THE EFFECTS OF THIBA DAM CONSTRUCTION ON THE LIVELIHOODS OF HOUSEHOLDS IN RUKENYA WARD, KIRINYAGA COUNTY, KENYA

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A RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF HUMANITIES AND SOCIAL SCIENCE IN PARTIAL FULFILLMENT OF THE REQUIRMENT FOR THE AWARD OF BACHELOR OF ARTS IN COMMUNITY DEVELOPMENT OF GRETSA UNIVERSITY

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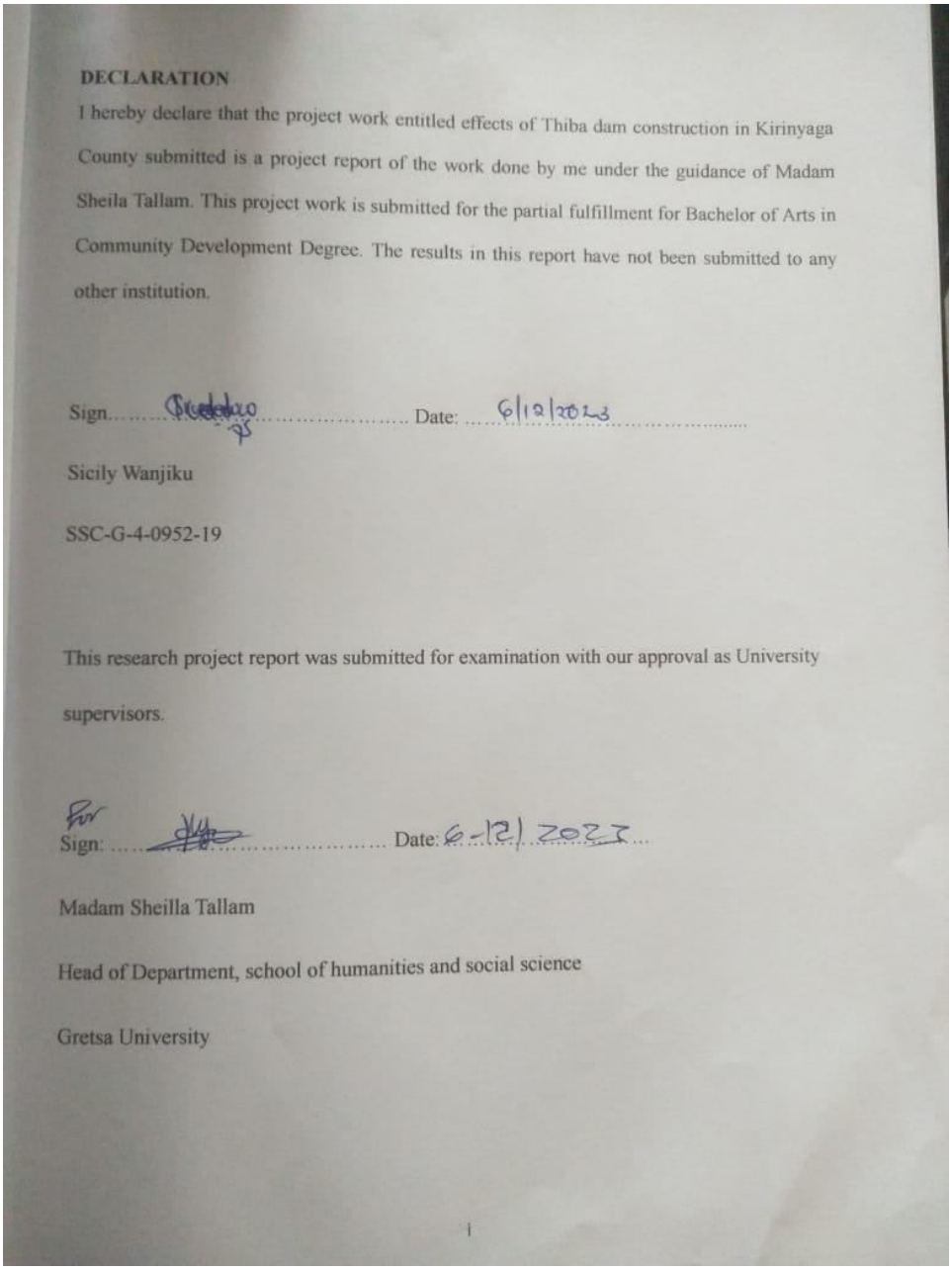
DECLARATION



DECLARATION

I hereby declare that the project work entitled effects of Thiba dam construction in Kirinyaga County submitted is a project report of the work done by me under the guidance of Madam Sheila Tallam. This project work is submitted for the partial fulfillment for Bachelor of Arts in Community Development Degree. The results in this report have not been submitted to any other institution.

Sign..... Date: 6/12/2023

Sicily Wanjiku

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This research project report was submitted for examination with our approval as University supervisors.

For
Sign: ..... Date: 6-12-2023

Madam Sheilla Tallam

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DEDICATION

I dedicate this work to my mother, Irene Wambui, who have supported me, paid for my higher education, and served as my inspiration and source of aspiration.

ACKNOWLEDGEMENT

My supervisor, Ms. Sheila Tallam, deserves my sincere gratitude for patiently guiding me through the difficult research tasks that led to this work. Moreover, I want to express my gratitude to my family for putting up with me when I was studying and unable to spend time with them. I want to thank everyone who gave me assistance with my research project in whatever way, including Mr. John. Finally, I'd want to express my gratitude to Gretsa University's staff, my fellow students, and the Thika Year 2019–2023 for their support and encouragement throughout the research project and class assignments.

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ABBREVIATIONS/ ACRONYMS

ADB	Asian Development Bank
AHITI	Animal Health and Industry Training Institute
FPIC	Free Prior and Informed Concert
IDAM	Intergrative Dam Assessment Model
ICMM	International Council on Mining and Metals
ICOLD	International Commission on Large Dam
IRN	International River Network
JICA	Japanese International Development Cooperative Agency
MIDP	Mwea Irrigation Development Project
RAP	Resettlement Action Plan
SPSS	Scientific Package for Social Science
UNEP	United Nation Environmental Programme
PAPS	Project Affected Persons
NIB	National Irrigation Board
UNCTAD	United Nations Conference of Trade and Development
WCD	World Commission on Dams

