

# Gender Disparity And Its Implications In Farming Set Up. Case Study of Fish Farming Projects Of 2009 Up To 2011 in Kirinyaga County Kenya.

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**Abstract:** Despite the Government of Kenya injecting Ksh1.12 billion in Economic stimulus program little had been done to assess gender disparity notwithstanding that among conditions set for fish farmers to benefit from the program, gender issues were not considered. This study assessed gender disparity in fish farming and its implication in fish farming under the Economic Stimulus Program in kirinyaga, County Kenya. A total of 124 questionnaires were administered to selected ESP fish farmers. Five sub-county fisheries officers were interviewed and documents regarding the project reviewed to support the survey data. Descriptive statistics and Pearson chi-square was done using SPSS version 20.0. Economic stimulus program (ESP) fish farmers beneficiaries who were sampled comprised were men while women were few compared to men. This study showed that there was men's dominance in education at all levels, age, land ownership, marital status and in geographic distribution in the five sub-counties of Kirinyaga County. Major causes of fish farming disparity were; men's dominance, unequal gendered government distribution of ESP to farmers, bottom-down management of the project, un equal gendered land ownership, household chores for women, political interference, cultural factors, low economic status of women, and poor information dissemination that favored men. The Study showed there is need for creation of awareness on women rights women's empowerment, land ownership rights, minimizing on negative cultural factors and ensuring equal gender distribution of resources. The conclusion is that gender was not observed in ESP fish farmers and government should consider gender equality in the distribution of resources. This study recommends government to Support gender sensitive policies and programs that will enhance economic, social and political women's empowerment in a way that ensure active participation in fish farming based on national accepted principles of women empowerment and gender equality; Women empowerment and gender mainstreaming, women rights, land ownership rights, and gender equality awareness are essential to avoid men dominance in fish farming; Also enhance public participation and consultations before the kick of the government funded project. This therefore will encourage the culture of bottom up participatory approach that will encourage community project ownership and full active participation..

**Key words:** Gender disparity; gender equality, fish farming; Economic stimulus program; Fish farming enterprise productivity program.

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## I. Introduction and Background of The Study

This chapter gives the highlights on the importance of fisheries sector as well as the background information on the government initiated project of 2009 to 2011. Also included in the chapter is various studies on gender disparity in fisheries and fish farming to find out the gaps in gender parity in fisheries. The study focuses more on information on the subject under the study.

Aquaculture has and is increasingly contributing to global food security. It has shown to grow on average at a rate of 6.2 annually between 2000 and 2012 thus becoming the global fastest growing sector in production of animal food (FAO, 2012; FAO 2014). In the last three decades, worldwide consumption of fish and other aquatic products have doubled annually from 71 million tons in 1979 to 158 million tons in 2012, thus about 136 tones was consumed by human beings (FAO, 2014d).

Fisheries and Aquaculture are the key sources of animal protein, and income for millions of people globally. In addition to this fish has been the most traded food commodity globally whereby over half of all fish exports are sourced from developing countries (FAO, 2016) Fish has been a major source of protein in human diet worldwide in which more 30% of fish consumed by people originates from aquaculture (Hastein et al.,

2006). Therefore fish farming is essential and is a critical agriculture component for food security, employment and economic growth mainly among the rural communities.

Unlike the traditional agricultural activities whose gender roles have been researched and are explicit, women roles in aquaculture development at various chain nodes of the aquaculture value chain are yet to come out clearly, forms half of global work force in fisheries and aquaculture spread along various chain nodes in fish processing, supply chain and marketing (FAO, 2009). According to William (2011) Women in aquaculture forms 24% in India, 33% in China and 80% in Vietnam. In Bangladesh even though women play a significant role, there is no data available to show their proportion in aquaculture (Nuruzzaman, 2012). Thus this makes of fish sector to have gender blindness as also exhibited in Norwegian salmon industry (Maal, 2013). Fish farming was previously viewed as a subsector in the larger agriculture sector has recently changed due to high prices of fish compared to red meat coupled with globally depleted wild fish stocks (HLPE, 2014)

In Africa De Graaf & Garibaldi (2014) have shown that women constitute more than one fourth of people working in fisheries and aquaculture sector. In Sub-Saharan Africa women participate in post harvest activities such as processing of fish, fish trade and supplying fishing materials (Coax, 2013). In Zambia Kafue flats in Southern province women are involved in small scale fish farming and in livestock husbandry (Lungu and Husken, 2008) Even though women do participate in fish farming their contribution to fisheries is minimal compared to men.

According to Rajaratnum (2016) Zambian women are disadvantaged due to partitioned unpaid roles such as child bearing and other domestic chores while men got involved in paid roles such as fishing an approach that left men as sole bread winners. This gender blindness traditional agricultural activities may be reflected in fish farming as well.

In Kenya natural fish stock in water bodies such as in Lake Victoria have declined due to overfishing among other causative factors resulting in an increased fish demand due to rapid human population growth (FAO, 2006). Aquaculture is regarded as step gap measure to declining wild fish catches against an ever increasing global human population. It is on this basis that Kenyan government established an Economic Stimulus Program to increase fish production to meet the increasing demand for fish proteins alleviate poverty and create employment opportunities. The Fish Farming Enterprise Productivity Program (FFEPP under Economic Stimulus Programme was aimed jump starting the economy of Kenya.

The government of Kenya injected Kshs 1.12 billion to construct 200 fish ponds in 140 political constituencies in the country (GoK, 2009). Each constituency was allocated with funds for construction of 200 fish ponds, (300m<sup>2</sup>) each stocked with 1 000 fingerlings. The program continued to the second phase in the 2011/2012 financial year and more 20 constituencies benefited by an extra 100 fish ponds in 140 political constituencies as well as 300 fish ponds allocated to the new constituencies thus totaling to 48 000 ponds that amounted to approximately 15 million US dollars (Mwangi, 2008). In the (FEPP) enrollment, the key requirement for interested farmers being a land a requirement predominantly owned by men in (Maina et al., 2014).

Gender equity is enshrined in the constitution of Kenya (2010) article 27 (8 & 81) where there is affirmative action which encompasses one third rule. The affirmative action states that women should take one third of employment or benefit representation in all the organizations or sectors. Furthermore the constitution of Kenya Provides for affirmative action as a clear solution, but does not give the affirmative action mechanism to be engaged (Kaimenyi, Kinya & Samwel, 2013). Laws exist but have experienced weak enforcement to bring about change. Fish sector policies or legislation and practices often have less gender consideration (FAO, 2012). Gender blindness and insensitivity is extended to Food and Agriculture Organization in the code of conduct for responsible fisheries in which it does not include gender issues, as is shown by Williams (2008). This is despite of involvement of women in various fisheries activities such as aquaculture harvesting, and processing among other activities (Weretunge & Snyder, 2009). Hence this might lead to gender biasness in fish farming coupled with lack of legal framework to empower women in fish farming.

Fish farming is a subsector in agriculture sector that has enormously contributed to the growth of Kenya's economy and has demonstrated tremendous development. This implies increased job opportunities and the need to ensure this women who forms the greater part of rural Kenyan population capacity built on aquaculture skills and knowledge to contribute to fish farming as well. Kiumbuku, Mutinda and Bernard (2013) observed that gender ideology contributed to unequal distribution of benefits between men and women in a study carried out in kwanza division, TranZoia County of Kenya. It is on this basis that the current study investigated the levels of gender disparity in reference to (FFEPP) program with specific reference to Kirinyaga County.

Local established culture determines Women resource benefits in the family without giving them independent mind in the roles they play. Girls assist mothers in household chores such as taking care of the young children while men are involved income generating activities (Kamua, Kimani & wamae-Ngare, 2014). This implies that women are engaged in works that do not directly earn them monetary benefits but rather

ensure family basic welfare unlike men whose chores are more often than not pegged to payment a trend associated with family hierarchy (Spade and Valentine, 2011). This has over time disadvantaged women and their roles in the agriculture sector across the globe despite many efforts.

Patriarchy-which means men's rule, also plays a role in decision making and in utilization of resources (Wamue & Njoroge, 2011) this therefore may also apply in aquaculture farming as patriarchy discriminate women and deny them the chance to make their own decision in resource use. This is was further stressed by Green (2008) in his study that showed women lack decision making power in their families in terms of resource utilization. The traditional agricultural development challenges faced by women are once more likely to reoccur in aquaculture if gender is not adequately addressed.

FAO (2013) demonstrated that there was paucity of gender information in the fisheries and aquaculture human and resource funds to enhance gender mainstreaming

Further lack of connection between policy and practice factors coupled with lack of political will disadvantaged pursuance of gender equality and mainstreaming, it is on this bases the study envisaged to explore gaps in gender equality in enrolment and implementation of fish farming project under the ESP-FFEPP in Kirinyaga County Kenya.

### **1.1. Study area**

Kirinyaga County aquaculture Sub-sector benefited through fish farming projects rolled out by the Kenyan government under ESP-FFEPP between 2009-2011, in phase I and II. The County has high potential for fish farming due to a number higher of permanent rivers flowing down the South-Eastern slopes of Mt Kenya in the county.

Kirinyaga County occupies an area of 513Km<sup>2</sup> and is situated about 100Km North east of Nairobi , Kenya, with an average of 176,261 people (KBS population census, 2009) The county is neighbored by Muranga County to the West, North west by Nyeri County the home to Mt Kenya, and to the South and South-East by Embu County. The county has three ecological zones; Midland with 2000-3400M above sea level, lowland having 1158m-2000m above sea level and highland with 3400m – 53000m above sea level.

The county enjoys an intertwining of six main rivers emanating from the slopes of Mt Kenya. These includes: Nyamidi, Thiba, Ragati, Sagana, Rupingazi and Rwamuthambi of which all join river Tana to the South. Geologically the county is comprised of rocks which are volcanic in nature, which led to formation of God Bridge on Nyamidi River.

The county is further enriched with seven waterfalls (Kirinyaga County plan 2016-2017) a clear indication of an existing aquaculture potentials.

The climate of the county is determined by the position of the County in the equator and position of Mt Kenya being on windward side. The main rain seasons with the short rain is in October up to November and long rain being in March and May. Short rains constitute 1,212 mm on average and short rains that occur on average of 2,146mm. Temperatures are between 8.1°C on average in the areas of upper zones up to 30.3°C in the hot seasons in the lower zones. The County is divided into six Districts; Kirinyaga West, Mwea East, Forest area, Kirinyaga Central, Mwea Central, and Kirinyaga East including four constituencies: Mwea, Ndia, Kirinyaga and Gichugu (Kirinyaga County plan 2013-2017). The main social economic activity in the County is rice farming . This is possible due to the flow of water from rivers Nyamidi and Thiba that flows by gravity (Mwai, Njenga & Barasa, 2016).

### **1.2. Problem Statement**

According to FAO report on state of Food and agriculture report as cited by Salzburg Global Seminar and International Fund for Agriculture (IFAD) (2012), gives is a need to minimize the gender gap in agriculture and rural development. This clearly shows that fish farming being a sub-sector in agriculture and rural development is not exempted from gender disparity or gender gap. In rural areas majority of small scale farmers are women and if they are not given opportunity in agriculture, this leads to low growth and also contributes to food insecurity (World Bank, 2007). This shows the importance of gender inclusiveness in aquaculture.

Aquaculture contributed to about 15% of the Kenya fish production with approximately 1 000 metric tons harvested from 7 477 ponds owned by 4, 742 fish farmers annually (Mwangi 2008). That led to construction of 48000 fish ponds at a cost of over 15million US dollars across the country the contribution of aquaculture in fish production and the economy was therefore expected to increase enormously. Notwithstanding that little had been done to ensure gender inclusiveness in the enrollment and in the program implementation. For distribution of ESP-FFEPP funds to Beneficiaries, the following conditions were to be fulfilled; land ownership, site suitability, and water availability (Ministry of fisheries development proposal for funding, 2010) thus gender equality was not a condition in project distribution and was factored in the enrollment and implementation of the program.

The proportion of women in Kenya constitutes 52.2% of the total population and they are the key in rural development contributing force 80% of the work force. Approximately, 70% of food produced is contribution by the women. Though they access only 10% of available resources. They only own 1% of the resources (Wawire & Nafukho, 2009). Thus fisheries being part of the resources thus women may be sidelined as seen in ownership of other resources although they form greater portion of the population.

It is based on these draw backs that created a need to conduct a study on assessment of gender disparity in fish farming in Kirinyaga County, Kenya.

### **1.3 Objective of the Study**

#### **1.3.1. General Objectives**

To determine status of gender disparity in fish farming in Kirinyaga County, Kenya

#### **1.3.2. Specific Objectives**

- I. To investigate the causes of gender disparity in farming in Kirinyaga County
- II. To assess the level of gender disparity in farming in Kirinyaga County
- III. To examine the effects of gender disparity in fish production and women welfare in Kirinyaga county.

### **1.4. Research questions**

- I. What are the causes of the gender disparity in fish farming in Kirinyaga County?
- II. What is the level of gender disparity in farming in Kirinyaga County?
- III. What are the effects of gender disparity in fish production and to welfare of women in Kirinyaga County?
- IV. What are the mitigation measures to gender disparity in Kirinyaga County?

