests support the largest percentage (80%) of the earth's terrestrial biodiversity (WWF, 2020). Lack of sustainability of reforestation projects directly contributes to declining forests cover as trees are not constantly replaced following high rates of forest degradation. According (FAO) (2020), between 2015 and 2020, it is estimated that deforestation rate will hit 10 million hectares annually. Besides affecting vulnerable communities that directly depend on forests for their survival, deforestation can pose a significant effect on the global population through increased risks of climate change and loss of biodiversity. A report by FAO (2020), indicates that fallout from post-election violence in 2007/8, poorly planned settlements, and illegal logging have led to the deterioration of forest resources in Kenya, thus, threatening water supplies, tourism, food security, and livelihoods. This has further hindered the country's effort to meet the recommended global minimum of 10% forest cover. Forest cover in Kenya currently stands at 7.4%. The rate of depletion of forests in Kenya is alarming, with about 5,000 hectares lost annually. This is estimated to cause a loss of 62 million cubic meters of water, leading to a loss of more than \$19 million (Ministry of Environment and Forestry, 2018). Mau forest, the country's largest indigenous forest and water tower, has lost a quarter of its area in the last 20 years (UNEP, 2020). From these statistics, it is evident that the rate of deforestation globally and in Kenya is a major problem. Reforestation projects can reverse this trend and help Kenya to meet the 10% forest cover only if they remain sustainable. Besides the ecological problems, lack of sustainability of the reforestation projects also causes financial wastage as huge amounts of money are invested in these projects. The study will produce valuable parameters that can be used to ensure the sustainability of reforestation projects. The parameters will be major reference points to facilitate the sustainability of reforestation projects.

1.2 Purpose of the Study

The study assessed the factors that influence the sustainability of reforestation projects in Kodera and Wire Forests in Rachuonyo South Sub-County in Homa Bay County.

1.3 Objectives of the Study.

The following objectives guided the study:

- I. To assess the influence of public participation on the sustainability of reforestation projects in Koderia and Wire forests.
- II. To assess the influence economic benefits on the sustainability of reforestation projects in Koderia and Wire forests.
- III. To evaluate the influence of government policies on the sustainability of reforestation projects in Koderia and Wire Forests.
- IV. To assess the influence of community awareness on the sustainability of reforestation projects in Koderia and Wire forests.

1.5 Research Questions

The following research questions guided the study:

- I. To what extent does public participation have a significant influence on the sustainability of reforestation projects in Koderia and Wire forests?
- II. How does an economic benefit influence the sustainability of reforestation projects in Koderia and Wire forests?
- III. How does a government policy influence the sustainability of reforestation projects in Koderia and Wire Forests?
- IV. To what extent does community awareness have a significant influence on the sustainability of reforestation projects in Koderia and Wire forests?

1.6 Research Hypotheses

The study sought to test the following hypotheses:

- I. **H₀**: Public participation does not significantly influence the sustainability of reforestation projects in Koderia and Wire forests.
H_A: Public participation has a significant influence on the sustainability of reforestation projects in Koderia and Wire forests.
- II. **H₀**: There is no significant relationship between economic benefits and the sustainability of reforestation projects in Koderia and Wire forests.
H_A: There is a significant relationship between economic benefits and the sustainability of reforestation projects in Koderia and Wire forests
- III. **H₀**: Government policies do not significantly influence the sustainability of reforestation projects in Koderia and Wire Forests.
H_A: Government policies have a significant influence on the sustainability of reforestation projects in Koderia and Wire Forests.
- IV. **H₀**: Community awareness does not significantly influence on sustainability of reforestation in Koderia and Wire forests.
H_A: Community awareness has a significant influence on the sustainability of reforestation in Koderia and Wire forests

1.7 Significance of the Study

The study results will help curb the effects of deforestation by ensuring the sustainability of reforestation projects. The beneficiaries of this study will be National Government Agencies like KFS, Kenya Wildlife Services, NEMA, and the ministry of environment. Other beneficiaries will be international organizations like the United Nations Environment, Food and Agricultural Organization of the United Nations, World Agroforestry Center, among others. County Governments will also find this study useful. These entities and organizations will benefit from this study by obtaining valuable and credible information on the critical parameters that influence the sustainability of reforestation projects. They can incorporate the parameters into their development activities and reforestation projects to achieve the primary goal, which is sustainability.

1.8 Limitations of the Study.

To mitigate the impacts of precipitation, data were collected during the dry season. To enhance security, the consent of the local leaders like chiefs and village elders was sought before the commencement of the study. The communication barrier was minimized by interpreting the contents of the study to the participants in languages that they understood best. The problem of negative perceptions that could be developed by the study participants was to be minimized by initially engaging local and community leaders. They, in turn, engaged the study participants on the intention of the study. The participants were also given an introduction letter from the University. The problem of financial constraints was curbed by seeking funds from well-wishers and friends.

1.9 Delimitations of the Study

The study sought to investigate the factors that influence the sustainability of reforestation projects. It was carried out in Kodera and Wire forests, located in Rachuonyo South Sub-County in Homa Bay County, Kenya. It was conducted during June and July.

1.10. Assumptions of the study

The study assumed that the sample of the population was representative. It also assumed that all the respondents were willing to participate in the study and, the questionnaires issued were honestly completed.

1.11 Definition of Key Terms

Sustainability: is the ability and capacity to constantly exist

Reforestation: is the process of renewing forest cover through natural seeding or artificial planting of young trees or seeds.

Forest: is a land with tree canopy cover exceeding 10% and area exceeding 0.5 hectares

Public participation: is the direct involvement of members of the public in decision making.

Economic benefits: are benefits that can be quantified in terms of money generated such as revenues, net income, and cash flow

Government policies: are laws and rules that have been enacted by the government

Community awareness: is the state of the community being conscious about something. More specifically, it is the ability of the community to perceive and directly know or be mindful of events.

1.12. Organization of the Study

The study is organized into five broad chapters. Chapter one delves into the introduction and includes the study background, problem statement, study purpose, study objectives, research questions, research hypothesis, the study's significance, limitations of the study, delimitation of the study, and definition of key terms.

Chapter two is a literature review that focuses on the sustainability of reforestation projects. The review discusses the four key variables related to the sustainability of reforestation projects. The variables include public participation, economic benefits, government legislation, and community awareness. The chapter also discusses the theoretical and conceptual framework of the study and finally provides the knowledge gap and summary.

Chapter three is the research methodology. It provides details on research design, population and sample size, sampling techniques, data collection instruments, validity and reliability of the data collection instruments, data collection procedure, ethical issues, data analysis and presentation, and operational definition of variables.

Chapter four is data analysis, presentation, and interpretation. It provides an introduction to the chapter, the rate at which the questionnaires were returned, reliability statistics, and the respondents' demographic characteristics. It also provides an analysis of the level of public participation, economic benefits, government legislation, and community awareness and establishes the relationship between these variables and the sustainability of reforestation projects.

Chapter five is a summary of the findings, discussions, conclusions, recommendations, and suggestions for further research. It provides an overview of respondents' bio-data, level of public participation, economic benefits, government legislation, and community awareness, and their effects on the sustainability of reforestation projects.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter provides empirical and theoretical literature based on the following areas; sustainability of reforestation projects, review of critical literature that will focus on public participation, economic benefits, government legislation, and community awareness about the sustainability of reforestation projects. Other areas that the chapter will focus on include theoretical and conceptual framework and the knowledge gap and summary.

2.2 Concept of the Sustainability of Reforestation Projects

The sustainability concept has existed for the entire period that human beings have been concerned with the future of their resources. Water and food have to originate from somewhere, and even the most primitive cultures have to think about the impacts of the disappearance of animals and plants that they depend on. However, sustainability itself has a more recent origin. Founded in German, it was originally termed as "Nachhaltigkeit" to mean "sustained yield" and was used to refer to harvesting beyond what forests can provide. Towards the commencement of the 19th century, the translated version of the term appeared in English (The World Energy Foundation, 2018). Over the years, the meaning of the word has progressively changed to fit specific needs.

When ecology became a discipline, the term became inclusive and incorporated not only forests but the entire biological system. In this case, ecological sustainability denoted the ecosystem's ability to maintain its essential functions and preserve its biodiversity. There was yet a shift in the meaning of the term sustainability in the 20th century. During the period, there was an increased awareness of the overuse of resources and overdependence on fossil fuels. Towards the 1980s, it was used more in terms of sustainability of how human beings live on the planet (The World Energy Foundation, 2018). Currently, the more popular meaning of sustainability relates to sustainable development, which United Nations' Brundtland Commission (1987) defines as the development that fulfills the current population's needs without jeopardizing the future generations' capacity to satisfy their needs. The 2005 World Summit set three goals for

sustainable development: environmental protection, economic, and social development (The World Energy Foundation, 2018). Sustainability is currently incorporated in most spheres like business organizations, finance, and project management.

Project sustainability is now an approach that is common in project management. All projects eventually have to end, but the project's impact should continue far into the future. For projects to be sustained, specific standards and parameters must be set from project identification, formulation, design, implementation, monitoring, and evaluation. Sustainability analysis will determine project adaptability, viability, acceptability, and relevance. A sustainable project should, therefore, be able to continue to produce desired impacts even after its implementation (The World Energy Foundation, 2018). In this regard, the concept of sustainability of reforestation projects entails the projects' ability to continue even after their implementation and produce the desired effects, which include increased forest cover. It means that planted trees should be able to grow to maturity. This can only be possible when such projects involve the local communities to provide community ownership and provide the community's economic incentive. Existing government legislation should also provide an enabling environment for project implementation. The community must also be aware of the significance of such projects to facilitate their implementation (The World Energy Foundation, 2018).