ABSTRACT

Dam is a structure built across a river or other watercourse to control and regulate the flow of water, store water for various purposes, generate electricity or prevent flooding World Commission on Dams (2012). Most of dams built mainly are for irrigation and domestic use purpose. A case of Thiba Dam construction it was situated in Rukenya, Kirinyaga County. Its main reason for construction was to improve the irrigation activities in the area and make water available for domestic use. Dam construction is followed by several problems. A case of Thiba Dam construction it had affected positively and negatively the people in the area. A case of displacement had occurred which was involuntary since the dam was to be constructed on a large piece of land. Dams can have negative effects on the rivers where it changes the natural flow this can cause sedimentation, effects on fish population and loss of fertile soil. This study focused on how household were impacted on dam construction projects. The study was done in Rukenya ward, Gichugu Constituency, Kirinyaga County. The area was of interest because the dam was constructed on a 10,000 acre of land which means most people were affected from this region hence the area of interest. The main aim of this study was the focus on how the dam construction had affected the households in terms of displacement, social amenities and water availability. Simple random sampling was used by the researcher because it was one of the best strategies for producing results for the whole representative sample Mehrez (2018). The targeted population of this study was 600 but will only sample 180 PAPs. A questionnaire was used to acquire data from the sampled households. Descriptive research design was used. Frequency analysis, regression analysis and quantitative and qualitative data presentation techniques was used to analyze the data. The results was presented using SPSS version 21. The study will aid in the government's understanding of the effects of dam construction on nearby households, serve as a foundation for further research, and aid other implementers and sponsors in balancing the costs and benefits of dam development. The study found out that 50% of household were compensated with land. The findings also showed that only 20% of household were compensated in monetary for while only 30% of the household were relocated.

CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND

Dam construction is one of the major development initiatives that had been progressing more quickly in rural areas. The relatively small-scale hydropower projects that have already been built provide some insight into the growing environmental and social effects that might be anticipated as the number and size of dam projects rise (Friend, Arthur & Keskinen, 2009)..

One of the big development projects that have been moving along more quickly in the rural areas is the construction of dams. The relatively small-scale hydropower projects that have already been created offer some insight into the rising environmental and social implications that might be anticipated as the number and size of dam projects rise (Friend, A rthur & Keskinen, 2009).

In order to increase the production of food over the coming decades, irrigation needs to be expanded. By the year 2025, 85% of new food production was predicted to come from irrigated land. Even with widespread water conservation efforts enabled by advancements in irrigation technology, further reservoir projects will still be needed (ICOLD, 2007).

Dams have been marketed as a key way to address energy and water needs as well as long-term investments with numerous additional advantages. Some of the supplementary advantages are common to all significant investments in the nation's infrastructure, while others are exclusive to dams and certain projects.

Other factors for building huge dams include regional development, employment creation, and creating an industry base with export potential. Additional motivations include collecting money

from exports, selling electricity directly, or selling produce or processed goods from enterprises that use a lot of electricity, such refining aluminum. Also, the majority of the hydropower dams in the nation serve just one purpose. Although dams might help the economy flourish, the services they offer might not be free. The Lagdo Dam serves as an example of this problem. This dam allowed for the generation of energy and irrigated rice in Cameroon (Canter, 2004).

Dams affect the ecosystem in both positive and negative ways. controlling river patterns, preventing floods, utilizing the water that had been saved for irrigation and household use, and creating energy. Together with its advantages, such as meeting social demands and enhancing living standards, dams also provide a considerable risk of harm to living things (Canter, 2004).

Moreover, relocation of nearby people populations due to dam construction occurs. The local population is typically compensated by the respective governments or agencies in order to ease their relocation. This research study was inspired by the fact that dam construction generally had a variety of negative effects on people. Its lack of water in Kenya in relation to the country's growing population is a significant barrier to growth. The majority of Kenya's population resides in the wetter regions, which are classified as semi-arid to varying degrees. Nonetheless, semiarid regions are being forced to grow due to the substantial land pressure brought on by the expanding population (Rowntree, 1990). As a result, Kenya had begun constructing multipurpose reservoirs across the main rivers to satisfy the growing population's need for water. For instance, the Tana River is home to about 20% of the country's population, a considerable portion of the nation's agricultural capacity, and the largest hydroelectric power generation potential (Maingi and Marsh, 2001).

Irrigation has been cited as the best strategy to solve food security, and agriculture is Kenya's second-largest contributor to GDP. By 2015, the MDG (Millennium Development Goals) goal of

eradicating hunger and poverty would have been achieved. Multipurpose dams are being created as a way of investing in Kenyans to improve the livelihood of citizens in order to harmonize with the vision 2030 social pillar (Newsletter, Vision 2030)

The Mwea Irrigation Development Project (MIDP) first had the idea for Thiba Dam in the middle of the 1980s, which led to the completion of a Feasibility Assessment for the Project in 1989. However, because to the donor circumstances in place at the time, the Project was unable to begin construction.. In 2008 the President of the Republic of Kenya revisited the issue of this project with the Government of Japan which resulted in re-engagement on the project with financing by Japanese International Cooperation Agency (JICA). JICA supported the conduct of an environmental and social impact assessment and the revision of the project's feasibility analysis through a Japanese Consultancy firm in 2009 (National Irrigation Board, 2013).

Later, in 2009/2010, a Resettlement Action Plan (RAP) was created for the project. The Governments of Kenya and Japan signed a finance agreement for the project on August 16, 2010, based on the revised project feasibility analysis, the creation of the RAP, and the identification of suitable resettlement areas. The project's anticipated cost was 18,631 million Japanese Yen (Kshs 16,619 million), of which the Japanese government provided 13,178 million (Kshs 11,755 million), and the Kenyan government contributed roughly Kshs 5 billion (National Irrigation Board, 2013).

Its main source of water is the Thiba River which flows from Abadare Ranges in central Kenya. The dam also receives water from tributaries including Nyamindi and Rwanyenya River. Additionally the dam is supplied with water from Nyeri-Nanyuki water tunnel.

The Thiba Dam is intended to enhance irrigation capabilities and provide a steady supply of water needed by local agriculture, particularly rice farming. By increasing the total cultivated

area in the project area from 7,860 ha to 16,920 ha, the project is projected to enable double cropping (two harvests per year) of rice and horticulture crops as well as improve the yield of rice and other crops. By these initiatives, the project hopes to improve food security in Kenya and the livelihoods of local farmers, guaranteeing that Kenya can produce rice with confidence (National Irrigation Board, 2013).

1.2 Problem statement

Thiba Dam is vital water resource project for the country with an aim of improving water supply and improvement in agricultural production for the households. It was constructed and completed in time within the allocated budget without delays or any setbacks. It should provide sufficient water to meet the high demand of water supply in the area to ensure sustainable production activities.