### **1.5. Significance of the study**

**Government of Kenya** -The study determines the gender disparities in aquaculture project (FFEP&PP) in Kirinyaga County and suggests mitigation measures. These mitigation measures will enable the government to formulate policies and strategies to curb gender inequality in rural farming set up. The study will also assist policy makers to make informed decision regarding gender issues in future related agriculture development program at all stages of implementation.

**Fisheries extension officers** -The study findings will enable extension service providers refocus their service delivery as well to farmers and give awareness on gender consideration in the service delivery as well as distribution of fisheries project resources.

**Donors, investors and other potential financiers** - Potential financiers and farmers uses the findings to make gender sensitive informed investment decisions .the study will further give prospective aquaculture funding bodies informed background information on the role of gender parity in agricultural projects.

**Kirinyaga County Community** – The community was informed by the study on the relevance of gender equality on promotion of fish farming. Creation awareness on the need of gender inclusiveness in fish farming projects was maintained. The community may also benefit through the funding of community projects funded by the county and other project partners who may find the significance of gender from this study.

### **1.6. Scope of the study**

The scope of this study is limited to Kirinyaga County, ESP-FFEPP aquaculture beneficiaries in phase I and phase II. Purposeful interviewing of county fisheries officer was done while questionnaires were distributed to fish farmers with the aim of gathering information from the program beneficiary farmers and main program implementers in regard to gender disparities.

### **1.7. Limitations of the study**

Kirinyaga County is vast with some areas inaccessible and poor road network. Thus moving to interior remote areas was a challenge. The researcher made plans to ensure access to areas with poor road infrastructure by use of motorbikes and walking on foot to gain data. However, this was also faced with unanticipated challenges including exaggerated motorbike charges and breakdown. There was a language barrier incidence but the fisheries assistants assisted in interpretation for ease of data collection.

### **1.8. Definition of terms used in the study**

**Aquaculture** is defined as rearing or farming of aquatic organisms such as fish, mollusks, crustaceans, aquatic plants, crocodiles, alligators, amphibians and turtles in a controlled environment. However for the purposes of this study aquaculture shall refer to the farming of fish only since under the ESP-FFEPP, the government funded the growing of Nile tilapia, a warm water fish.

**Fish Farming and Enterprise Productivity Program under Economic stimulus program** –This was the National program Economic Jump-starting program after an economic downfall following the disputed

2007 presidential elections funded by the government Kenya. In fisheries this program financed Fish farming program and enterprise productivity in 2009/2010 financial year while in the financial year 2010/2011 another program funded fish farming (Mwangi, 2008).

**Fisheries** can be described as the science of rearing fish and other aquatic resources with an objective of human food provision or (recreation and sport fishing) or getting ornamental fish oil products such as fish oil (Ramos et al., 2009.)

**Gender** – this is referred as social, cultural attributes, behavior and norms that is attached to males or females (World Bank, 2011)

**Gender and Development (GAD)** This is an approach concerned with addressing unequal relations in gender to avoid development that is not equitable and which ignores women to participate in development projects (Saunier et al.,2009).GAD objection is to ensure equal decision making, benefit sharing and participation of men and women.

**Gender equality** is the equal rights, responsibilities and chances of men and women and boys and girls considering interests, needs and priorities without depending on male or female perspectives (UN Women, 2010).Thus gender equality emphasizes on the equal treatment of both women and men in all sectors or spheres of life.

**Gender equity** - is the fairness accorded to men and women with an aim of minimizing unjust or unfair treatment in men and women in access to resources and all benefits (Un Women 2010)

**Gender mainstreaming** is the integral process of integrating gender in the operating institutions. Its aim is enhance gender equality in order to achieve sustainable development (Saunier et al., 2009).

**Gender** refers to the men’s and women’s roles and responsibilities as featured in our cultures, families and societies (Saunier et al., 2009)

**Practical needs** – These are immediate necessary things as perceived by men or women such as shelter, food and water (sunier et al., 2009).

**Women in Development (WID)** This approach its objective is to involve women in the already established process of development. Women are considered passive recipients in the projects (WID).its weakness is that, it did not factor in multiple roles that women play and blind men’s responsibilities and roles in the empowerment of women (Saunier et al.,2009).

**1.9. Summary**

In developing countries, gender disparity issues in all fields is common, although there is emerging force to change the situation. In Kenya gender issues are only addressed in the Supreme law of the land but its implementation is not effective as there are still gender disparities in many areas. However some lessons can be learnt from the countries that have achieved some success in implementing gender parity such as Vietnam where women forms 74.2% and men contribute 80.6% in economic activities (UNDP, 2010).Developed countries have achieved much in gender equality and therefore developing countries are bound to follow the same steps.

**II. Review of Related Literature and Studies**

**2.1. Introduction**

This section deals with Fish farming Enterprise Productivity Program (FFEPP) under economic stimulus program(ESP) , gender equality in fish farming, theoretical frame work, conceptual framework, research gaps and chapter summary. Thus this chapter focuses on FFEPP-ESP, fish farming production statistics, government financing and social cultural beliefs in FFEPP-ESP. The aim of this literature review is to enhance topic understanding, identify gaps for research compare and contrast with similar done, compare with previous works results, analyze existing findings and advice for further studies.

**2.2. Operational variables**

**Table 1** Operational variables

	<b>Research objectives</b>	<b>Concepts</b>	<b>Variables</b>	<b>Method of data Collection</b>	<b>Methods of data Analysis</b>
1	To determine the cause of gender disparity in rural farming set up	Patriarchy	Are there any gender disparities in Kirinyaga county?	Questionnaire	Descriptive
Men dominancy		Does men dominancy affects women participating in fish farming?	Questionnaire	Descriptive	
Income control		In your opinion, do you think household income control by men hinders	Questionnaire	Descriptive	

			women to get involved in fish farming?		
2	To determine the level of gender disparity in fish farming	Number of men and women in fish farming or who were the beneficiaries of fish farming programs	Did enrollment and implementation of the ESP funds for phase 1 and phase 2 considered gender equality to beneficiaries of the funds	interview	Explanatory analysis
		Decision making	Who controls income from fish sales in women owned fish ponds	questionnaire	Descriptive analysis
		Benefit sharing	Who benefits more from the fish harvested in the fish ponds	questionnaire	Descriptive analysis
3	To determine the effects of gender disparity in fish production and women welfare.	-Women social life	In your own view do think that social life of women is affected by gender disparity in fish farming?.	Interview	Thematic analysis
		Fish production	How do you think low numbers of women in comparison to men effects fish production output	Questionnaires	Descriptive analysis
		Women and jobs	In your own opinion do you think gender disparity in fish farming denies women jobs or income?	Questionnaire	Descriptive analysis
4	To determine the role of gender equality in fish farming	Women roles in fish farming	What are the roles of women in fish farming?	questionnaire	Descriptive analysis
		Women areas of concentration in fish farming	Which jobs in fish farming are women more concentrated than men	Questionnaire	Descriptive analysis
	Mitigation measures to gender disparity	Laws/Affirmative action	Do you think national laws on gender equality are implemented effectively in fish farming	Questionnaire	Descriptive analysis
		What is to be done	What do you think should be done to ensure gender parity in fish farming?	Questionnaire	Descriptive analysis

### 2.3 Theoretical framework

#### Introduction

This Chapter deals with theories that give more understanding and insight on gender disparities. Theories discussed in this section include; Feminist conflict theory, intersectionality theory, neoclassic theory, Feminist trade theory.

A theory is a set of ideas that gives reasoning and attempt to elucidate events and facts (Hornby, 1994). Theories help in defining, evaluating and ordering realities in social economic spheres of life as well knowing their identities. Nevertheless theories can be viewed as ideas that contrast with practices. Thus empirical studies should accompany them to warrant their validities (Mohapatra, 2009).

#### 2.4. Feminist conflict theory

Feminist conflict theory, John (1984) argues that traditionally and culturally women have been undermined for the men to benefit from power, status and wealth. This theory emphasizes that due to resource limitation women are bound for domestic work as relegated by men. Feminist conflict theory further suggests that stratification is geared by the degree that men and women control the production means and economic benefits allocation. This therefore shows that there is a stratum for gender described roles in the stratified society. Moreover men and women adhere to social norms and beliefs practiced in a society. This adherence limits women in activities they do as opposed to men, therefore exacerbating gender disparity.

Study conducted in India by Mohapatra (2009) in the tribe of Koraput showed that those women who remain unmarried for a long time after adulthood stage are forced to marry a man then she stays in her maternal house afterwards. This empirical study therefore demonstrates the reality of feminist conflict theory, where and how women suffer under society norms and practices.

#### **2.4.1. Relevance of the theory on the study**

Feminist conflict theory is significant to the study as it helps in understanding the practical meaning of gender equality in rural fish farming set up and will support in evaluating fish farming projects enrolment and implementation in consideration gender equality. Thus this framework will assist in understanding gender related problems.

### **2.5 Neoclassical Theory**

Some countries in 1960s got encouraged by neoclassic trade theory and they adopted export oriented industrialization. Neoclassical trade theory stated that trade liberalization would make greater strides for women compared to men in reference to minimizing employment and wage gaps that finally results to women empowerment (Hankivsky, 2014).

Neoclassical theory is based on two rationales: production of variety of goods will utilize the factors of production in different ratios, while countries that have variety in factors of production initially supply factors. Therefore countries that are developing are bound to produce goods that need unskilled labor as it is in the case of manufactured goods and primary commodities (Ozay, 2011). Thus the model has three assumptions; that the increase in economic growth through access of markets and new resources is brought by free trade, secondly international and national equality is induced by free trade thus allowing price equalization affects in factors of production. Lastly countries can realize the benefits of free trade when they practice on an outward focused trade policy as was observed by Todaro and Smith (2009).

Neoclassical theory was applied By Taiwan government to encourage gender equality. This was achieved through adoption of export oriented industrialization in 1970s. Women got the opportunity of being employed in export segment (Hankivsky, 2014). This theory therefore encourages trade that improves women gender parity as well as their welfare through trade.

#### **2.5.1. Relevance of Neoclassic Theory to this study.**

A neoclassical theory helps in understanding the roles of women in the society such as labor input which is critical in evaluation women's contribution in fish production in the study.

In East Asia the change of women's labor to market production from non market production or shift of production to measured as opposed to unmeasured one affected the production in totality that brought development (Elson, 1955). This theory therefore brings out the consequences of stratification in family make ups but if the challenge is overcome as in the case of East Asia then gender disparity and unequal benefits can be overcome thus promoting economic development.

In this study neoclassical theory helps in evaluation and understanding the evolution of gender disparity particularly in the household set up in the rural fish farming areas and provides possible solution to the stratification menace that impedes the realization of gender parity in fish farming.

### **2.6. Feminist Trade Theory**

Feminist trade theory argues that economics cannot be separated from social life. This is because gender is institutionalized by gender norms and the society stereotypes including labour market, and institutions of labor (Elson et al., 2007) therefore feminist economist oppose neoclassical theory because of considering labor in production processes as opposed to people experiences lived that can define people capacity.

#### **2.6.1. Application of Feminist Trade Theory.**

Feminist theory is an expansion of neoclassical theory that incorporates economy and social sphere thus bringing more understanding on gender equality thus it is valuable in the study as it adopts the factors of production where women roles are recognized.

Both neoclassical and Feminist theories gives more understanding on the role of women in development, therefore in this study they will enhance in evaluating the roles of women in fish farming and as well as in mitigating related gender based issues. Aforementioned theories give more justification of gender disparity therefore giving support for the need to address gender issues; hence it is important in process of project implementation, monitoring, measurement and evaluation of the impact.

The applicability of the this theory is reflected in industrialized selected semi - Southern countries and in Northern states between 1975 -1995 that showed shift of wage discrimination against women in south

to the North in terms of degree of discrimination. The rise in semi industrialized countries demonstrates that women's wages rise, how it changed to export production mechanisms (Caglar, 2008).

In this study theory of feminist theory thus is important in investigating how women can contribute to economic growth and production if they are given chance and gender disparity is eliminated in the to ensure involvement of women in measured work or work that is paid rather than the tradition gendered roles that exposed women to household roles whilst men were involved in paid jobs. This scenario can be applied in fish farming to avoid gender inequality in sharing of fisheries resource and equal gender involvement in aquaculture activities.

## **2.7 Intersectionality Theory**

Intersectionality term was first coined by Kimberlie Williams Crenshaw (1989). Intersectionality gives more understanding on interactions of social factors such as gender, class age, Indignity, race, migration status, ability or disability, religion, geography and ethnicity. These factors interact in interconnected structures of power and systems. Thus oppression and privileges that is defined by patriarchy, colonialism, racism, ableism, imperialism and homophobia come up as a finally (Hankivsky, 2014) therefore the main idea behind of this theory is that human lives is shaped by multidimensional and complex factors and single categories such as race, gender and social economic status.

