

**IMPACT OF COMMUNAL PROJECTS IMPLEMENTATION PROCESS
ON THE WELFARE OF LOCAL COMMUNITIES; THE CASE OF
MSUMARINI SHALLOW WELLS IN KILIFI COUNTY, KENYA**

BY

SHOLO BENJAMIN KAMBI

**A RESEARCH PROJECT REPORT SUBMITTED IN PARTIAL
FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF A
MASTER OF ARTS DEGREE IN PROJECT PLANNING AND
MANAGEMENT OF THE UNIVERSITY OF NAIROBI**

2015

DECLARATION

This research project report is my original work and has not been submitted to any other university or institution of higher learning for examination.

SHOLO BENJAMIN KAMBI

REG NO: L50/71785/2014

Signature **Date**

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

DR.MOSES OTIENO

LECTURER, DEPARTMENT OF EXTRA-MURAL STUDIES

UNIVERSITY OF NAIROBI

Signature..... **Date**

DEDICATION

This work is dedicated to my family; my loving and caring wife-Salome, my wonderful kids-Shimmi, Shanni, Shamma and Shammi. Let this be an inspiration to you. To my parents Mzee Gedion Kambi Masha and Mama Sarah Sidi Malunja thanks so much for taking me to school.

ACKNOWLEDGEMENT

I wish to express my gratitude to the University of Nairobi, more specifically, the Malindi center for giving me the opportunity to undertake this course. To my supervisor, Dr. Moses Otieno who has always dedicated his humble time for me to finish this work; Doctor, thanks for guiding me through the entire research project. To the Course lecturers, staff in the Department of Extra Mural Studies, your invaluable support enabled me to successfully go through this course. I wish to thank my colleagues Muteti, Emma and the rest who were a source of encouragement as I waded through the academic waters to accomplish this course.

In addition, my sincere gratitude goes to my wonderful staff mates at Garsen High school for their support, understanding and constant concern that they have always demonstrated; you gave me invaluable moral support as you cheered me to soldier on to the finishing line. Indeed colleagues may God bless you abundantly.

Moreover, I wish to thank my fellow members, Board of Directors of Malindi Water and Sewerage Company Limited whose resolve to further the water agenda in Magarini sub-county has been steadfast. It was out of this zeal that greatly informed my choice of the study topic. Finally, I wish to sincerely thank God Almighty for his health, provisions and protection throughout the times, seasons and moments of study for this degree.

TABLE OF CONTENTS

DECLARATION.....	ii
DEDICATION.....	iii
ACKNOWLEDGEMENT.....	iv
TABLE OF CONTENTS.....	v
LIST OF FIGURES.....	vii
LIST OF TABLES.....	vii
ACRONYMS AND ABBREVIATIONS.....	ix
ABSTRACT.....	x
CHAPTER ONE: INTRODUCTION.....	1
1.1 Background to the Study.....	1
1.2 Statement of the Problem.....	8
1.3 Purpose of the Study.....	9
1.4 Objectives of the Study.....	10
1.5 Research Questions.....	10
1.6 Research Hypothesis.....	10
1.7 Significances of the Study.....	11
1.8 Limitations of the Study.....	11
1.9 Delimitation of the Study.....	12
1.10 Basic Assumptions of the Study.....	12
1.11 Definition of Significant Terms.....	13
1.12 Organization of the Study.....	13
CHAPTER TWO: LITERATURE REVIEW.....	14
2.1 Introduction.....	14
2.2 Communal Projects Implementation Influence on the Employment Patterns.....	14
2.3 Health Issues Associated With the Implementation of Communal Projects.....	18
2.4 Social Conflicts Brought by the Implementation of Communal Projects.....	21
2.5 Environmental Pollution Impact as a Result of Community Projects Implementation.....	25
2.6 Conceptual Framework.....	30

2.7 Summary of Literature Review.....	31
CHAPTER THREE: RESEARCH METHODOLOGY.....	32
3.1. Introduction.....	32
3.2 Research Design.....	32
3.3. Target Population.....	32
3.4. Sample Size and Sampling Procedure.....	33
3.5 Data Collection Instruments.....	34
3.6 Validity and Reliability of Research Instruments.....	34
3.6.1 Validity of the Research Instrument.....	34
3.6.2 Reliability of the Research Instrument.....	35
3.7 Data Collection Procedure.....	35
3.8 Data Analysis	35
3.9. Ethical Considerations.....	36
3.10 Operational Definition of Variables.....	37
CHAPTER FOUR: DATA PRESENTATION AND INTERPRETATION.....	38
4.1 Introduction.....	38
4.2 Return Rate of Questionnaires.....	38
4.3 Basic information of Respondents.....	38
4.4 Responses in Relation to Employment Opportunities.....	40
4.6 Health Issues Associated with Shallow Wells Projects.....	42
4.7 Social Conflicts in Relation to Shallow Wells Projects.....	43
4.8 Responses on Items on Environmental Pollution.....	45
4.9 Testing of the First Hypothesis.....	46
4.10 Testing of the Second Hypothesis.....	47
4.11 Testing of the Third Hypothesis.....	48
4.12 Testing of the Fourth Hypothesis.....	49
CHAPTER FIVE: SUMMARY, DISCUSSIONS CONCLUSIONS AND RECOMMENDATIONS.....	50
5.1 Introduction.....	50
5.2 Summary of Findings.....	50

5.3 Discussion of Findings.....	52
5.4 Conclusions.....	54
5.5 Recommendations.....	55
5.6 Suggestions for Further Research.....	55
REFERENCES.....	57
APPENDICES.....	65
APPENDIX I Letter of Transmittal.....	65
APPENDIX II Respondents Questionnaire.....	66

LIST OF FIGURES

Figure 1:	Conceptual Framework.....	30
-----------	---------------------------	----

LIST OF TABLES

Table 3.1	Target Population.....	33
Table 3.2	Operationalization Table.....	37
Table 4.1	Basic information of the Respondents.....	39
Table 4.2	Response on Employment Opportunities.....	40
Table 4.3	Rating of Jobs Creation.....	41
Table 4.4	Response on Health Issues Associated with Shallow Wells Projects.....	42
Table 4.5	Rating of Health Issues.....	43
Table 4.6	Responses on the Social Conflicts.....	44
Table 4.7	Rating of Social conflicts on a scale.....	44
Table 4.8	Responses on Environmental Pollution.....	45
Table 4.9	Rating of Responses on Environmental Pollution.....	46
Table 4.10	Hypothesis Testing Using the Chi-Square.....	47
Table 4.11	Hypothesis Testing Using the Chi-Square.....	47
Table 4.12	Hypothesis Testing Using the Chi-Square.....	48
Table 4.13	Hypothesis Testing Using the Chi-Square.....	49

LIST OF ACRONYMS AND ABBREVIATIONS

ASAL	Arid and Semi-Arid Lands
CBOs	Community Based Organization
CIA	Criminal Investigating Agency
FBOs	Faith Based Organisations
GoK	Government of Kenya
MDGs	Millennium Development Goals
MAWASCO	Malindi Water and Sewerage Company
NGOs	Non-Governmental Organizations
OECD	Organization for Economic Development
SPSS	Statistical Package for Social Sciences
UN	United Nations
UNEP	United Nations Environment Programme
WCED	World Commission on Environment and Development
WHO	World Health Organization
WRMA	Water Resource Management Authority
WRUA	Water Resource Users Association
WWAP	World Water Assessment Program

ABSTRACT

According to United Nations Development Programme (UNDP), (2010) report, people need water and sanitation to sustain their health and maintain their dignity. The report further states that water beyond the household sustains ecological systems and provides input into the production systems that maintain livelihoods. This means that water permeates all aspects of human development and lack of its access at household level or for production results to peoples' choices and freedoms curtailed by ill health, poverty and vulnerability. Due to the fundamental role played by water in human life, a number of water projects have been implemented across the globe, targeting various livelihoods in a number of communities. This has seen the same happen in Kenya, more specifically in Magarini sub-county where this research targeted. The aim of this study therefore was to assess the impact of communal projects implementation on the welfare of local communities, while focusing on the Msumarini shallow wells in Magarini Sub county Kenya. The study was guided by four objectives that sought to; examine how employment opportunities created by communal projects implementation impacts on the welfare of the local communities of Magarini sub county, investigate how health related issues resulting from communal projects implementation impacts on the welfare of the local communities of Magarini sub county, examine how social conflicts created by communal projects implementation impacts on the welfare of the local communities of Magarini sub county and establish how environmental pollution caused by the implementation of communal projects impacts on the welfare of the local communities of Magarini sub county, Kenya. A descriptive research design was adopted for the study since the study was a social research in nature. In the study systematic random sampling was used in accordance to the characteristics and the elements that the population possessed from the various 8locations. The target population was about 1680but a population sample of 95was used as calculated by the Yamane (1967) formula. A pilot study was conducted to check the instruments reliability and validity and a correlation figure of 0.5 was considered. Data from the field was collected using a structured questionnaire which was administered personally, via e-mails, enumerators and picked them after they had been filled. The data then was sorted out, coded and analyzed using the SPSS version. Chi-square was used to test the hypothesis. From the hypothesis tested and the figures in the conversion of the data in chapter four, a number of issues emerged. For example the Chi-Square values of 21.57, 36.15, 50.97 and 24.77 were found for impacts on employment creation, health issues, social conflicts and environmental pollution respectively; meaning that in all the cases the alternative hypotheses were adopted. In relation to the findings in chapter four, the researcher recommended a number of issues like more funding for the water projects so as to take care of the unemployment in the area and further areas for research have been suggested.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The UN Millennium Declaration of 2000 set a target to halve the percentage of world's population without access to sustainable safe drinking water by 2015. This was a stepping stone towards full global coverage by 2025 as in the Global Water Partnership Framework for Action and the African Water Vision and in the Kenya Vision 2030 which aims to ensure water availability and access to all by 2030 (African Union, 2011). About 2.8 billion people (more than 40%) of the world live in river basins faced with some form of water scarcity and 1.6 billion people live in areas of economic water scarcity, where even though water is available, human, institutional and financial capital limit access to water (UN, 2010).

According to United Nations Development Programme (UNDP), (2010) report, people need water and sanitation to sustain their health and maintain their dignity. The report further states that water beyond the household sustains ecological systems and provides input into the production systems that maintain livelihoods. This means that water permeates all aspects of human development and lack of its access at household level or for production results to peoples' choices and freedoms curtailed by ill health, poverty and vulnerability.

The same UNDP report further reveals that globally an estimated 1.1 billion people in developing countries have inadequate access to water, over 0.7 billion people in developed countries have been faced by catastrophes arising from water based projects for the past 8 years and 2.6 billion people out the 6 billion lack basic sanitation. The above estimates concur with findings by World Bank, (2010) report which showed that water is a scarce resource with multiple interwoven uses that range from drinking water, energy, irrigation among others. The report further states that, more than one sixth of the Worlds' population does not have access to safe drinking water, with 80% living in rural areas thus access to water cannot not be guaranteed globally; a factor that has made it necessary for almost 90% of the communities across the globe to come up with ways of ensuring continued water supply projects for their communities' survival.

It is a truism that mankind cannot survive without water. Moss (2010) emphasized that water is essential for human life because it plays a vital role for the survival of human beings and all

forms of life. He added that, people tend to possess a subconscious concern to maintain, preserve and defend access to water which they need for their own survival. Marvin (2013) added that water supports health and livelihoods, grows our food, powers our industry, and cools our generating plants and these different uses can no longer be seen in isolation from each other.

In this realization of the importance of water, communities have always come up with all the possible strategies of conserving the little available water and inventing new ways of ensuring continued water supply (Joop, 2013). In this regard, a report by Moss, (2010) countries that have made remarkable strides recently in improving the water supply systems to their communities include China, India and Pakistani. In China for example, the continued growth of its population past the billion figure led to the inventions that integrated new technologies that led to the construction of a Mega water project/dam for the last decade.

According to the World Bank (2010), in 2006, the Chinese government completed a decades-long construction on the world's largest dam ever that was aimed at solving the long experienced water problems by its community. Situated in Central China, the Three Gorges Dam is 1.4 miles long and 604' tall, over 5 times as large as the Hoover Dam (Xinhua News Agency, 2013). TGD is fed by the Yangtze River and its 26 turbines provide 18,000 megawatts of power, over 500 million metric volume of water for domestic, industrial use and water for agriculture.

However, studies by IPCC (2010) show that holding back enough water to slow the rotation of the earth; it is a testament to human ingenuity and architectural prowess. And while the Dam provides roughly 3 percent of the country's energy needs, thousands of jobs, numerous water folds and remarkable regional development, it has come at great costs both environmentally and socially. These costs, moreover, feed one another insofar as social displacement puts further stress on the cities and towns that must now support the displaced and environmental degradation of the area surrounding TGD and nearby stretches of the Yangtze river equals a loss of resources for China in general. These include arable land, biodiversity, medicinal flora, and valuable topsoil, among others.

According to Stockholm Environment Institute (2014), some of the effects associated with community based water projects in China have been felt from the TGD project. For example, about 1.3 – 1.9 million people were forced to move from their homes along the Yangtze River

due to the construction of the Three Gorges Dam. There are inconsistencies as to how many people were resettled, which means that there was inadequate information and thus funding for resettlement. Peasants account for 87.3% of people who live in the reservoir area, and are mostly uneducated. Estimates state that 140 cities, about 1,000 villages, two cities, and 100,000 acres of fertile farmland will be inundated by the reservoir annually thus negatively influencing the lives of the locals. The World Bank (2010) further shows that communal water projects like this dam project in China has had both social and environmental negative effects besides the constructive results like jobs creation and increased amounts of electricity for both the locals and other urban centres in the community. On environmental issues for example, the World Bank reports that, the Three Gorges Dam, according to some, has the potential to be one of China's largest environmental nightmares, with one of the most immediate environmental effects of the Three Gorges Dam being an increase in landslide activity that has been experienced in the recent past. This results primarily from erosion caused by the drastic increases and decreases in reservoir water levels, which, when at their peak, create a body of water almost as long as Britain (World Bank, 2011). Furthermore, landslides in the surrounding areas have been much worse than had been predicted and dozens of people have already died as a result (World Bank, 2010).

Across Africa, several issues have revolved the water resource for a long time. Wars have been revolving the water catchment areas; people have been making a living from the areas while others have for a long time been displaced by either floods or construction of reservoirs in their motherlands for almost 90 years now (AU, 2010). The most remarkable one is the ancient projects in Egypt that are surrounding the Nile River that originates from the Lake Victoria and passes through the Sudan, Ethiopia and Egypt lands. In Egypt for example, all her communities entirely depends on the water from the Nile River for their operations. According to the report by the United Nations Development Programme (2010), the Aswan Dam (a remarkable Mega water project to the local community of the Egyptians) is an embankment dam situated across the Nile River in Aswan, Egypt. Since the 1960s, the name commonly refers to the High Dam. Construction of the High Dam became a key objective of the Egyptian Government following the Egyptian Revolution of 1952, as the ability to control floods, provide water for irrigation, and generate hydroelectricity were seen as pivotal to Egypt's industrialization. The High Dam was constructed between 1960 and 1970, and has had a significant impact on the economy and culture of Egypt.