2.3. Public Participation and the Sustainability of Reforestation Projects.

Research has shown that the involvement of the public is vital in promoting the sustainability of reforestation projects. Research conducted by Yamanoshita & Amano (2012) on the capability development for project sustainability in reforestation established that participation of all important stakeholders was vital in minimizing the risks of non-permanence of projects. The study identified that it is important to first develop community capability before implementing any reforestation project. Through questionnaires, surveys, and interviews, local villagers recorded that reforestation projects in Vietnam were not sustainable. They caused a land shortage for convectional activities like grazing and collection of fuel-wood. The level of public participation was evaluated by the number of meetings attended by the villagers (Yamanoshita & Amano, 2012). The public meeting forms the core of any public participation process and is a direct indicator of the extent of public involvement in any process of decision making. Public

meetings bring together stakeholders in any development activity, and the views of each of the stakeholders are heard.

According to Park (2018), public participation goes beyond a technique; it is a way of working and acting. It requires both participants and organizers to have a more vivid understanding of the participatory approach's intent and the participation opportunities being organized. It should be based on cooperation, improved communication, and mutual trust among all participants. Public participation has a vital role in the sustainability of reforestation projects.

2.4 Economic Benefits and the Sustainability of Reforestation Projects.

Research carried out by Le, Smith, & Herbohn (2014) on the drivers of sustainability of reforestation projects in the developing world established that economic incentive was one of the important factors that determine the success of reforestation projects. The authors noted that the number of people directly employed or earning wages from the projects and number of households benefiting from reforestation products like honey, fruits, timber, and fodder are some of the important indicators of the extent or level of economic incentives associated with reforestation projects (Le, Smith, & Herbohn, 2014). Another study conducted by Bullock & King (2011) established that successful change of farmland under the "Grain for Grain" reforestation project in Wuqu and Tianquan of Sichuan and Shaanxi provinces of China depended upon the development of the local economy. It means that the local population must be able to enjoy the economic benefits of the program directly. The authors concluded that without economic development of the rural communities, farmers would continue to rely on subsidy assistance to fulfill the ambitious environmental restriction policies hence undermining the sustainability of the program (Bullock & King, 2011). Analysis of these literatures shows that economic benefit is a vital factor that determines the sustainability of reforestation projects.

2.5 Government Policies and Sustainability of Reforestation Projects

Research conducted by Barr & Sayer (2012) on the restoration of forests and political economy in Asia Pacific notes that sometimes, government policies that are designed to promote the sustainability of reforestation projects in some instances promotes the loss of biodiversity. The authors argue that the policies promote inequalities by concentrating resources in the hands of economic and political actors at the expense of local communities. To achieve sustainability,

government policies and legislation on reforestation projects must focus on empowering local communities (Barr & Sayer, 2012). This argument makes sense because local communities play a central role in the sustainability of reforestation projects; hence government policies and legislation on reforestation should be centered on the local communities. Another study by Park & Lee (2014) on forest law and policy for sustainability around the Korean Peninsula established that while North Korea failed in ensuring the sustainability of its reforestation projects, South Korea succeeded due to its effective forest policies. South Korea integrated sectorial policies like economic development, land management, agricultural development, energy security, and reforestation. It also developed laws that treated forest conservation as a component of land management. Thus, projects that control erosion were carried out as part of the national greening program (Park & Lee, 2014). From this study, it is clear that government policies on reforestation must integrate other relevant sectorial policies and treat forest protection as part of land management. It should also focus on the community and eliminate social barriers of equality.

2.6 Community Awareness and the Sustainability of Reforestation Projects.

A study conducted by Reynolds, Farley & Huber, (2010) established that to achieve the sustainability of reforestation projects, community awareness on environmental threats must be done. Community awareness can be created through public awareness campaigns education. Communities must be educated on the benefits of reforestation projects and their significance before they are implemented. According to Persha et al. (2011), when members of local communities see how they benefit from forest services and products, they will dedicate their time and energy to reforestation projects. The author asserts that an increased level of awareness on the significance of reforestation projects can also motivate local communities to modify their land-use patterns and resources to support conservation efforts. Forest use practices are determined by traditional beliefs, attitudes, and knowledge. Promoting indigenous knowledge can be vital in enhancing the sustainability of reforestation projects (Persha et al., 2010). FAO recognizes that the critical indicators for community awareness that can enhance the sustainability of reforestation projects include beliefs and attitudes towards forest conservation projects, level of education, and capacity building initiatives (FAO, 2019). Positive beliefs and attitudes towards reforestation projects can increase the local communities' confidence towards

the projects; hence, the projects become acceptable. A high level of education, including traditional knowledge, can help the local communities understand the vital role of forest and subsequently understand the importance of sustaining reforestation projects. Adequate capacity building can provide people with access to networks, skills, and knowledge to scale up, implement, incentivize, and plan restoration projects and ensure their continuity (Bloomfield et al., 2019)

2.7 Theoretical Framework.

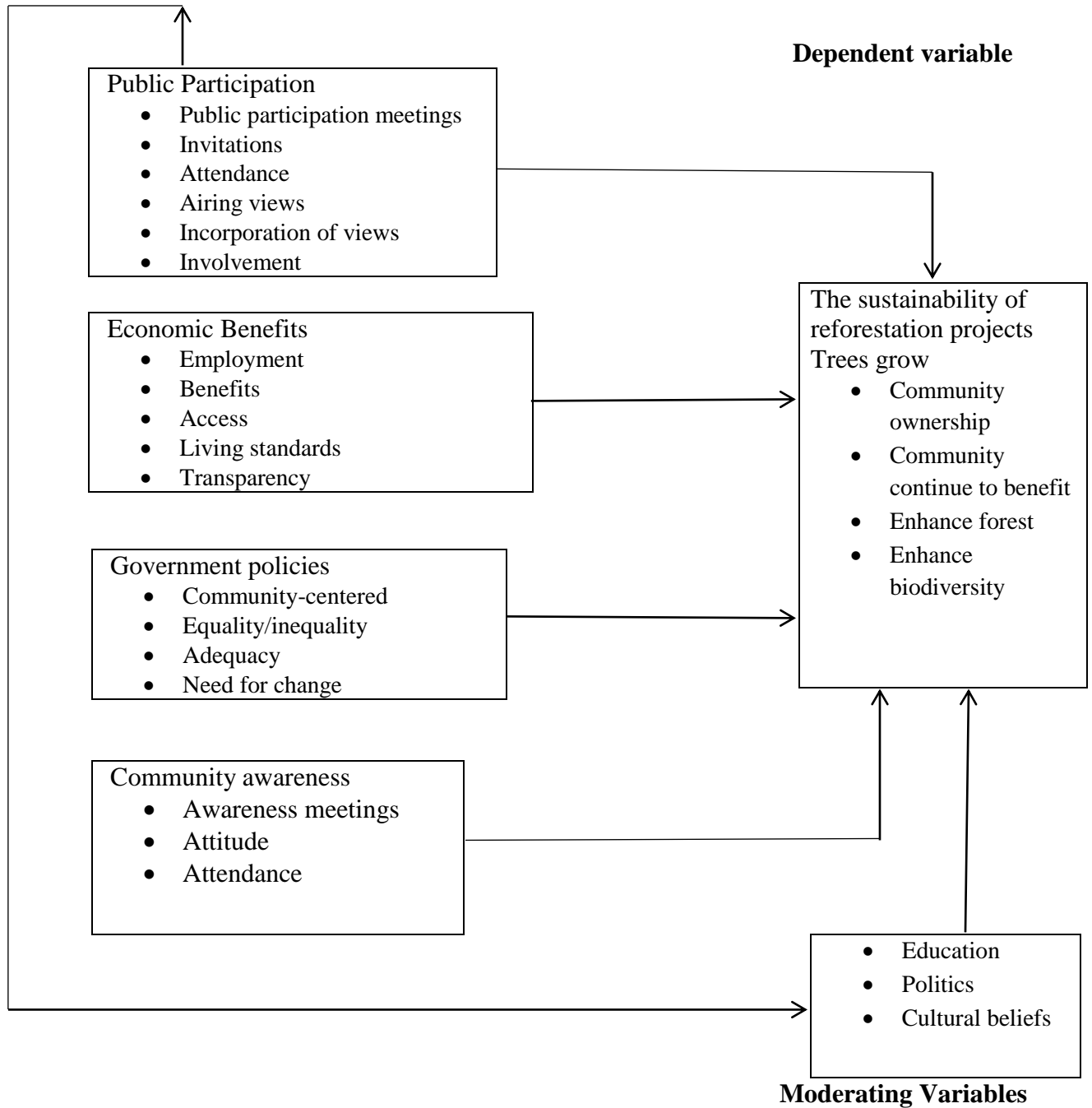
The theories of participation and conservation guided this study. Starting with the theory of participation, it can be traced to the English colonial era and ancient Greece. It was institutionalized in the 1960s during the Great Society programs by President Lyndon Johnson. Public participation gives private individuals the ability to influence decisions (Quick & Bryson, 2016). The theory is based on the broad approaches of decision-making structure, which entails the democratic and the technocratic approaches. The democratic approach is based on the premise that all who may be affected by a given decision have a right in the participation of that decision making. The technocratic approach applies technical knowledge, methods, and expertise to solve a problem. Other key themes of the theory of participation include legitimacy and diversity and inclusion. Legitimacy underpins a procedurally rational and just process that embodies democratic values like transparency and fairness (Quick & Bryson, 2016). Inclusion entails active negotiations among differences in institutional boundaries, identities, and perspectives. The second is the theory of conservation. Gifford Pinchot came up with the resource conservation ethic, which postulates that people see nature as a natural resource for their consumption. The theory can only be viable if resources were used prudently to produce the greatest benefit to the highest number of people in the longest time (Orbaşlı, 2017).