Intersectionality theory has been applied in various areas where studies in inequality have been done. The theory has shown to be an effective tool for diagnosis and also the theory has proved its prescription effectiveness (Hancock, 2007:73). For instance a study done by Dzah's in Ghana (2011) on climate change examination, demonstrated that just comparison of man and women could not give up enough understanding on how and who was impacted. As an alternative many factors such as age gender, marital, life stages and status ethnicity do affect adaptive capacity and vulnerability levels. Also applicability of the theory is reflected by Sultan (2010) study in Bangladesh on flooding analysis where the study showed that women are in heterogeneous group rather than homogenous group in reference to floods experience. Other factors such as caste, age, class and religion can influence women's right, responsibilities and resources as well. Sultan found out that women who were poor were susceptible to nature related disasters and floods including other factors such as women limitation to resource access and upturn.

### **2.7.1. Intersectionality Theory Relevance**

This theory gives more understanding of the cause of gender disparity as multidimensional factor that are interlinked through various interaction. This theory will help in understanding the various causes of gender inequality in fish farming at a wider scope in order to give and exhaust all the mitigation measures that curb the gender disparities.

Williams (2013) stressed that "issues of intersectionality — the axis of analysis is not only about women and men, but how the other factors such as class, age, ethnicity, race, caste, and religion all come into play to define and condition the relations that one would have in fisheries and aquaculture systems". This was further emphasized by Hankivsky (2014:2) by stating that "inequities are never the result of single, distinct factors. Rather, they are the outcome of intersections of different social locations, power relations and experiences". This means that gender disparity may not be caused by a single discipline or entity thus intersectionality theory will help in assessing other factors such as stock assessment, technological factors among other elements in aquaculture that may derail the achievement of gender equality.

This theory does not focus only on gender division of labour but takes all the aspects in totality in investigating the various factors that really make women not to be involved in fish farming or aquaculture as it is the case of men. Therefore this multidisciplinary approach in investing gender issues in this study will help yield good findings that will facilitate in unearthing suitable solutions in minimizing gender equality in aquaculture that promotes sustainable social economic development. For instance in European union countries where advocacy for gender mainstreaming is frequent including development of national policies, intersectionality is seen as helpful in those policies and significant as opposed to approaches that cultivate contending oppressions as it was observed by Kantola & Nousiainen (2009).

Intersectionality theory thus fits well in this study as it will widen the researcher mind in investigating the disparities in fish farming. This will make the researcher to avoid in focusing on single factors rather than incorporating the holistic influencing factors that contribute to inequalities in fish farming the study area under investigation. Therefore is in regard of the above inferences and applicability that makes the theory relevant to this study thus its use.

## **2.8. The essence of economic Stimulus program (ESP) and its development**

The fisheries sector injects 7 billion Kenyan shillings annually, with the 1921 in the colonial era government intervention on common carp and black bass precursors of the FFEPP-ESP (Maina et al., 2014) was aimed at economic recovery, poverty alleviation and regional development program (ERPARDP).



The essence of ESP was to jump start the economy to a long term growth and development, improving the livelihood of Kenyans. The program focused on sectors that would earn maximum benefit, improve the livelihood of the poor create jobs to the youth (GoK,2009).A number of activities were covered by ESP that includes construction of market for fresh agriculture produce, promote irrigation farming, construction of fish ponds, water reservoirs for fish culture including fish farming related costs

The main objectives of the ESP was to boost the recovery of the economy, ensure the growth of the economy as enshrined in the Medium term growth plan, ensure long term food security, increase employment opportunities and boosting equity, social development and stability (Njagi, Njati & Guyo 2013) and thus a general indication that ESP program was induced to steer economic growth in the sectors that contribute to the

Kenyan economy including fish farming. However gender issues were not considered in the projects enrolment and in the implementation stage.

The Fish Farming Enterprise Productivity program (FFE&PP) of 2009 was stimulated by the high demand for fish, demand for fish protein, overfishing phenomenon in Lake Victoria among other factors (FAO, 2006).Government allocated more than three billion Kenyan shillings (3B) to the program in 2009-2011 financial years (MOFD,2011).The program was covered in two phases. In the first phase of the project was funded by ESP whereas the Economic Recovery, Poverty Alleviation and Regional Development Program (ERPARDP) as shown by MOFD (2010).This shows government commitment to steer development by injecting huge amount of funds. However these funds should benefit both men and women equally in order to avoid uneven development and avoid gender inequality in fish farming.

The fish farming project which was covered under the umbrella of Economic stimulus program whose aim was to improve food nutrition and ensure food security, create employment and a source of income generation to the Kenyan people (Fish Farming Enterprise and productivity Report, 2010).The program essence was to increase farmed fish production from 4000 MT to over 20,000 MT for the planned short term including over 100,000 Mt in the long term plan (Charo-Karisa and Gichuri, 2010).Approximately 2700 fish ponds were constructed in 140 constituencies across the country and 200 fish ponds were constructed in each constituency.The FFEPP project consumed 1.12 billion Kenyan shillings .28,000 fish ponds were constructed across the country (Uhuru ,2009) as the first phase while 2.72 billion Kenyan shillings were used in construction of supplementary 200 fish ponds,3 shallow wells, purchase of pond liners, fish feeds and fingerlings including the construction of 80 min fish storage facilities(Uhuru,2010)

## **2.9. The essence of gender equality in fish farming and women's role in fisheries sector**

Fisheries and aquaculture are the main sources of nutrition, food, income and employment to many people around the world. In 2014 global per capital fish supply was 20kg.In addition to this fish has shown to be the most traded food globally where by more than half of fish exported are sourced from the third world states (FAO, 2016).This is achieved by vigorous and faster growth of aquaculture sector globally.

Aquaculture employs many people but women are low compared to men in many countries. European aquaculture sectors employed more 85,000 people in Europe where annual wage average was around 19,400 Euro. However it has been shown that women constituted only 29% of the jobs in European union aquaculture sector (Scientific, Technical and Economic Committee for Fisheries (STECF), 2013).This clearly shows that women are less involved in aquaculture activities even in the developed countries thus there is a need to incorporate more women to achieve more and better results in aquaculture.

In rural set up women are involved in small scale fisheries activities and play a role at a varying degree in different countries. In Mozambique, Cambodia and Nigeria women work in small scale in capture fisheries at 4%, 57% and 73% respectively (Weeratunge and Snyder 2009).Women in Asia do participate in all fisheries activities especially in Mekong region ranging from the manufacturing, of gears used in fish processing while in India In some parts women net prawns and in Philippines women participate in fishing in regions along the coastal lagoons (Gopal et al., 2014).

In Africa, it has been shown that more than one-fourth of women work in fisheries and aquaculture while most of them are involved in inland fisheries working as a processors at a proportion of 69.2% and fishers at 6.7% (De Graaf and Garibaldi 2014).However In sub-Saharan Africa (SSA) most of the women are specifically involved in post harvest work that involves post harvesting activities such as harvesting, processing and fish trading (Cox, 2013). Despite women showing that they play a significant role in fisheries they are disadvantaged in their societies due to the issues that affect them such as reproductive health, violence, land grabbing and other forms of discrimination in the society. It is shown that gender issues have not been addressed adequately, as no document even in chapter eight of FAO document for code of conduct for responsible fisheries, that give exactly gender issues in small scale farmers and the impacts of inequality in social relations in contribution to sustainable development. In rural communities in particular, women in small scale communities are marginalized in fisheries value chain and their capacities are poorly valued and recognized (Quist, 2016).Therefore this shows that women are less disadvantaged particularly in fisheries sector and there is

need for intervention. Issues of gender equality and gender equity are less considered in current fish sector standards, policies, and strategies, this is a testimony that Women's interests and voices are understood and heard and this is sign of weakness in fisheries sector too (Williams, 2016).

Potentials gains could be achieved by closing gender productivity gap particularly in aquaculture as shown by FAO (2011) that farming lands managed by women, if they use the amount of inputs as men farms then the output for agricultural produce would increase at an average of 2.5-4 % thus reducing the undernourished people by the rate of 12-17%.

Women empowerment and gender equality are highly emphasized in the developing countries because women rights, opportunities and attention are less taken into consideration compared to the developed countries. Therefore the need for more research on gender equality is required (World Bank, 2012). Thus in developed countries much have been achieved in ensuring gender equality unlike in developing countries where there is strong emphasis on this because gender equality issues are derailing behind.

In connection to the aforementioned issues FAO (n.d) shown that research is required for better understanding of the men's and women's roles and how their relations promotes sustainable and gender sensitive development in fisheries.

It is therefore in reference to the aforementioned gaps that there was a need to assess gender disparity in the rural fish farming set up that will provide information guide on fisheries policy makers, government, leaders, and other concerned parties in informed decision making on gender issues.

### **2.10. Gaps to be filled by the Study**

Gender issues have been raised for over many decades but still it remains complicated and not fully adopted at various implementation levels. In 21st century gender disparity in developing countries still remains high compared to developed countries. Food and Agriculture Organization; Gender, Equity and Rural Development Division (2009) observed that women in rural areas encounter systematic discrimination in to resource access, which are crucial in social economic development. Access to input, credit, seed supply services are given to men who are household heads. However women are neglected in development projects that might add more in men's income and production.

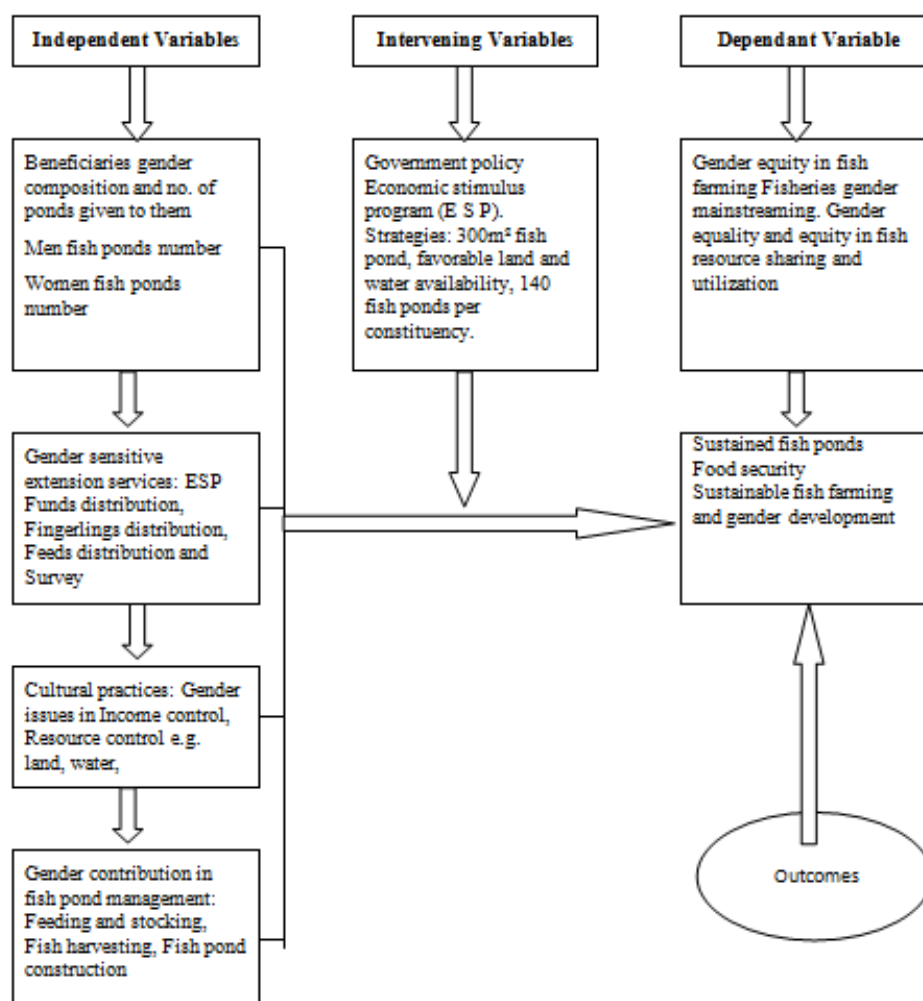
Kenya is not exceptional to gender disparity although there are some efforts to ensure gender parity. In aquaculture/fish farming gender disparity information is limited. A study on forms of gender inequality conducted in Kwanza division in rift valley Kenya indentified by Kiumbuku, Mutinda and Bernard (2013) depicted that gender disparities such as women inaccessibility to credit, land and other forms of gender inequality existed.

Also during the kick off the ESP-FFEPP gender issues were not the requirement for fish ponds distribution. The program required beneficiaries to possess land, site suitability and water availability as a condition for distribution of the program funds.

It is in response to this drawback that a study was conducted in Kirinyaga County to investigate gender disparities in the fish farming program of 2009 up to 2011.

### **2.11 Conceptual Framework**

The following conceptual framework is defined in the study and indicates the relationship between independent and dependent variable; the influence of independent variables on dependant variables. In this conceptual frame work shows how gender equality which promotes sustainable fish production is limited by extension services, cultural practices, and gender roles and gender inequality in fish farming management.



Source: Author (2017)

**Figure 1: Conceptual Framework of the Study**

### 2.12. Summary

The theoretical and empirical literature reviewed on gender demonstrate that less studies have been done on gender disparities in fish farming in Kenya thus it is important to articulate the issue of gender disparity to ensure gender parity, that subsequently promotes social economic development.