Before the dams were built, the Nile River flooded every year during late summer, when water flowed down the valley from its East African drainage basin. These floods brought high water and natural nutrients and minerals that annually enriched the fertile soil along the floodplain and delta; this had made the Nile valley ideal for farming since ancient times. Because floods vary, in high-water years the whole crop might be wiped out, while in low-water years widespread drought and famine occasionally occurred. As Egypt's population grew and conditions changed, both a desire and ability developed to control the floods, and thus both protect and support farmland and the economically important cotton crop. With the reservoir storage provided by the Aswan dams, the floods could be lessened and the water stored for later release (WaterAid, 2014).

Ahmad and Talib (2011) argue that the High Dam in Egypt that was supported by the local Egyptians long time ago has resulted in protection from floods and droughts, an increase in agricultural production and employment, electricity production and improved navigation that benefits tourism. Conversely, the dam flooded a large area, causing the relocation of over 100,000 people and submerged archaeological sites, some of which were relocated as well. The dam is also blamed for coastline erosion, soil salinity and health problems.

In east Africa, water projects have been the centre stage of conflicts in Sudan and northern parts of Uganda for a longtime now (African Ministers Council on Water, 2011). Remarkably is the Nalubaale Power Station, formerly known by its old name, Owen Falls Dam that was aimed at changing the lives of the people of Uganda starting from Busia border, Jinja and the larger Busoga region. This project is a water reservoir station and a hydroelectric power station across the White Nile near to its source at Lake Victoria in Uganda. Nalubaale is the Luganda name for Lake Victoria. Despite the fact that the project has attracted a number of goodies for the Jinja people and Ugandans at large, it has been faulted for a number of issues too (Bennett 2010). A report by DFID (2010) shows that the Ugandans have benefited from activities associated with water projects like those of the Nalubaale Dam in a number of ways that include: availability of water for irrigation that has led to a bounce cultivation of sugarcane and coffee along the Jinja area, tourism attraction activities like boat fishing that have brought in foreign exchange thus changing the lives of the local Ugandans, employment creation for the locals, water has been available for both domestic and industrial use etc. However, the UN report of 2010 has

associated the implementation of such projects with a number of negative issues like regular drowning of the locals especially the children, attacks from aquatic animals like crocodiles, normal community conflicts that have led to regular wars, water borne diseases like cholera, bilharzia, malaria due to mosquitoes breeding, displacement of large numbers of people and many more.

In Kenya, water conflicts have not only been felt in the ASALs but have been existing even in lands where waters are both from the underground and the rain sources like mount Kenya region, mount Elgon areas, Gusii highlands, Lake Victoria region, the ocean ridden coast region and many more (WaterAid, 2011). In his research entitled, Community water projects in rural Kenya help raise family income, Gathuti (2010) argues that, Rural family incomes tend to rise when Kenyan women don't have to spend several hours a day lugging water to their villages or the locals spend days to belligerent just to divide the waters among their clans for either cultivation or their animals. Related to this, UWAZI (2010) argues that, Kenya is a beautiful mix of cities and countryside, mountains and desert, remarkable potential amidst desperate poverty. It is home to a people of inspiring hospitality, kindness and joy. But for so many in Kenya, clean and safe water is impossible to find. Mothers search for it in vain and children gather dirty water when nothing else is available. As they do, hope is lost when inevitable sickness and poverty follow.

Due to this, a number of organisations, the government, locals and many more have been on the move of inventing new ways of coping with the stress of reduced water supply for domestic, industrial and agricultural use. Studies by WCED (2010) have shown that, communities have partnered with international or governmental organisations to come up with communal water projects like, Bridge Water Project that refocused efforts in Western Kenya on well rehabilitation and construction. Local communities apply with BWP to either have a water project overhauled or installed for the first time. BWP works with these communities to ensure they are ready and able to manage their water source and that they are properly trained in hygiene and sanitation. This has spent over six years strengthening the activities in the western region.

Another project according to WCED (2010) is the Africa Sand Dam Foundation that has among others, expanded its relationship with the Africa Sand Dam Foundation, building its 2011 pilot program into a robust construction effort that includes 10 sand dams and 8 shallow wells in 18 counties across the country including the Nairobi, Kiambu, Kisii, Tana Delta, Mombasa, Kwale,

Taita Taveta etc. These comprehensive projects included the design and construction of small subsurface dams, as well as efforts in agriculture, land terracing, tree planting and watershed management, aimed at bettering the lives of the local communities in the various counties. The final water communal project that has made a remarkable impression in Kenya today is the Pamoja Trust that has a unique Urban Water Kiosk pilot in Mombasa, which has been a success for 5 years now. These small kiosks provide low income families with affordable alternative access to clean, safe municipal water. Without these interventions, which are coordinated and endorsed by the local government, families often pay a prohibitive premium for stolen and often dangerous drinking water from unscrupulous providers. The kiosk programs are entirely managed and operated by the local community and profits from water sales are reinvested into programs such as secondary education scholarships.

Studies by OECD (2011) on Environmental Policy have shown that communities along the Kenyan coast are still deprived off the right to accessing clean and sufficient water for both domestic and commercial use, a factor that has led to regular innovations of self-water sustenance. In Kwale county for example, a report by Mutagamba (2011) shows that the community adopted the construction of water reservoirs along the small Marere river as a strategy of getting water for both domestic and commercial uses. The impact to the locals and the coast community has been: creation of jobs for the water venders and those employed by the Marere Water Company (Demombynes and Trommlerova, 2012) that purifies and packs water in drums and bottles for sale, improved living standards of the communities feeling the positive outcomes from the Marere waters (Jansz, 2011) like having access to income from the water business and accessing water for agriculture, Displaced people and wild animals that come from the adjacent Shimba Hills animals park have also been informed by various studies like the direct receivers of the negative impact of the water project (Ministry of Water and Irrigation, 2012), environmental issues like health hazards exposed to both animals and human beings like diseases triggering parasites breeding (Odie, 2012), and many more .

A report posted by the World Wikipedia (2015) has shown that a number of water projects that are aimed at benefiting the Kenyan economy have been identified by both the Kenyan government under Hon. Mwai Kibaki and the local communities for the last five years and their impacts have been greatly felt by the locals. Since the inception of such interventions, it is

estimated that community projects account for about 3000 water supply schemes in Kenya and about 101 schemes in the larger Kilifi and Tana Delta region (UWAZI report, 2011). In relation to the community water projects, the simple history available about the water situation in Magarini Sub County and more specifically the people living in Msumarini shows that the level of access to water from the Malindi Water and Sewage Company is totally limited (Malindi Inquiry Report, 2011). A brief history about the Msumarini shows that, the community living in this village came from different parts e.g. Mambrui [Gongoni], Kadzinuni and Msumarini [Kilifi] with the aim of acquiring land for cultivation. The group from Mambrui was tired of paying land rates to the Mazrui family while the Msumarini group was evicted by the Vipingo sisal company. Most of them came in 1982 and acquired plots through a local committee which was developed by earlier occupants in the area. The village was called Msumarini since then due to a scrap metal which was left in the area after the construction of a bridge (GOK, 2012).

A report by the County Development Board (2014) shows that the area does not have any formal water or sewer connections from MAWASCO and majority of the households use shallow wells build under the various water development projects to get water. In an interview by the County Water Board on 952 respondents, when asked if the household has access to water at household level 921 families did not access water at household level but through other sources. 27 families accessed water at household level through wells dug in their compounds while 2 families had tapped water from the boreholes dug in their compounds. In relation to the responses above, studies by WHO (2011) have shown that since the community water projects were incepted in the Magarini District, there has been a significant improvement in health, open opportunities for education and capacity-building for all.

Positive Social Impacts, improved standard of living of the beneficiary residents due to income generation and productivity, housing, health, etc., reduced distances traveled and time spent in search of water hence the beneficiaries (especially women and children) using the energy and time on economically and socially viable activities for the families, availability of water for irrigation thus enhancing the agricultural potential and productivity of the target areas as well as promoting recreation activities etc. Negative social Impacts however have been associated with these water projects. For example, Gathuti (2010) observed that, the people of marginalized Kilifi County have been faced with a number of issues due to the water production programmes

that they involve in. They include displacements and re-settlement to alternative locations; increase in human-wildlife conflicts cases especially from the increase in populations of aquatic animals notably crocodiles from the rivers Tana; trauma due to the relocation of graves; disruptions to subsistence fishing activities; health and safety of the residents from possible enhanced vector breeding (mosquitoes, snails, etc.); attraction of wildlife to the area and water contamination; accidental drowning etc. However, little research has been done on the water situation in the area and its influence of human life; a factor that this research intended to address.

1.2 Statement of the Problem

Crops, fishing and aquaculture, livestock, poultry, dairy farming etc. in rural communities, the availability of food often depends entirely on uncertain weather patterns – whether rains come and rivers flow. Ensuring a sustainable water supply for agriculture increases food production and helps alleviate the world's hunger. Water is essential to industry, to economic development and to creating livelihoods for the poor. A reliable water supply also helps poor households augment their income through productive domestic activities such as cultivating vegetable gardens or raising poultry. Without water, agriculture, industry, energy production and all other economic activities come to a halt (Jim, 2013).

Water is the principal medium through which climate change exhibits its environmental, economic and social impacts. Many regions, and particularly poorer communities, are already vulnerable to floods, droughts and similar water-related disasters which can destroy lives, assets and incomes. Providing safe water services and managing water resources wisely improves health and opens opportunities for education and capacity-building for all (WHO/UNICEF, 2011).

According to World Bank (2012), in many poor communities in the Kenyan slums of Nairobi and rural homes like the marginalized coast province, fetching water from distant sources and queuing for water are physically-demanding and time-consuming responsibilities borne primarily by women and girls. Women have less time to engage in other productive activities, while for girls school attendance is often considered a lesser priority: a gender bias that creates a huge imbalance in school enrolment ratios. The lack of adequate sanitation and separate toilet facilities

in schools also reduces girls' attendance. Consequent disparities in women's education and involvement in decision-making can place them at a significant disadvantage in earning an income or having a say in the affairs of their community.

In his studies in relation to the community decisions making and the well-being of the society, Mukunga (2012) argues that, unlike Nairobi where the women's voice is heard in community projects, other areas like the coast and North Eastern have totally put aside the women in development projects; leading to overall disparities in achieving development goals. Another study by Muruta (2010) has addressed comparative issues surround water catchment areas in Kenya and Mozambique, while that by the UN (2010) has addressed Progress on Sanitation and Drinking Water in Kenya's coast but no one particular research has touched on the impact of these water projects on the welfare of the local communities.

A report by WCED - World Commission on Environment and Development of 2010 has shown that major brewing conflicts in east Africa today are due to the location/site of major community water projects. The major source of conflict cited in the report for example includes the involuntarily displacement of the locals from their ancestral lands, health hazards like diseases and drowning of humans, conflicts between humans and animals for the waters and many more.

However, studies by White and White (2009) show that in any place of the world, communal projects have helped in improving the health of the locals, living standards improvement via access to income from both communal products vending, employment, tourism fee and many more, increased production, favored community participation, prolonged life expectancy via achieved better health and education and many more. This has therefore build fertile grounds for such research that intended to assess the impact of communal projects implementation on the welfare of local communities, while focusing on the Msumarini shallow wells in Magarini Sub county Kenya.

1.3 Purpose of the Study

The purpose of this study was to find out the impact of communal projects implementation on the welfare of local communities; the case of Msumarini shallow wells in Magarini Sub county Kenya.

1.4 Objectives of the Study

This research study was guided by the following objectives:

- i. To examine how employment opportunities created by implementation of communal projects impacts on the welfare of the local communities of Magarini Sub County, Kenya.
- ii. To investigate how health related issues resulting from implementation of communal projects impacts on the welfare of the local communities of Magarini Sub County, Kenya.
- iii. To examine how social conflicts created by implementation of communal projects impacts on the welfare of the local communities of Magarini Sub County, Kenya.
- iv. To establish how environmental pollution caused by the implementation of communal projects impacts on the welfare of the local communities of Magarini Sub County, Kenya.

1.5 Research Questions

The study was guided by the following research questions:

- i. How do employment opportunities created by communal projects implementation impacts on the welfare of the local communities of Magarini sub county, Kenya?
- ii. How do health related issues resulting from communal projects implementation impacts on the welfare of the local communities of Magarini sub county, Kenya?
- iii. How social conflicts created by communal projects implementation impacts on the welfare of the local communities of Magarini sub county, Kenya?
- iv. How does environmental pollution caused by the implementation of communal projects impacts on the welfare of the local communities of Magarini sub county, Kenya?

1.6 Research Hypothesis

The study was guided by the following alternative research hypothesis:

1. H₁: Employment opportunities created by communal projects implementation have an impact on the welfare of the local communities of Magarini sub county, Kenya.
2. H₁: Health related issues resulting from communal projects implementation have an impact on the welfare of the local communities of Magarini sub county, Kenya.

3. H₁: Social conflicts created by communal projects implementation have an impact on the welfare of the local communities of Magarini sub county, Kenya.
4. H₁: Environmental pollution caused by the implementation of communal projects has an impact on the welfare of the local communities of Magarini sub county, Kenya.

1.7 Significance of the Study

It is expected that the findings of the study will be beneficial to community members of Magarini sub county, Kilifi County, CBOs, NGOs, Water and Sanitation Board of Kilifi, Ministry of Health, Ministry of Lands, Ministry of Labour, Ministry of Agriculture and future researchers. At first, it is expected that the study will highlight the various activities that have been undertaken by the various water projects with the aim of changing the lives of the locals; thus helping the community members understand their participation and how this participation will change their lives.

It is also expected that the findings of the study will assist CBOs and NGOs operating in the Magarini to understand the undisclosed issues surrounding the various water projects and other related development projects in the area. These organisations will get the relevant information on how the various projects have aided in transforming the lives of both the disadvantaged and non-disadvantaged in this community and how best they can intervene to mitigate the challenges associated with these projects.

Moreover, the knowledge generated in this study will inform governments (county and national) that local people are always affected either positively or negatively by any development initiative and they should be given prior information and should be allowed to participate freely. The various county and national ministries will be enriched with information that will help them understand how well they can tackle the negatives associated with such projects and how to cultivate the positives for general economic and social development. Lastly, the result of the study will increase the existing body of knowledge.

1.8 Limitations of the Study

The major limitation that faced the study was time. Time for classroom work, research, that at work, that for the family and that of linkage between the supervisor and the respondents was highly in competition. Also, owing to the nature of the researcher's work, the time of the

research and guidance by the supervisor at the campus was highly in competition. However the researcher took a leave and created personal time to link the supervisor and the respondents.