Some dams have been constructed in Kenya yet the number of displaced people had not been documented. However in this study it will focus on the level of displacement of households by dam construction. Thiba Dam was constructed with an aim of increasing water supply for domestic and agricultural use. It was expected to provide irrigation water to over 10,000 acre of Land and serve a population of more than 150,000 people. However it was faced with challenges since the allocated fund was delaying being disbursed therefore slowering the process. The people started raising concerns on the potential effect on the ecology of River Thiba AND Tana since they are the main source of water. But the government empathized that the project is designed to be eco-friendly and minimize negative effects on the environment. The 542 acre

Thiba Dam in Kirinyaga County alone had caused the relocation of 845 families. There are two different sorts of compensation programs, where some households received cash payments and others received land swaps. Those who choose for the land compensation were relocated to

Kirinyaga County's Gathigiri Prison and A.H.I.T.I Domba, while the others will receive monetary compensation. The government is to provide infrastructure to this areas. Infrastructure will include Houses, Roads, Water, Social Amenities, and Electricity. A program called livelihood restoration program will monitor on the PAPs livelihood even after compensation. (NIB, 2013).

The benefits of globalization are distributed unevenly and economic growth often occurs at the expense of the poorest countries and communities. Thiba Dam construction have both positive and negative impacts on the households.it will increase the water supply for drinking, irrigation and industrial use, improve agricultural production to ensure food security, creation of employment. Other negative include displacement of people, leads to soil erosion and loss of biodiversity e.g. grass species, aquatic species. Those living in large dam catchment areas can be left worse off than they were prior to construction (Soros, 1998). Therefore, it was based on this past observation that this study will investigate the effect of dam construction projects on household livelihood by focusing on the Thiba dam in Kirinyaga County. Several studies have been conducted on the Impacts of Dam construction; however none had focused on the Thiba Dam that is based in Kirinyaga County.

1.3 Purpose of the study

The purpose of this study was to investigate the effects of Thiba Dam construction on the livelihood of the local people.

1.4 Conceptual Framework

The aim of this study was to investigate the effects of dam construction projects on household livelihoods. The independent variables of this study was; displacement, provision of social amenities and water availability. These values were assumed to have an impact on the dependent variable which is households' livelihood. The households' livelihood was measured by; agricultural production and income levels.

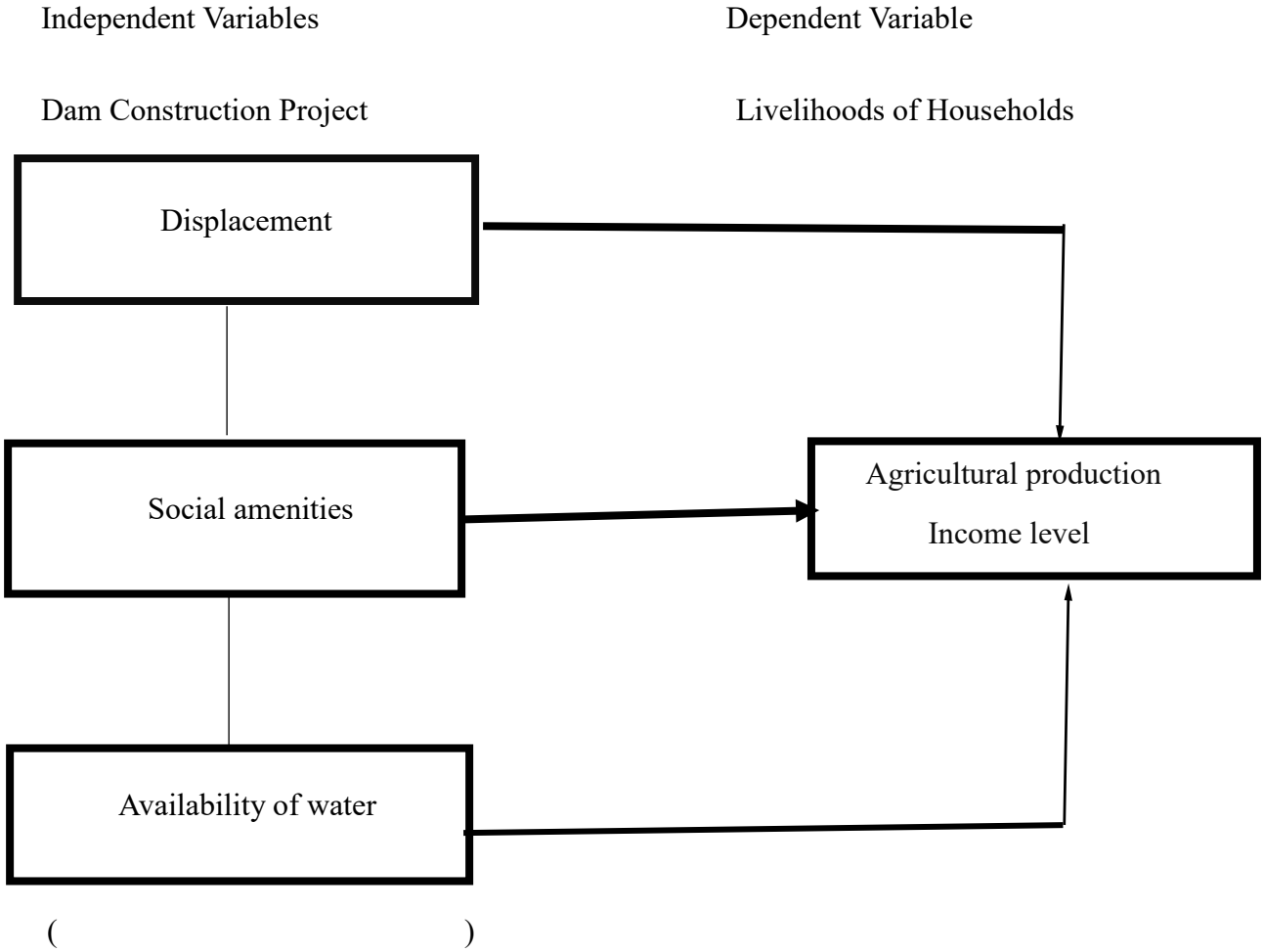


Figure 1.1 conceptual framework

1.4 Research questions

This study answered the following questions;

1. Does displacement have effect on the livelihood of households?
2. Does the presence of social amenities have effect on livelihood of households?
3. Does the water availability in the areas have effect on the livelihood of households?

1.5 objectives of the study

General objectives

To examine the effects of Thiba Dam construction on the livelihoods of households in Rukenya, Kirinyaga County

Specific objectives

1. Examine the effect of displacement on the livelihood households.
2. To investigate the effect of social amenities on the livelihood of households.
3. To assess the effect of water availability on livelihood of households.

1.6 Significance of the study

The findings of this study was significant to the various departments of the government, and to the Kirinyaga County Government in understanding how the dam construction projects influence the livelihoods of residents living around the projects' sites; especially the ministry of agriculture.

It was significant to the National Irrigation Board so as to sustain rice production in order to provide livelihoods with food security, reduce hunger, income generation and to enhance environmental conservation for the betterment of life.

The findings will help the implementers as well as the donors to estimate the benefit of the dam against the costs incurred.