In regard to research gap few studies have been done to investigate gender disparities in fish farming particularly in the enrollment and implementation of Economic Stimulus program of 2009 to 2011 in Kirinyaga County.

Subsequent chapter three deals with the discussion on the research methodology that includes research design, methods of data collection, procedures and data analysis.

### 2.13. Empirical literature review

Little has been done with regard to gender equality in fish farming in Kirinyaga County as there is lack of systematic and well organized studies, on consideration of gender disparity in the implementation of the of fish farming projects in the County and many other counties where the program was enrolled in Kenya. As far as the knowledge of the researcher goes there is no adequate study on gender disparity in fish farming in enrollment and implementation of fish farming projects in Kirinyaga County. The researcher has reviewed studies in home and abroad for the sake of the study.

A study carried out by Maina et al.,(2014) in Mwea division, Kirinyaga County, Kenya on the influence of social economic factors such productivity project and gender in regard to fish farming showed that gender influenced on management practices in fish. The study indicated that there was a difference in women and men in regard to the size of the ponds; women had smaller ponds as opposed to men who had large ponds.

Also the type of fertilization in ponds differed. The research further stressed that gender disparity between men and women emerged from the economic status differences; women had limited access to land, credit and capital, improve management and commercial fertilizer purchase.

However, the study focused on a small area (Mwea division) and both farmers who were funded by the government and those who were not funded as opposed to this study that only focused on Government funded fisheries project and covered cover the whole county thus giving better representation and the situation on the whole County. The research also didn't give detailed information on the causes of gender disparity impact, the effects of fish farming disparity in fish production and the role played by women in fish farming in Kirinyaga County. This is because even if men owned large fish ponds women could be the ones working more on in the men owned fish ponds. Therefore this study was done to give the detailed information on gender disparity and the role of women in fish farming compared to men.

Orina et al., (2014) conducted a study on the hatchery management of African catfish and Nile tilapia situational analysis in Kirinyaga and Kisii Counties in Kenya and found out that gender disparity was high where only one hatchery was managed by a female. The hatcheries were operated by private investors and farmer groups.

### **III. Research Methodology**

#### **3. Introduction**

This section deals with Plan of the research (Kumar (2011) that includes research design ,type of research, types sources of data, methods of data collection or data gathering procedure, population and sampling techniques, respondents of the study, sample size, table summary for respondents, research instruments, scales and quantification, data analysis or statistical treatment of the data and interpretation.

#### **3.1. Research Design**

Kothari (2004) showed that "A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure." It acts as guide map for collecting data, measurement and data analysis. Research design facilitate operations in research thus enabling efficiency thus producing enough data with reduced time effort and money.

##### **3.1.1. Descriptive Survey Research**

The study used descriptive survey research to assess gender disparity in Kirinyaga County. It aimed to describe the data and characteristics of what was being studied as shown by Kothari (2004:37).The researcher chose descriptive research to describe gender disparity, level of gender disparity, causes and roles of gender equality in fish farming in Kirinyaga County. In addition, descriptive research used to describe the influence of gender in fish farming production and recommend appropriate mitigation measures to gender disparity. Kothari (2004) indicated that the use of descriptive type of research guides the researcher to identify the major pertinent disparities in fish farming.

#### **3.2. Research Approach**

##### **3.2.1. Mixed Methods**

This study employed concurrent triangulation of data where qualitative, quantitative and document analysis techniques were used to collect data. In this study unstructured interviews and questionnaires were used to gather relevant information from the Kirinyaga County Government stakeholders to address the research problem more scientifically and systematically (Creswell, 2003).To get detailed information on gender disparity a mixed approach was used in this study.

Creswell (2003), mixed methods approach requires the researcher to base knowledge claims on practical or reality on the ground. Therefore this enhanced the researcher to used mixed methods to gather the pragmatic information on the ground.

##### **Quantitative (Questionnaires)**

Scholars use quantitative approaches to generate and analyze quantitative data (Kothari, 2004).This research techniques were applied to collect data on the study. This involves the use of questionnaires that were distributed to the fish farmers who benefited from Economic stimulus program (ESP); this was to enable the researcher to gain information on fish farming and gender disparity.

##### **Qualitative (Interviews)**

Qualitative research deals with explanations of social occurrences and helps in comprehending the world in terms of social, happenings and the way things are. It seeks to know how people behave, their opinions,

attitudes, how events affect people and the way cultures and norms of societies are developed (Hancock, Windridge & Ockleford, 2007)

The purpose of using this approach in the study was to get detailed information on inequality in fish farming between males and females, the causes of disparities, level of gender disparity and the role that women play that affects fish production. Therefore this research plays an investigative role in giving information that cannot be achieved by other research methods.

### 3.3.2 Target Population

The target population is a collection of individuals, items from which sample is chosen or selected. In this study the target population was farmers funded by Economic stimulus program in phase I and phase II in each sub-County and five fisheries officers from fisheries office of each sub-County were interviewed, in Kirinyaga County.

#### 3.3.2.1 Population and sampling techniques

Kirinyaga has a population of 528,054 and annually growth rate of 1.5%. The population projection growth by 2017 was 595,379 (Kenya population and housing census report, 2009). The target population was fish farmers who were beneficiaries of fish farming projects funded by government of Kenya in the financial year 2009/2010, 2010/2011 and fisheries technical officers working in the fisheries department in Kirinyaga County.

**Table 2: Population distribution in Kirinyaga County.**

Sub-County	Population		Fish Farmers ESP Beneficiaries 2009		No. of Households
	People Number		2011		
	Males	Females			
County	260,630	267,424			154,220
Sub-County					
Mwea			400	200	
Kirinyaga West			200	100	
Kirinyaga Central			200	100	
Kirinyaga East			200	100	
Kirinyaga West			200	100	
Total	528,054		1000	1500	

Source: Kirinyaga headquarters Fisheries office (2016)

### 3.3 Sampling Design

Sampling is the process of drawing a sample from an entire population Kothari (2004:152). Therefore, to research on gender disparity in fish farming in Kirinyaga County, the researcher selected five Sub-county fisheries officers and also collected quantitative data from the fish farmers who were the beneficiaries of FFEPP-ESP.

### 3.4. Sample Size and sampling techniques

A sample size is defined as the number of elements or items to be drawn from the population. Size of the sample should be optimum to avoid too small or too large data. Sample optimality is regarded as efficient, reliable, representative and flexible (Kothari, 2004).

Since a qualitative and quantitative data were used to investigate gender disparity in fish farming in Kirinyaga County which is comprised of five Sub counties. This researcher used two techniques; probability (Simple random sampling) and non-probability sampling technique (purposive or judgmental sampling). Simple random sampling was employed to select fish farmers who benefited from FFEPP funds from each sub county. Purposive sampling was used to select five sub-county fisheries officers for interviews because they were the implementers of the program, so they had vast knowledge on the program. Also selecting non-probability techniques enabled the researcher to save time and energy because the respondents were not assured of availability. Selection was based on researcher's judgment on interviewers. The sample size calculation (n) was determined by the population size and formula as shown by Kothari, (2004).

Fish farming enterprise productivity program funded the construction of 200 fish ponds in 140 constituencies' countrywide (Musa et. 2009) and addition 100 fish ponds were added in phase in some selected counties and Kirinyaga County was a beneficiary of the second phase of the economic program (Mwangi,2008). To determine the sample size of this population, there were 300 beneficiaries of the funds in each constituency in phase I and II of FFEPP in Kirinyaga County which constitute five constituencies (Sub-counties) thus the total target population was  $300 \times 5 = 1500$  people. To determine actual sample of the population to be sampled, a researcher employed a scientific method.

Therefore from targeted populations of 1500 fish famers under ESP the researcher used Kothari (2004) formula

$$n = \frac{z^2 pq + ME^2}{ME^2 + \frac{z^2 pq}{N}}$$

Where:-

**N** = 264, **Z** = 1.96/95%, **p** = 0.9, **q** = 0.1, **ME**= 0.05/5%.

**N** = population size n = desired sample size

**z** = standard normal variable at the required confidence level (z statistic).

**p** = estimated characteristic of target population.

**q** = 1 – p.

**ME** = level of statistical significance set/margin of error

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**ME** = level of statistical significance set/margin of error

$$\frac{(1.96)^2(0.9)(0.1)+(0.05)^2}{(0.05)^2+ (1.96)^2(0.9)(0.1)} = \frac{0.345744+ 0.0025}{0.0025+ 0.00019208} = \frac{0.348244}{0.002730496} = 128$$

### 3.5. Sampling Frame

Sampling frame was sourced from the Department of Fisheries headquarters in Kirinyaga County. The County consists of five sub-counties. In each Sub-County there are 300 fish farmers who benefited from ESP-FFEPP (Department of fisheries Kirinyaga County, 2017).The total targeted population was 1500 from all the five Sub-Counties. To determine actual population that had to be sampled scientific method was applied (Kothari, 2004) and a sample size of 128 was considered. In every sub-county 26 respondents were sampled for the questionnaires.

### 3.6. Sources of data

The two sources of data depend on the type of data to be collected, which is either primary or secondary data.

#### 3.6.1. Primary data

Primary is defined as data collected is the data collected directly from its original source.

#### 3.6.2. Primary data collection instruments

Primary data collection instruments includes; Observation, direct communication and interview. Data collection is through questionnaires and unstructured interviews.

##### 3.6.2.1. Questionnaire

Questionnaire is defined as the all the techniques used in data collection where respondent respond to the same set of queries that are orderly determined (Devaus, 2002).

Some questions in the questionnaires comprised of both open and closed questions. In open ended questions as referred by Dillman (2007) give respondents freedom to answer question with liberty (Fink 2003a).Closed ended questions or forced choice queries (Devaus 2002) makes the respondents to chose from alternative answers provided. Open ended question are useful if the response is not known and if the research is interested with detailed information on subject of the study. In this research both open ended and closed ended questions were used to achieve the objective of the study.

- **Reliability of the questionnaire**

The length of a questionnaire influenced the response rate (Devaus, 2002).For instance longer questionnaires have shown to minimize rates of response so to avoid this the researcher used questionnaires that are short (Edward et al., 2002).On the other side shorter questionnaires may indicate that the research is less significant (Saunders, 2009) but to avoid this questionnaires were verified by experts. Questionnaires are suitable for descriptive or exploratory research.

Reliability assessment of a questionnaire as suggested by Mitchell (1996) Considered the following to ensure reliability; Internal-consistency, test retest and alternative form.

Test retest of five questionnaires was done because this correlates the collected data with the similar questionnaire collected under similar approximate conditions. Internal consistency is correlation of responses in each question in the questionnaire with other questions of the questionnaire.

Many methods are used in calculating internal consistency, but this research used cronbach alpha correlation coefficient to test questionnaire reliability that yielded 0.7..

The questionnaire of this study was accompanied by cover letter that explained the purpose of the study. Dillman (2007) found out that questionnaires with covering letter affected the rate of response and should be placed in the first page of the questionnaire. At the closing of the questionnaire the researcher explained the use of the questionnaire and thanked the respondents for answering the questionnaire including giving the researchers contacts.

Kumar (2011) defined reliability as the consistency of instruments giving similar results when repeatedly used under similar situation. To measure internal consistency of scales, the use of Cronbach's alpha coefficient of correlation was applied. The coefficient is a model of internal co efficiency in reference of inter-item correlation, with exemption of other models. If data is dichotomous then it should be numerically coded. Reliability is determined by the consistency of the findings and data collection techniques. Reliability can be assessed by the measures that yield the same results, and if similar results can be obtained by other observers and the extent of transparency on how sense is seen in the raw data (Easterby-Smith *et al.* 2008:109)

In reliability fours threats are have been known (Robson, 2002); among them being; participant error, participant bias, observer bias. In order to overcome participant error in this study the questionnaire was administered to respondents at 'neutral' time to avoid generation of different results. This was achieved by apportioning questionnaire when the respondents had convenient time to answer the questionnaire effectively without much influence from personal activities or other obstructions.

**Subject or participant error** -This is an error that comes as result of an authoritarian management where there is possibility of individual insecurity. Researcher ensured anonymity of the respondents in the questionnaire as well as research instrument.

Observer error – This occurs when there is different ways of soliciting the answer when conducting interviews and to avoid this error interview structure schedule was of high degree (Saunders ,2009).

Observer bias –This is brought about by research in interpreting the feedbacks. This therefore requires keenness of the researcher during the collection of the data.

It is based on this that the scaled items in the questionnaire were found reliable as Cronbach's alpha coefficient correlation of the questionnaire calculated was 0.382 thus the confidence of the research was guaranteed.

- **Non-structured interview**

Non structured interview allowed the interviewer to have freedom to ask or prepare supplementary questions or allow the interviewer from time to time omit certain questions. It also helped to understand the feelings and emotions of the respondents. In this study primary data was collected from fish farmers who benefited from government funds.

### **3.6.2.2. Secondary data**

Secondary data is defined as reanalyzing the information which already gathered for some other purposes. Secondary data was comprised of published data resources and raw data (Saunders, 2009).