2.8 Conceptual Framework

This study was based on the following conceptual framework

Figure 2.1: Conceptual framework

Independent Variables



The conceptual framework diagram represents the four variables: public participation, economic benefits, government legislation, and community awareness. The indicators for public participation include the number of public participation meetings organized, number of public participation meetings attended, ability to air views freely, Incorporation of the views during implementation of the projects, and adequate invitations to the meetings. The indicators for economic benefits are numbers of persons employed or earning wages from reforestation projects and the number of households benefiting from reforestation products like fruits, flowers, and fibers, and transparency in employments into the reforestation projects. The indicators for government legislation are levels to which they focus on the local community extent to which they address inequalities and the need to change the policies. The indicators for community awareness are attitude and the number of community awareness meetings. Education and politics are the extraneous variables that can affect the outcome of the dependent variable.

2.9 Knowledge Gap

The knowledge gap is highlighted in table 2.1 which compares what others say and what is practiced at Wire and Koderia Forest

Table 2.1: Knowledge gap

| Study Variable | Author | Findings and Conclusions | Knowledge Gap | Focus of the Current Study |
|-----------------------|-----------------------------|--|---|--|
| Public participation | Yamanoshita & Amano (2012). | Community awareness and education levels had significant impact on the level of public participation in reforestation projects | The study did not investigate the influence of public participation on the sustainability of reforestation projects | The study investigated the influence of public participation on the sustainability of reforestation projects in Koderia and Wire forests |

| | | | | |
|---------------------|---------------------------------|--|---|---|
| Economic benefits | Le, Smith, & Herbohn (2014) | Financial Incentives from reforestation projects enhanced the participation of community forest associations, thus ensuring sustainability | The study did not investigate how economic benefits from the reforestation projects to the locals influenced the suitability of reforestation projects | The study investigated the influence of economic benefits (with focus on the local community) on the sustainability of reforestation projects in Kodera and Wire forests |
| Government policies | (Appiah, Fagg & Pappinen, 2015) | Lack of sustainability of reforestation projects can be attributed to insufficient legal frameworks for shared equitable benefits resulting in social conflicts. | The study did not investigate how the other aspects of government policy such focus on the community influence the sustainability of reforestation projects | The study investigated how the aspects of government policies like focus on the community influence the sustainability of reforestation projects in Kodera and Wire forests |
| Community awareness | (Persha et al., 2010). | Lack of sustainability of reforestation projects can be attributed to low education levels which contribute to low community awareness | The study did not investigate the influence of community awareness on the sustainability of reforestation projects | The study investigated the influence of community awareness on the sustainability of reforestation projects in Kodera and Wire forests |

2.10 Summary of the Chapter

The chapter discussed the concept of the sustainability of reforestation projects. It delved into the four variables of the study: public participation, economic benefits, government legislation, and community awareness, highlighting how these variables relate to the sustainability of reforestation projects.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter delves into the research design, population and sample size, sampling techniques, data collection instruments, validity and reliability of the data collection instruments, data collection procedure, ethical issues, and data presentation.

3.2 Research Design

The study adopted a descriptive design because it describes, records, and analyzes present conditions. Descriptive research entails a process or method of collecting and analyzing to answer questions or test hypotheses regarding the status of the subjects studied (Edmonds & Kennedy, 2016). The research design was employed because it relates to the existing program, which is reforestation project. It used questionnaires as a research tool. The information that was collected was used to make the recommendations of the study.

3.3. Target Population

The study's target population was all the villages that exist within a radius of 2 kilometers from Koderia and Wire forests in Rachuonyo South Sub-County of Homa Bay County. Records from the Chiefs' offices indicated that 298 homes exist within a radius of 2 kilometers from Koderia and Wire forests. Records from the Registrar of Persons at Kosele, the sub-county headquarters, indicate that 920 adults live in the 298 homes.

3.4. Sample Size and Sampling Procedure

According to Mugenda & Mugenda (2003), sampling denotes the process of selecting participants in a study in a manner that is representative of the entire population.

3.4.1 Sample Size

According to Mugenda & Mugenda (2003), 10% to 30% of the total population that is accessible is appropriate for descriptive studies depending on the population size. This study being a descriptive, therefore, used a sample of 10%. The sample frame is illustrated in table 3.1 below.

Table 3.1: Sample frame

| Respondents | Total Population | Sample (10%) |
|--------------------|-------------------------|---------------------|
| Villagers | 920 | 92 |

3.4.2 Sampling Procedure

The study adopted probability sampling to select the sample for villagers. Probability sampling is unbiased and lacks systematic error (Acharya, Prakash, Saxena, & Nigam, 2013). It provides the best opportunity to create a truly representative sample of the population and generates highly reliable research findings (Mugenda & Mugenda, 2003). Stratified random sampling was adopted for the study to ensure unbiased representation of all the respondents. The villages were first divided into smaller sub-groups based on their income. Simple random sampling was then used to ensure that each sub-group member got an equal chance of being selected.

3.5 Data Collection Instruments

The primary data collection instrument for the study was questionnaires. A questionnaire is relatively easy to administer and analyze. It also allows a large number of samples within a given population to be contacted easily and at a relatively low cost. Most respondents are also familiar with questionnaires (Bryman, 2016). Primary data that was used for the study was collected using questionnaires. It comprised of closed-ended questions which focused on answering the research questions based on the study objectives.

3.5.1 Piloting of the Instruments

Piloting entails pre-testing the instruments of research before the actual data collection to establish their reliability and validity (Acharya, Prakash, Saxena, & Nigam, 2013). According to Mugenda and Mugenda (2003), a sample of 10% of the sample population is enough for piloting. Consequently, ten respondents were randomly selected from the sample population for pilot-testing. The questionnaires were administered to the respondents, and the responses were used to revise the questionnaires and make necessary adjustments.

3.5.2. The validity of Data Collection Instruments

Validity denotes the idea that research instruments measure it is intended to measure. It refers to the empirical association between test scores and scores on the relevant criterion (Taherdoost, 2016). The validity of the questionnaires was tested using piloting. Piloting means pre-testing the research instruments with a few respondents to establish its accuracy (Bryman, 2016). The content validity of the instruments (questionnaires) was established through piloting. This was done by first giving the instruments to two groups of ten respondents residing near the forest. After successful piloting, the instruments were administered on the sampled population. This allowed the researcher to establish if the instruments were too complicated or appropriate. To further enhance the validity of the instruments, they were subjected to validation by experts. According to Mugenda and Mugenda (2003), the judgment of experts and professionals in the field of study can enhance the validity of research instruments. Simple English was used to structure the questions. The questions were also structured to concur with the study objectives.

3.5.3. Reliability

Reliability denotes the extent to which instruments of research produce consistent results after repeated trials (Mugenda and Mugenda, 2003). It tends to decrease with an increase in random errors. Random errors denote the deviation from an actual measurement; due to factors that have been ineffectively handled by the researcher (Taherdoost, 2016). The reliability of the questionnaires was established using the split-half method. In this regard, the researcher administered the questionnaires on the sampled group who were obtained by randomly dividing the scored items into two groups. The total scores for each subject in the two groups were

computed and correlated from all the subjects. A coefficient value of 0.8 was obtained, indicating that the data collection instrument was highly reliable. The results are shown in Table 3.2

Table 3.2: Reliability statistics

| Variables | Cronbach's Alpha | Number of Items |
|--|-------------------------|------------------------|
| Public Participation | 0.712 | 7 |
| Economic Benefits | 0.693 | 5 |
| Government Policy | 0.847 | 5 |
| Community Awareness | 0.769 | 7 |
| Sustainability of Reforestation Projects | 0.894 | 5 |
| Overall reliability | 0.783 | |

Table 3.2 shows an overall reliability of 0.8.

3.6. Data Collection Procedure

The permission to carry out the collection was obtained from the Ministry of Education through the University of Nairobi's dean of postgraduate studies and a copy handed to the Forest Conservator before commencing data collection. A personal visit was made to all the sampled respondents. The visit was done in three phases. The first phase included visiting and notifying the forest conservators about the study. The second phase included visit the chiefs and notifying them about the study. The third was included visiting and administering the questionnaires on respondents in the company of the area chiefs and three research assistants.

3.7 Ethical Issues

To maintain privacy, the questionnaires did not bear the name of the respondents. The respondents were also allowed to participate in the study voluntarily and withdraw at their will. A letter of consent was given to all the respondents to seek their permission to participate in the

study. Each respondent was also allowed to ignore questions that they were not comfortable to answer.

3.8. Data Presentation

The questionnaires were coded and scored to produce quantitative responses and measured either in the form interval scale and then keyed into SPSS for further analysis. Analysis of data was done by the use of both inferential and descriptive statistical techniques. The correlation between independent and dependent variables was determined using F-test-Two Sample for Variances. Data were presented using tables.

3.9 Operational Definition of Variables

This explains how the concept was measured. Table 3.3 shows the objectives and the specific indicators and how they were measured.