Finally the findings of this study will significant to future researchers in finding literature on dam construction and household livelihoods. This study act as a stepping-stone to future researches.

1.7 Delimitation

The study was carried out at Kirinyaga County's Rukenya.

10,000 acres of land are taken up by the Thiba dam, which is situated in Rukenya. This research centered on Thiba Dam. 600 homes were relocated as part of the Thiba Dam construction process to make room for the dam's construction on the land. Out of the 600 households, 230 have received complete cash for land compensation, 210 have received land compensation, and the remaining 160 have undertaken relocation.

1.8 Limitation of the study

This study covered Thiba dam in Kirinyaga County. The study focused on the households that were displaced due to the dam construction. Some study group resisted in answering the questions in questionnaire. In order to solve it, the researcher assured the respondent that it was mainly for academic purpose and their answers were confidential.

1.9 Assumptions

The assumption of this study were; that all the respondents were well knowledgeable with the area of construction of Thiba Dam and its effects on their livelihood and most of them willingly take part to this study. Other assumptions were that the sample group under study represented the whole population that is affected by the dam construction. The researcher also assumed that the method of data collection was accurate and clear and the respondent would be truthful and give accurate information.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter presents the relevant literature on the topic of study that captures the theoretical and conceptual frameworks, to help increase the understanding the variables and their relationship to this study and present a preferred approach. It also presents the relevant literature on dam projects outlining the effects of dam construction both positive and negative to the livelihood of households. The study will assess; effects of water availability, provision of social amenities and displacement of households.

2.2 Dam Construction Project

The effects of the projects on social and environmental effects are one of the key effects of dam construction projects. The size, location, and other dam characteristics, such as the inundated area and population density in the river basin, all affect the project's scope and scale (Sayboualava, 2004).

The problems that arise during construction are not just restricted to the project's design, construction method, and operations. The issues of dam construction extend beyond their technical components to include their social and environmental effects.The main issues of these debates are the issues of equity, power, justice and administration.

Around 5000 years ago, people created dams and reservoirs all throughout the planet (Tortajada, 2001). The majority of these dams and reservoirs was primarily built to store and supply water for home and agricultural uses. Yet, throughout the previous 60 years, dams was constructed to provide the industrial boom with affordable and clean hydropower. This pattern culminated in the 1970s, when two to three significant dams are built globally per day on average (World Commission on Dams, 2000). Thiba Dam was started in the mid 1980's by the Mwea Irrigation

Development Project (MIDP) leading to the carrying out Study for the Project in 1989. The Project however did not move to construction due to donor conditions at the time. In 2008 the President of the Republic of Kenya revisited the issue of this project with the Government of Japan which resulted in re-engagement on the project with financing by Japanese International Development Cooperation Agency (JICA).

JICA supported the updating of the project's feasibility analysis and the carrying out of environmental and social impact assessment through a Japanese Consultancy firm in 2009 (National Irrigation Board, 2013).

A Resettlement Action Plan (RAP) for the project was subsequently prepared in 2009/2010. On the basis of the updated project feasibility analysis, preparation of RAP and identification of potential resettlement sites, the Governments of Kenya and Japan signed a financing agreement for the project on 16th August 2010. The Project cost was estimated at 18,631 million Japanese Yen. The Thiba Dam is envisioned to enhance irrigation systems to offer a consistent supply of the water needed by local farmers. The initiative is anticipated to boost rice yield and permit double cropping (two harvests per year) of horticulture crops and rice by increasing the total area under cultivation in the project area from 7,860 ha to 16,920 ha. By these initiatives, the project hopes to enhance both the livelihoods of local farmers and Kenya's food security (National Irrigation Board, 2013).

2.3 Displacement by dam construction on households livelihood

When individuals are compelled to migrate as a result of development, this is known as development-induced displacement and resettlement (DIDR). It had historically been connected

According to the World Commission on Dams WCD (2000), between 40 and 80 million people reside close to dams. Physical displacement has been induced by dams all throughout the world. World Bank analysis of projects between Estimates from 1986 to 1993 indicated that 300 significant dams were constructed annually. The possible repercussions on way of life, health, and traditional traditions must be carefully monitored and controlled with this level of mass displacement. There are two main types of compensation programs, where some households would receive cash payouts and others obtained land swaps. While the others received monetary compensation, those who choose for the land compensation were transferred to Kirinyaga County's Gathigiri Prison and A.H.I.T.I Domba. The distribution of the data that was used the analysis revealed that home displacement was a result of the construction of the Thiba dam.

Furthermore, settlements downriver may be closely connected to the river system and adjoining wetlands. The WCD notes that structural changes to river patterns are anticipated to significantly impact downstream grazing, agricultural, and fishing economies as well as lower land values, in addition to other unfavorable effects. The ecological repercussions of dam construction consequently have a knock-on effect on local populations' means of subsistence, access to food, and traditional ways of life (WCD, 2000). Hence, the goal of this research was to determine the societal effects of the Thiba dam's construction.

Cultural alienation is another unfavorable societal impact of the construction of large projects. The rich soils of river valleys are the source of some of the cultural heritage. The loss of irreplaceable traditional knowledge systems is threatened by the displacement. According to the World Bank, forcible displacement puts traditional families ties in jeopardy. A community's sense of cultural identity can also be damaged by the destruction of important sites like graveyards and ancestral lands, which can cut ties to the past (Adams, 2000). The physical surroundings of

indigenous tribes typically have a tight connection to their social, cultural, and political customs. This study will determine how the construction of the Thiba Dam affects home culture.

Also acknowledged is the detrimental effect of shifting stress and social network disruption on a community's health and well-being. Women may be more susceptible to the resettlement process, according to WCD research: Stress is brought on by forced relocation since it uproots people from their homes and places of employment and makes them question their own morals. Gender is an important factor in resettlement. Because they are underprivileged members of marginalized groups, women are typically forced to endure the suffering of relocation considerably more intensely (Adams, 2000).

2.4 Effect of social amenities on the livelihood of households

Large-scale project activities contribute significantly to the development of the local community by providing infrastructure like schools, health facilities, and water supply systems, as well as training, public services like health and education, clean water, transportation, and energy. The programs are based on the notion that small and microbusinesses will grow and supply supplies and related services to the project's businesses, miners, and their families, resulting in the establishment of a sizable extra source of revenue (World Bank, 2005). Also, businesses engaged in large projects are anticipated to directly hire citizens of the adjacent towns both during the development and operation phad es indirectly by raising the demand for inputs, and even more indirectly by raising the demand for goods and services among employees. Large projects produce foreign exchange earnings in addition to national, regional, and local tax revenues (Holden, 2007). So, the goal of this study was to determine how the Thiba dam's construction had impacted the social and economic environment of Thiba. Dams have been promoted as an essential means of meeting purported demands for water and energy as well as long-term,

strategic investments with many additional benefits. Some of these added benefits apply to all major public infrastructure projects, while others are exclusive to dams and specific projects (Asmal, 2000).