Financial resources were not only a limitation but a factor in the study. Limited resources may delay the achievements of the study. However the researcher got family support and at times went for some bank funding in order to get extra sources of finance to cater for both research and travels.

The final limitation was that of linkage with the respondents in the field. The study area was poorly connected with road network and at times basic communication internet from the subscribers like Safaricom, Air Tell etc. was a challenge. However, this was overcome by use of motor bikes, enumerators and other sources of communication like the trained messengers.

1.9 Delimitation of the Study

The study delimited itself by concentrating on the impact of communal projects implementation on the welfare of local communities; the case of Msumarini shallow wells in Magarini sub county Kenya. The study also focused on only four aspects of impacts on the community's welfare that was limited to jobs/employment influence, environmental pollution, social conflicts and the health issues associated with implementing of community based water projects in Magarini. Enumerators were used to distribute the questionnaires and at the same time they were used as translators in cases where the target group maybe composed of individuals who didn't have an immense understanding of the language used.

1.10 Basic Assumptions of the Study

There were records of several community projects initiated by various water projects in the area for the past five years so as to have the relevant literature for the study; The Magarini community members were willing to give information necessary for the study.; Another assumption under this study was that the information retrieved from respondents through questionnaires and non-structured interview schedules could meet the purpose of the study, and, Finally, it was assumed that the projects have had a visible impact on the welfare of the locals for over five years now and the people in the area are able to articulate the issues surrounding the projects.

1.11 Definitions of Significant Terms

A community- is a social unit of any size that shares common values. In human communities, intent, belief, resources, preferences, needs, risks, and a number of other conditions may be present and common, affecting the identity of the participants and their degree of cohesiveness (WHO/UNICEF, 2014).

Health-Refers to the general better functioning of a human body when there is no foreign germs in the blood that inhibit enzymes functioning. It can also refer to the ill state of stable state of an individual, due to the presence or absence of foreign parasites in the body that either alters its functioning positively or negatively (World Health Organization and UNICEF, 2012).

Environmental pollution- is defined as the undesirable change in physical, chemical and biological characteristics of our air, land and water. As a result of over-population, rapid industrializations, and other human activities like agriculture and deforestation etc., earth became loaded with diverse pollutants that were released as by-products.

Resettlement - the transportation of people (as a family or colony) to a new settlement (as after an upheaval of some kind) or relocation.

Social Conflicts-Refers to internal or external misunderstandings in the society due to the scarcity of resources or due to struggles for the few resources on earth (UN, 2010).

1.12 Organization of the Study

This research proposal is organized in five chapters. Chapter one is the introduction which includes the background of the study, statement of the problem, purpose of the study, objectives of the study, research questions, statement of the problem, purpose of the study, objectives of the study, research questions, research hypothesis, significance of the study, delimitations of the study, basic assumptions and the definition of significant terms. Chapter two of the study consists of the literature review with information from other articles which are relevant to the researcher. Chapter three entails the methodology that was used in the research. Chapter four contains data analysis, presentation and interpretation. Chapter five consists of summary of findings, discussions, conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The reflection and collection of the literature review to this chapter attempts to present a review of various previous studies that have been undertaken in relation to the impact of community projects on the welfare of the community. Various studies on this subject are reviewed herein to provide a broad perspective on how the impact of the community projects implementation with a bias to water projects and the elaborations will be done in relation to the objectives. A conceptual framework will be used also to show the variables to be considered in the research (the independent variables, the dependent and the moderating variables).

2.2 Communal Projects Implementation Influence on the Employment Patterns

Projects implementation since the colonial periods required either paid or slave labour to work on the initial construction and implementation stages besides the people who were employed to either sell or distribute the output results from them. Whenever any projects is build, be it production or manufacturing project, water is needed for either the individuals or the production process, a factor that occasionally has led to water shortages and crises since the ancient times (World Water Assessment Programme, 2010). This has led to the living communities since the agrarian revolution to come up with water projects that were and are toady aimed at bettering the lives of the communities. This according to Campbell, Corvalán and Neira (2012) has led to the creation of jobs and other more opportunities for the communities and many more.

From the global perspective for example, China has been known to be the economy that has been expanding its industrial base at a very high rate, a factor that has put it at a high crisis of how to get a balance between industrial water and the clean water needed by the over 1.1 billion citizens; a factor that has continuously led to the development of various community water strategies and projects. The implementation of various water projects like the Jianmin Village that requested for the construction of water projects like dams that could help the citizens get access to clean water, electricity and other industrial water. This led to the erection of the Three Gorges Dams project that was implemented in a PPP system. According to Xinhua News Agency

(2013), China, last year, Chinese officials celebrated the completion of the Three Gorges Dam by releasing a list of 10 world records. As in: The Three Gorges is the world's biggest dam, biggest power plant and biggest consumer of dirt, stone, concrete and steel that has been the dream of the Jianmin Village people. Among the benefits that have been accompanying the construction of these projects for over 7 years since they were started has been the creation of jobs for both the skilled and the non-skilled China people who have been working at different categories of either construction (World Bank, 2011), management (The Times, 2010) or those who have been self employed by the projects' products like vending water or irrigating the farms using the waters (Asian Development Bank (ADB), 2010).

A research by Comprehensive Assessment of Water Management in Agriculture (2013) shows that, in India, Egypt, Eritrea and Zambia, the local authorities have been engaging the local women and men in the rural areas since early times dating to the 1970s in various water projects like local dams construction and many more. The final impact of the almost 410 medium water projects in Egypt, coupled with the renown Aswan High Dam for example have led to the creation of over 2.1 million jobs for the locals (United Nations Convention to Combat Desertification, 2013), 70,000 jobs for the people from the cities and other far places in the south and the northern parts (Water Quality and Health Council, 2011), and over 1,210 jobs have been given to foreigners as far as from places like Kenya and the Arabic world (Mutagamba, 2011).

In relation to the above research Egypt, Ahmad and Talib (2011) came up a slightly different argument that is almost similar to what was argued by a number of scholars in relation to the Aswan High Dam project. According to him, just north of the border between Egypt and Sudan lies the Aswan High Dam, a huge rockfill dam which captures the world's longest river, the Nile, in the world's third largest reservoir, Lake Nasser. The dam, known as Saad el Aali in Arabic, was completed in 1970 after 18 years of work. He further shows that since the point of introduction of the idea of the dam project in the early 1960s, people from adjacent towns of Bani Suwayf, Tanfa, Al Jizah, Al Minya and Asyut were involved in the construction process of the project, later on followed the managerial jobs, as electricity was created, maintenance jobs were created to keep the machines run and later on, the water vending was a business as most of the locals could sell the water including to the urban towns like Cairo, besides the idea of self-

employment in the farms whereby irrigation helped in increased agricultural products that could be traded.

In Sudan and Tanzania, communities have not only been fighting with hunger but also for almost 20 years now, they have been having the issues of unpredictable long dry spells and droughts, not mentioning the issue of desertification that is being brought up by uncontrolled deforestation. This has forced the countries to have general water management strategies that in the recent days have seen the development of water projects like community dams and sand dams that are built across seasonal rivers with lower non-impervious rocks to prevent water loss through infiltration. The implementation of these community projects led to the drastic change of the lives of the local communities in the early 1990s by having the locals access clean drinking water, water for their animals, water for irrigation, extra money changed their lives that came from the sales of the farm produce, jobs at the construction level, maintenance jobs and the water vending gave the locals a chance to smile (DFID, 2011; El-Sadek, 2011).

In Kenya, studies have been done by a number of scholars on the impact of water projects to the communities by local organisations, international bodies, scholars and many more. OCHA (2010) for example did a research entitled, Water Scarcity and Humanitarian Action: Key Emerging trends and challenges. According to the research, the emerging trends of communities coming up with their local solutions to their local water shortage issues, has seen the development of water projects in areas like Kehancha (Kuria), Pokot, Maralal, Isiolo, Kilgoris and many more. The report shows that besides checking on the water shortage in the area, the projects implementation has led to the creation of jobs like the workers who carry out the construction work, those who do the regular repairs and maintenance of the projects.

A similar report by IRC-International Water and Sanitation Centre (2011) shows that, in eastern province, there have been a number of community water projects since 2003 that have included the construction of a number of dams along the Tana river course, the erection of dykes along the river like the Muthomo and Ikutha river, construction of sand dams along seasonal rivers' beds like river Yumbisye in Nzambani and the Nzambani river etc. According to the report, the construction of these community projects has led to increased water output and in the process it

has solved the food crisis among the locals by getting water for irrigation, the projects have led to development of micro-manufacturing firm (Yumbisye Fruit Processing Firm at Wikililya), creation of jobs and businesses like water vending in erected community kiosks and many more.

In a study carried out by the UNESCO, (2014)-Guidelines on Strategic Planning and Management of Water Resources in Kenya, and another one by UNFPA (United Nations Population Fund), (2012)-“Water: A critical Resource,” show that the only way for Kenya to create jobs for the local woman, is by implementing projects that give her the solution to the local gender classification of her being in the kitchen. This can be achieved by having the basic problems like water be solved through the construction of community wells, bore holes, dams and many more. According to the two studies, in an interview that included 2352 Kenyans from the ASALs, the respondents who supported the idea of the jobs creation by the implementation of the various water projects were 1990, while those who supported the idea that the improvement of the quality of the water from the various water projects could lead to improved lives of the rural women and young people by creating business opportunities through water vending attracted 2012 respondents.

However, no many studies that have been done in the Kenya Coast on the impact of water projects implementation to communities with the exception of area like Tana Delta and in two incidences available about Kwale County. According to WWF (2013), In Tana Delta, Hola and Kwale’s Samburu area, over 6,000 jobs have been created through various projects that have been implemented on different occasions by the CBOs, NGOs, World Bank, FBOs and many more. In Samburu for example, a number of old men and youths were found to have been employed by guarding the water points, some sold water by use of carts, others were involved in maintaining the built projects and this has transformed their lives by a great index value. Similar results have been found in the Hola and the larger Tana Delta. In Mtoroni, Kadzuyuni, Msumarini and Kanagoni, community water projects have been implemented for over 11 years now since the since the Coast Provincial Commissioner Mr. Ernest Munyi ordered more than 6,000 flood displaced people in Magarini District to move from their camps back home. This has created jobs like youths, old women and the people with energy concentrating in the construction of the water projects, maintaining, and selling of water plus doing farming (UNDP. 2013; World

Bank, 2013).

2.3 Health Issues Associated With the Implementation of Communal Projects

From the available literature, there have been numerous studies across the globe that has been done in relation to the influence of either clean drinking water or unsafe water to the health of the people and their animals. The major aim as to why communities come up with community based water projects across the globe is to access safe drinking water for their families and children (UNDP-World Bank, 2012), water for their animals and industrial production (UNDP, 2010), water for irrigation and more importantly, water that is clean and that adds value to their lives (WHO/UNICEF, 2013)

According to the Millennium Development Goals Report (2012), the need for water and sanitation is fundamental to all citizens, and increased implementation of projects aimed at covering of these essential services will significantly contribute to population welfare as well as the wealth and stability of across the World. The effects of water shortages and water pollution have been felt in both industrialized and developing countries, and it will be necessary to transcend international and political boundaries to meet the world's water needs in a sustainable manner that will conserve and preserve this common resource by implementing the necessary water projects (World Health Organization, 2010). In the last few decades, national and international organizations from both the public and private sectors have come together to tackle global issues in water and sanitation so as to alleviate the health issues related to either access or drinking of unclean water.

According to (UNESCO, 2010), areas without adequate implementation of projects of supplies of freshwater and basic sanitation carry the highest burdens of disease which disproportionately impact children under five years of age. Lack of these basic necessities also influences the work burden, safety, education, and equity of women. While poverty has been a major barrier to gaining access to clean drinking water and sanitation in many parts of the Developing world, access to and the availability of clean water is a prerequisite to the sustainable growth and development of communities around the world.

In India, Bangladesh, Pakistani, Malaysia and other developing countries in the African continent

for example, the implementation of the 4,132 community water projects across the countries in 2004 to 2009 had a lot of effects in the health trends of these Countries. Previously, in the years 1995 to 2007, 1.8 million people died every year from diarrhoea diseases (including cholera); 90% of who were children under 5, mostly in developing countries. 88% of diarrhoea disease was attributed to unsafe water supply, inadequate sanitation and hygiene. However, the implementation of these proposed water projects has for time now led to improved water supply which in turn has reduced diarrhoea morbidity by 21 % (WHO, 2011).

Studies in Tanzania by the WHO (2012) have shown that cases water borne diseases like diarrhoea have been in the decline for the last 9 years due to the access of most communities to safe and drinking water that comes from the various erected community water projects like dams and other local wells. According to the report, in 2008 for example, the deaths from diarrhoea reduced by 35.7%, while the effects of the disease reduced by 42.1%. However, digging of open dams in the open fields in the northern parts for example led to increase of a number of diseases that are brought up by water-related insect vectors. This is where, the pathogen is carried and transmitted by insects that breed in or bite near water, as occurs in dengue fever, malaria, and trypanosomiasis (sleeping sickness). The final effect of these is increased number of deaths (67, 124 people die of malaria each year, 90% of whom are children under 5).

Studies by the UN (2011) show large numbers of people in Kenya lack access to basic sanitation and water supply due to failed and ever failing water programmes. One of the UN Millennium Development Goal (MDG) targets is to halve, by 2015, the number of people who lack access to these services. According to data compiled by the WHO/UNICEF Joint Monitoring Program (JMP), the rate of progress towards achieving this target in Kenya is such that the targets will not be reached by the end of 2015. The Government of Kenya's own water and sanitation target is 76% for 2015. Since 1990, there has been little change in sanitation coverage in Kenya, and rural water projects implementation have not only been on the decline but they have failed completely. Given that the target is a rate change, progress towards the target has been further challenged by continuing population growth. Based on the most recent estimates of sanitation coverage in 2010, Kenya needs to increase sanitation coverage from 34% to 65% in urban areas and from 33% to 64% in rural areas to meet the MDG targets in 2015. In rural areas access to safe water

needs to increase by 13 percentage points from 54% to 67%, and in urban areas by 11 percentage points from 85% to 96%.

Due to the lack of proper and well distributed water projects in the country, communities have come up with a number of projects that are aimed at alleviating their poor situation of lack of access to enough water in the required state (UNICEF, 2011). According to the GOK (2011); UN (2010), in an economic study conducted for Kenya has shown that impacts resulting from poor water, sanitation and hygiene programmes implementation cost the economy of Kenya 24.7 Billion Kenyan Shillings (KSh) (US\$ 324 million) per year, or the equivalent of 0.9% of annual Gross Domestic Product (GDP). This translates to an average KSh 630 (US\$ 8.3) per capita annually, or KSh 910 (US\$ 12) per unserved inhabitant. These figures reflect themselves in the adverse health effects associated with poor sanitation and water supply, costs of treating these health problems, loss of productivity that results when individuals are sick and others have to care for them, and, time spent to access services.