Secondary data is efficient as it saves time and money (Ghauri& Gronhaug, 2005) thus it is cheap to collect secondary data than researcher collecting data by himself. It is also quick to obtain it than primary data (Stewart & Kamins, 1993).It is also unconstructive to collect if the organization has no objection or does not hide the information Cowton(1998) and finally secondary data provides a data that that is available and permanent that can be verified or checked by others easily (Denscombe,2007).

Secondary sources of data include; books, journals, websites, thesis, government reports were reviewed for the purpose of revealing background of study, organize relevant literature and design research questionnaires.

### **3.6.2.3. Secondary data collection instruments**

Use of published and unpublished data was considered. Published books, journals as well as report and documents from fisheries office in Kirinyaga were used.

### **3.6.2.4. Document analysis**

Document analysis can be defined as an orderly process of reviewing documents that are in form of electronic or printed materials. Document analysis helped in examining data and interpreted it in order to unearth the meanings, understanding and gain practical knowledge on the ground (Corbin & Strauss, 2008).The

essence of using different methods of collecting data was to minimize potential bias that may appear with a one study method (Bowen, 2009).

### **3.7. Methods of data analysis**

#### **3.7.1. Statistical treatments of the data**

The researcher analyzed data received from quantitative and qualitative data collected through the questionnaire and non-structured interview.

##### **3.7.1.1 Quantitative data analysis**

The data collected was subjected to Statistical package for social sciences (SPSS) version 20.0v to generate, tables, graphs, mean, standard deviation and Pearson correlation.

##### **3.7.1.2 Qualitative data**

The data was categorized into objectives, coded, re-categorized based on data similarity, content analysis was analyzed and cross checked with quantitative findings.

## **IV. Data analysis, Presentation and Interpretation**

### **4.1 Introduction**

A survey was conducted between March and May 2017 with random sampling method used to identify selected respondents. A total of 124 questionnaires were administered in the five Sub-counties of Kirinyaga County particularly to FFEP-ESP beneficiaries. A master codebook was used to confirm that questionnaires were coded uniformly. The data was entered, coded and analyzed using statistical package for social science (SPSS Inc. version 20.0). Descriptive analyses such as percentage, Pearson correlation and frequencies were used. Interviews were conducted to the five Sub-county fisheries officers. Also previous FFEP-ESP development documents were analyzed to give support to survey and interview data.

**Table 3: Profile of the Respondents in Terms of Their Gender**

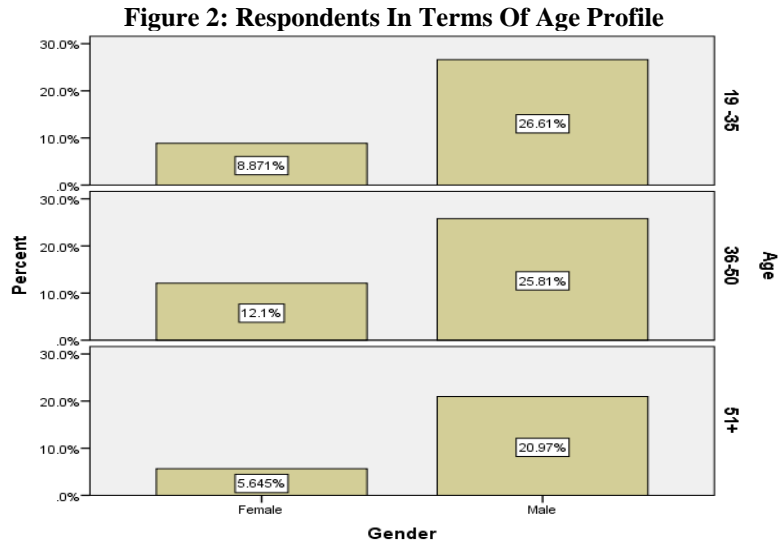
Gender	Frequency	Percent
Male	33	26.6
Female	91	73.4
Total	124	100

*Source: Field survey data (2017)*

### **4.2. Respondents gender distribution**

Majority (73.4%) of the FFEP-ESP beneficiaries in Kirinyaga County sampled were men and women constituted only (26.6%). This was because most of the beneficiaries of the program were men because one of the conditions for allocation of ESP Fish pond was land possession. And most men are registered land owners as opposed to women. Therefore this made few women to be less beneficiaries of the program because they don't own land. This therefore results in biased gender fish farming where males dominates the fish farming thus denying women source of income, skills and knowledge in fish farming. Men's dominance in fish farming can have negative effects in fish production. For instance, during the study interviewers explained that "*Most men give management to women up to harvesting of fish because men were dealing with cash crops such as tea and most men were trained in fish farming but they did not apply their training skills in fish pond management*" (case 001). If women are left to manage the fish ponds and they were not trained it may lead to poor fish husbandry and poor fish production.

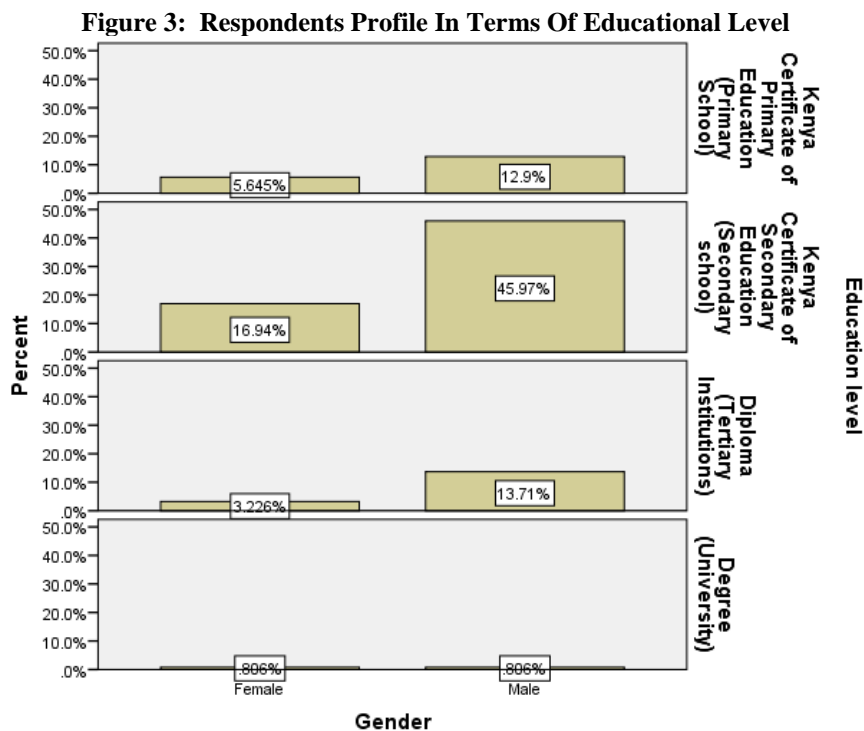




Source: Computed Field Survey data (2017)

### 4.3. Age profile distribution

The age bracket of 36-50 (37.9%) had the highest number of respondents who benefited from Economic stimulus program in fish farming, followed by 19-35 (35.5%) and 51+ (26.6) respectively. Forty four and forty seven percent of farmers were 19-35 and 36-50 years of age respectively, and 33 percent of the respondents were older than 50 years. This high percentage of ESP fish ponds beneficiaries with age between 36-40 indicates that most of them are in the class of economically active part of the population and therefore forms a labor force in fish farming enterprise and are potential good managers who could handle limited ESP resources appropriately. Thus the farmers engaged in ESP fish farming fell into the active-age category. Training, extension and information dissemination should be quite effective for those age categories. In all the age categories (19-35, 36-50, 51+) men were more at 26.61%, 25.81% and 20.97% respectively against women at (8.87%), (12.1%), (5.64%) in age categories 19-35, 36-50 and 51+ respectively. This implies that there was unequal distribution of ESP fish ponds between male and females and government needs to ensure parity in fish farming sector.



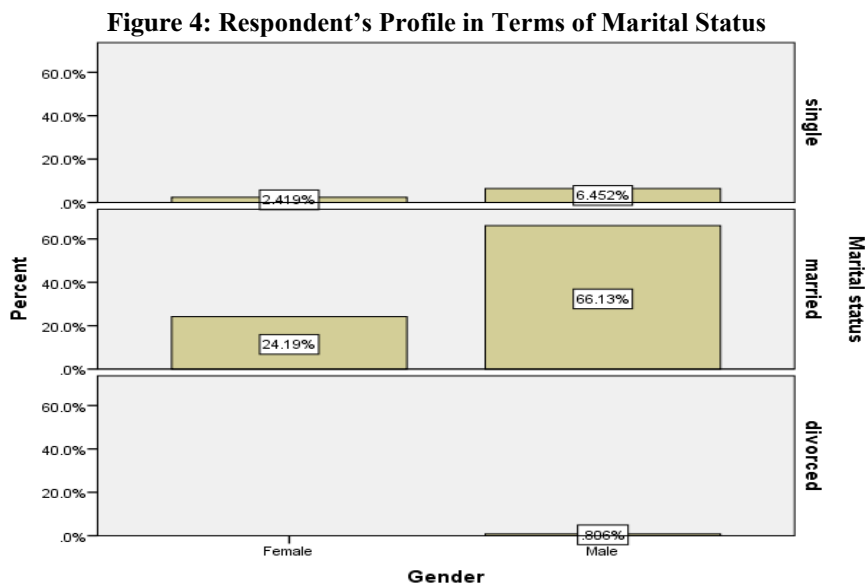
Source: Field survey data (2017)

**4.4 Gender distribution in terms of education levels**

The males dominated the gender composition with 73.4% while females constituted 26.6%. Totally 62.9% of the respondents attained secondary education, 18.5% attained primary education while 16.9% attained tertiary education or post secondary education. This implies that great number of respondents have acquired secondary education and they thus they can understand the basics of fish farming and can acquire training on fish husbandry with ease. This is due to the fact that most training is conducted or communicated using English and it sometimes done through seminars, newsletters and pamphlets. For instance majority of the respondents having attained secondary education is an observation done by Maina et al., 2014 in the former Mwea irrigation scheme (now Mwea east and Mwea west). Formal education levels have also been related with adoption of fish farming technologies (Kimenye, 2001). Farmers with formal education have shown to adapt fish farming technologies as opposed to those who are not.

In Figure 3, the males are higher in all education levels from primary Secondary, Tertiary except in University level at (12.2%),(45.97%),(13.7%) and (0.8%) respectively. Women were less at (5.6%), 16.94, 3.2% and 0.8%) in primary, secondary and tertiary and Therefore this shows that women still lagged behind in all the education levels and is an indication that women can be less productive than men because most of the training in fish husbandry were mostly done in English language and women being less educated is a sign of poor fish management and consequently low fish production compared to men.

The findings also concurs with Wagithi (2003) studies that showed that men in Kenya are more educated than women and women are hired in to work in farms and in most cases women earn less than males. In addition women’s are the ones who were left to do in fish management work as shown in (case001) in the interviews conducted and this worsened the situation whereby this resulted to gender disparity accompanied by poor fish farming.

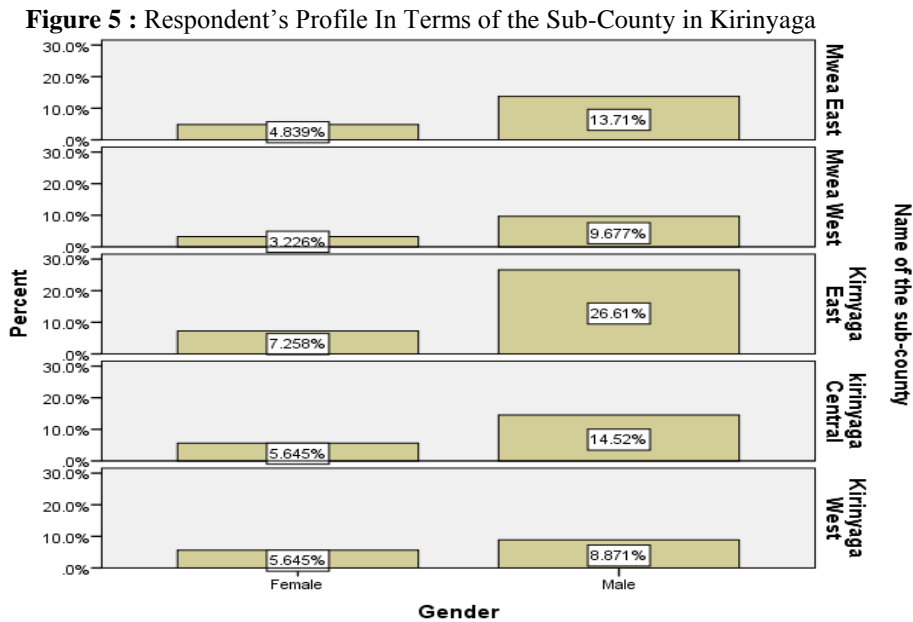


Source: Computed field survey data (2017)

**4.5 Profile of respondents in terms of marital status**

Out of 124 economic stimulus fish farmers sampled (89.9%) were married, 8.9% were single and 0.8 were divorced. This implies high number of married people as shown in table 4 has children and this constitutes a labor force that can provide cheap work to the fish farms thus reducing the cost of fish production.