Regional growth, the generation of jobs, and the development of an export-oriented manufacturing base are additional justifications for the construction of large dams. The ability to generate income from export sales, whether through the direct sale of energy, the sale of cash crops, or the selling of processed items from industries with high power dependence, such the processing of aluminum, are additional factors. In water-rich nations like Cameroon, large dams have been constructed for the purpose of hydropower generation. In Cameroon, the most majority of its dams are single-purpose hydropower structures that are primarily utilized for power generating and irrigation Although dams may help the economy, the services they provide might not be completely free. The Lagdo Dam serves as the ideal example of this issue. This dam enabled the generation of energy and irrigated rice cultivation downstream in Cameroon.
Consequently, the purpose of the current study was to see whether the effects seen in Cameroon could also be seen in Thiba.

The Thiba Dam is intended to enhance irrigation capabilities and provide a steady supply of water needed by local agriculture, particularly rice farming. By increasing the total area farmed in the project area from 7,860 ha to 16,920 ha, the project was anticipated to enable double cropping (two harvests per year) of rice and horticulture crops as well as to increase the productivity of rice and other crops. By these initiatives, the project hopes to improve both the livelihoods of local farmers and Kenya's food security, thereby guaranteeing the nation's rice production security. (National Irrigation Board, 2013).

2.5 Availabity of water to livelihood of household

Water supply refers to the provision of water by government agencies, private businesses, nonprofit organizations, local initiatives, or by individuals, typically through a network of pumps and pipes. Systems for providing public water are essential to the smooth operation of society. These systems provide drinking water to people all around the world.

Agriculture is Kenya's second-largest contributor to GDP, and irrigation had been suggested as the greatest method for resolving the food security issue. The Millennium Development Goals (MDG) target of ending hunger and poverty by 2015 would have been accomplished.
Multifunctional dams are being built as a method to invest in Kenyans and improve the standard of living for people in order to align with the social pillar of the vision 2030 program (Newsletter, Vison 2030).

Thiba dam mainly was constructed for the purpose of irrigation Thiba dam construction will enable the water to be availability for the households for irrigations and domestic use. Water availability will ensure there is food security and reach the goal of the governments of having double cropping harvest. Water availability will led to economic growth and activities and this will make the households be independent and raise their economic status. It will reduce rural-urban migration in the area since the households are able to sustain themselves.

Millions of people die each year from water-related diseases, which also prohibit millions more from living healthy lives and undermine development efforts (Nash, 1993, Olshansky et al 1997). In the world, 2.3 billion people experience illnesses that are related to water (Kristof 1997, UNCSD, 1997) Infectious and parasitic disorders, the majority of which are connected to water, are responsible for almost 60% of all baby deaths (Rowley, 1990). In the case of Thiba Dam the

government had established health facilities in the area to enable the education of how to treat water before consumption and treating water borne diseases.

2.6 Theoretical Framework

Thiba dam construction was constructed based on different theories

a) **Environmental Theory**

Environmental theory explains how dams construction affects the environment. It suggests that dams should be built in a way that minimizes their ecological effects and consider the impact on local surrounding R. J. Naiman añd H. Decamps (1997)

During construction the public raised concerns on the ecology of River Thiba an River Tana but the government emphasized that the project is designed to be to the ecosystem friendly and sustainable to minimize any negative impact on the local ecology.

b) **Economic Theory**

The theory suggests that dams should be built based on economic consideration such as generating power, irrigation and flood control benefits. Goals of dam construction is to maximize the economic benefits and minimizing its cost M. Ahmad, M. Molen and H. Aerts (2015).

Thiba dam construction is built with the aim of increasing economic activities such as irrigation and raising the crop production by double -cropping.

2.7 Summary of identified gaps

That most dams planning designs do not factor in the component of community human health in their budget in spite of its significance.

- That although community socioeconomic is always one of the justifications for the purpose of reservoir dams, but many of the projects do not necessarily achieve it sustainable.
- They ought to acknowledge community involvement in the dam-building process.
- Encouraging small scale irrigation farming methods is very important for reducing deforestation and erosion.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, the study's methodology is presented. These include information on the study's data collection plan, data analysis techniques, and target population of the researcher, population frame, and research design.

3.2 Research design

The research used a descriptive survey methodology. According to Mugenda & Mugenda (1999), a descriptive survey is a technique used to gather information in order to test hypotheses or provide answers to queries about the current state of the subject being studied. The study examined how the development of huge projects affected communities' livelihoods on the Thiba dam construction in Rukenya, Kirinyaga County.

3.3 Study area

The study was done in Rukenya ward, Gichugu Constituency, Kirinyaga County. The area was of interest because the dam was constructed on a 10,000 acre of land which means most of the people was displaced from this region.

The study area helped to identify the households that were compensated and those that were not compensated by the constructors.

3.4 Target population

The Rukenya area, 600 homes were the focus of this investigation. Of the 600 households,210 households received compensation in cash, 90 households with land for their land. The 160 people that were left over were relocated to the Gathigiriri and AHITI Domba region. The household heads in the sample houses served as the research's study object.

3.5 Sampling technique

Sampling technique is a strategy or approach used to choose elements of the sample that provide a balanced representation of the entire population. Kalagnanam and 13 Diwekar (2015).

Simple random sampling was used by the researcher because it was one of the best strategies for producing results for the whole representative sample Mehrez (2018). The responders waere chosen by the investigator from all the households.

3.6 Sample size

According to Mugenda & Mugenda (2003) state that a sample size of 10% to 50% is suitable for a study. In this instance, the researcher employed a sample size of 30%. The table below shows the sample size distribution.

Table 3.2 Sample size distribution

Target Group	**Population size**	**Sample size**
Cash for Land Compensation	230	69
Land for Land Compensation	210	63
Relocated Households Compensation	160	48
Total	600	180

3.7 Measurements of variables

In order to quantify the independent and dependent variables, questions on the variables was used to generate a Likert scale that ranges from 1 to 5, indicating (I.e., 1=strongly disagree to 5=strongly agree).

3.8 Research instrument

A questionnaire was created to perfectly suit the requirements of the conceptual

Framework and its variables was used to gather primary data. According to Kottler and Armstrong (2004), a questionnaire is a tool used to gather data by asking questions that are tailored to the variables.

3.9 Validity and Reliability of measurement

The researcher obtained the validity from literature review from key works of this area to ensure validity of the instruments. It was also validated through the university library by examining the degree of plagiarism. By testing and retesting a questionnaire with a sample of ten respondents, the research instruments were piloted. Before beginning the actual survey, the researcher made sure that any errors or misunderstandings discovered during the piloting study was fixed. With the Cronbach alpha test, the study evaluated the variables' internal consistency. Values of 0.7 and higher demonstrated the variables' good internal consistency.