According to the study carried out by Haines (2011) in 10 districts in Kenya, 15 districts in Tanzania and 4 slums in Uganda showed that, implementation of various water projects in the studied districts led to reduced spending on medication, reduced mortality rates, increased population and life spans, and many more. In a report by the Millennium Community Development Initiatives Kenya Chapter (2010), one important contributor to implementation of various water projects in the communities in disadvantaged areas (ASALs, Rurals and Slums) is child mortality. The World Health Organization (WHO) estimates that diarrheal diseases caused the deaths of around 24,000 children under five years old in Kenya in 2008. The indirect effects of malnutrition) to which poor water and sanitation contribute 50% according to WHO (cost a further 7,200 lives. Malnutrition is widespread in Kenya, as evidenced by high rates of moderate and severe stunting and underweight in children under five: 35% and 6%, respectively. Studies have shown that malnutrition leads to lower school productivity and work productivity from impaired cognitive function and learning capacity. However, the World Bank shows that Kenya has since then changed the figures of non-productivity and deaths by partnering with NGOs, FBOs, Development Banks and county governments to provide various water based community programmes.

The integrated coast district water strategy and the report on the Kilifi county government website posted by the Malindi Water and Sewage Company show that, in the coast lands of Kenya, a number of water initiatives including digging of bore holes-though they give out salty waters-, construction of sand dykes and dams, construction of water channels and ground tanks has been on the acceleration pace since the early 2000. This is due to the increased population that needs more sanitation and water. In Magarini for example, the local communities, investors, FBOs and by extension the county government has supported the implementation of the community water programme in the area and its general impact to the locals has been felt (Water and Sanitation Programme- Field Note, 2010). For example, the number reported death cases especially due water borne diseases like cholera has been on the decline; although this has been at a slow rate of 9.1% per year from 2008, the travels to the hospitals have reduced and the general trends of budgetary allocation to water borne diseases control from the county and national governments have reduced. However, no much studies have been done in relation to health and water projects implementation in Magarini; a factor that this research aimed at finding out.

2.4 Social Conflicts Brought by the Implementation of Communal Projects

According to CIA (2010), social conflicts over water are, to some extent, inevitable, given water's multiple functions: it is a basic human need, the foundation of livelihoods, the lifeblood of critical ecosystems, a cultural symbol, and a marketable commodity. Managing social conflict is central to good water projects implementation management. However, as the development of water resources and the transformation of freshwater ecosystems have intensified, so have the conflicts. Social conflicts around water are not only increasing, but also being transformed by two simultaneous global revolutions. The communications revolution has produced an explosion in global networks, access to information, and personal mobility, making it easier for affected communities and sympathetic advocacy groups to partner with those in other countries. The democratic revolution has increased the ability of people in previously closed societies to organize and express dissent, making it easier (though not always easy) for communities to oppose projects or policies that harm their interests, livelihoods, and cultures. As a result of these two revolutions, conflicts that were once largely local matters have been dragged into international arenas (U.S, 2011).

According to Khan (2009) changes in community access to water supplies or formerly known water point can generate social conflict. The increasing difficulty of financing water-supply projects' infrastructure, as well as pressure from international financial institutions, has led some governments to contract out water projects to the private sector. Many more are "marketizing" water by increasing prices, cutting off service for nonpayment, or otherwise limiting access to water.

In Cochabamba, Bolivia, in 2000 for example, large protests against price increases and concessions given to a private multinational consortium led the government to declare a state of emergency and deploy the army; at least one person died and more than 100 were injured in clashes with security forces. Similar protests (on a lesser scale) have broken out in many countries, recently claiming lives in China, India, Pakistan, Colombia, Kenya, and Somalia. This has been worse of late in the Arabic war torn countries whereby the access to water that was originally erected by one community needs to be shared either equally or in a particular share with the outsiders (Thomas and Hodges, 2010).

While studying the social issues surrounding the various water projects in Pakistani and China, Donovant (2013) argues that, conflicts often arise when people are deprived of basic human needs, resulting in demands for improved services or opportunities, including security, recognition, acceptance, fair access to political institutions, and economic participation. In 2000 for example, violent water conflicts occurred in Shandong, China, where farmers clashed with police in response to government plans to divert community irrigation water to cities and industries. Water conflict also took place that same year in Cochabamba, Bolivia, where violent government repression of tens of thousands of protestors occurred following the privatization of its community water projects in the country. Indeed, history is full of examples of violent conflicts that have been due, at least in part, to issues of control of and access to water resources. Such incidents may be a prelude to the kinds of tensions that can be expected in the future as water demand outstrips available water resources (Christina, 2010).

Studies in Somalia on the community water projects implementation in the 2012 to 2013 shows that, wars between the clans in the communities have formerly existed due to control and access

of the water projects. Villagers of Rabdore, Somalia call it the “War of the Well,” a battle that erupted between two clans over control of a watering hole in this dusty, drought-stricken trading town. By the time it ended two years later, 250 men were dead. ““We call them the warlords of water”” Fatuma Ali Mahmood, 35, said about the armed men who control access to water sources. One day last year, Mahmood's husband went out in search of water. Two days later, he was found dead. He was shot when an angry crowd began fighting over the well, she said. “His body was bloodied, swollen and just lying there with the other dead by the well, left in disgrace (International Rivers Organization. 2013).

According to WWF (2013), in Somalia, a well or any water installed complete project is as precious as a town bank, controlled by warlords and guarded with weapons. During the region's relentless three-year drought, water has become a resource worth fighting and dying over. Long-term solutions to fighting drought include collecting what little rainwater that does fall, building modern irrigation systems and using new water exploration techniques, water experts said. But that kind of effort typically requires the coordination and enforcement of a central government, said ZlatanMilisic, the World Food Program's country director for Somalia.

Across the country Kenya, water projects have been given priorities since independence but their effects to the society have been felt from one day to another. A sampling of typical water-related conflicts encountered on the local and national levels by development practitioners and human rights advocates in the country includes: poor water system governance and administration: Issues of corruption, lack of required administrative/technical skills, failure to value water / insufficient pricing and lack of cross subsidizing to promote social equity as experienced in the larger north eastern province and the larger south rift (Wikipedia, 2013),disputes over ownership of water sources and water usage rights: Competition among industry, agriculture, domestic use, ecological use, etc. as experienced in Tana River waters between the Oroma and Pokomo people (The World Bank, 2014).

Also, there have been a lot of issues surrounding the community water projects in the country like the areas in Eastern Province and the dry parts of the leeward sides of the Mt. Kenya regions. According to Njagi, Kagundu (2013) the factors that have been worst cited in his

research in the Kenyan Coast conflicts in the otherwise communally owned waters include: Contamination of water sources, whereby, diminished quality and/or quantity due to unsustainable agriculture, mining—both artisan and capital-intensive, solid wastes, untreated wastewaters, etc., increasing water scarcity, where this results of increasing population, life expectancy, affluence, economic growth, and agricultural production, coupled with poor water resources stewardship, prohibitions imposed by landowners impeding access to water facilities; through the lack of easements and documentation of past agreements, project implementation, operations, and maintenance can be delayed and even denied as a result of prohibitions imposed by landowners to accessing water sources, pipelines, and other water system infrastructure etc.

Also, disputed access to water supply systems i.e. conflict between those who are “in” (who worked to install the systems) and those who are “out” (who didn’t help install the systems), but who now want to be connected and cannot afford the high connection fees, deforestation due to large concessions and illegal cutting: Devastated ecosystems and ruined local livelihoods, leading to violence and scarcity of water, and, ruling government political party maneuvering: Drought relief ordered only for affiliates of governing party, use of anti-terrorist laws to suppress public protest over possible water privatization, government “aid” used to create division in community co-ops. The above cited factors have for a long time led to disagreements and times violence in the major erected water projects in the Kenyan coast.

However, different studies on social issues have been given by UNDP (2013) on its study of the role of natural river and community dams in water sustenance in the disadvantaged districts in coast province. The report published in January 2013 shows that, coast has the potentials of feeding her citizens with enough aquatic products if it adopted the idea of communal water projects but this has been left to the hands of conmen who are full of greed, leading to regular conflicts and wars. However, no studies have been done in the area of study in relation to the social conflicts associated with the community water projects but the available information from the local sources indicate that some disagreements, quarrels and simple fights over the communal water projects have been experienced since 2007. This is what the research is out to establish.

2.5 Environmental Pollution Impact as a Result of Community Projects Implementation

The implementation of large water projects like construction of large community dams completely change the relationship of water and land, destroying the existing ecosystem balance which, in many cases, has taken thousands of years to create. Currently there are around 40,000 large community dams for example which obstruct the world's rivers, completing changing their circulation systems: this is not going to occur without dire environmental impacts (U.S, 2012).

Throughout the past few years in China for example, the negative impacts of communal dams projects like the Three Gorge Dams have become so well known that most local authorities have stopped building them altogether and are now forced to invest their money into fixing the problems created by existing dams (Lockwood and Smits, 2011). According to UN-Water (2010), the environmental impacts associated with large scale water projects dams and other reservoirs often have significant negative impacts on the environment. The Three Gorges Dam is no different. The creation of the dam and associated reservoir has impacts both upstream from the dam and downstream. It affects species in the area; some endangered, water quality, and may increase the likelihood of earthquakes and mudslides in the area.

A study done by UNFPA (2013) in China, India, USA and West Timor shows that, a number of species have been and will be adversely affected by the construction of the big water projects like dams. There are 300 species of fish in the Yangtze River for example. The dams recently completed in the China country have created a barrier in the river that these species have not and will not be able to cross. Fish will not be able to travel upstream to spawn, so the populations of the species will decrease. Other affected species include the Chinese River Dolphin, Chinese Sturgeon, Chinese Tiger, Chinese Alligator, Siberian Crane, and the Giant Panda. There are a total of forty-seven rare or endangered species in the Three Gorges Dam area that are protected by Chinese national law. The only natural habitat of the Chinese River Dolphin is the Yangtze River, and there are less than one-hundred of these endangered dolphins in the river. The reservoir created from the construction of the dam covers a significant amount of the dolphins' natural habitat.

Studies across the Egyptian local farmers and the Zimbabwean white settlers show that the effect

of deforestation and resettlements are associated with the development of water reservoirs in areas where people live or have had forestation taking place. In the case of Aswan High Dam for example, towns and forests located in areas that were inundated have been demolished and removed in order to increase navigability on the river Nile (UN, 2014). The loss of forests and agricultural lands had led and will lead to erosion and the buildup of sediment at the base of the river and reservoir. This has frequently led to increased flooding upstream (World Bank, 2013). Sediments and silt contain valuable nutrients necessary to agricultural production. The blocking of sediments behind the dam means that these nutrients may not reach fertile farmland downstream of the dam. This could reduce the fertility of the land thus reduced agricultural produce (African Union, 2011).

Studies in Uganda called, 'the other side of water reservoirs to the northern pastoralists' shows that, the destruction of the villages during the implementation and construction of these community projects has led to problems of pollution. The rivers in the Ayago reservoir and Bujagali water dam are already polluted from the shipping of coal, acid rain, and its central location in Uganda's industrial activity. Pollutants from towns and waste dumps that will be inundated will add to this pollution. Some funds were set up to aid in cleaning the area for the reservoirs, but only the future will show whether a sufficient job was done. Water moves slower in the reservoir and some are concerned that the pollution will sit and worsen water quality of the river.

Studies by United Nations General Assembly (2011) show that, Kenya just like other countries is faced with a number of issues due to the implementation of the various water projects like reservoirs and the six dams (Nairobi, Koromojo Dam, Masinga Dam, Mukurumudzi Dam, Nairobi Dam, Rukenya Dam and Thika Dam) have been faced with numerous soil erosion. According to Michael (2010), one of the first problems with dams and communal water reservoirs is the erosion of land. Dams hold back the sediment load normally found in a river flow, depriving the downstream of this. In order to make up for the sediments, the downstream water erodes its channels and banks. This lowering of the riverbed threatens vegetation and river wildlife. A major example of soil erosion problems is the Aswan Dam, Gitaru Reservoir, Kiambere Reservoir and Kindaruma Reservoir (UN-Water, 2009).

According to WHO (2012), World Bank (2014) and International Rivers Organization (2013) one of the reasons as to why dams and other water reservoirs are built is to prevent flooding. However, most ecosystems which experience flooding are adapted to this and many animal species depend on the floods for various lifecycle stages, such as reproduction and hatching. Annual floods also deposit nutrients and replenish wetlands. When this is related to the Magarini situation, flooding has been controlled by the community water programmes that have been adopted in the last 8 years. A report in the Daily Nation show the then Coast Province P.C Mr. Ernest Munyi telling the over 6000 displaced communities to return home due to the fact that the flooding process had been checked on and the area is not to experience flooding soon. The major environmental issue that is associated with such an act is limiting the agricultural activities of the locals who dependent on planting rice in the flooded areas, dead of plant and animal species that depended on the flooded water, reduced local agricultural produce and finally an arise of conflicts like lack of enough food for the locals.

In their writing, Campbell-Lendrum, Corvalán, and Neira (2012) argue that spread of Disease is a menace caused by the implementation of various water projects. Whilst community water reservoirs in the ASALs for example are helpful to humans, they can also be harmful as well. One negative effect is that these reservoirs have become breeding grounds for disease vectors. This holds true especially in tropical areas like the coast lowlands of Kenya starting from Voi-Vanga-Lamu where mosquitoes (which are vectors for malaria) and snails (which are vectors for Schistosomiasis) take advantage of this slow flowing water.

According to WHO (2011), major diseases in the ASALs and areas surrounded by water are as a result of disease carrying vectors breeding due to the fertile environment caused by the available water in the dams and reservoirs. The report for example had 1, 223 out of 1780 respondents interview in 5 districts in coast province in 2011 who argued that since the various water projects were introduced, the number of malaria cases and have been reported due to the increased number of mosquitoes. In Msumarini for example, the water reservoirs and wells are literally breeding grounds for mosquitoes, snails, and flies, the vectors that carry malaria, schistosomiasis, and river blindness.

A study by United Nations Convention to Combat Desertification (2008) shows that, Dams and the creation of reservoirs require relocation of potentially large human populations if they are constructed close to residential areas. The record for the largest population relocated belongs to the Three Gorges dam built in China. Its reservoir submerged a large area of land, forcing over a million people to relocate. "Dam related relocation affects society in three ways: an economic disaster, human trauma, and social catastrophe", states Dr. Michael Cernea of the World Bank and Dr. Thayer Scudder, a professor at the California Institute of Technology. As well, as resettlement of communities, care must also be taken not to damage irreparable sites of historical or cultural value. The Aswan Dam forced the movement of the Temple at Aswan to prevent its destruction by the flooding of the reservoir. The Gitaru Reservoir, Kiambere Reservoir, Kindaruma Reservoir, Masinga Reservoir etc. led to the displacement of over 10, 000 homesteads in the eastern and Kenya's upcountry, the Msumarini wells have seen the displacement of over 600 families from the commonly enjoyed environments. The change in environments lead to changes in their activities and at times leads to more adverse environmental damage due to overcrowding.