In figure 4: Majority of men were married (66%), single (6.4%) and divorced (0.8%) while women were less (24%) married. (2.4%) were single and no divorcee for women, respectively. This indicates that most of men were are married compared to women, thus men have high potential to manage more efficiently with reduced labor cost because their children can provide more labour force, also in married couples both in men and women can provide efficient fish management than those who are single and divorced. For instance in the interviews conducted showed that fish pond management was regarded as household chores therefore it was left for women (case001) Hence marriage people can help each other in case one partner is away.



County

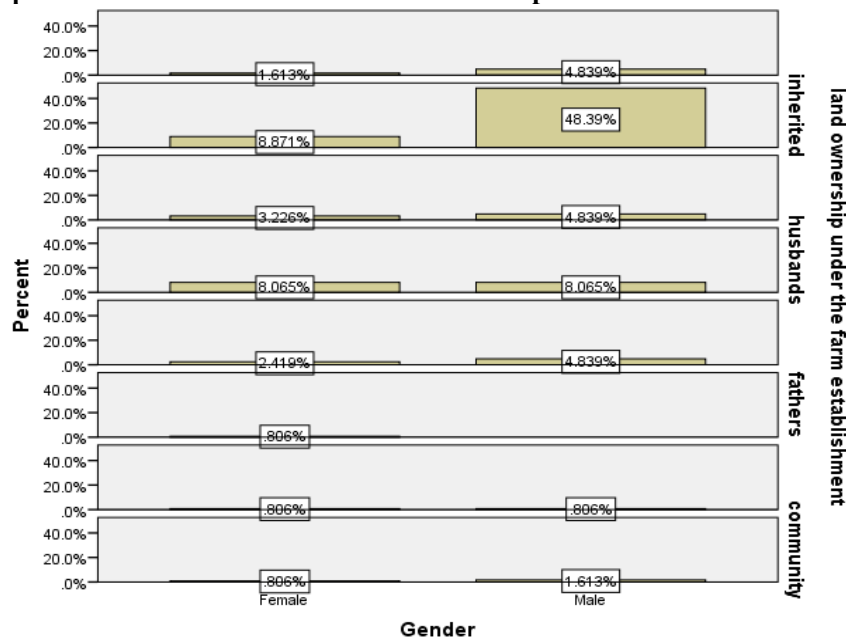
Source: Computed field survey data (2017)

#### 4.6 Distribution of respondents in terms of sub-county

In figure 5 Most of the ESP fish farmers sampled were from Kirinyaga East (33.9%), Kirinyaga Central (20.2%), Mwea East (18.5%), Kirinyaga West (14.5%) and Mwea West (12.9%) respectively. The variability of the respondents was because farmers were not distributed equally in the four sub-counties. For instance, the program was done before the devolution and emergence of new administration boundaries. This applies to Mwea East and Mwea west where it was one region before simply by the name mea district as opposed now where the area is divided into Mwea East Sub-County and mea west Sub-Counties. This affected other areas as well. In addition to this, in some Sub-Counties some farmers couldn't be found for sampling due to their various commitments.

As shown in bar graph 5 majority of the respondents were men compared to women due to the fact that men are the registered lands owners and therefore fish pond establishment were given to men as they fulfilled the condition for fish ponds distribution as opposed to women who don't own land.

**Figure 6: Respondent's Profile in Terms of Land Ownership under Their Fish Farms Establishment**



Source: Computed field survey data (2017)

**4.7 Respondents in terms of land ownership under their farm establishment**

Majority of ESP fish farmers beneficiaries (both men and women) had inherited land (57.3%), (6.5%) were leaseholders, (16.1%) was their husbands land,(8.1%) was donated land, (7.3%) was wife’s land, (2.4%) were community land and (1.6%) was freehold land respectively, where their fish ponds were established. The high percentage of land owners who inherited the land were men (48.39%) compared to women (8.87%). Land is essential element for establishment of the fish pond. The ESP farmers who inherited the land were at more liberty to practice fish farming than those use their husbands or wife’s land because the land owners might bring limitations on the size of land to use in construction of fish pond.

In Figure 6, majority of men inherited land (47.39%) compared to women at (8.8%).This implies that men are the majority land owners and thus they fulfilled the condition set for ESP ponds distribution as opposed to very low number of women who possess land. This therefore created gender disparity in fish farming and in future government should consider programs that are gender sensitive.0.8% of women used their fathers land, (8.0%) was their husbands land and 08% was community land In establishment of their fish ponds. This can face many challenges for the owner of the land might decide to do something else instead of fish farming which mighty make the fish ponds fail.

**Table 4: Factors that hinder gender parity in fish farming.**

	Questions to the respondents	Strongly disagree Frequency/%	Disagree Frequency/%	Neutral Frequency/%	Agree Frequency/%	Strongly agree Frequency/%
(a)	Do men’s dominance in the family discouraged women from benefiting with Economic Stimulus program fish projects	13 (10.5%)	38(30.6%)	5 (4.0%)	55 (44.4)	13(10.5%)
(b)	Did gendered role such as household chores impeded women participation in fish farming	18 (14.5)	58(46.8%)	9 (7.3%)	37(29.8%)	2 (1.6%)
(c)	Does women limitation to sources of finance prevent them from fish farming	12 (9.7%)	36(29.0%)	9 (7.3%)	61(49.2%)	6 (4.8%)
(c)	Do we have cultural factors that may prevent women to participate in fish farming	20(16.1%)	36(29%)	13(10.5%)	48(38.7%)	7 (5.6%)
(d)	Fish husbandry and management factors such as poor market and poor fish farming practices may prevent women from fish farming	21(16.9%)	23(18.5%)	11(8.9%)	44(35.5)	25(20.%)
(e)	Women benefited more with fish pond compared to men	58(46.8%)	58(46.8%)	4 (3.2%)	2 (1.6%)	2 (1.6%)
(f)	Only men controls the funds from the fish pond	6 (4.8%)	53(42.7%)	23(18.5%)	33(26.6%)	9 (7.3%)
(g)	Women works mostly in fish husbandry compared to men	5(4.0%)	68(54.8%)	14(11.3%)	31(25%)	6(4%)

**4.8 Men’s dominance as a cause of gender disparity in fish farming**

In Figure 4(a) majority of ESP farmers (44%) agreed that men’s dominance in their families was an issue because it affected fish farming, followed by (30.6%) who strongly agree, (10.5%) strongly disagree, as the same (13%) who also strongly agree and (4.0%) were neutral. Men have traditionally dominated and associated by with worlds fisheries (Williams’s et. al.2005; Choo et. al ; Davis & Gerrard 2000; Samwel 2007) thus supporting majority of the of the respondents (45%) of the respondents in the study agreed on men’s dominance in fish farming. However in most parts of Africa, women show active involvement in trade on fish and fish products (Madanda, 2003) for instance in Lake Victoria men controls the high value large scale profitable fisheries while women are involved mostly on low value local market fish (Lwenya & Abila, 2001). Hence these studies agree with respondents who agreed on table a (a) that women are less pronounced in fisheries as men’s dominate at 44%.This disparity in fisheries reduce women’s access to fisheries resources and also gives limitation to bargaining power during price fluctuations and even they experience limited fish landings (Franklin et al,2013).

**4.8.2 How women household gender roles hinder their participation in fish farming**

In figure 4 (b), majority of the respondent (46.8%) who were sampled in the study disagreed that women household chores could not restrict them in participating in fish farming; 14.5% strongly disagreed; (7.3%) were neutral; (37%) agreed and (2%) strongly agreed. This study showed that respondents had varied opinions on the issue.

The finding of this study confirms that 46.8% of the respondent disagreed that household chores did not hinder women in fish farming. Thus this contradict the observations of Kiumbuku, Mutinda & Bernard (2013) in their study that showed that culturally women carry out household chores and are supposed to stay at home. This limits them from participating in outdoor activities like gatherings and meetings. Moreover this becomes an impediment for them to participate in fish farming and other information disseminated in the gatherings. Consequently women household chores were not a hindrance to them to participate in fish farming.

#### **4.8.3 How women limited access to funds hinder them in fish farming**

In figure 4 © Economic Stimulus Program fish farmers showed that lack of funds by women was an hindrance for women to participate in fish farming, where (49.2%) of the respondents agreed that lack of funds limited to engage in fish farming, (29%) disagreed, 9.7 strongly agreed, (7.3%) were neutral while (4.8%) strongly agreed. Large percentage of the respondents in this study agreed that women have limited access to finance. This was also observed in a study that showed women face lack of funds and this limits them from participating in fish farming. Lack of funds by women was because women don't possess ownership documents such as title deed that can act as security for loan facilities (Kiumbuku, Mutinda & Bernard, 2013) therefore this disadvantages women and acts as a hindrance for them to engage in fish farming. In the interview conducted showed that *women are not financially stable because men controls all the resources* (case002).

#### **4.8.4 How fish husbandry and management factors such as poor market and poor fish farming practices may prevent women from fish farming.**

In figure 4 (d) majority of the respondent (35.5%) agreed that poor market and poor husbandry practices can hinder in fish farming, (20.2%) strongly agree the same, (18.5%) disagree, (16.9%) strongly disagree and 18.5% were neutral. This therefore shows that gender disparity can be influenced by other factors other than gender disparity but related. Studies conducted by Shitote, Wakhungu and china (2012) also shows that fish farmers encounter the problems in fish pond management that results comes from: high cost of feeds, drying up of ponds during drought, shortage of fingerlings, heavy floods, fish ponds siltation, pond management and fish pond insecurity. Even though the challenges shown above cuts across all the genders women are more vulnerable because of limitations they have in accessing the funds e.g. loans facilities and land ownership as shown in this document.

#### **4.8.5 How fish ponds were distributed between women and men**

In figure 4 ( e) majority of ESP farmers sampled (46.8%) strongly disagreed that women were allocated more fish ponds than men, (46.8%) as well disagreed, (3.2%) were neutral, (1.6%) agreed and (1.6%) as well strongly agreed as shown in figure 2 ©. This therefore indicates clearly that gender disparity was not observed in the distribution of fish ponds where more men benefited compared to women as aforementioned in this paper.

#### **4.8.6. Only men controls the funds from the fish ponds**

In figure 4 (f) men do not only control the funds from ESP fish ponds as disagreed by (42.7%) of the respondents, (4.8%) strongly disagreed, (18.5%) were neutral, (26.6%) agreed and (7.3%) strongly agreed. This showed that not only men have the authority to control the funds from the fish farming also women can have the authority to control the funds as well as shown in figure 2(f).. This was also supported by interviews where *"Most men give management of fish ponds to women up to harvesting and selling because men were dealing with cash crops such as tea"* (case 001). This is therefore an evidence that not only men controlled the funds in ESP fish farming, while women as well do control in the study area. This implies that even though men dominate in access and control of resources as aforementioned, women can also control the funds from fish farming which is a motivation to them to participate in fish farming and this consequently improves fish farming.

#### **4.8.7 More women works mostly in fish husbandry compared to men**

In figure 4(g) most of the respondents who were sampled disagreed that women works more than men in fish husbandry at (54.8%), (5%) strongly disagreed, (11.3%) were neutral, (25%) agreed while (4%) strongly disagreed. This implies that fish husbandry work is done by men and this creates a drawback because if men are not around women may not have the experience to do the fish husbandry management as men do. Also this denies women to learn and experience the fish farming techniques thus leaving women without the fish farming skills. This may deny women source of income in fish farming. This is supported by interviews in the study as shown in figure in table 4 (f) above.

**Table 5: Shows causes of gender disparity and roles of women in fish farming**

	Questions to the respondents	Responses in terms of frequency and percentage				
		Strongly disagree	disagree	neutral	agree	Disagree
<b>a</b>	Men are the most frequently trained in fish farming compared to men	13 (10.5%)	48 (38.7%)	5 (4.0%)	48 (38.7%)	10 (8.1%)
<b>b</b>	Fish production is affected by low number of women in fish farming	58 (46.8%)	28 (22.6%)	6 (4.8%)	25 (20.2%)	7 (5.6%)
<b>c</b>	Gender disparity in fish farming contributes to low standard of living to women	12 (9.7%)	41 (33.1%)	12 (9.7%)	49 (39.5%)	10 (8.1%)
<b>d</b>	Gender disparity in fish farming has no effects in fish production	8 (6.5%)	66 (52.4%)	14 (11.3%)	35 (28.2%)	2 (1.6%)

*Computed own survey data*

#### **4.9 Men were the most frequently trained in fish farming compared to women.**

In table 5 (a) majority of the Respondents disagreed and agreed at (38.7%) that men were most frequently trained and (38.7%) disagreed that women were frequently not trained, (10.5%) strongly disagreed, and (4.0%) were neutral while (8.1%) as shown in table 7 (a). This shows that fish farming training was neutral for both men and women who benefited from ESP-FFPEP funds. This shows that fish farming extension played a key role in ensuring gender equality in delivering their fish farming training extension services. Hence conclusion is that this promotes promotion of knowledge and skills in all dimensions that definitely increases fish production. The findings are in concurs with interviews conducted that showed *extension services were given equally between men and women though "Most men were trained in fish farming skills through seminars but they could not allow their women attend the training"* (case002). This is an indication that men were the majority of ESP fish ponds beneficiaries and they were the ones who were trained mostly as but training extension services were given equally. This therefore implies that the government extension officers disseminated fish farming training with gender parity that definitely gives equal opportunity for both men and women to be involved in fish farming.