3.10 Data collection techniques

In order to gather information from the specified target population, questionnaires was used in this research project, which also utilized primary data. The questionnaire was created in four sections, the first of which aided in gaining understanding of the background data, followed by open-ended research methodologies. The investigator had the opportunity to interrogate the participants further using the closed-ended questions to get further information, primarily thoughts and suggestions, about how building a dam would affect household livelihoods. The research questions and objectives guided the creation of the questions.

3.11 Data analysis

Using both quantitative and qualitative methodologies, the data from this study was examined in relation to questions and specified aims. The information was organized to address certain study

objectives. With that, descriptive and inferential statistics was used to analyze the data. Frequency distributions and percentages were employed for descriptive statistics, and regression was used for inferential statistics to examine the quantitative data. The analysis was presented using the SPSS software (Version 21). Tables were used to present the survey's results.

3.12 3.10 Logistical and Ethical considerations

The logistics procedure entailed the researcher looking into the specifics of obtaining approval from the local authority before doing the research and also received letter from the institution to facilitate this. The researcher made sure the research tool was genuine and adhered to the intended goals of the investigation. Regarding ethical considerations, the researcher maintained the absolute confidentiality and ensured that no information on the individual respondents to a given questionnaire was disclosed. The questionnaires were distributed in a professional and careful manner.

CHAPTER 4: FINDINGS AND DISCUSSION

4.1 Introduction

This chapter discusses the presentation and interpretation of the findings, particularly the analysis of the data on the effects of construction of Thiba Dam 0n livelihoods of households in Rukenya Ward Kirinyaga County. The study was based on the following objectives;

- Examine the effect of displacement on the livelihood households.
- To investigate the effect of social amenities on the livelihood of households.
- To assess the effect of water availability on livelihood of households.

4.2 Questionnaire Return Rate

180 questionnaires were distributed to household representative, and 170 questionnaires (94.4%) of those were returned. According to Dilliman (2000), who stated that researchers should aim to attain at least a 60% return rate of research instruments, this figure seems sufficient. The distribution of questionnaires was as shown in Table 4.1.

Table 4.1 Questionnaire Return Rate

Groups	**Frequency**	**Percentage**
Cash for Land Compensation	65	38.2
Land for Land Compensation	60	35.3
Relocated Households Compensation	45	26.5
Total	**170**	**100**

4.3 Demographic data of respondents

The results of the study's analysis of the household participants' demographic information are presented in this section. The section includes information on the respondents' age, gender, and size of their homes.

4.3.1 Gender of the household

The majority of the respondents interviewed were men 64.7% and women 35.3% as illustrated in the table below.

Table 4.2 Gender of the households

Gender	Frequency	Percentage
Male	110	64.7
Female	60	35.3
Total	**170**	**100**

4.3.2 Age of the Respondents

According to the study, the majority of respondents 92 were between the ages of 28 and 39, while 40 were between the ages of 18 and 28. Additionally, 20 responders, ranging in age from 39 to 45, were found, with 18 of them being 45 years of age or older.

Table 4.3.3 Age of the respondents

Age	**Frequency**	**Percentage**
18-28	40	23.5
28-39	92	54.1

39-45	20	11.8
Above 45	18	10.6
Total	**170**	**100**

4.4 Size of the household

According to the findings it showed that the respondents had an almost equal number of house member in their households. 3-5 members were 32% and 10-13 members were 34.2% as illustrated below.

Table 4.4 size of households

Size of household	**Frequency**	**Percentage**
3-5	56	33
6-9	60	35.2
10-13	54	31.8
Total	**170**	**100**

4.5 Effects of Social Amenities by dam construction on livelihood

This study aimed to determine how household livelihood was affected by social amenities provided by dam construction projects. Contribution of the dam to the following areas: energy, roads, and education

4.5.1 Effects of dam construction in education

The researcher inquired from the representatives of the households if they had noticed an increase in school attendance in the area since the dam construction.

Table 4.5 Effects of dam construction in education

	Frequency	**Percentage**
Yes	69	40.6
No	101	59.4
Total	**170**	**100**

The table above indicates that dam construction had increased school attendance in the area.

4.5.2 Effects of dam construction on energy

The purpose of the study was to determine whether the production of energy had increased in Rukenya after the construction of the Thiba dam. The results are displayed in table 4.6

Table 4.6 Effects of dam construction on energy

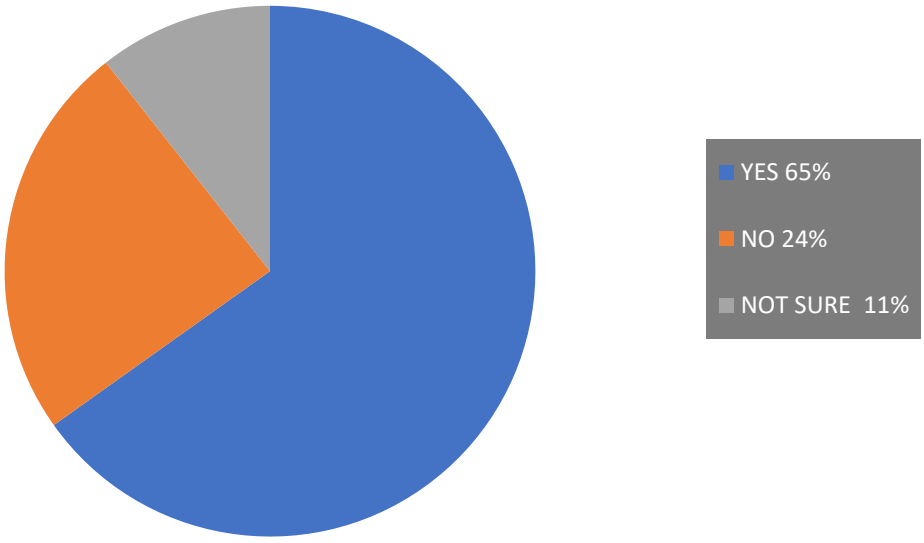
	Frequency	**Percentage**
Yes	10	5.9
No	160	94.1
Total	**170**	**100**

According to the table above, the research shows that almost all the respondents believed that the dam's construction had not improved Rukenya's access to energy after construction.

4.5.3 Effects of Dam Construction on Roads

The pie chart contains the replies to the question of whether respondents believed that the construction of the dam project had improved the condition of the roads in Rukenya.

Figure 4.2 Effects of dam construction on roads



From the findings above it shows that majority of the respondents believe that the dam construction had an impacts on quality of road network while the 11% were not sure if it had any effects on the road network.