Stockholm Environment Institute (2014) reports that, dams and communal water reservoirs occasionally break causing catastrophic damage to communities downstream. Dams break due to engineering errors, attack or natural disaster. The greatest dam break disaster happened in China killing 200,000 Chinese citizens. However, they have happened in California killing 600 people, Germany during World War II and other countries. Also, in many developing countries the savanna and forest ecology of the floodplains depend on seasonal flooding from rivers. Also, flood recession cropping is practiced extensively whereby the land is cultivated taking advantage of the residual soil moisture after floods recede. Reservoirs attenuate floods which in turn affect the ecology and agriculture seriously, leading to natural conflicts between animals, plants and man.

A report by IPCC (Intergovernmental Panel on Climate Change) (2010) quotes NASA geophysicist Dr. Benjamin Fong Chao who found evidence that large water reservoir projects like large dams cause changes to the earth's rotation, because of the shift of water weight from

oceans to reservoirs. This is supported by Mutagamba, Maria Lubega (2008) who argued that, reservoirs contribute to changes in the Earth's climate. Warm climate reservoirs generate methane, a greenhouse gas when the reservoirs are stratified, in which the bottom layers are anoxic (i.e. they lack oxygen), leading to degradation of biomass through anaerobic processes.

In some cases, where flooded basins are wide and biomass volumes are high the amount of biomass converted to methane results in pollution potential 3.5 times more than an oil-fired power plant would for the same generation capacity. Hydroelectric dams are the number one source of methane gas emissions caused by humans. Methane gas contributes much more to climate change than carbon dioxide. Also, increased agricultural activities like overstocking of animals, overgrazing, over cultivation and over use of both organic and non-organic fertilizers have led to reduced food production, deforestation, increased population, and finally has led to adverse environmental pollution as a result of climate change, thus issues like unpredictable floods.

2.6 Conceptual Framework

The conceptual framework outlines the dependent, independent and intervening variables as discussed in the literature review and elaborated in the figure below. It helps one to understand the relationship between the variables of the study.

Independent Variables

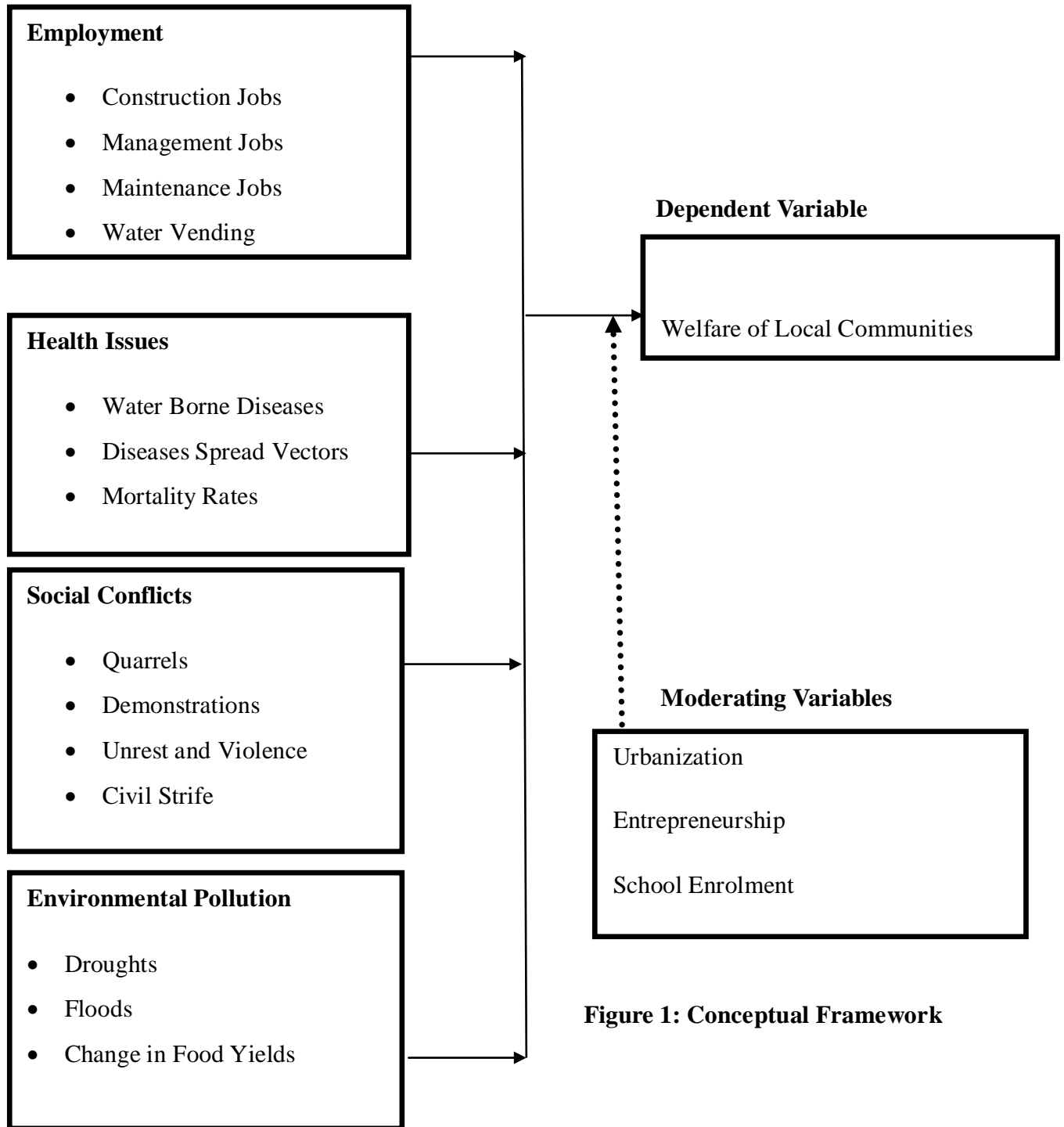


Figure 1: Conceptual Framework

Above is the conceptual framework that gives the whole summary of literature review by looking at the independent variables like environmental pollution, social conflicts, employment, and health issues. The dependent variable is the impact of communal projects implementation on the welfare of local communities, while the moderating variables include entrepreneurship, school enrolment and urbanization.

2.7 Summary of Literature Review

According to various literatures in the studies, communal projects have been in the rise across the world and their effect in the world round has been felt by all the populations and individuals. The study has established that in China for example, water is a vital commodity and at times people have not only felt the effects of the various water projects in the country. The study has also shown that a number of factors have been occurring to the communities as a result of implementing community projects and this has led to either betterment of the society or spelled doom in the community. The literature review has been done under sub-objectives, which are given the orders, 2.2, 2.3, 2.4 and 2.5.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the methodologies which will be used in the study. The chapter consists of research design, target population, sampling procedure, methods of data collection, validity and reliability of instruments, operational definition of variables and ethical consideration.

3.2 Research Design

A descriptive survey was used in the study on assessing the impacts of communal projects implementation to the welfare of the local communities. Mugenda and Mugenda (2003) contend that the purpose of a descriptive research is to describe behaviours and characteristics. For the purposes of obtaining adequate and relevant information in a short time, the study used survey to collect the data.

Kasomo (2006) agreed with other scholars who argued that descriptive surveys describes and interprets phenomena and are concerned with conditions or relationships that exists, opinions that are held, processes that are going on, and effects that are evident or trend that are developing. The study design was suitable for this research since it was able to give the degree to which the communal projects influence the lives of the local communities. Mugenda and Mugenda (1999) say that in order to describe facts and characteristic of a given population or an area of interest, factually and accurately, the best model or design is descriptive research design. The study also used qualitative methodology through use of detailed questionnaires.

3.3 Target Population

The target population was picked the 1,680 beneficiaries under Protracted Relief and Recovery Operations (PRRO) (Kilifi County Integrated Report, 2014) and who are directly involved in the day to day well project activities in the area for the last five years. According to Worthen, Borg, White (1993) the target population is a set of people or objects the researcher wants to generalize the results of the research .They add that the target population has a far reaching implication in the results in a study. The study randomly sampled beneficiaries directly involved from the 8locations who have benefited from the project in the over 5 years before (2014 and behind). The locations included, Adu, Bungale, Dagamra, Fundi-issa, Garashi, Gongoni, Magarini and Marafa.

Table 3.1 Target Population

Location	Population	Percentage
Adu	210	11.5%
Bungale	190	11.3%
Dagamra	240	14.3%
Fundi-issa	240	14.3%
Garashi	220	13.1%
Gongoni	165	9.8%
Magarini	321	19.1%
Marafa	94	6.6%
Total	1680	100%

Source: (Kilifi County Integrated Report, 2014)

3.4 Sample Size and Sampling Procedure

According to Kothari (2007), the sample size will have far reaching implication on this study. Probability of getting a representation of the target population will be of great significance (Mugenda and Mugenda, 2003). Participants to the study included key informants whom the researcher believes will provide the needed data.

The study sample size was calculated using Yamane formula (1967). In this formula, sample size can be calculated at 3%, 5%, 7% and 10% precision ϵ levels. Confidence level to be used is 95% with degree of variability (p) equivalent to 50% (0.5).

$$1 + N (\epsilon)^2$$

n = Desired sample size when population is less than 10,000.

ϵ = Sampling error/precision level

N = Study Population

In this study sample size will be at precision level of 10% ($e=0.1$). Therefore the desired sample size is:

$$N = \frac{1680}{1 + 1680(0.1)^2} = 95$$

Therefore, a total of 95 respondents were picked using systematic sampling procedure. In this sampling method, simple random sampling was applied to select the first respondent and the subsequent ones will be selected as per the n^{th} term. In the proposed study the n^{th} will be 18^{th} that is $1680/95=17.68$, therefore the researcher will use skip to select respondents based on the sample frame.

3.5 Data Collection Instruments

The questionnaires are the main instruments of data collection that was used. The questionnaire helped the researcher to collect data on knowledge, opinions as well as attitudes of respondents towards the impact of communal water projects to the welfare of the community. The questionnaire was suited for this study because it is practical and is used to collect data from a large number of people within a short time and in a relatively cost effective manner.

The questionnaires were used to collect data from the permanent/temporary employees or head of the project and by extension the people who directly benefit from the water wells. Observation was expected to be used to help gather crucial data that couldn't be obtained through questionnaires. The questionnaires were administered by the researcher and selected enumerators who at one point served as translators. Both open ended and closed ended questions were used. Open ended questions enabled respondents to provide sufficient details while close ended questions enabled the researcher to easily quantify results by the use of SPSS.

3.6 Validity and Reliability of Research Instruments

Validity is a measure of how well a test measures what it is supposed to measure. It is the degree to which results obtained actually represent the phenomenon under investigation. Reliability is the measure of the degree to which a research instrument yields consistent results after a repeated trial.

3.6.1 Validity of the Research Instrument

Wiersma (1999) refers to validity as the quality that a procedure or instrument or a tool used in research is accurate, correct, true and meaningful. The research used content validity as a

measure of the degree to which the data collected using the questionnaire represents the objectives of the study. The instrument was verified by the supervisor and other two senior lecturers in the University of Nairobi, Mombasa campus. Also, fellow colleagues who have passed through the same programme previously verified the instrument.

3.6.2 Reliability of the Research Instrument

Mugenda (2003) says that reliability is concerned with estimates of the degree to which a research instrument yields consistent results after repeated trials. The instruments were piloted in 10 respondents and the procedure repeated in two weeks. Reliability was determined by a test-retest administered to 10 subjects not included in the sample. Input from invaluable sources was obtained during the study that is useful in modifying the questionnaire before a final set of questions will be produced. Piloting was done to test the validity and reliability of the instruments.

3.7 Data Collection Procedure

A questionnaire was used since it was the best tool for this study that aimed at investigating the impact of communal projects implementation on the welfare of local communities; the case of Msumarini shallow wells in Magarini sub-county, Kenya. The questionnaire was prepared on the basis of a review of literature on in Kenya and the rest of the world. Data collection tools were piloted and suggestions made before finalizing the questionnaire.

The study will utilize a self-administered questionnaire and equally will refer to the existing secondary data. The researcher got a permit from the graduate school and county minister of water and sanitation. The researcher visited the sample, use enumerators to access some other people in far areas and e-mail a questionnaire to some respondent who could be committed for one on one filling. Necessary prior appointments were made and the researcher emphasized that the information given was to be specifically be used for the study and it would be private and confidential and that names could not be necessary.

3.8 Data Analysis

Quantitative data obtained from the open ended questions was coded to facilitate quantitative analysis. The coded data was analyzed by use of descriptive statistics comprising of frequency tables. The hypothesis was tested by use of Chi Square. Data analysis was done by use of SPSS.

3.9 Ethical Considerations

The research made efforts to contact all National and County authorities to inform them prior to the study to avoid suspicions and resistance from the community members. Consent was also sought from the respondents whose participation in this study was voluntarily and the information they provided was treated with utmost confidentiality. Finally, Privacy and dignity of the respondents was considered during the research whereby names of the respondents were not exposed and codes were used instead.

3.10 Operational Definition of Variables

This defines the interaction of the various variables and how they were statistically measured.

Table 3.2 Operationalization Table

Objective	Independent Variable	Indicators	Measurement scale	Types of analysis
To examine how employment opportunities created by communal projects implementation impacts on the welfare of the local communities of Magarini sub county, Kenya.	Employment	Construction Jobs Management Jobs Maintenance Jobs Water Vending	Ordinal Scale	Descriptive
To investigate how health related issues resulting from communal projects implementation impacts on the welfare of the local communities of Magarini sub county, Kenya.	Health Issues	Water Borne Diseases Diseases Spread Vectors Mortality Rates	Ordinal Scale	Descriptive
To examine how social conflicts created by communal projects implementation impacts on the welfare of the local communities of Magarini sub county, Kenya.	Social Conflicts	Quarrels Demonstrations Strife & Violence Civil Strife	Ordinal Scale	Descriptive
To establish how environmental pollution caused by the implementation of communal projects impacts on the welfare of the local communities of Magarini sub county, Kenya.	Environmental Pollution	Droughts Floods Change in Food Yields	Ordinal Scale	Descriptive

CHAPTER FOUR

DATA PRESENTATION AND INTERPRETATION

4.1 Introduction

The data collected was sorted, keyed and analyzed by simple descriptive analysis using Statistical Package for Social Scientists (SPSS). The data was then presented through frequency tables and narrative analysis. Hypothesis was tested after each question as per the objective and the simple Chi-Square test was used.

4.2 Return Rate of the Questionnaires

Out of the 95 questionnaires issued to the respondents, 90 were returned and were useful for the study. Therefore the return rate was 94.7% positive while negative response was 5.3%.