##### **4.9.1 Fish production and low number of women in fish farming**

In figure 5 (b) majority of ESP fish ponds beneficiaries (46.8%) strongly disagreed that fish farming was affected by low number of women in fish farming, (22.6%) disagreed, (4.8%) were neutral, (20.2%) agreed while (5.6%) strongly agreed. This clearly implies that fish farming was not affected in terms of kilograms by low number of women who were beneficiaries of the ESP. This contradicts the interviews conducted that showed that most of the work in fish husbandry was left for women as men goes for other work. This leaves women with the responsibility of taking care of the fish ponds as shown by interviews (case001). This can have effects in production because fish ponds which are owned by men are dependent on them. This is because they are the ones who go for training while their wives are not. The fish ponds were left at the hands of women who had no training or less training the effects can felt in fish production.

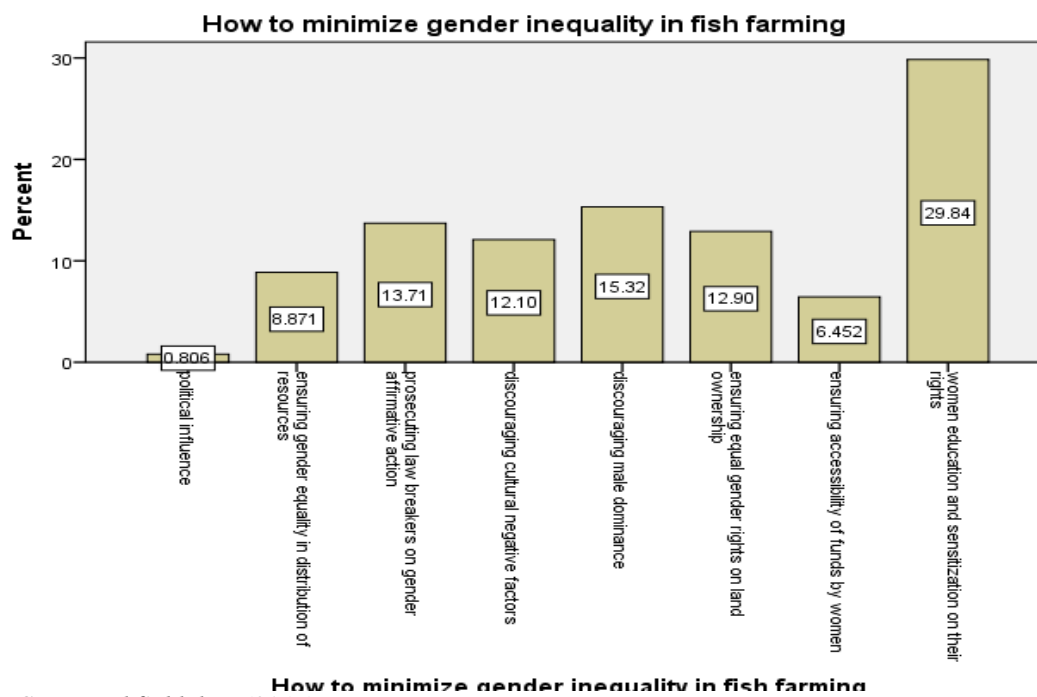
##### **4.9.2 Gender disparities in fish farming contributes to low standard of living to women**

In figure 5 (c) of this study (39.5%) of the respondents agreed that gender disparity leads to low standard of living to women, (33.1%) disagreed, (9.7%) were neutral while (8.1%) strongly agreed as shown in figure Table 8(c). These results indicate without having gender parity in fish farming denies women source of living and this contributes to low standard of living to women. Fish farming is accompanied by income through the sale of fish and as a subsistence food, so if women are sidelined from the same, then they lose those opportunities.

##### **4.9.3 Gender disparity in fish farming has no effects in fish production.**

In figure 5 (d) responses from the ESP fish beneficiaries sampled disagreed at (52.4%) that gender disparity in fish farming has no effects in fish production, (6.5%) strongly disagreed, (11.3%) were neutral, (28.2%) disagreed and (1.6%) strongly disagreed. This implies that without gender parity fish production can be affected. This is because both men and women are important in playing different roles in fish farming and this enhances fish production. Studies conducted by FAO (2006); William et al. (2005) shows that women play the role of mending nets, preparing food for fishers and collecting bait but men are involved in control the profitable large scale management of high-value fish (Lwenya and Abila 2001) these roles are different and cannot be accomplished with exclusion of either gender. In support of this interviews showed that in *"Management of fish farms was left to women e.g. feeding and woman feels that they don't own the fish ponds so this leads to low production"* (case002). Women are too busy doing other domestic work such as feeding the chickens and cows, fish is not attended because don't give a audible warn that can make them to be remembered like other animals. In conclusion therefore gender disparity can affect fish production negatively.

**Figure 7: How to minimize gender disparity in fish farming.**



Source: Computed field data (2017)

**4.10: How to minimize gender disparity in fish farming.**

Respondents give responses on the ways of mitigating gender inequality as shown in bar graph above, starting with the factor with the highest percent of response to the one with the lowest respondents percent as follows:(1) ensuring equal gender rights on land ownership (2) prosecuting violators of affirmative action (3) conducting fish farming trainings (4) ensuring access to funds by women (5) discouraging cultural factors (6) ensuring gender parity in equal distribution of resources (7) ensuring women education on their rights and political interference especially by lawmakers through making of policies..

Gender disparity in fish farming can be minimized by applying the above measures mentioned in figure 3 results.FAO (2013) further observed that reducing gender inequality in fish industry improve productivity, incomes and production, reduces losses that results from the post harvest acts as nutrition food security for household and women empowerment promotes management of natural resources. Also expounded more on the inclusion of gender equality in newly established fish policies and laws, inclusion of women in international and regional in fisheries organizations and supported women to access land, resources used for production as shown in Figure 7 above.

**Table 6. Shows how intervening variables or government intervention influenced gender disparity in fish farming**

	Questions	Yes Frequency/Percent	No Frequency/Percent
a	Is the one economic stimulus program fish pond was able to improve beneficiaries economic status?	59 (47.6%)	65 (52.4%)
b	b-Is one economic stimulus program fish pond operational?	44 (35.5%)	80 (64.5%)
c	c- If the one fish pond Economic Stimulus Program beneficiary has additional fish pond?	9 (7.3%)	115 (92.7%)
d	d-Did government adhere to constitutional gender rule (affirmative action) Economic stimulus Program in distribution of fish ponds?	2 (1.6%)	122 (98.4%)
e	e- Do we have cultural factors that hinder gender equality in fish farming?	48 (38.7%)	76 (61.3%)

Source: Computed field data (2017)

**4.11 How one ESP pond improved beneficiaries economic status**

As shown in table 6 (a) majority of the respondents (52.4%) viewed that that one economic stimulus fish pond was not enough to improve their economic status while (47.6%) viewed that one economic stimulus fish was able to improve their economic status. Majority of the respondent (92.7%) indicated that since they

were supported with the first fish pond they did not add another fish pond due to other reasons apart from gender issues while (1.6%) showed they had additional fish pond. This shows that though gender equality was not observed in ESP fish farmers, many of them could not improve their economic status therefore the program was not successful to greater part to many of the ESP fish farmers. This is supported in the interviews where *Men who benefited were not committed and this led to low fish production in terms overall weight of fish, some men never give enough importance to fish (case003)*. This shows that men who benefited from the fish ponds did not take up the project management in a serious commitment and this led to poor performance of the project.

Also interviews showed that ESP fish farmers beneficiaries who took as their own benefited but those who took as government project didn't because they waited for the government to do everything for them (case005). This shows that ESP fish farmers took the project as a government property so they did little to add what government supported them with. This consequently led to poor performance of the project and hence the program didn't improve economic status of both men and women.

Table 6 ©: Shows that majority of ESP fish farmers beneficiaries sampled were not able to improve their economic status through the program fish ponds this is due to that fact that majority of the respondents claimed that the fish ponds faced many problems such water scarcity due to long droughts, leakage of fish pond liner, predation and the high cost of fish feeds ponds (during the interview). This made some of the fish farmers to abandon the fish ponds. This is supported by Shitote, Wakhungu and China *et. al.* (2012) research that demonstrated that several challenges face fish farmers such as high cost, poor quality seeds, water scarcity during the drought period, inadequate fingerlings flooding, ponds siltation that leads drying up of fish ponds, lack of proper maintenance and insecurity that may lead to low fish yield. This therefore supports the theory of intersectionality whereby it's not only gender disparity in fish farming that may contribute the poor fish farming or low yields.

**4.11.1. Government adherences on gender rule**

Figure 6 (d) During the distribution of ESP ponds government did not adhere to affirmative gender but considered other factors such land ownership, site suitability, income levels and political interference as in figure four and as greatly viewed by respondents in figure 4 above at 99.4% that government did not adhere to constitutional gender rule. This indicates that

**4.11.2. How cultural factors hinder gender equality in fish farming?**

In figure 6 (e) majorities of the respondents (61.3%) felt that there were no cultural factors that hinder gender equality in fish farming while 38.7% said that there is cultural factors that hinder gender equality in fish farming. This was different from the interviews conducted that showed "Cultural factors make women think that that fish belongs to men and fish are for luos not kikuyus" (case005). Luo is a community in Kenya that inhabits near L.victoria and fisheries is their main economic activity, while kikuyus is community in central kenya and traditionally they were non-fish eaters and this made the respondents feel that fish is associated with luos rather than themselves, also women believe that fish belongs to men.

The Cultural factors women thinks that that fish belongs to men, fish are for luos not kikuyus is stereotype may act as an hindrance to women in fish farming. Further interviews stressed that "*some women don't like fish e.g. my mother don't like the smell of the fish*" (case002). This also is an obstacle for women in participating in fish farming and a contributor of gender disparity in Kirinyaga County. Various authors have shown different views on whether there were cultural factors that hinder gender parity in fish farming. In table 6 above high percentage viewed that no cultural factors that play part in fish farming, more similar results were observed by Mwamuye, Cherutich & Nyamu (2012) where it was found that cultural values can promote or lead to poor aquaculture programs for instance where traditional fish eating community can alter the participation of project market compared to non tradition fish eating community. In contrary to this, Njagi, njati & Guyo (2013) observed that culture does not determine the fish demand due to women sensitization and empowerment on fish importance and nutrients composition. Therefore this may contribute to positive fish farming performance by women and women. This finally support table 6 above on the respondents who felt that cultural factors do not hinder gender disparity.

**Table 7 : Shows the effects of low participation of women in ESP fish farming.**

Cross tabulation								
		Low number of women in ESP fish farming denies them source of income and livelihoods					Total	
		strongly disagree	disagree	neutral	agree	strongly agree		
Gender	female	Count	6	8	2	14	3	33
		% within Gender	18.2%	24.2%	6.1%	42.4%	9.1%	100.0%
	male	Count	12	20	7	45	7	91



	% within Gender	13.2%	22.0%	7.7%	49.5%	7.7%	100.0%
	Count	18	28	9	59	10	124
Total	% within Gender	14.5%	22.6%	7.3%	47.6%	8.1%	100.0%

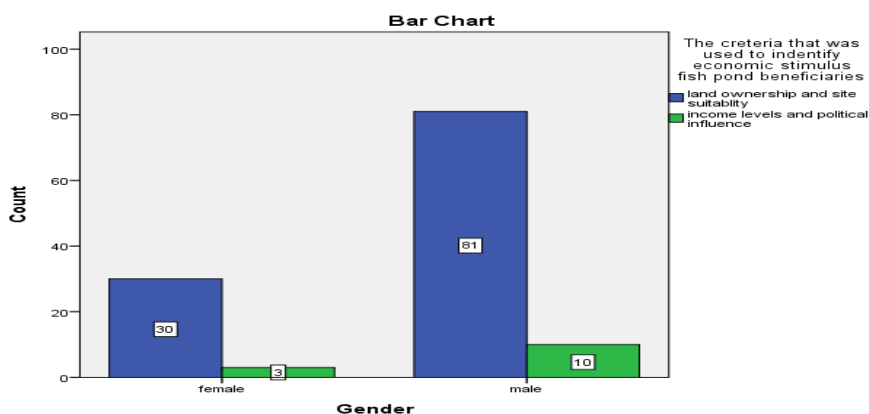
Source: Computed field data (2017).

**4.12. Effects of low women participation in ESP fish ponds**

In figure 7 respondents sampled viewed that women were impacted negatively especially those who did not beneficiaries of ESP fish ponds,65% of the respondents showed that women did not got benefits that accompanied ESP as men did. 25% said that women couldn't control the funds earned from the fish ponds and 1% claimed that women did not gain skills in fish farming. Gender disparity in ESP denied women opportunities such as training on aquaculture where those who benefited most were men and they were given training, skills, and knowledge on fish farming technique and approaches which only small percentage of women were received this opportunity while the rest didn't got this opportunity as shown in figure 7.This might impact negatively in fish production because some men who benefited from the program had less time manage their fish ponds and left them to women to manage, but women were not trained and with little fish husbandry skills which might have lead to poor fish pond management as shown by interviews (case002) and consequently this leads to poor fish yields.