4.5 The effect of displacement on the households

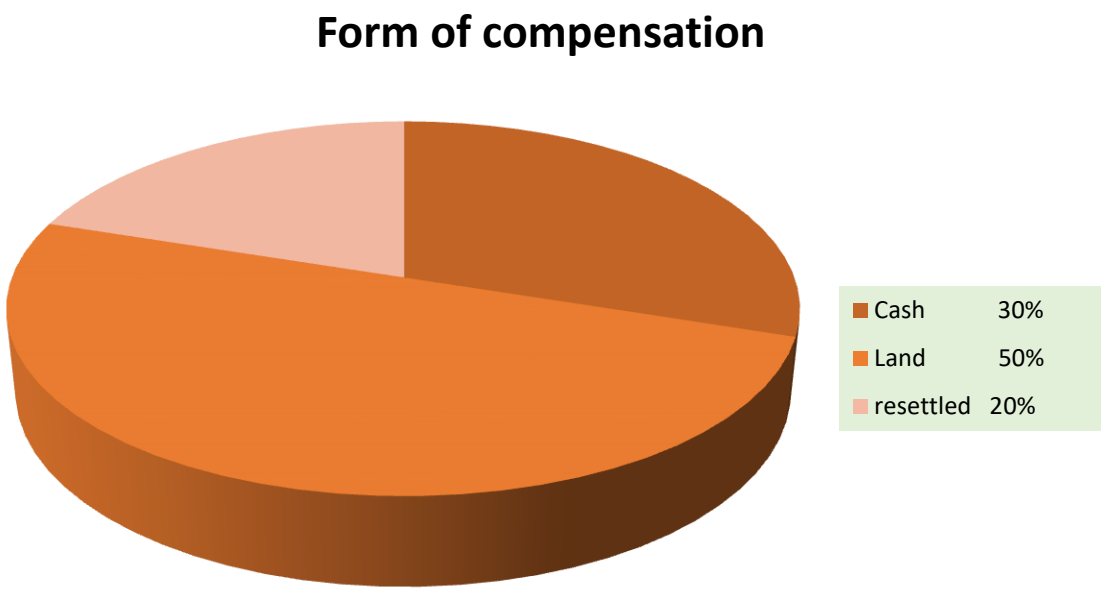
The goal of the study was to investigate how households in Rukenya Ward were impacted by displacement.

Findings about their compensation and loss of family ties are presented in this section.

4.5.1 Compensation of Households.

The purpose of this question was to gather information regarding various compensation methods, including cash, land, and resettlement from the displaced households. The findings are summarized in the pie chart below

Figure 4Compensation



According to the study's findings, land was the most common strategy used to compensate displaced households, accounting for 50% of the cases. A total of 20% of the cases involved resettlement compensation, while only 30% involved monetary compensation.

4.5.2 Effects of displacement on loss of family ties

The study sought to examine if displacement had caused loss of family ties or separation of families on households. The findings are in the table 4.7 below

Table 7 effect on loss of ties

	Frequency	**Percentage**

Yes	**162**	**95.3**
No	**8**	**4.7**
Total	**170**	**100**

The findings show that 95.3% of respondents said they had felt the effects of a loss of family connections, whereas 4.7% had not. This highlights the widespread effects of such loss by indicating that a sizable majority of people have been impacted by interruptions or changes in their familial connections**.**

4.6 Effect of water availability on livelihood of households.

The study's objective was to determine how the availability of water affected homes in the Rukenya Ward.

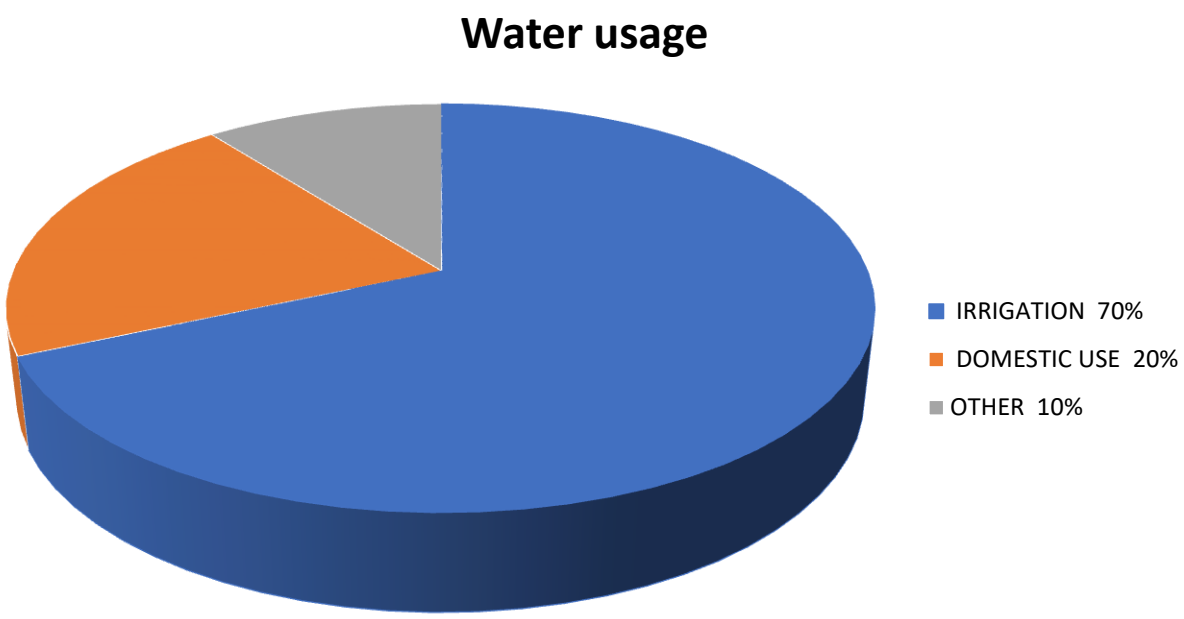
This section presents the research on their water use and whether it had increased their income.

4.6.1 Water usage

This study analyzed household water usage for irrigation, domestic purposes, and other purposes.

The findings are in the table below.

Figure 4.3Water usage



The study reveals that a significant portion (70%) of the household water usage is dedicated to irrigation, indicating a substantial reliance on water for agricultural purposes. Domestic use, which includes activities like drinking, bathing, and cleaning, accounts for 20% of the water usage, suggesting a comparatively smaller portion of water allocated for household needs. The remaining 10% of water usage is attributed to other purposes, which could include activities such as industrial use or recreational activities.

4.6.4 Effect on income

Based on the findings, 97.1% of respondents said that having more water available had a good influence on their income level, while 2.9% said they had noticed no change. These results illustrate the potential economic advantages of having access to water by indicating an established connection between better water access and greater income.