Table 3.3: Operationalization variables

| Objective | Variable | Indicator | Tool of Analysis | Measurement Scale | Type of Analysis |
|--|-----------------------------------|---|------------------|-------------------|--|
| To assess the influence of public participation on the sustainability of reforestation projects in Koderu and Wire forests | Independent; Public participation | Number of Public participation meetings attended Number of public participation meetings organized | SPSS | Interval | Descriptive statistics Inferential statistics |

| | | | | | |
|--|---|--|------|----------|--|
| To assess influence the economic benefits on the sustainability of reforestation projects in Koder and Wire forests | Independent; Economic benefits | Number of persons directly employed by the reforestation projects Number of households benefiting from reforestation products | SPSS | Interval | Descriptive statistics Inferential statistics |
| To evaluate the influence of government policies on the sustainability of reforestation projects in Koder and Wire Forests | Independent; Government policies | Community-centered Equality/inequality | SPSS | Interval | Descriptive statistics Inferential statistics |
| To assess the influence of community awareness on the sustainability of reforestation projects in Koder and Wire forests | Independent; Community awareness | Number of community awareness meetings Attitude | SPSS | Interval | Descriptive statistics Inferential statistics |

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, AND INTERPRETATION

4.1 Introduction

The chapter gives the results of the primary data was gathered through the use of closed-ended questionnaires and analyzed through inferential and descriptive statistical methods.

4.2 Questionnaire Return Rate

All the 92 questionnaires that were handed out were correctly filled and returned, achieving a 100% return rate which, was far above the required rate of 70%. According to Kothari (2007), a response rate exceeding 70% is adequate for analysis.

Table 4.1: Response Rate

| Questionnaires issued | Questionnaires returned | % of questionnaires returned |
|------------------------------|--------------------------------|-------------------------------------|
| 92 | 92 | 100 |

4.3. Demographic Characteristics of Respondents

The study investigated the respondents' demographic characteristics, which mainly included the number of years lived in the village, gender, the highest level of education, occupation, and average monthly income.

4.3.1 Number of years lived in the Village

The study sought to obtain information on the number of years the respondents had lived in the given location as demonstrated in table 4.2

Table 4.2: Number of years lived in the village

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------------|-----------|---------|---------------|--------------------|
| 10 - 20 years | 12 | 13.0 | 13.0 | 13.0 |
| 20 - 30 years | 31 | 33.7 | 33.7 | 46.7 |
| More than 30 years | 49 | 53.3 | 53.3 | 100.0 |
| Total | 92 | 100.0 | 100.0 | |

The study outcome established that most of the respondents at 53.3% had lived in their villages for more than 30 years while 33.7% had lived between 20 – 30 years while 13% had lived between 10 – 20 years.

4.3.2. Gender of the Respondents

The study sought for information on the respondents' gender as illustrated in table 4.3

Table 4.3: Distribution by Age

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------|-----------|---------|---------------|--------------------|
| Male | 43 | 46.7 | 46.7 | 46.7 |
| Female | 49 | 53.3 | 53.3 | 100.0 |
| Total | 92 | 100.0 | 100.0 | |

Females represented 53.3% of the respondents while males were 46.7%. This was a fairly balanced gender distribution.

4.3.3. Highest Level of Education

The study looked for information on the respondents' highest education levels of the as highlighted in table 4.4

Table 4.4: Distribution by the Highest Level of Education

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|-----------------------|-----------|---------|---------------|--------------------|
| Primary Certificate | 29 | 31.5 | 31.5 | 31.5 |
| Secondary Certificate | 24 | 26.1 | 26.1 | 57.6 |
| Diploma/Certificate | 12 | 13.0 | 13.0 | 70.7 |
| Bachelor's degree | 5 | 5.4 | 5.4 | 76.1 |
| Master's degree | 2 | 2.2 | 2.2 | 78.3 |
| No formal Education | 20 | 21.7 | 21.7 | 100.0 |
| Total | 92 | 100.0 | 100.0 | |

The study found out that most of the respondents at 31.5% had primary certificates while 26.1% had secondary certificates. 21.7% lacked formal education while 5.4% had bachelor's degrees. Only 2.2% had master's degrees while 13% had diplomas or certificates.

4.3.4 Occupation of the Respondents

The study sought information on the respondents' occupation as highlighted in table 4.5

Table 4.5: Distribution by Occupation

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------------|-----------|---------|---------------|--------------------|
| Livestock farming | 22 | 23.9 | 23.9 | 23.9 |
| Crop farming | 31 | 33.7 | 33.7 | 57.6 |
| Casual laborer | 16 | 17.4 | 17.4 | 75.0 |
| Formal Employment | 4 | 4.3 | 4.3 | 79.3 |
| Business person | 19 | 20.7 | 20.7 | 100.0 |
| Total | 92 | 100.0 | 100.0 | |

Majority of the respondents at 33.7% were crop farmers while a paltry 4.3% were formally employed. 23.9% were livestock farmers, 17.4% were casual laborers, while 20.7% were business persons

4.3.5. Average Income of the Respondents

The study established the average monthly income of the respondents in Kenya Shillings as demonstrated in table 4.6

Table 4.6: Distribution by Average Monthly Income

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|---------------------|-----------|---------|---------------|--------------------|
| Valid | Less than Ksh 5,000 | 22 | 23.9 | 23.9 | 23.9 |
| | Ksh 5,000 - 10,000 | 42 | 45.7 | 45.7 | 69.6 |
| | Ksh 10,000 - 15,000 | 11 | 12.0 | 12.0 | 81.5 |
| | Ksh 15,000 - 20,000 | 9 | 9.8 | 9.8 | 91.3 |
| | More than 20,000 | 8 | 8.7 | 8.7 | 100.0 |
| | Total | 92 | 100.0 | 100.0 | |

The findings indicated that most of the respondents at 45.7% earned between Ksh. 5,000 - 10,000, while 23.9% earned less than Ksh 5,000. 12% earned between Ksh 10,000 - 15,000 while 9% earned between Ksh 15,000 - 20,000. Only 8% earned more than 20,000.

4.4 Public Participation and the Sustainability of Reforestation Projects

The first objective was to assess the influence of public participation on the sustainability of reforestation projects in Koderia and Wire forests. The data was captured on a 5-point Likert scale, and the study findings were as shown in table 4.7

Table 4.7: Public Participation and the Sustainability of Reforestation Projects

| Statement | | Frequency | % | Mean | Std.Dev |
|--|----------------------------|-----------|--------------|---------------|----------------|
| Many public meeting regarding reforestation projects are organized | Strongly Disagree | 21 | 22.8 | | |
| | Disagree | 47 | 51.1 | | |
| | Neither Agree Nor Disagree | 4 | 4.3 | | |
| | Agree | 14 | 15.2 | | |
| | Strongly Agree | 6 | 6.5 | | |
| Total | | 92 | 100.0 | 2.3152 | 1.17604 |

| | | | | | |
|--|-------------------------------|-----------|--------------|---------------|----------------|
| Members of the public are invited to attend meetings | Strongly Disagree | 21 | 22.8 | | |
| | Disagree | 47 | 51.1 | | |
| | Neither Agree Nor Disagree | 3 | 3.3 | | |
| | Agree | 15 | 16.3 | | |
| | Strongly Agree | 6 | 6.5 | | |
| | Total | 92 | 100.0 | 2.3261 | 1.18701 |
| Many people attend the public participation meetings | Strongly Disagree | 20 | 21.7 | | |
| | Disagree | 48 | 52.2 | | |
| | Neither Agree Nor Disagree | 5 | 5.4 | | |
| | Agree | 12 | 13.0 | | |
| | Strongly Agree | 7 | 7.6 | | |
| | Total | 92 | 100.0 | 2.3261 | 1.17771 |
| Members of the public are freely allowed to air their views | Strongly Disagree | 12 | 13.0 | | |
| | Disagree | 12 | 13.0 | | |
| | Neither Agree Nor Disagree | 46 | 50.0 | | |
| | Agree | 15 | 16.3 | | |
| | Strongly Agree | 7 | 7.6 | | |
| | Total | 92 | 100.0 | 2.9239 | 1.06114 |
| Public views are adequately incorporated in the reforestation projects | Strongly Disagree | 16 | 17.4 | | |
| | Disagree | 31 | 33.7 | | |
| | Neither Agree Nor Disagree | 27 | 29.3 | | |
| | Agree | 11 | 12.0 | | |
| | Strongly Agree | 7 | 7.6 | | |
| | Total | 92 | 100.0 | 2.5870 | 1.14020 |

| | | | | | |
|---|----------------------------|-----------|--------------|---------------|----------------|
| Community members are adequately involved in the implementation of reforestation projects | Strongly Disagree | 14 | 15.2 | | |
| | Disagree | 36 | 39.1 | | |
| | Neither Agree Nor Disagree | 19 | 20.7 | | |
| | Agree | 17 | 18.5 | | |
| | Strongly Agree | 6 | 6.5 | | |
| | Total | 92 | 100.0 | 2.6196 | 1.14683 |
| Public participations has a significant influence on the sustainability of reforestation projects | Strongly Disagree | 1 | 1.1 | | |
| | Disagree | 2 | 2.2 | | |
| | Neither Agree Nor Disagree | 2 | 2.2 | | |
| | Agree | 51 | 55.4 | | |
| | Strongly Agree | 36 | 39.1 | | |
| | Total | 92 | 100.0 | 4.2935 | .71925 |
| Composite mean | | | | 2.7702 | |

The study findings displayed in table 4.7 above shows a composite mean of 2.7702 of the respondents who agreed that public participation influenced the sustainability of reforestation projects. This was supported by the key statements that majority of the respondents with a mean score of 4.2935 and a standard deviation of .71925 agreed that public participation has a significant influence on the sustainability of reforestation projects. A mean score of 2.3152 and a standard deviation of 1.17604 agreed that public meetings regarding reforestation projects were organized. A mean score of 2.3261 and a standard deviation of 1.18701 agreed that members of the public are invited to attend the public meetings. A mean score of 2.3261 and a standard deviation of 1.17771 agreed that many people attend the public participation meetings. A mean score of 2.9239 and a standard deviation of 1.06114 agreed that members of the public are freely allowed to air their views. A mean score of 2.5870 and a standard deviation of 1.14020 agreed that public views are adequately incorporated in the reforestation projects. A mean score of

2.6196 and standard deviation of 1.14683 agreed that community members are adequately involved in the implementation of reforestation projects.