4.3 Basic Information of Respondents

General basic information of the respondents was sought for and the summary given in the table below:

Table 4.1 Basic Information on the Respondents

Response	Frequency	Percentage	Total
Gender	F (30)	33.3 %	90
	M (60)	66.7 %	
Age Bracket	18-30 (9)	10%	90
	31-40 (36)	40%	
	41-50 (27)	30%	
	51-60 (9)	10%	
	>61 (9)	10%	
Academic qualifications	Primary (27)	30 %	90
	Secondary (18)	20%	
	Diploma (27)	30%	
	Bachelor's degree (18)	20 %	
Work Experience	< 1 yr (36)	40%	90
	1-2 yrs (27)	30%	
	2-4 yrs (9)	10%	
	>5 yrs (9)	10%	
	Unemployed (9)	10%	
Average total		100%	90

From the responses gotten in the field, 33.3 % of the respondents represented women who were 30 while the remaining 60 who represented 66.7% were men.

In relation to age bracket, from the table, ages between 18-30 had 9 who made 10% respondents, 31-40 attracted 36 respondents who made 34%, 41-50 years had 27 respondents 30%, 51-60 years attracted 10% while the remaining 9 with 10% were over 60 years. In addition to the above, responses on academic qualifications were, Primary certificate attracted 27 respondents, 18 attracted secondary certificates, diploma attracted 27 respondents who made 20%, bachelors attracted 18 respondents who made 20%, and postgraduate degree attracted 0 respondents. Finally, responses on academic qualifications showed that, 10% of the respondents had no employment, 40% were of less than 1 year experience, 30% were for between 1-2 years, 10% were of 2-4 years, and 10% went for over 5 years work experience.

4.4 Responses in Relation to Employment Opportunities

The research sought to explore from the respondents whether the shallow wells projects had an impact in employment patterns in the region and a number of responses were as follows in the list of tables discussed.

Table.4.2 Response on Employment Opportunities

Respondents were asked with relevant examples supporting their answers whether they thought that communal projects implementation in Magarini sub-county have led to jobs creation and responses were as follows:

Response	Frequency	Percentage
No	9	10%
Yes	72	80%
Not sure	9	10%
Total	90	100%

From the information gotten in the field, 10% of the respondents argued that the water project has never created any visible job to the locals as most of the brains are drawn from the NGOs and at times political sycophants; some of whom aren't the locals. In relation to the yes response, 80% of the respondents felt that the projects associated with Msumarini shallow wells have helped create a number of jobs more specifically to the mothers and youths. Examples include youths who are employed as watchmen, regular maintenance attendants and those who vend the

water using carts and motor bikes. Those who were not sure with a representation of 10% didn't have a solid reason for the same.

Table 4.3 Rating of Jobs Creation

On a scale of rating, respondents were asked to indicate the extent to which they agreed or disagreed with the following statements. (Scale of 1-5 where **1= strongly disagree; 2 = disagree; 3 =not sure; 4 =agree; 5 = strongly agree**).

Statement	1	2	3	4	5
The implementation of the water projects has an influence in construction jobs provision to the local community.	7	9	4	40	30
The implementation of the water projects has an influence in management jobs provision to the local community.	5	9	10	38	28
Maintenance jobs have been influenced due to the implementation of the communal water projects.	2	5	15	30	38
Water Vending as a result of communal water projects implementation has influenced jobs for the locals.	7	9	19	29	26

From the responses, in relation to the first statement that read, the implementation of the water projects has an influence in construction jobs provision to the local community, responses were as follows: 7 respondents strongly disagreed, 9 disagreed, 4 were not sure, 40 agreed, while the remaining 30 strongly agreed. In relation to the second statement that that read, the implementation of the water projects has an influence in management jobs provision to the local community, 5 respondents strongly disagreed, 9 disagreed, 10 were not sure, 38 agreed, while the remaining 28 strongly agreed. The statement that said, maintenance jobs have been influenced due to the implementation of the communal water projects attracted different responses whereby, 2 respondents strongly disagreed, 5 disagreed, 15 were not sure, 30 agreed, while the remaining 38 strongly agreed. Finally, the idea that water vending as a result of communal water projects implementation has influenced jobs for the locals attracted 7 respondents who strongly disagreed, 9 disagreed, 19 were not sure, 29 agreed, while the remaining 26 strongly agreed.

4.6 Health Issues Associated with Shallow Wells Projects

Respondents were asked to indicate whether there are health issues that have been associated or influence by the shallow wells projects implementation in the county and a number of responses were given as indicated in the tables below:

Table 4.4 Response on Health Issues Associated with Shallow Wells Projects

Respondents were asked whether they thought that there are health issues that have affected the community due to the implementation the communal water projects and the responses in the table below were arrived at:

Response	Frequency	Percentage
No	18	20%
Yes	72	80%
Total	90	100%

From the responses, 80% of the respondents supported the idea that there are a number of health issues associated with the implementation of the shallow wells projects while the no response attracted 20%. In relation to reasons for support, the majority of the respondents gave reasons like a number of deaths have been associated with malaria due to mosquitoes from the stagnant waters, diarrhea and many more. Those who went for no argued that the projects have availed clean water that has made the residents reduce the rate at which they were dying due to water borne diseases.

Table 4.5 Rating of Health Issues

Respondents were asked the extent to which they agreed or disagreed with the following statements in relation to health and communal water projects implementation using a scale of 1-5 where 1= strongly disagree; 2 = Disagree; 3 =Not sure; 4 =Agree; 5 = strongly agree and results as below arrived at.

Statement	1	2	3	4	5
Water borne diseases have been greatly associated with the implementation of the communal water projects in the area.	6	7	9	28	40
Diseases spread vectors have been influenced by the communal water projects introduction in the area.	8	9	9	35	28
Mortality Rates have been associated to diseases associated communal water Projects implementation.	7	9	12	30	32

From the responses given in the field, 6 respondents strongly disagreed with the idea that water borne diseases have been greatly associated with the implementation of the communal water projects in the area, 7 disagreed, 9 were not sure, 28 agreed and the rest who were 40 strongly agreed. In relation to the second statement that that read, diseases spread vectors have been influenced by the communal water projects introduction in the area, 8 respondents strongly disagreed, 9 disagreed, 9 were not sure, 35 agreed, while the remaining 28 strongly agreed. Finally, the idea that Mortality Rates have been associated to diseases associated communal water Projects implementation attracted 7 respondents who strongly disagreed, 9 disagreed, 12 were not sure, 30 agreed, while the remaining 32 strongly agreed.

4.7 Social Conflicts in Relation to the Shallow Wells Projects

Respondents were asked a number of questions in relation to social conflicts associated with water projects and the results in the tables below were arrived at.

Table 4.6 Responses on the Social Conflicts

Respondents were asked whether they thought that the implementation of the communal water projects is associated with any conflicts in the society and the table shows the responses.

Response	Frequency	Percentage
No	7	7.8%
Yes	72	80%
Not sure	11	12.2%
Total	90	100%

From the responses, 7.8% of the respondents said that there have not been any social conflicts associated with shallow projects implementation, 72 who represented 80% said that there have been conflicts that are associated with the water projects and finally 12.2% of the respondents were not sure. On average, over 80% of the respondents gave issues like increased social unrests, quarrels, strife and sometimes violent wars that have been witnessed in a number of clans.

Table 4.7 Rating of Social conflicts on a scale

Respondents were asked to indicate how they agreed or disagreed with the following statements in relation to social conflicts; where 1= strongly disagree; 2 = disagree; 3 =not sure; 4 =agree; 5 = strongly agree.

Statement	1	2	3	4	5
Quarrels have been associated with communal water projects implementation.	8	9	4	34	35
Demonstrations have been influenced by communal water projects implementation.	7	8	8	45	22
Unrests and Violence have been influenced by communal water projects implementation in the sub-county.	12	10	9	29	30
Civil strife have been influenced by the communal water projects Implementation in the area.	8	9	10	19	44

From the responses given in the field, 8 respondents strongly disagreed with the idea that, quarrels have been associated with communal water projects implementation, 9 disagreed, 4 were not sure, 45 agreed while the remaining 22 strongly agreed. In relation to the second statement that read, demonstrations have been influenced by communal water projects

implementation, 7 respondents strongly disagreed, 8 disagreed, 8 were not sure, 45 agreed, while the remaining 22 strongly agreed. The third statement that said, unrests and Violence have been influenced by communal water projects implementation in the sub-county attracted different responses whereby, 12 respondents strongly disagreed, 10 disagreed, 9 were not sure, 29 agreed, while the remaining 30 strongly agreed. Finally, the idea that civil strife has been influenced by the communal water projects implementation in the area attracted 7 respondents who strongly disagreed, 9 disagreed, 19 were not sure, 29 agreed, while the remaining 26 strongly agreed.

4.8 Responses on Items on Environmental Pollution

Respondents were asked to give their views in relation to Environmental Pollution and results in the tables below were given:

Table 4.8 Responses on Environmental Pollution

Response	Frequency	Percentage
No	18	20%
Yes	54	60%
Not sure	18	20%
Total	90	100%

From the responses that were associated with environmental pollution, 54 respondents argued that the water projects have had a significant influence in the environmental pollution in the area, 20% of the respondents went for no and not sure in the same proportions. When asked to support their reasons, on average, 60% of the respondents gave reasons like unpredictable droughts and floods for example have been experienced of late.

Table 4.9 Rating of Responses on Environmental Pollution

Respondents were asked to rate the extent to which they agreed or disagreed with the following statements. Scale of use: 1-5, where, **1= strongly disagree; 2 = disagree; 3 =not sure; 4 =agree; 5 = strongly agree.**

Statement	1	2	3	4	5
Droughts have been influenced by the implementation of the Communal water projects in the Magarini area.	8	9	12	34	27
The implementation of communal water projects has influenced the occurrence of floods in the area.	8	8	16	30	28
Implementation of communal Water projects in area has an influence in the food yields in the area.	9	9	15	29	28

From the responses in relation to the first statement that said, droughts have been influenced by the implementation of the Communal water projects in the Magarini area, 8 respondents strongly disagreed, 9 disagreed, 12 were not sure, 34 agreed, while the remaining 27 strongly agreed. In relation to the statement that read, the implementation of communal water projects has influenced the occurrence of floods in the area in the area attracted 8 respondents who strongly disagreed, 8 disagreed, 16 were not sure, 30 agreed, while the remaining 28 strongly agreed. In relation to the final statement that focused on foods yields being influenced by the water projects, 9 respondents strongly disagreed, 9 disagreed, 15 were not sure, 29 agreed, while the remaining 28 strongly agreed.

4.9 Testing of the First Hypothesis

H₀: Employment opportunities created by communal projects implementation have no impact on the welfare of the local communities of Magarini sub county, Kenya.

Table 4.10 Hypothesis Testing Using the Chi-Square

O	E	(O-E)	(O-E) ²	(O-E) ² /E
7	18	-11	121	6.72
9	18	-9	81	4.5
19	18	1	1	0.06
29	18	11	121	6.72
26	18	8	64	3.57
				$\sum (O-E)^2/E = 21.57$

$$\chi^2_{c=21.57} > \chi^2_{\infty, 0.05} = 9.488 \text{ at 4 degrees of freedom and 5\% level of confidence.}$$

Since the calculated chi-square value of 21.57 is greater than the critical chi-square value at 5% level of confidence, we accept the alternative hypothesis. Thus, employment opportunities created by communal projects implementation have an impact on the welfare of the local communities of Magarini sub county, Kenya.

4.10 Testing of the Second Hypothesis

H₀: Health related issues resulting from communal projects implementation have no impact on the welfare of the local communities of Magarini sub county, Kenya.

Table 4.11 Hypothesis Testing Using the Chi-Square

O	E	(O-E)	(O-E) ²	(O-E) ² /E
8	18	-10	100	5.55
9	18	-9	81	4.5
9	18	-9	81	4.5
35	18	17	289	16.05
28	18	10	100	5.55
				$\sum (O-E)^2/E = 36.15$

$$\chi^2_C = 36.15 > \chi^2_{\infty, 0.05} = 9.488 \text{ at 4 degrees of freedom and 5\% level of confidence.}$$

Since the calculated chi-square value of 36.15 is greater than the critical chi-square value at 5% level of confidence, we accept the alternative hypothesis. Thus, health related issues resulting from communal projects implementation have an impact on the welfare of the local communities of Magarini sub county, Kenya.

4.11 Testing of the Third Hypothesis

H₀: Social conflicts created by communal projects implementation have no impact on the welfare of the local communities of Magarini sub county, Kenya.

Table 4.12 Hypothesis Testing Using the Chi-Square

O	E	(O-E)	(O-E) ²	(O-E) ² /E
8	18	-10	100	5.55
9	18	-9	81	4.5
10	18	-8	64	3.55
19	18	1	1	0.05
44	18	26	676	37.55
				$\sum (O-E)^2/E = 50.97$

$$\chi^2_C = 50.97 > \chi^2_{\infty, 0.05} = 9.488 \text{ at 4 degrees of freedom and 5\% level of confidence.}$$

Since the calculated chi-square value of 50.97 is greater than the critical chi-square value at 5% level of confidence, we accept the alternative hypothesis. Thus, social conflicts created by communal projects implementation have an impact on the welfare of the local communities of Magarini sub county, Kenya.

4.12 Testing of the Fourth Hypothesis

H₀: Environmental pollution caused by the implementation of communal projects has no impact on the welfare of the local communities of Magarini sub county, Kenya.

Table 4.13 Hypothesis Testing Using the Chi-Square

O	E	(O-E)	(O-E) ²	(O-E) ² /E
9	18	-9	81	4.5
9	18	-9	81	4.5
15	18	-3	9	0.5
29	18	11	121	6.72
28	18	10	100	5.55
				$\sum (O-E)^2/E = 24.77$

$$\chi^2_{C=24.77} > \chi^2_{\infty, 0.05} = 9.488 \text{ at 4 degrees of freedom and 5\% level of confidence.}$$

Since the calculated chi-square value of 24.77 is greater than the critical chi-square value at 5% level of confidence, we accept the alternative hypothesis. Thus, environmental pollution caused by the implementation of communal projects has an impact on the welfare of the local communities of Magarini sub county, Kenya.

CHAPTER FIVE

SUMMARY, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the study findings, discussions, conclusions and recommendation of the research. The chapter also contains suggestions of related studies that may be carried out in the future.

5.2 Summary of Findings

Questionnaires were the main data collection tools that were used and they were allocated to a population sample of 95 respondents of whom 90 returned well filled questionnaires that were valid for the study. Findings from the field show that, in relation to the first objective that touched unemployment opportunities created by communal projects implementation has an impact on the employment patterns of the community, 80% of the respondents supported the argument, 10% said no while the remaining 10 were not sure. On Average, over 80% of the respondents showed that a number of job categories have been influenced by communal water projects. For example, in a rating scale, in relation to the first statement that read, the implementation of the water projects has an influence in construction jobs provision to the local community, responses were as follows: 7 respondents strongly disagreed, 9 disagreed, 4 were not sure, 40 agreed, while the remaining 30 strongly agreed. Finally, the idea that water vending as a result of communal water projects implementation has influenced jobs for the locals attracted 7 respondents who strongly disagreed, 9 disagreed and 19 were not sure, 29 agreed, while the remaining 26 strongly agreed. The calculated chi-square value of 21.57 was greater than the critical chi-square value at 5% level of confidence thus the alternative hypothesis was accepted.