Table 4.7 Effects on income

	Frequency	**percentage**
Yes	**165**	**97.1**
No	**5**	**2.9**
Total	**170**	**100**

Based on the findings, 97.1% of respondents said that having more water available had a good influence on their income level, while 2.9% said they had noticed no change. These results illustrate the potential economic advantages of having access to water by indicating an established connection between better water access and greater income.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION

5.0 Introduction

The study's results are described in this chapter so that conclusions can be drawn and suggestions can be made. The study's results are summarized in the section that follows.

5.1 Summary

The study was examining the effects of Thiba dam construction on the household's livelihood of people in Rukenya. This section presents the summary and discussion of the findings of this study according to the objectives of the study. The objectives of this study were, examine the effect of displacement on the livelihood households, to investigate the effect of social amenities on the livelihood of households and to assess the effect of water availability on livelihood of households.

The first objective was to examine the effects of displacement on households. The study identified various effects of displacement on households during the implementation of the Thiba Dam construction water project. The findings revealed that most people were compensated with land, while the least were Relocated with land. This had led to the separation of families as individuals were relocated to different areas, disrupting their familial ties and support systems.

The second objective was to investigate the effect of social amenities on the livelihood of households. In order to better understand how social amenities affect households' quality of life, the study looked especially at how a dam affects three important areas: energy, roads, and education. The results showed that the dam's construction had a significant influence on education since more students attended school, indicating better access to and quality of

educational opportunities. The dam had only a minor influence on energy availability or affordability, though, showing that it did not considerably boost the energy industry. On the plus side, the dam was instrumental in expanding the road system, which increased the region's connection and infrastructure for transportation.

The third object was to assess the effect of water availability on livelihood of households. The study assessed the effects of water availability on households' livelihoods, specifically examining water usage and its impact on income levels. The findings showed that the majority of households primarily used water for irrigation, followed by domestic use and other purposes like industrial use. Regarding income, a significant proportion of households experienced income improvement, indicating a positive correlation between water availability, utilization for income-generating activities, such as irrigation, and enhanced financial well-being.

5.2 Conclusion

In conclusion, the study examined how social amenities and water accessibility affect households' ability to support themselves. The results showed that the dam had a beneficial effect on education, as seen by a rise in school attendance. However, it was not entirely successful in enhancing the energy industry. On the other side, the dam greatly expanded the road system, enhancing the infrastructure of transportation. When it came to water availability, households mainly used it for irrigation, which led to higher income levels. The study did draw attention to the adverse consequences of displacement, which upset societal and family institutions. These results highlight the importance of considering the specific needs and priorities of households when planning and implementing social amenity projects, as they can have varying impacts on different aspects of livelihoods.

5.3 Recommendations

5.3.1 Recommendation for policy

1. Households impacted by the Thiba dam should be guaranteed effective resettlement services. This involves providing suitable pastures for cattle and fertile terrain for agricultural pursuits. To make certain that households receive fair remuneration for their lands, a fair policy should be created.
2. Offers of compensation to residents living close to dam construction sites should be preceded by professional valuation. Participating household representatives in negotiation procedures will guarantee that the interests of implementers and families are taken into account. To guarantee just compensation for people impacted by significant projects like the Thiba dam, the government should implement a compensation scheme akin to that of Ethiopia.
3. Implementing the Thiba dam should prioritize improvements in energy infrastructure. Enhancing electricity systems will not only optimize the project's efficiency but also foster community acceptance, ensuring a successful construction venture focused on providing reliable and sustainable energy resources.

5.3.2 Recommendation for further study

Further studies should examine the long-term effects of the Thiba dam on affected households, including income levels, agricultural activities, and overall well-being. Evaluating the effectiveness of compensation and resettlement programs is also crucial. Additionally, assessing the environmental impact and ecological changes resulting from the dam construction and operation would enhance understanding of the project's overall implications.

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APPENDICES 1
WORK PLAN

ACTIVITY	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY
Generation of topic,variables and a go ahead from supervisor	✓						
Submitting of chapter 1 and 2 to the supervisor for corrections		✓					
Completion of chapter 3 and submitting to the library for clearance			✓				
Presentation of the project				✓			
Data Collection					✓		
Data analysis						✓	
Conclusion and final defense							✓

BUDGET

Activity	Cost
Data collection	10,000
Printing, binding and photocopy	10,000
laptop	30,000
Transport	8,000
Accommodation	12,000
Total	**70,000**

QUESTIONNAIRE

SECTION A: DEMOGRAPHIC BACKGROUND

1. What is your gender

Male [ ]

Female [ ]

2. What is your age

18-24 [ ]

25-30 [ ]

31-45 [ ]

Above 45 [ ]

3. How many members are in your family

Less than 3 [ ]

4-5 [ ]

6-8 [ ]

9-10 [ ]

More than 11 [ ]

4. How are you compensated? Land for land compensation [ ]

Land for money compensation [ ]

Waiting to be compensated [ ]

5. What is your occupation?

.....

SECTION B: DISPLAMENT OF HOUSEHOLDS

1. Has Dam construction affected you physically?

   Yes [ ]

   No [ ]

2. If yes , how?

   .....

3. Has dam construction affected family ties?

   Yes [ ]

   No [ ]

4. Has dam construction affected the cultural activities of households?

   Yes [ ]

   No [ ]

5. If yes, how would you rate it

   Strongly agree [ ]

   Agree [ ]

   Neutral [ ]

   Disagree [ ]

   Strongly disagree [ ]

6. Has displacement affected your household ability to maintain a steady income.

   Yes [ ]

   No [ ]

7.Were you compensate from the displacement

   Yes [ ]

   No [ ]

If Yes, how were you compensated……..

SECTION C: AVAILABILITY OF WATER

1. How do you use water

   Domestic use [ ]

   Irrigation [ ]

   Others [ ]

2. Has water availability affected your ability to earn an income

   Yes [ ]

   No [ ]

3. Have you ever had to migrate or change your livelihood due to water scarcity

   Yes [ ]

   No [ ]

4. Have you noticed any changes in your health due to lack of clean water

   Yes [ ]

   No [ ]

5. Has the availability of water raised your economic status?

   Yes [ ]

   No [ ]

SECTION D: SOCIAL AMENITIES

1. How would you rate the condition of the roads in your area?
   a) Excellent
   b) Good
   c) Fair
   d) Poor
2. How satisfied are you with the transportation infrastructure in your area?
   a) Very satisfied
   b) satisfied
   c) Neutral
   d) Dissatisfied
   e) Very dissatisfied
3. How would you rate the quality of education in your area?
   a) Excellent
   b) Good
   c) Fair
   d) Poor
4. Do you think roads have increased school attendance?

   Yes [ ]

   No [ ]
5. Has dam construction improved energy supply

   Yes [ ]

   No [ ]