4.5 Economic Benefits and the Sustainability of Reforestation Projects

The second objective sought to assess the influence of economic benefits on the sustainability of reforestation projects in Koderu and Wire forests. The data was captured on a 5-point Likert scale and the findings of the study were as highlighted in table 4.8

Table 4.8: Economic Benefits and the Sustainability of Reforestation Projects

| Statement | | Frequency | % | Mean | Std.Dev |
|--|----------------------------|-----------|--------------|---------------|----------------|
| Many people are directly employed or earning wages from reforestation projects | Strongly Disagree | 21 | 22.8 | | |
| | Disagree | 36 | 39.1 | | |
| | Neither Agree Nor Disagree | 7 | 7.6 | | |
| | Agree | 18 | 19.6 | | |
| | Strongly Agree | 10 | 10.9 | | |
| | Total | 92 | 100.0 | 2.5652 | 1.32851 |
| Communities are allowed to access reforestation products | Strongly Disagree | 22 | 23.9 | | |
| | Disagree | 49 | 53.3 | | |
| | Neither Agree Nor Disagree | 3 | 3.3 | | |
| | Agree | 11 | 12.0 | | |
| | Strongly Agree | 7 | 7.6 | | |
| | Total | 92 | 100.0 | 2.2609 | 1.17548 |

| | | | | | |
|--|----------------------------|-----------|--------------|---------------|----------------|
| Reforestation projects have improved the standard of living in the community | Strongly Disagree | 21 | 22.8 | | |
| | Disagree | 45 | 48.9 | | |
| | Neither Agree Nor Disagree | 4 | 4.3 | | |
| | Agree | 13 | 14.1 | | |
| | Strongly Agree | 9 | 9.8 | | |
| | Total | 92 | 100.0 | 2.3913 | 1.25756 |
| Employment in the reforestation projects is done in a transparent manner | Strongly Disagree | 25 | 27.2 | | |
| | Disagree | 41 | 44.6 | | |
| | Neither Agree Nor Disagree | 5 | 5.4 | | |
| | Agree | 14 | 15.2 | | |
| | Strongly Agree | 7 | 7.6 | | |
| | Total | 92 | 100.0 | 2.3152 | 1.23972 |
| Economic benefits have significant influence on the sustainability of reforestation projects | Strongly Disagree | 2 | 2.2 | | |
| | Disagree | 3 | 3.3 | | |
| | Neither Agree Nor Disagree | 4 | 4.3 | | |
| | Agree | 24 | 26.1 | | |
| | Strongly Agree | 59 | 64.1 | | |
| | Total | 92 | 100.0 | 4.4674 | .89505 |
| Composite mean | | | 2.8 | | |

The study findings exhibited in table 4.8 above shows a composite mean of 2.8 of the respondents who agreed that economic benefits influenced the sustainability of reforestation projects. This was supported by the key statements that majority of the respondents with a mean score of 4.4674 and standard deviation of .89505 agreed that economic benefits have significant influence on the sustainability of reforestation projects. A mean score of 2.5652 and a standard

deviation of 1.32851 agreed that many people are directly employed or earning wages from reforestation projects. A mean score of 2.2609 and a standard deviation of 1.17548 agreed that communities are allowed to access reforestation products. A mean score of 2.3913 and a standard deviation of 1.125756 agreed that reforestation projects have improved the standard of living in the community. A mean score of 2.3152 and a standard deviation of 1.23972 agreed that employment in the reforestation projects is done in a transparent manner

4.6 Government Policy and the Sustainability of Reforestation Projects

The third objective was to evaluate the influence of economic benefits on the sustainability of reforestation projects in Koderu and Wire forests. The data was captured on a 5-point Likert scale, and the findings of the study were as shown in table 4.9

Table 4.9: Government Policy and the Sustainability of Reforestation Projects

| Statement | | Frequency | % | Mean | Std.Dev |
|---|----------------------------|-----------|--------------|---------------|----------------|
| There are adequate government policies on reforestation | Strongly Disagree | 10 | 10.9 | | |
| | Disagree | 11 | 12.0 | | |
| | Neither Agree Nor Disagree | 24 | 26.1 | | |
| | Agree | 31 | 33.7 | | |
| | Strongly Agree | 16 | 17.4 | | |
| | Total | 92 | 100.0 | 3.3478 | 1.21741 |
| Government policies on reforestation focuses on the community | Strongly Disagree | 24 | 26.1 | | |
| | Disagree | 35 | 38.0 | | |
| | Neither Agree Nor Disagree | 19 | 20.7 | | |
| | Agree | 10 | 10.9 | | |
| | Strongly Agree | 4 | 4.3 | | |
| | Total | 92 | 100.0 | 2.2935 | 1.10482 |

| | | | | | |
|---|-------------------------------|-----------|--------------|---------------|----------------|
| Government policies on reforestation focus on equality | Strongly Disagree | 25 | 27.2 | | |
| | Disagree | 36 | 39.1 | | |
| | Neither Agree Nor Disagree | 17 | 18.5 | | |
| | Agree | 9 | 9.8 | | |
| | Strongly Agree | 5 | 5.4 | | |
| | Total | 92 | 100.0 | 2.2717 | 1.13004 |
| Government policy should be changed | Strongly Disagree | 21 | 22.8 | | |
| | Disagree | 45 | 48.9 | | |
| | Neither Agree Nor Disagree | 4 | 4.3 | | |
| | Agree | 13 | 14.1 | | |
| | Strongly Agree | 9 | 9.8 | | |
| | Total | 92 | 100.0 | 2.3913 | 1.25756 |
| Government policy has significant influence on sustainability of reforestation projects | Strongly Disagree | 1 | 1.1 | | |
| | Disagree | 2 | 2.2 | | |
| | Neither Agree Nor Disagree | 2 | 2.2 | | |
| | Agree | 37 | 40.2 | | |
| | Strongly Agree | 50 | 54.3 | | |
| | Total | 92 | 100 | 4.4457 | .74663 |
| Composite mean | | | 9.5 | | |

The study findings had shown in table 4.9 above shows a composite mean of 2.95 of the respondents who agreed that government policy influenced the sustainability of reforestation projects. This was supported by the key statements that that majority of the respondents with a mean score of 4.4457 and a standard

deviation of .74663 agreed that government policy has significant influence on sustainability of reforestation projects. A mean score of 3.3478 and a standard deviation of 1.21741 agreed that there are adequate government policies on reforestation. A mean score of 2.2935 and a standard deviation of 1.10482 agreed that government policies on reforestation focuses on the community. A mean score of 2.2717 and a standard deviation of 1.13004 agreed that government policies on reforestation focus on equality. A mean score of 2.3913 and a standard deviation of 1.25756 agreed that government policies on reforestation should be changed to address the needs of the community

4.7 Community Awareness and the Sustainability of Reforestation Projects

The fourth objective was to assess the influence of community awareness on the sustainability of reforestation projects in Koderu and Wire forests. The data was captured on a 5-point Likert scale, and the findings of the study were as shown in table 4.10

Table 4.10: Community Awareness and the Sustainability of Reforestation Projects

| Statement | | Frequency | % | Mean | Std.Dev |
|---|----------------------------|-----------|--------------|---------------|----------------|
| Community members are adequately sensitized on reforestation projects | Strongly Disagree | 31 | 33.7 | | |
| | Disagree | 42 | 45.7 | | |
| | Neither Agree Nor Disagree | 7 | 7.6 | | |
| | Agree | 8 | 8.7 | | |
| | Strongly Agree | 4 | 4.3 | | |
| | Total | 92 | 100.0 | 2.0435 | 1.07839 |
| Many community awareness meetings are held | Strongly Disagree | 29 | 31.5 | | |
| | Disagree | 41 | 44.6 | | |
| | Neither Agree Nor Disagree | 8 | 8.7 | | |
| | Agree | 9 | 9.8 | | |
| | Strongly Agree | 5 | 5.4 | | |
| | Total | 92 | 100.0 | 2.1304 | 1.13115 |

| | | | | | |
|---|-------------------------------|-----------|--------------|---------------|----------------|
| A large number of community members are involved in the meetings | Strongly Disagree | 29 | 31.5 | | |
| | Disagree | 39 | 42.4 | | |
| | Neither Agree Nor Disagree | 6 | 6.5 | | |
| | Agree | 11 | 12.0 | | |
| | Strongly Agree | 7 | 7.6 | | |
| | Total | 92 | 100.0 | 2.2174 | 1.22990 |
| Proper and timely invitations for the meetings are done | Strongly Disagree | 31 | 33.7 | | |
| | Disagree | 38 | 41.3 | | |
| | Neither Agree Nor Disagree | 4 | 4.3 | | |
| | Agree | 11 | 12.0 | | |
| | Strongly Agree | 8 | 8.7 | | |
| | Total | 92 | 100.0 | 2.2065 | 1.27131 |
| The meetings are beneficial and relevant to the projects being undertaken | Strongly Disagree | 12 | 13.0 | | |
| | Disagree | 20 | 21.7 | | |
| | Neither Agree Nor Disagree | 39 | 42.4 | | |
| | Agree | 15 | 16.3 | | |
| | Strongly Agree | 6 | 6.5 | | |
| | Total | 92 | 100.0 | 2.8152 | 1.06832 |

| | | | | | |
|---|-------------------------------|-----------|---------------|---------------|----------------|
| Reforestation projects are beneficial | Strongly Disagree | 7 | 7.6 | | |
| | Disagree | 8 | 8.7 | | |
| | Neither Agree Nor Disagree | 5 | 5.4 | | |
| | Agree | 32 | 34.8 | | |
| | Strongly Agree | 40 | 43.5 | | |
| | Total | 92 | 100 | 3.9783 | 1.24015 |
| Community awareness has significant influence on sustainability of reforestation projects | Strongly Disagree | 1 | 1.1 | | |
| | Disagree | 2 | 2.2 | | |
| | Neither Agree Nor Disagree | 1 | 1.1 | | |
| | Agree | 20 | 21.7 | | |
| | Strongly Agree | 68 | 73.9 | | |
| | Total | 92 | 100 | 4.6522 | .71767 |
| Composite mean | | | 2.8634 | | |