In relation to the second objective which sought to investigate how health related issues resulting from communal projects implementation impacts on the welfare of the local communities of Magarini sub county, 80% of the respondents supported the idea that there are a number of health issues associated with the implementation of the shallow wells projects while the no response attracted 20% of the respondents who had different ideas. Those who went for yes for example gave reasons like a number of deaths have been associated with malaria due to

mosquitoes from the stagnant waters, diarrhea and many more. Those who went for no argued that the projects have availed clean water that has made the residents reduce the rate at which they were dying due to water borne diseases. On average, respondents agreed with the idea that the implementation of the projects in the area has an influence in the health of the locals. For example, 6 respondents strongly disagreed with the idea that water borne diseases have been greatly associated with the implementation of the communal water projects in the area, 7 disagreed, 9 were not sure, 28 agreed and the rest who were 40 strongly agreed. The calculated chi-square value of 36.15 was greater than the critical chi-square value at 5% level of confidence thus the alternative hypothesis was accepted.

On the third objective that sought to examine how social conflicts created by communal projects implementation impacts on the welfare of the local communities of Magarini Sub County, 7.8% of the respondents said that there have not been any social conflicts associated with shallow projects implementation. 72 who represented 80% said that there have been conflicts that are associated with the water projects and finally 12.2% of the respondents were not sure. On average, over 80% of the respondents gave issues like increased social unrests, quarrels, strife and sometimes violent wars that have been witnessed in a number of clans. The calculated chi-square value of 50.97 was greater than the critical chi-square value at 5% level of confidence thus the alternative hypothesis was accepted.

In relation to the final objective that sought to establish how environmental pollution caused by the implementation of communal projects impacts on the welfare of the local communities of Magarini sub county, a number of responses were to the point that the projects have an influence in the environmental pollution. For example, 54 respondents argued that the water projects have had a significant influence in the environmental pollution in the area, 20% of the respondents went for no and not sure in the same proportions. When asked to support their reasons, on average, 60% of the respondents gave reasons like unpredictable droughts and floods for example have been experienced of late. Similarly, on a rating, a number of statements attracted various responses that showed a relationship.

For example, in relation to the first statement that said, droughts have been influenced by the implementation of the Communal water projects in the Magarini area, 8 respondents strongly disagreed, 9 disagreed, 12 were not sure, 34 agreed, while the remaining 27 strongly agreed. In

relation to the statement that read, the implementation of communal water projects has influenced the occurrence of floods in the area in the area attracted 8 respondents who strongly disagreed, 8 disagreed, 16 were not sure, 30 agreed, while the remaining 28 strongly agreed. The calculated chi-square value of 24.77 was greater than the critical chi-square value at 5% level of confidence thus the alternative hypothesis was accepted.

5.3 Discussion of Findings

Results from the above have shown that a number of responses and views from the field are tied with the finding in the review of the secondary information in chapter two. For example, in relation to the first objective that touched unemployment opportunities created by communal projects implementation has an impact on the employment patterns of the community, 80% of the respondents supported the argument, 10% said no while the remaining 10 were not sure. On average, over 80% of the respondents showed that a number of job categories have been influenced by communal water projects. This is shown by a number of scholars in the literature review. OCHA (2010) for example did a research entitled, Water Scarcity and Humanitarian Action: Key Emerging trends and challenges. According to the research, the emerging trends of communities coming up with their local solutions to their local water shortage issues, has seen the development of water projects in areas like Kehancha (Kuria), Pokot, Maralal, Isiolo, Kilgoris and many more. The report shows that besides checking on the water shortage in the area, the projects implementation has led to the creation of jobs like the workers who carry out the construction work, those who do the regular repairs and maintenance of the projects. This has been supported by the Chi-square that has given a value higher than that of the critical of 9.488.

In relation to the second objective which sought to investigate how health related issues resulting from communal projects implementation impacts on the welfare of the local communities of Magarini sub county, 80% of the respondents supported the idea that there are a number of health issues associated with the implementation of the shallow wells projects while the no response attracted 20% of the respondents who had different ideas. Those who went for yes for example gave reasons like a number of deaths have been associated with malaria due to mosquitoes from the stagnant waters, diarrhea and many more. Those who went for no argued that the projects have availed clean water that has made the residents reduce the rate at which they were dying due to water borne diseases. On average, respondents agreed with the idea that

the implementation of the projects in the area has an influence in the health of the locals. According to the study carried out by Haines (2011) in 10 districts in Kenya, 15 districts in Tanzania and 4 slums in Uganda showed that, implementation of various water projects in the studied districts led to reduced spending on, medication, reduced mortality rates, increased population and life spans, and many more. In a report by the Millennium Community Development Initiatives Kenya Chapter (2010), one important contributor to implementation of various water projects in the communities in disadvantaged areas (ASALs, Rurals and Slums) is child mortality.

On the third objective that sought to examine how social conflicts created by communal projects implementation impacts on the welfare of the local communities of Magarini Sub County, 7.8% of the respondents said that there have not been any social conflicts associated with shallow projects implementation. 72 who represented 80% said that there have been conflicts that are associated with the water projects and finally 12.2% of the respondents were not sure. On average, over 80% of the respondents gave issues like increased social unrests, quarrels, strife and sometimes violent wars that have been witnessed in a number of clans. According to (CIA) (2010), social conflicts over water are, to some extent, inevitable, given water's multiple functions: it is a basic human need, the foundation of livelihoods, the lifeblood of critical ecosystems, a cultural symbol, and a marketable commodity. Managing social conflict is central to good water projects implementation management. However, as the development of water resources and the transformation of freshwater ecosystems have intensified, so have the conflicts. Social conflicts around water are not only increasing, but also being transformed by two simultaneous global revolutions. The communications revolution has produced an explosion in global networks, access to information, and personal mobility, making it easier for affected communities and sympathetic advocacy groups to partner with those in other countries.

In relation to the final objective that sought to establish how environmental pollution caused by the implementation of communal projects impacts on the welfare of the local communities of Magarini sub county, a number of responses were to the point that the projects have an influence in the environmental pollution. For example, 54 respondents argued that the water projects have had a significant influence in the environmental pollution in the area, 20% of the respondents went for no and not sure in the same proportions. When asked to support their reasons, on

average, 60% of the respondents gave reasons like unpredictable droughts and floods for example have been experienced of late. According to Michael (2010), one of the first problems with dams and communal water reservoirs is the erosion of land. Dams hold back the sediment load normally found in a river flow, depriving the downstream of this. In order to make up for the sediments, the downstream water erodes its channels and banks. This lowering of the riverbed threatens vegetation and river wildlife. A major example of soil erosion problems is the Aswan Dam, Gitaru Reservoir, Kiambere Reservoir and Kindaruma Reservoir (UN-Water, 2009).

According to WHO (2012), World Bank (2014) and International Rivers Organization (2013) one of the reasons as to why dams and other water reservoirs are built is to prevent flooding. However, most ecosystems which experience flooding are adapted to this and many animal species depend on the floods for various lifecycle stages, such as reproduction and hatching. Annual floods also deposit nutrients and replenish wetlands. When this is related to the Magarini situation, flooding has been controlled by the community water programmes that have been adopted in the last 8 years. A report in the Daily Nation show the then coast province P.C Mr. Ernest Munyi telling the over 6000 displaced communities to return home due to the fact that the flooding process had been checked on and the area is not to experience flooding soon. The major environmental issue that is associated with such an act is limiting the agricultural activities of the locals who dependent on planting rice in the flooded areas, dead of plant and animal species that depended on the flooded water, reduced local agricultural produce and finally an arise of conflicts like lack of enough food for the locals.

5.4 Conclusions

From a series of issues that have come into bow starting from the literature review, the information gathered in the field and the summary of the findings, the research concluded that the shallow water projects just like any other in the rest of the world have led to jobs creation in the Kilifi's Magarini area and other surrounding environs.

The researcher also concludes that health hazards and issues have been surrounding the implementation of the shallow water projects in the area just like any water projects across the world.

Also, the researcher concludes that social conflicts, wars, misunderstandings and tribal clashes have been linked to water projects implementation in the Kilifi County.

Finally, the researcher concludes that environmental pollution, climate change and altered food production patterns have been associated to the implementation of water projects in the county.

5.5 Recommendations

Based on the findings of the study that has come from the respondents in the field and the literature review, the researcher makes the following recommendations:

First, the researcher recommends that the water projects should be given funds and be strengthened as they create job opportunities thus solving the problem of unemployment more specifically to women and youths.

Secondly, the researcher recommend that health hazards like regular drowning of drunkards in the water wells, diseases carrying vectors, water borne diseases and water contaminations should be addressed by both the national government, county government and the various NGOs/CBOs in the area. MAWASCO for instance should monitor, advice and capacity build community initiatives on water provision so as to avail water to the households as envisaged in Kenya Vision 2030.

Thirdly, the researcher recommends that social conflicts associated with such vital projects must be addressed via mutually designed committees, bodies and penalties should be attached to those who break the rules as agreed.

Finally, the researcher recommends that climate issues surrounding the implementation for such projects should be addressed via bodies like NEMA and remedy plans be put in place.

5.6 Suggestions for Further Research

- i. The researcher suggest for a research to be done on determinants of community participation in water projects implementation in Kilifi County.
- ii. Another study can be done to investigate the sustainability of community water projects in Kilifi County.

- iii. Finally, a research can be done to investigate the determinants of communal water projects implementation in Kilifi County.

REFERENCES

- African Union. (2011). *Sharm El-Sheikh Commitments for Accelerating the Achievement of Water and Sanitation Goals in Africa*. Declaration I. Assembly of the African Union, Eleventh Ordinary Session, 30 June-1 July, Sharm el-Sheikh, Egypt. www.africa-union.org/
- African Union. (2012). *Sharm El-Sheikh Commitments for Accelerating the Achievement of Water and Sanitation Goals in Africa*. Declaration I. Assembly of the African Union, Eleventh Ordinary Session, 30 June-1 July, Sharm el-Sheikh, Egypt. www.africa-union.org/
- Ahmad, S.M. and Talib, A.N. (2011). *External factors that inhibit community participation in development, International Journal on Economic and Resources*, 1: 16-22.
- AMCOW (African Ministers Council on Water). (2011). *AMCOW Country Status Overviews- Regional Synthesis Report. Pathway to Progress: Transitioning to Country Led Service Delivery Pathways to meet Africa's Water Supply and Sanitation Targets*. Washington, D.C: The World Bank/Water and Sanitation Program.
- Asian Development Bank (ADB). (2010). *Impact of Rural Water Supply and Sanitation*. Independent Evaluation Department, Pakistan.
- Bennett, N. (2010). *Sustainable Livelihoods from Theory to Conservation Practice: An Extended Annotated Bibliography for Prospective Application of Livelihoods*. Victoria, Canada.
- Best, J. W., and Khan, V. (2009). *Research in Education*. 7th Edition, Prentice Hall, New Delhi: India.
- Campbell-Lendrum, D., C. Corvalán, and M. Neira. (2012). *Global Climate Change: Implications for International Public Health Policy*. Bulletin of the World Health Organization 85: 235-37.
- Carlevaro F, and Gonzalez C. (2011). *Costing improved water supply systems for low-income communities: a practical manual*. CDROM. World Health Organization, Geneva.
- Comprehensive Assessment of Water Management in Agriculture. (2013). *Water for Food, Water for Life: A Comprehensive Assessment of Water Management in Agriculture*. London: Earthscan, and Colombo: International Water Management Institute.

- Christina L. (2010). *Evaluation of NGO International Development and Humanitarian work, briefing on practices and debates in evaluation*, Water Aid.
- Demombynes, G., and Trommlerova, S.K.(2012). *What Has Driven the Decline of Infant Mortality in Kenya? Policy Research Working Paper 6057*. The World Bank, Africa Region.
- DFID, (2010). *Sustainable Livelihood*. DFID, London.
- DFID, (2011). *Sustainable Livelihood*. DFID, London.
- Donovat S, (2013). *Towards an alternative society? The role of Intermediary nongovernmental organizations in urban poor communities, the Philippines* Springer
- El-Sadek, A. (2011). *Virtual water: An effective mechanism for integrated water resources management*. doi:10.4236/as2011.23033 for efficient utilization of scarce water resources in semi-arid regions of Rajasthan, India. *Water Resources Management*, 18: 219–235.
- Gathuti C, (et al). (2010). *Korogocho socio-economic survey report Participatory Training Promotions Institute ltd*.
- Haines, A., R. S. Kovats, D. Campbell- Lendrum, and C. Corvalan. (2011). *Climate Change and Human Health: Impacts, Vulnerability and Public Health*. *Public Health* 120 (7): 585-96.
- International Rivers (Organization). (2013, November 23). *Dam Removal. International Rivers*. Retrieved November 23, 2013, from <http://www.internationalrivers.org/campaigns/dam-removal>.
- International Rivers (Organization). (2013). *Technical Challenges*. Retrieved December 3, 2013 form <http://www.internationalrivers.org/files/attached-files/rrdecompt4.pdf>
- IPCC (Intergovernmental Panel on Climate Change). (2010). *Technical Paper on Climate Change and Water*. IPCC-XXVIII/ Doc. 13, Intergovernmental Panel on Climate Change, Geneva. www.ipcc.ch/meetings/session28/doc13.pdf.
- IRC International Water and Sanitation Centre. (2011). *Lessons for Rural Water Supply*. Assessing progress towards sustainable service delivery, Ethiopia.
- Jansz, S. (2011). *A Study into Rural Water Supply Sustainability in Niassa Province, Mozambique*, WaterAid.

- Jim L. (2013). *Is community development necessary?* Canadian Anthropology society.
- Joop W. (2013). *Urban Alleviation in Bangalore: Institutional and community level dilemmas*
Economic and political Weekly
- Kasomo, D., (2006). *Research Methods in Humanities and Education*. Egerton University, Kenya.
- Kothari. (2007). *Research methodology: Methods and techniques*. (2nd ed): New Age International publishers. Delhi, India.
- Lockwood, H. and Smits, S. (2011). *Supporting Rural Water Supply. Moving towards a Service Delivery Approach*. Practical Action Publishing Ltd. Warwickshire, UK
- Malindi Inquiry Report. (2011). www.ujamaakenya.org, www.mustkenya.or.ke
- Marvin B, (2013). *Dependent disabled and dependent poor*, The university of Chicago Press
- Michael J. (2010). *Reliability and validity*, Western International University
- Millennium Community Development Initiatives. (2010): *Community Guide to Water Act 2002*. Nairobi Kenya.
- Ministry of Water and Irrigation. (2012). *Annual Water Sector Review 2011-2012*. Nairobi, Kenya.
- Moss, J. (2010). *Water ethics and business*. Water Ethics Taylor & Francis.
<http://dx.doi.org/10.1201/9780203875438-c15>
- Mugenda, A. and Mugenda. (1999). *Research Methods: Quantitative and Qualitative Approaches*. Nairobi: Act Press.
- Mugenda and Mugenda. (2003). *Research methods: Quantitative and qualitative approaches*. Acts Press, Nairobi, Kenya.
- Mukunga, Faith (2012). *Influence of community participation on performance of Kiserian dam* (Unpublished thesis, Masters of Arts). University of Nairobi, Kenya.
- Muruta S. (2010). *Community development in Zimbabwe: the role of community based organizations*, Southern Institute of peace building and development Ruwa, Zimbabwe
- Mutagamba, Maria Lubega. (2008). *The Role of Women within the Water Sector and the Importance of Gender Mainstreaming*. The 5th World Water Forum Newsletter 4.
- Mutagamba, Maria Lubega. (2011). *The Role of Women within the Water Sector and the Importance of Gender Mainstreaming*. The 5th World Water Forum Newsletter 4.