The study findings showed in table 4.10 above shows a composite mean of 2.8634 of the respondents who agreed that community awareness influenced the sustainability of reforestation projects. This was supported by the key statements that majority of the respondents with a mean score of 4.6522 and a standard deviation of .71767 agreed that community awareness has significant influence on sustainability of reforestation projects. A mean score of 2.0435 and a standard deviation of 1.07839 agreed that community members are adequately sensitized on reforestation projects. A mean score of 2.1304 and a standard deviation of 1.13115 agreed that many community awareness meetings are held. A mean score of 2.2174 and a standard deviation of 1.22990 agreed that a large number of community members are involved in the meetings. A mean score of 2.2065 and a standard deviation of 1.27131 agreed that proper and timely invitations for the meetings are done. A mean score of 2.8152 and a standard deviation of 1.06832 agreed that the meetings are beneficial and relevant to the projects being undertaken. A mean score of 3.9783 and a standard deviation of 1.24015 agreed that reforestation projects are beneficial

4.8. The Sustainability of Reforestation Projects in Koderu and Wire Forests

The study investigated the level of sustainability of reforestation projects in Koderu and Wire forests. The data was captured on a 5-point Likert scale, and the findings of the study were as discussed in table 4.11

Table 4.11: The sustainability of Reforestation Projects in Koderu and Wire Forests

| Statement | | Frequency | % | Mean | Std.Dev |
|---|----------------------------|-----------|--------------|---------------|----------------|
| The trees continue to grow after the implementation of reforestation projects | Strongly Disagree | 9 | 9.8 | | |
| | Disagree | 35 | 38.0 | | |
| | Neither Agree Nor Disagree | 23 | 25.0 | | |
| | Agree | 17 | 18.5 | | |
| | Strongly Agree | 8 | 8.7 | | |
| | Total | 92 | 100.0 | 2.7826 | 1.12734 |
| There is community ownership of reforestation projects | Strongly Disagree | 24 | 26.1 | | |
| | Disagree | 33 | 35.9 | | |
| | Neither Agree Nor Disagree | 9 | 9.8 | | |
| | Agree | 13 | 14.1 | | |
| | Strongly Agree | 12 | 13.0 | | |
| | Total | 92 | 100 | 2.5165 | 1.36921 |

| | | | | | |
|--|----------------------------|-----------|--------------|---------------|----------------|
| Community members continue to benefit from the reforestation projects after their implementation | Strongly disagree | 28 | 30.4 | | |
| | Disagree | 27 | 29.3 | | |
| | Neither agree nor disagree | 7 | 7.6 | | |
| | Agree | 20 | 21.7 | | |
| | Strongly agree | 10 | 10.9 | | |
| | Total | 92 | 100.0 | 2.5326 | 1.40213 |
| The projects enhance forest cover | Strongly Disagree | 9 | 9.8 | | |
| | Disagree | 11 | 12.0 | | |
| | Neither Agree Nor Disagree | 4 | 4.3 | | |
| | Agree | 51 | 55.4 | | |
| | Strongly Agree | 17 | 18.5 | | |
| | Total | 92 | 100.0 | 3.6087 | 1.20399 |
| The projects conserve biodiversity | Strongly Disagree | 9 | 9.8 | | |
| | Disagree | 10 | 10.9 | | |
| | Neither Agree Nor Disagree | 6 | 6.5 | | |
| | Agree | 49 | 53.3 | | |
| | Strongly Agree | 18 | 19.6 | | |
| | Total | 92 | 100.0 | 3.6196 | 1.20295 |
| | Composite mean | | | 3.012 | |

The study findings shown in table 4.11 above shows a composite mean of 3.012 of the respondents who agreed that reforestation projects in Kodera and Wire forests were sustainable. This was supported by the

key statements that majority of the respondents with a mean score of 2.7826 and a standard deviation of 1.40213 agreed that the trees continue to grow after the implementation of reforestation projects. A mean score of 2.5165 and a standard deviation of 1.36921 agreed that there is community ownership of reforestation projects. A mean score of 2.5326 and a standard deviation of 1.40213 agreed that community members continue to benefit from the reforestation projects after implementation. A mean score of 2.9130 and a standard deviation of 1.16404 agreed that the projects enhance forest cover. A mean score of 2.6848 and a standard deviation of 1.05798 agreed that the projects conserve biodiversity

4.9. Hypothesis Testing

The study tested the following four hypotheses

4.9.1: Public participation does not have a significant influence on the sustainability of reforestation projects in Koderu and Wire forests.

The result of the F-test-Two Sample for Variances is shown in table 4.12 below

Table 4.12: Public Participation and Sustainability

| | Public Participation | Sustainability |
|---------------------|----------------------|----------------|
| Mean | 2.770186335 | 3.015217391 |
| Variance | 0.181635578 | 0.336029623 |
| Observations | 92 | 92 |
| df | 91 | 91 |
| F | 0.540534423 | |
| P(F<=f) one-tail | 0.001843785 | |
| F-Critical one-tail | 0.707043252 | |

The findings shown in table 4.12 shows that the P-value was 0.001843785 at 95% confidence level. This value is less than 0.05; thus, rejecting the null hypothesis. This demonstrated that there was a statistically significant relationship between public participation and the sustainability of reforestation projects.

4.9.2: There is no significant relationship between economic benefits and the sustainability of reforestation projects in Koderu and Wire forests.

The result of the F-test-Two Sample for Variances is shown in table 4.13

Table 4.13: Economic Benefits and Sustainability

| | Economic Benefits | Sustainability |
|---------------------|-------------------|----------------|
| Mean | 2.813421 | 3.021978 |
| Variance | 0.166681 | 0.335512 |
| Observations | 92 | 92 |
| Df | 91 | 91 |
| F | 0.573681 | |
| P(F<=f) one-tail | 0.009802 | |
| F-Critical one-tail | 0.705672 | |

The findings shown in table 4.13 shows that the P-value was 0.009802 at 95% confidence level. This value is less than 0.05 thus; rejecting the null hypothesis. This demonstrated that there was a statistically significant relationship between economic benefits and the sustainability of reforestation projects.

4.9.3: Government policy does not have a significant influence on the sustainability of reforestation projects in Koderu and Wire Forests.

The result of the F-test-Two Sample for Variances is shown in table 4.14

Table 4.14: Government Policy and Sustainability

| | Government | |
|---------------------|------------|----------------|
| | Policies | Sustainability |
| Mean | 2.951320 | 3.021978 |
| Variance | 0.231922 | 0.335512 |
| Observations | 92 | 92 |
| Df | 91 | 91 |
| F | 0.691248 | |
| P(F<=f) one-tail | 0.040775 | |
| F-Critical one-tail | 0.705672 | |

The findings shown in table 4.14 shows that the P-value was 0.040775 at 95% confidence level. This value is less than 0.05; thus, rejecting the null hypothesis. This demonstrated that there was a statistically significant relationship between government policy and the sustainability of reforestation projects

4.9.4: Community awareness does not have a significant influence on the sustainability of reforestation in Koderia and Wire forests.

The result of the F-test-Two Sample for Variances is shown in table 4.15 below

Table 4.15: Community Awareness and Sustainability

| | Community | |
|---------------------|-----------|----------------|
| | Awareness | Sustainability |
| Mean | 2.863357 | 3.021978 |
| Variance | 0.168548 | 0.335512 |
| Observations | 92 | 92 |
| Df | 91 | 91 |
| F | 0.502361 | |
| P(F<=f) one-tail | 0.000629 | |
| F-Critical one-tail | 0.705672 | |

The findings shown in table 4.15 shows that the P-value was 0.000692 at 95% confidence level. This value is less than 0.05; thus, rejecting the null hypothesis. This demonstrated that there was a statistically significant relationship between community awareness and the sustainability of reforestation projects

CHAPTER FIVE

SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction.

This section summarizes the findings of the study, discusses the finds, concludes with conclusions, and provides recommendations and suggestions for further studies. The conclusion and recommendations provided by the study were geared towards the purpose of the study.

5.2 Summary of Findings

The study sampled 92 villagers who lived within a radius of 2 kilometers from Kodera and Wire forests. A total of 92 questionnaires were administered on the villager. All the questionnaires were appropriately filled and returned, resulting in a 100% return rate. The reliability of the questionnaires was established using the test-retest method. A coefficient of 0.8 was obtained, indicating that the questionnaires were highly reliable. The study established that most of the respondents at 53.3% had lived in the villages surrounding Wire and Kodera forests for more than 30 years, while 33.7% had lived between 20 – 30 years. Only 13% had lived between 10 – 20 years. The majority of the respondents at 53.3% were females, while males were 46.7%. This showed a balanced gender distribution. The majority of the respondents at 31.5% had a primary certificate, while 26.1% had a secondary certificate. 21.7% lacked formal education, while 5.4% had a bachelor's degree. Only 2.2% had a master's degree while 13% had a diploma or certificate. Most of the respondents at 33.7% were crop farmers, while a paltry 4.3% were formally employed. 23.9% were livestock farmers, 17.4% were casual laborers, while 20.7% were business persons. The study also established that majority of the respondents at 45.7% earned between Ksh. 5,000 - 10,000, while 23.9% earned less than Ksh 5,000. 12% earned between Ksh 10,000 - 15,000 while 9% earned between Ksh 15,000 - 20,000. Only 8% earned more than 20,000. An average mean of 2.7702 showed that public participation influenced the sustainability of reforestation projects, while the mean of 2.8 revealed that economic benefits influenced the sustainability of reforestation projects. Besides, the means of 2.95 and 2.8634

showed that government policy and community awareness influenced the sustainability of reforestation projects, respectively. Finally a mean of 3.012 revealed an influence on the sustainability reforestation projects in Kodera and Wire forests. The P-values for the influence of public participation, economic benefits, government policy, and community awareness on sustainability were 0.001843785, 0.009802, 0.040775, and 0.000629, respectively, thus, rejecting all the null hypotheses.

5.3 Discussion of the Findings

The section provides an in-depth discussion of the major findings of the study that provided the basis for the study's conclusion and recommendations.

5.3.1 Public Participation and the Sustainability of Reforestation Projects in Kodera and Wire Forests

The study established that a composite mean of 2.7702 of the respondents agreed that public participation influenced the sustainability of reforestation projects. This was supported by the key statements that the majority of the respondents with a mean score of 4.2935 and a standard deviation of .71925 strongly agreed that public participation has a significant influence on the sustainability of reforestation projects. A mean score of 2.3152 and a standard deviation of 1.17604 agreed that public meetings regarding reforestation projects were organized. A mean score of 2.3261 and a standard deviation of 1.18701 agreed that members of the public are invited to attend the public meetings. A mean score of 2.3261 and a standard deviation of 1.17771 agreed that many people attend the public participation meetings. A mean score of 2.9239 and a standard deviation of 1.06114 agreed that members of the public are freely allowed to air their views. A mean score of 2.5870 and a standard deviation of 1.14020 agreed that public views are adequately incorporated in the reforestation projects. A mean score of 2.6196 and a standard deviation of 1.14683 agreed that community members are adequately involved in the implementation of reforestation projects. To further support these results, the F-test-Two Sample for Variances showed that the P-Value for the relationship between public participation and the sustainability of reforestation projects was .001843785 at 95% confidence level. This value was less than 0.05 hence, rejecting the null hypothesis. This demonstrated that there was a statistically significant relationship between public participation and the sustainability of

reforestation projects. These results were consistent with the findings of a study conducted by (Ghazanfari, Namiranian, Sobhani & Mohajer, 2014) which established that public participation significantly influenced the sustainability of reforestation projects in Northern Zagros Mountains of Kurdistan province in Iran. The authors concluded that traditional forest management practices could enhance public participation in sustainable forest management. Important indicators for effective public participation included frequent public participation meetings and adequate inclusion of public views in forest management. Another study by Tabot, Owuor & Migosi (2020) also established that the sustainability of forestry projects significantly relied on community participation. Community members must be involved during project initiation.

5.3.2 Economic benefits and the sustainability of reforestation projects in Koderia and Wire forests

The study revealed a composite mean of a composite mean of 2.9500 of the respondents who agreed that government policy influenced the sustainability of reforestation projects. This was supported by the key statements that the majority of the respondents with a mean score of 4.4457 and a standard deviation of .74663 strongly agreed that government policy has a significant influence on the sustainability of reforestation projects. A mean score of 3.3478 and a standard deviation of 1.21741 agreed that there are adequate government policies on reforestation. A mean score of 2.2935 and a standard deviation of 1.10482 agreed that government policies on reforestation focus on the community. A mean score of 2.2717 and a standard deviation of 1.13004 agreed that government policies on reforestation focus on equality. A mean score of 2.3913 and a standard deviation of 1.25756 agreed that government policies on reforestation should be changed to address the community's needs. The F-test-Two Sample for Variances showed that the P-Value was .009802 at 95% confidence level. This value was less than 0.05; hence, the null hypothesis was rejected. This demonstrates a statistically significant relationship between the economic benefits and the sustainability of reforestation projects. These findings were consistent with the results of a study conducted by (Ofoegbu et al., 2017) that the sustainability and effectiveness of forest-based climate change initiatives can be enhanced by improving the economic and social conditions that exist in households around forests. The economic conditions were income levels and standards of living (Ofoegbu et al., 2017). Another

study by Le, Smith & Herbohn (2014) established that incentives from reforestation projects significantly contributed to their sustainability.

5.3.3 Government Policy and the Sustainability of Reforestation Projects in Koderia and Wire Forests

The study established a composite mean of 2.95 of the respondents who agreed that government policy influenced the sustainability of reforestation projects. This was supported by the key statements that the majority of the respondents with a mean score of 4.4457 and a standard deviation of .74663 strongly agreed that government policy has a significant influence on the sustainability of reforestation projects. A mean score of 3.3478 and a standard deviation of 1.21741 agreed that there are adequate government policies on reforestation. A mean score of 2.2935 and a standard deviation of 1.10482 agreed that government policies on reforestation focus on the community. A mean score of 2.2717 and a standard deviation of 1.13004 agreed that government policies on reforestation focus on equality. A mean score of 2.3913 and a standard deviation of 1.25756 agreed that government policies on reforestation should be changed to address the needs of the community. The F-test-Two Sample for Variances showed that the P-value was 0.040775 at 95% confidence level. This value was less than 0.05 hence, rejecting the null hypothesis. This demonstrated that there was a statistically significant relationship between government policy and the sustainability of reforestation projects. These findings were consistent with the results of the study conducted by Kim & Alounsavath (2015), which established that forest policy had a significant influence on the increase in forest cover. Another study by Le, Smith & Herbohn (2014) concluded that government policy was a major driver for the sustainability of reforestation projects. According to the authors, community-focused policies dealing with vegetation strategies can have beneficial effects on the success of reforestation projects (Le, Smith & Herbohn, 2014)

5.3.4 Community Awareness and the Sustainability of Reforestation Projects in Koderia and Wire Forests

The study revealed a composite mean of 2.8634 of the respondents who agreed that community awareness influenced reforestation projects' sustainability. This was supported by the key statements that the majority of the respondents with a mean score of 4.6522 and a standard

deviation of .71767 agreed that community awareness has a significant influence on the sustainability of reforestation projects. A mean score of 2.0435 and a standard deviation of 1.07839 agreed that community members are adequately sensitized on reforestation projects. A mean score of 2.1304 and a standard deviation of 1.13115 agreed that many community awareness meetings are held. A mean score of 2.2174 and a standard deviation of 1.22990 agreed that many community members are involved in the meetings. A mean score of 2.2065 and a standard deviation of 1.27131 agreed that proper and timely invitations for the meetings are done. A mean score of 2.8152 and a standard deviation of 1.06832 agreed that the meetings are beneficial and relevant to the projects being undertaken. A mean score of 3.9783 and a standard deviation of 1.24015 agreed that reforestation projects are beneficial. The results of the F-test-Two Sample for Variances showed that the P-value was 0.000692 at 95% confidence level. This value was less than 0.05 hence, rejecting the null hypothesis. This demonstrated that there was a statistically significant relationship between community awareness and the sustainability of reforestation projects. These findings were consistent with the results of the study conducted by Owoeye, Olayide, & Njuguna (2019), which established that community awareness and engagement were crucial for value addition and regular participation in reforestation projects leading to their success and sustainability. Another study by Rauf et al. (2019) concluded that community awareness was the most significant determinant of the success of reforestation projects in Pakistan.

5.3.5. Sustainability of Reforestation Projects in Koderia and Wire Forests

The study revealed a composite mean of 3.012 of the respondents who agreed that reforestation projects in Koderia and Wire forests were sustainable. This was supported by the key statements that the majority of the respondents that mean score of 2.7826 and standard deviation of 1.40213 agreed that the trees continue to grow after the implementation of reforestation projects. A mean score of 2.5165 and a standard deviation of 1.36921 agreed that there is community ownership of reforestation projects. A mean score of 2.5326 and a standard deviation of 1.40213 agreed that community members continue to benefit from the reforestation projects after implementation. A mean score of 2.9130 and a standard deviation of 1.16404 agreed that the projects enhance forest cover. A mean score of 2.6848 and a standard deviation of 1.05798 agreed that the projects conserve biodiversity. These findings were consistent with the results of the study conducted by

Peras (2016), which concluded that community ownership and the ability of the trees to grow after the implementation of the reforestation projects were the most significant indicators of the success and sustainability of reforestation projects.

5.4 Conclusion

From the discussion above, several conclusions were drawn.

The study revealed that public participation significantly influenced the sustainability of reforestation projects in Koderia and Wire forests in Rachuonyo South Sub-County, Homa Bay County. This was attributed to the majority of the respondents attesting that public participation significantly influenced the sustainability of reforestation projects. However, public participation regarding reforestation projects in Koderia and Wire forests is still inadequate as few respondents agreed with the statements that; many public meetings regarding reforestation projects are organized, members of the public are invited to attend the public meetings, many people attend the public participation meetings, public views are adequately incorporated in the reforestation projects, and community members are adequately involved in the implementation of the reforestation projects in Koderia and wire forests.