- Njagi, Kagundu. (2013, June 3). *Community dams aim to build water security in arid Kenya*. Retrieved December 2, 2013 from <http://www.trust.org/item/20130603103952-mba98/>
- OCHA. (2010). *Water Scarcity and Humanitarian Action: Key Emerging trends and challenges*. OCHA Policy Development and Studies Branch.
- Odie, M.S. (2012). *Community Related Variables Influencing Sustainability of Water Projects in district*. A Case of UNICEF Funded projects Under UNICEF WASH Programme, Kenya. M.A Thesis. University of Nairobi, Nairobi, Kenya.
- OECD. (2011). *Environmental Policy: How to Apply Economic Instruments, The Organization for Economic Cooperation and Development*. Paris, France.
- Oraro, E. J. (2012). *Determinants of Delays in Construction of Community Water Projects in district*. A Case of GOK UNICEF WASH Programme. M.A Thesis. University of Nairobi. Nairobi, Kenya
- Stockholm Environment Institute. (2014). *Sustainable Pathways to Attain the Millennium Development Goals: Assessing the Key Role of Water, Energy and Sanitation*. Stockholm: SEI.
- The Millennium Development Goals Report. (2012). *United Nations*, New York.
- The Millennium Development Goals Report (2012). United Nations, New York. <http://mdgs.un.org/unsd/mdg/Resources/Static/Products/Progress2012/English2012.pdf>. Accessed 2012
- The World Bank. (2014). *The World Bank Group*, n.d. Web. 27 Nov. 2013. <http://siteresources.worldbank.org/INTINVRES/Resources/DisplacementResettlementRehabilitationChinasoc203.pdf>
- Thomas, D.R. and Hodges, I.D. (2010). *Designing and Managing Your Research Project*. The Draft National Water Policy 2012. Republic of Kenya. March 2012.
- Time for Change. (2010). "Water Scarcity and Global Warming." *Time for Change Website*, as accessed on 10 August 2014. <http://www.timeforchange.org/water-scarcity-and-global-warming>
- The Times. (2011). "Crops for a Drought." *Times Online*, 27 November 2014. <http://www.timesonline.co.uk/tol/news/uk/article2951028.ece>.
- UN. (2010). *Water, a shared responsibility. The United Nations World Water Development*

- Report-2 UNESCO and Berghahn Books, Paris and London.*
- UN, (2014) *United Nations: We the peoples: The role of UN in the 21st Century*. New York, USA.
- United Nations Convention to Combat Desertification. (2008).*Desertification – Coping with Today’s Global Challenges*. Edited by Timothy Nater. Germany: Deutsche Gesellschaft für, Bonn. www.unccd.int/
- UNESCO.(2010). “*Water, a Shared Responsibility,*” *the 2nd United Nations World Water Development Report*. United Nations Educational, Scientific and Cultural Organization, 2009.[http://unesdoc.unesco.org/ images/0014/001454/145405E.pdf](http://unesdoc.unesco.org/images/0014/001454/145405E.pdf)
- United Nations Environment Programme (Organization). (2013, December 1).*Dams and Development Project*. Retrieved December 1 from <http://www.unep.org/dams/WCD/>
- UNESCO. (2014).*Guidelines on Strategic Planning and Management of Water Resources*. New York.
- United Nations General Assembly. (2011). *Road map towards the implementation of the United nations Millennium Declaration*. A/56/326. New York, UN.
- UNICEF. (2011). “*Water, Sanitation and Hygiene: Common Water and Sanitation-Related Diseases.*” UNICEF, 1 April 2005. http://www.unicef.org/wes/index_wes_related.html
- United Nations Convention to Combat Desertification. (2013). *Desertification – Coping with Today’s Global Challenges*. Edited by Timothy Nater. Germany: Deutsche Gesellschaft für, Bonn. www.unccd.int/
- UNFPA (United Nations Population Fund). (2012). “*Water: A critical Resource*”. UNFPA, New York.
- UNFPA, (2013) Annual Report. *United Nations Population Fund*. New York, USA
- United Nations Development Programme. (2010). “*Human Development Report 2009: Beyond Scarcity: Power, Poverty and the Global Water Crisis.*”United Nations Development Programme, 2009.<http://hdr.undp.org/hdr2009/pdfs/report/HDR06-complete.pdf>
- UNDP. (2010).*Human Development Report. Real Wealth of Nations: Pathways to Human Development*. New York.
- UNDP. (2013). *Human Development Report. Beyond Water Scarcity: Power, Poverty and the global water crisis*. United Nation Development Programme New York.

- UN-Water, (2009). *Coping with water Scarcity: The challenge of the twenty-first century*. FAO New York.
- UN-Water. (2010). *Coping with water scarcity: a strategic issue and priority for system-wide action*.
- UNDP-World Bank. (2012). *The Millennium Development Goals Report*. New York, UN.
- UWAZI, (2010). *It's our Water too! Bringing greater equity in access to water in Kenya*-Policy brief.
- UWAZI report.(2011). *Mkukuta Annual Implementation Report (2006-2007)*. Progress, Challenges and the way forward. By Anna Mwashu.
- U.S. Central Intelligence Agency (CIA). (2010). *Topic on "Africa: Uganda" in CIA World Factbook*, as accessed on 10 August 2014. <https://www.cia.gov/library/publications/the-world-factbook/geos/ug.html>
- U.S. (2011). *Environmental Protection Agency*. "Water Recycling and Reuse: "e Environmental Benefits." EPA Website, as accessed on 10 march 2015. <http://www.epa.gov/region09/water/recycling/>
- U.S. (2012). *Water News Online*. "Dry Beijing to Shun Water-Intensive Industry." U.S. Water News Online, March 2015. <http://www.uswaternews.com/archives/arcglobal/4dryxbeij3.html>
- WaterAid. (2011). *Sustainability Framework*. WaterAid's Website – www.wateraid.org/publications
- Water and Sanitation Programme- Field Note. (2010). *Sustainable Management of Small Water Supply Systems in Africa*. Practitioner's Workshop Report. October 6-8. 2010.
- WaterAid. (2014). *Gender Aspects of Water and Sanitation*. WaterAid, 2014, http://www.wateraid.org/documents/plugin_documents/microsoft_word__gender_aspects.pdf
- Water Quality and Health Council. (2011). "*Drinking Water Worry Tops Chinese Environmental Concerns*." Water Quality and Health Council, 8 March 2015. http://www.waterandhealth.org/news_center/in_news080805.php3,
- WCED - World Commission on Environment and Development. (2010). *Our Common Future*. Oxford University Press, New York.

- Wikipedia. (7 Nov 2013). *Reservoir*. Retrieved from <http://en.wikipedia.org/wiki/Reservoir>.
- Wiersma ,W. (1999). *Research Methods in education: An Introduction*. Itasca (USA): F.E. Peacock Publishers.
- White, G.F., Brandley, D. and White, A. (2009).*Drawers of Water: Domestic water use in East Africa*. University of Chicago Press. Chicago and London..
- World Health Organization.(2010). “*Cholera” fact sheet*. World Health Organization, November 2014. <http://www.who.int/mediacentre/factsheets/fs107/en/index.html>
- WHO/UNICEF. (2014). *Meeting the MDG Drinking water and Sanitation*. A mid-term Assessment of progress.UNICEF. New York
- WHO/UNICEF, (2011).*Water, Sanitation and Hygiene Annual Report*. UNICEF. New York.
- WHO. (2011). *Progress on the Health-related Millennium Development Goals*. Geneva.
- WHO/UNICEF Joint Monitoring Report. (2010).*Progress on Sanitation and Drinking Water*. UNICEF. New York.
- World Health Organization and UNICEF. (2012).*Progress on Sanitation and Drinking Water: 2012 Update*.
- WHO. (2012).*Reducing Risks, Promoting Health Life*. World Health report Geneva.
- WHO/UNICEF. (2013).*Joint Monitoring Programme for Water Supply and Sanitation*. WHO Library Cataloguing-in- Publication Data Internet: Accessed July 03 2012 from: <http://en.wikipedia.org/wiki/Economichttp://daccess-dds-ny.un.org/do>
- WHO. (2014).*Meeting the MDG Drinking Water and Sanitation Target*. A mid-term Assessment of Progress. Geneva.
- World Bank. (2010). “*Shoring Up Water Infrastructure*.”*World Bank Website*, as accessed on 10 August 2014. [http:// go.worldbank.org/I7M6HR9BP0](http://go.worldbank.org/I7M6HR9BP0)
- World Bank. (2011).*World Development Indicators*, 2005, <http://books.google.co.uk/books?id=XuISLieRRrsC&dq>
- World Bank. (2012).*Country Status Overview of Water Supply and Sanitation Kenya*, Consultation draft. Nairobi.
- World Water Assessment Programme. (2010). *The United Nations World Water Development Report 3: Water in a Changing World*. Paris: UNESCO Publishing, and London: Earthscan. www.unesco.org/water/wwap/wwdr/wwdr3/.
- Worthen, B.R., Borg, W.R., and White, K. R. (1993). *Measurement and evaluation in the school*.

Longman, New York.

WWF. (2013). *Dam facts and figures*. wwf.panda.org. org. Retrieved November 23, 2013, from http://wwf.panda.org/what_we_do/footprint/water/dams_initiative/quick_facts

WWF. (2013, November 23). *Dam Solutions – Alternatives & mitigation*. WWF. Retrieved November 23, 2013, from http://wwf.panda.org/what_we_do/footprint/water/dams_initiative/dams/alternatives

Xinhua News Agency. (2013). “*Clean, Safe Water for All Chinese Rural Residents by 2015.*” China.org.cn, 5 September 2010. <http://www.china.org.cn/english/2006/Sep/180067.htm>.

APPENDICES

APPENDIX I:

Letter of transmittal

Sholo Benjamin Kambi

P.O Box 1117-80200

Malindi.

Tel: 0725342472

Email: shollobk@yahoo.com

Dear participant,

My name is Sholo Benjamin Kambi and I am a student undertaking a Master of Arts Degree in Project Planning and Management at the University of Nairobi Mombasa campus. To fulfill the completion of this course, I am carrying out a study on the Impact of Communal Projects Implementation on the Welfare of Local Communities; The Case of Msumarini Shallow Wells in Magarini Sub-County, Kenya. Since the matter affects the whole community of which you and I live, I am inviting you to participate in this research study by completing the attached questionnaire and answer the questions sincerely.

If you choose to participate in this research, please answer all questions as honestly as possible. Participation is strictly voluntary and you may decline to participate at any time. In order to ensure that all the information will remain confidential, you do not have to include your name. The data collected will be for academic purposes only.

Thank you.

Yours faithfully

.....

Sholo Benjamin Kambi.

**APPENDIX II:
Research Questionnaire**

Section A:

BACKGROUND INFORMATION

1. Your gender: Male Female
2. Your age bracket (**Tick whichever appropriate**)
18-30yrs 31 - 40 Years 41 - 50 years 51- 60 years Over 61 years
3. What is your highest education level? (**Tick as applicable**)
Primary certificate Secondary certificate Diploma/certificate Bachelors' degree
Postgraduate degree
4. Working Experience
a) Less than 1 year () .b) 1-2 years () .c) 2-4 years () .d) 5 years and above () .e)
Unemployed () .

Section B: As Discussed in the Objectives

Item on Employment Opportunities

1. With relevant examples supporting your answer, do you think that communal projects implementation in Magarini sub-county has led to jobs creation?
Yes () Not Sure () No ()

Examples-----

2. On a likert scale rating indicate the extent to which you agree or disagree with the following statements? Use a scale of 1-5 where
1= strongly disagree; 2 = disagree; 3 =weakly agree; 4 =agree; 5 = strongly agree.

Statement 1 2 3 4 5

The implementation of the water projects has an influence in construction jobs provision to the local community.

The implementation of the water projects has an influence in management jobs provision to the local community.

Maintenance jobs have been influenced due to the implementation of the communal water projects.

Water Vending as a result of communal water projects implementation has influenced jobs for the locals.

II. Item on Health Issues associated with Shallow Projects

3. Do you think that there are health issues that have affected the community due to the implementation the communal water projects?

Yes { } No { }

4. With example of some of these problems if any, support your answer.

5. To what extent do you agree or disagree with the following statements in relation to health and communal water projects implementation? Use a scale of 1-5 where **1= strongly disagree; 2 = Disagree; 3 =Not sure; 4 =Agree; 5 = strongly agree.**

Statement	1	2	3	4	5
Water borne diseases have been greatly associated with the implementation of the communal water projects in the area.					
Diseases spread vectors have been influenced by the communal water projects introduction in the area.					
Mortality Rates have been associated to diseases associated communal water Projects implementation.					

III. Item on Social Conflicts

6. Do you think that the implementation of the communal water projects is associated with any conflicts in the society?

Yes () No () Not Sure ()

7. Support your answer in 6 above with any relevant examples.

.....

.....

8. On a likert scale with : (1= Strongly disagree; 2 = Disagree; 3 =Not sure; 4 =Agree; 5 = Strongly agree.) ,show how you agree or disagree with the following.

Statement	1	2	3	4	5
Quarrels have been associated with communal water projects implementation.					
Demonstrations have been influenced by communal water projects implementation.					
Unrests and Violence have been influenced by communal water projects implementation in the sub-county.					
Civil strife have been influenced by the communal water projects Implementation in the area.					

IV. Item on Environmental Pollution

9. Do you support the idea that communal water projects implementation in Magarini sub-county have led to environmental pollution?

Yes () No ().

10. Support your answer in 9 above.

11. Rate the extent to which you agree or disagree with the following statements. Use a scale of 1-5 where, **1= strongly disagree; 2 = disagree; 3 =not sure; 4 =agree; 5 = strongly agree.**

Statement	1	2	3	4	5
Droughts have been influenced by the implementation of the Communal water projects in the Magarini.					
The implementation of communal water projects has influenced the occurrence of floods in the area.					
implementation of communal Water projects in area has an influence in the food yields in the area.					