Economic benefits significantly influenced the sustainability of reforestation projects in Koderia and Wire forests in Rachuonyo South Sub-County, Homa Bay County. This was attributed to the majority of the respondents attesting that public participation had a significant influence on the sustainability of reforestation projects. However economic benefits of reforestation projects in Koderia and Wire forests remain a critical issue as few respondents agreed with the statements that; many people are directly employed or earning wages from reforestation projects, communities are allowed to access reforestation products, employment in the reforestation projects is done transparently, and reforestation projects have improved the standard of living in the community, and in Koderia and Wire forests.

Government policy significantly influenced the sustainability of reforestation projects in Koderia and Wire forests in Rachuonyo South Sub-County, Homa Bay County. This was attributed to the majority of the respondents agreeing that government policy had a significant influence on the sustainability of reforestation projects. However, there are underlying issues with government policies that deal with reforestation projects as few respondents agreed that government policies

on reforestation projects focus on the community and promote equality. The majority of the respondents agreed that the policies should be changed.

Again, community awareness significantly influenced the sustainability of reforestation projects in Koderia and Wire forests in Rachuonyo South Sub-County, Homa Bay County. This was attributed to the majority of the respondents agreeing that community awareness had a significant influence on the sustainability of reforestation projects and that, the reforestation projects are beneficial. However, community awareness regarding reforestation projects in Koderia and Wire forest is inadequate as few respondents agreed with the statements that; community members are adequately sensitized on reforestation projects, many community awareness meetings are held, a large number of community members are involved in the meetings, proper and timely invitations for the meetings are done, and the meetings are beneficial and relevant to reforestation projects being undertaken in Koderia and Wire forests.

The study established that the sustainability of reforestation projects in Koderia and Wire forests in Rachuonyo South Sub-County, Homa Bay County is influenced by the ability of the trees to continue growing after implementation of the reforestation projects, community ownership, community members continuing to benefit from the reforestation projects after implementation, and ability of the projects to enhance forest cover and biodiversity.

In summary, public participation, economic benefits, government policy, and community awareness have a significant influence on the sustainability of reforestation projects in Koderia and Wire forests in Rachuonyo South Sub-County, Homa Bay County.

5.5 Recommendations

Based on the findings of the study, the following were recommended

1. Public participation is vital in project management; hence many public meetings regarding the projects should be organized. Members of the public should be properly invited to attend the public meetings, and implementers should ensure that many people attend public participation meetings. Public views should be adequately incorporated into the projects, and community members should be sufficiently involved in the implementation of the projects.

2. Ensure that the community members benefit economically from the projects by employing many members of the community transparently. The projects should also improve the standards of living in the community, and community members should be allowed to access the products of the project. Local communities must be put at the center of any project.
3. Government policies that relate to projects should promote equality focus on the community.
4. There must be adequate community awareness of projects. Community awareness of projects should be enhanced through adequate sensitization meetings. Invitation to the meetings should be proper and timely, and the meetings should be relevant to the project being undertaken.

5.5.1 Suggestions for Further Studies

This study's focus was to determine the influence of public participation, economic benefits, government policy, and community awareness on the sustainability of reforestation projects. Further studies should be done on the following:

1. Political influence on the sustainability of reforestation projects
2. Influence of income levels on the sustainability of reforestation projects
3. Influence of literacy levels on the sustainability of reforestation projects
4. Influence of tree species on the sustainability of reforestation projects

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APPENDICES

APPENDIX I: LETTER OF INTRODUCTION TO THE RESPONDENTS

Dear Sir/Madam,

RE: Sustainability of Reforestation Projects in Koderu and Wire Forest in Rachuonyo South Sub-County, Homa Bay County

I am a postgraduate student at the University of Nairobi, pursuing a Master of Arts degree in project planning and management researching the above topic.

You have been selected as a respondent to this study. I, therefore, humbly request you to answer the questions in the questionnaire. I assure you that the information that you will provide will solely be used for academic purposes and treated with the highest levels of confidence.

Please do not write your name or telephone number on the questionnaire. Thank you.

Tobias Ouma Mboya

APPENDIX 11: QUESTIONNAIRE FOR HOUSEHOLDS

SECTION A: SOCIO-DEMOGRAPHIC CHARACTERISTICS

(To be filled by a person above 18 years old in a household, preferably household head)

How long have you lived here?

Below 10 years

10-20 years

20-30 years

More than 30 years

Gender of respondent

Male Female

What is your highest level of education?

Primary certificate

Secondary certificate

Diploma/certificate

Bachelor's degree

Master's degree

No formal education

Others (please specify).....

1. What is your occupation?

Livestock farming

Crop farming

Casual laborer

Formal employment

Businessperson

Others (Please specify).....

2. What is your average monthly income?

Less than 5,000

5,000 – 10,000

10,000 – 15,000

15,000- 20,000

More than 20,000

SECTION B: PUBLIC PARTICIPATION AND SUSTAINABILITY OF REFORESTATION PROJECTS

3. The following statements relate to public participation in reforestation projects. In your opinion, indicate how frequently the following activities are carried out.

Use the Likert scale 5-1, where, 5=strongly agree, 4= agree, 3= neither agree nor disagree,

2= Disagree, 1= strongly disagree

| SN | Statement | 5 | 4 | 3 | 2 | 1 |
|-----------|--|----------|----------|----------|----------|----------|
| 1 | Many public meetings regarding reforestation projects are organized | | | | | |
| 2 | Members of the public are invited to attend the public meetings | | | | | |
| 3 | Many people attend the public participation meetings | | | | | |
| 4 | Members of the public are freely allowed to air their views | | | | | |
| 5 | Public views are adequately incorporated in the reforestation projects | | | | | |
| 6 | Community members are adequately involved in the implementation of reforestation projects | | | | | |
| 7 | Public participation has a significant influence on the sustainability of reforestation projects | | | | | |

SECTION C: ECONOMIC BENEFITS AND SUSTAINABILITY OF REFORESTATION PROJECTS

4. In your opinion, rate the following statements on the economic benefits of reforestation projects.

Use the Likert scale 5-1, where, 5=strongly agree, 4= agree, 3= neither agree nor disagree,

2= Disagree, 1= strongly disagree

| SN | Statement | 5 | 4 | 3 | 2 | 1 |
|----|--|---|---|---|---|---|
| 1 | Many people are directly employed or earning wages from reforestation projects | | | | | |
| 2 | Communities are allowed to access reforestation products | | | | | |
| 3 | Reforestation projects have improved the standard of living in the community | | | | | |
| 4 | Employment in the reforestation projects is done in a transparent manner | | | | | |
| 5 | Economic benefits have significant influence on the sustainability of reforestation projects | | | | | |

SECTION D: GOVERNMENT POLICY AND SUSTAINABILITY OF REFORESTATION PROJECTS

5. In your opinion, rate the following statements on government policy and reforestation projects.

Use the Likert scale 5-1, where, 5=strongly agree, 4= agree, 3= neither agree nor disagree,

2= Disagree, 1= strongly disagree

| SN | Statement | 5 | 4 | 3 | 2 | 1 |
|----|---|---|---|---|---|---|
| 1 | There are adequate government policies on reforestation | | | | | |
| 2 | Government policies on reforestation focuses on the | | | | | |

| | | | | | | |
|---|---|--|--|--|--|--|
| | community | | | | | |
| 3 | Government policies on reforestation focus on equality | | | | | |
| 4 | Government policies on reforestation should be changed to address the needs of the community | | | | | |
| 5 | Government policy has a significant influence on the sustainability of reforestation projects | | | | | |

SECTION E: COMMUNITY AWARENESS AND SUSTAINABILITY OF REFORESTATION PROJECTS

6. The following statements relate to community awareness in reforestation projects. In your opinion, indicate the extent to which you agree or disagree with the following statements. Use the Likert scale 5-1, where, 5=strongly agree, 4= agree, 3= neither agree nor disagree,

2= Disagree, 1= strongly disagree

2= Disagree, 1= strongly disagree

| SN | Statement | 5 | 4 | 3 | 2 | 1 |
|----|---|---|---|---|---|---|
| 1 | Community members are adequately sensitized on reforestation projects | | | | | |
| 2 | Many community awareness meetings are held | | | | | |
| 3 | A large number of community members are involved in the meetings | | | | | |
| 4 | Proper and timely invitations for the meetings are done | | | | | |
| 5 | The meetings are beneficial and relevant to the projects being undertaken | | | | | |

| | | | | | | |
|---|---|--|--|--|--|--|
| 6 | Reforestation projects are beneficial | | | | | |
| 7 | Community awareness has a significant influence on the sustainability of reforestation projects | | | | | |

SECTION F: THE SUSTAINABILITY OF REFORESTATION PROJECTS

7. In your opinion, rate the following statements on the sustainability of reforestation projects. Use the Likert scale 5-1, where, 5=strongly agree, 4= agree, 3= neither agree nor disagree,

2= Disagree, 1= strongly disagree

| SN | Statement | 5 | 4 | 3 | 2 | 1 |
|----|--|---|---|---|---|---|
| 1 | The trees continue to grow after the implementation of reforestation projects | | | | | |
| 2 | There is community ownership of reforestation projects | | | | | |
| 3 | Community members continue to benefit from the reforestation projects after implementation | | | | | |
| 4 | The projects enhance forest cover | | | | | |
| 5 | The projects conserve biodiversity | | | | | |

THANK YOU