Weeraturunge et al. (2010) further observed gender disparity in fisheries such a access to fisheries resource denies women their livelihood including entire household. FAO (2008) in 2013 also observed that relative low participation of women in fisheries chain value results to gender disparity in income that leads to women poverty as in west African fish sector thus supporting observations in figure 7 above.

Figure 8: Criteria that was considered in selection of fish farmers beneficiaries in ESP program



Source: Computed field data (2017)

**4.13 Criteria that was considered in selection of fish farmers beneficiaries in ESP program**

As shown in the figure 8:Over 80% and less than 20% of the respondents showed that land ownership, and suitability, income levels and political influence respectively were the main criterion factors that were used to identify ESP fish farmers beneficiaries. Therefore this shows that gender equality factor was not a condition in the enrollment and implementation of the program and this might have contributed to gender inequality in ESP fish farming.

Respondents sampled demonstrated that land ownership, site suitability, income levels and political influence were the factors considered in identifying the ESP fish ponds beneficiaries where over 80% of the respondents indicated that land ownership and site suitability were the main factors that government of Kenya considered in distributing ESP fish ponds not considering gender parity.This therefore shows that gender equality was not a factor that was in consideration during the distribution of ESP ponds because land being one of the major factors that was set as a condition to benefit from ESP funds could lock women out because as land is manly owned by men. This study is supported by a study conducted by Njai, Njagi,Njati & Guyo (2013) on the “ Factors Affecting Profitability of Fish Farming Under Economic Stimulus Programme in Tigania East District, Meru County, Kenya” that showed that males were the major respondents that were at 72% and women were at 27% of the population sample that indicated that out of the total fish farmer sampled man were majority and controls land ownership and income levels from the family. This therefore shows that the criteria that were used to identify fish farmers was not gender sensitive and this lead to gender disparity in fish farming.

High number of females (30) and males (81) agreed that land ownership and site suitability were the criteria that was used to identify fish farmers while low number of females and males showed that income levels and political influence were also factors that were taken into consideration in identifying fish farmers, hence gender parity was not a consideration in ESP fish farmers.

**Figure 9: Figure shows the level of gender disparity in fish farming in terms of women, men and youth**

*Source: Computed field data (2017).*

**4.14. Gender disparity in ESP distribution to beneficiaries.**

Figure 9: Indicates the percentage of fish farmers known by ESP fish farmers around their fish farms, comprises of youth (1.6%), women (11.3%) and men (87.1%) thus men are higher in number hence this is an indication that men dominates the farmers who were beneficiaries of ESP funds.

Respondents who were samples showed that ESP farmers whom they knew in their area were dominated by men at high percentage as shown in figure 9. This therefore is an exhibition of gender disparity in fish farming particularly to the ESP fish ponds beneficiaries where women are low compared to men. This gender inequality therefore hinders fish farming productivity since who have high potential are not fully involved in fish farming Kiumbuku, Mutinda & Bernard (2013). The study therefore supports the findings of this study. The level of gender disparity in this study therefore is very in the way fish farmers benefited with ESP funds or ESP resource distribution.

**Table 8: Shows the Roles That Women Play In ESP Fish Ponds.**

Questions to respondents	Very low extent	Low extent	Not at all	High extent	Very high extent
Many women were involved in the initial fish pond construction compared to men	78 (62.9%)	33 (26.6%)	6 (4.8%)	5 (4.0%)	2 (1.6%)
Fish husbandry is mostly done by women	44 (35.5%)	53 (42.7%)	6 (4.8%)	19 (15.3%)	2 (1.6%)
Women Keep watch of fish predators most of the time compared to men	47 (37.9%)	39 (31.5%)	10 (8.1%)	25 (20.2%)	3 (2.4%)
Women controls income from the family ESP fish pond	50 (40.3%)	44 (35.5%)	13 (10.5%)	14 (11.3%)	3 (2.4%)
Women work more than men in Economic Stimulus Program fish ponds	69(55.6%)	30(24.2%)	9(7.3%)	12(9.7%)	4(3.2%)

*Source: Computed data field (2017)*

**4.15 Roles of women in ESP fish ponds management.**

The sampled Economic stimulus program (ESP) fish farmer’s respondents showed that women were involved at very low extent (62.9%) in the initial pond construction compared to men,(47%) of the respondents indicated very low extent participation in general fish husbandry by women while 37.9% showed that women are involved in fish predator management at very low extent. Women controls the income received from the fish ponds at very low extent at (40.3%) and generally women work at very low extent (55.6%) in economic stimulus program. The very low extent of women role in ESP fish ponds compared to men shows that men are the dominant in ESP fish pond husbandry. This is may be due to the fact that women don’t possess fish ponds as most of them were given to men and land is still owned by men where the fish ponds were established therefore there is no sense of belonging to women. This was shown by Maina et al., (2014) that women tend to have less access to land. Further studies by Maina et al., (2014) showed that fish management practices are influenced by gender where fish husbandry management such as the frequency of topping water, draining of fish ponds and pond fertilization was less in women’s managed fish ponds compared to those managed by men. A study conducted by Shitote ,Wakhungu & China (2012) showed that poor management of fish ponds at( 95%) and (88%) of fish farmers sampled in western Kenya were affected by predation which posed a big threat to fish farming, consequently that may lead to low yields. Therefore very low extent of women involvement in fish pond management and predator prevention may contribute negatively to fish farming production. Studies by Githukia et al. (2014) have shown that women mostly participate at the marginal parts of the fish value chain, such as fish processing during the post-harvesting, trading and marketing. Thus the study supports this study.

**4.16. Cross tabulation of men respondents and women benefited more with number of fish ponds**

Cross tabulation			Women benefited more with number of ESP fish ponds compared to men					Total
			strongly disagree	disagree	neutral	agree	strongly agree	
Gender	female	Count	19	13	1	0	0	33
		% within Gender	57.6%	39.4%	3.0%	0.0%	0.0%	100.0%
	male	Count	39	45	3	2	2	91
		% within Gender	42.9%	49.5%	3.3%	2.2%	2.2%	100.0%
Total		Count	58	58	4	2	2	124
		% within Gender	46.8%	46.8%	3.2%	1.6%	1.6%	100.0%

**Table 9: Cross tabulation of related variables4**

Computed field data (2017)

Majority of the respondents both males and females at (46.8%) strongly agreed and disagreed that women benefited more with ESP fish ponds compared men. Females (57.6%) strongly disagreed compared to males (42.9%) who strongly disagreed. This is an indication that both male and female acknowledged that women who benefited from ESP fish ponds were significantly less than males who benefited. Consequently this created gender disparity in fish farming thus women were denied the benefits that associated with ESP fish ponds compared to their male counterparts. Therefore in regard to this study it shows that women didn't benefit with more number of fish ponds compared to men.

**V. Summary of Findings, Conclusions and Recommendations**

**5.1 Study findings summary.**

The study was aimed at assessing gender disparity and its implication in fish farming under Economic Stimulus program in Kenya. The study was necessitated by the fact that the government injected over 2 billion and little had been done to give the status of gender representation in the project. A lot of literature was reviewed that indicated that fisheries was male dominated and thus there was a need assess gender status representation in enrolment and in the implementation of the project. Due to issue of gender disparities in various dimensions, the study focused on, the study aimed at addressing four research questions;

- a) To examine the causes of gender disparity in rural farming set up in Kirinyaga County
- b) To investigate the effects of gender disparity in fish production and women welfare in Kirinyaga county. To examine the role of gender equality in fish farming in Kirinyaga County
- c) To assess the level of gender disparity in fish farming To assess the level of gender disparity in rural farming set up in kirinyaga County
- d) To recommend mitigation measures on gender disparity in rural farming set up in Kirinyaga County

Literature in the study area showed various challenges that encounter gender parity in fish farming. Men's dominance in the families, household chores, cultural believes government distribution of resources and other factors that affects gender parity in fish farming. The main challenges highlighted are lack of government commitment to gender equality in distribution of resources.

**5.2 Causes of gender disparity in fish farming**

In the study the respondents showed the causes of gender disparity in fish farming as men's dominance (49.2%), cultural factors (35.5%). Gendered roles such as house hold chores did not contribute in gender disparity in fish farming. Fish pond husbandry was carried out by men compared to women. Men working in fish husbandry (54.8%) compared to women denied women skills in fish farming and this was also a contributor of gender disparity in fish farming.

In the study respondents showed that government did not consider gender equality in enrolment and distribution of ESP fish ponds (98.4%) while only (16%) of the respondents showed that government considered gender equality in distribution of ESP fish ponds. Therefore government was a contributor in gender disparity in fish farming by unequal distribution of ESP fish ponds among males and females.

**5.3.1. Pearson correlation between men and women (beneficiaries of FFEPP)**

This study therefore showed that there was negative correlation between women and men who benefited from Economic stimulus program fish ponds distribution, where men benefited more with fish ponds than women. Studies by William (2016) observed the same findings. His studies showed that women and poorer men in fisheries sector have insignificant influence and profile. This study showed that gender disparity emerged from the program kick off where women and men were not considered equally during the distribution of economic stimulus fish ponds funds. There was also poor flow of information to all to ensure gender equality in the program. Political interference in the distribution of the ESP fish ponds, men's dominance in the family among other factors contributed to gender disparity as well in fish farming. Turpie et al. (1999) showed that men

constitute the majority of the people in small scale capture fisheries sector although this varies with specific contexts.

A study by Weeratunge and Snyder (2009) demonstrates that women participation in fisheries varied from 4%, 47% and 73% in Mozambique, Cambodia and Nigeria respectively. In the study Majority of the respondents were men as shown in (Table 1). The reason for this is that one of the requirements to participate in the ESP was that one had to own land, and men in Kenya are the majority registered land owners (Maina et al., 2012). It was observed that men dominated over 44.4% (table7a) of households sampled in fish farming. Further studies (Njagi,Njati &Guyo,2013) shows that men dominated at 72% and women at 27% of the sampled population as an indicator that majority of ESP farmers controls the units of ownership and income from the families. The study showed that women were left with a major role in the management o fish ponds although they were not the ones who were trained in fish farming, this consequently affects the production of fish.

### **5.3. Level of gender disparity in fish farming**

Respondents showed that men were the major beneficiaries of the fish pond(87.1%) followed by women (11.3%) and youth (1.6%).This level of disparity was as a results of land ownership issues where men culturally own land and this made men to the most beneficiaries in ESP fish pond beneficiaries. This high gender disparity in fish farming is contributed by various factors as discussed in this report. The main cause of men's dominance in fish farming is due to cultural factors that give men the privileges such as land ownership and men as the heads of the families. On other hand women involvement in household chores, overburdened responsibilities as shown in this study hinder women participation in fish farming.

#### **5.3.1. Roles of women in fish farming and how their low number in fish farming affects fish production and how their low number in fish farming affects their standard of living.**

In this study respondents showed that low number of women in ESP did not affect fish production(46.8%) while this contributed to their low standard of living (39.5%) because their did not receive the benefits associated with ESP ponds as men did.

Studies have shown that women plays a major roles in fisheries but this has been neglected therefore denying them to contribute and strengthen the fisheries sector (Sumudra,1995).Therefore their critical contribution in reproduction and production in fisheries creates a need to identify in fish farming and in fisheries sector as whole. The study therefore concurs with the findings of this research on the important roles that women play in fisheries that goes un recognized. As shown in this study women were left to manage ESP fish ponds while men were involved in cash crops and other commercial generating activities. The outcome of this study was supported by a study that showed that "In most cases, men are the owners of the ponds while women and children manage the ponds" (medard et al., 2000) thus a need to streamline gender issues in fisheries.

#### **5.4: Recommendation to mitigate genders disparity in fish farming.**

In the study respondents showed that gender disparity could be minimized by;

Women education and sensitization of their rights(29.8%),discouragement of male dominance(15.32%) prosecuting gender affirmative action breakers(13.7%) ensuring equal distribution of resources(12.9%) discouraging negative cultural factors() and political intervention (0.8%).

In this study women control of resources such as land was limited due to culture practices that allow men to own land. To solve these problem respondents recommended the aforementioned mitigations measures against gender disparity in fish farming. The study by Chen.(1997) showed that (i) women control of material resources and income(ii) change in knowledge level, awareness and holistic environment (iii)change in individual views on gender and value. Therefore the study supported the views of respondents sampled for this study.

### **5.5. Conclusions**

Despite the government enrollment and implementation of ESP fish ponds in all the sub-counties of kirinyaga County, gender disparity in ESP-FFEP appears where number of women who were allocated with fish ponds were very low compared to men, this was caused by cultural factors, household chores, lack of land ownership by women limited access to funds by women and men's patriarchy among other factors.

This led to poor performance of the project as shown by in this study.This is because men were involved in commercial fish ponds and cash crops while women are left to manage small scale fish ponds although they were not initially trained in fish husbandry. This shows that women were associated with low paying domestic jobs as opposed to men. Also this might have led to many non operational FFEPP fish ponds.

Most men had no time for fish pond management although they received training on the same, so women were left to manage fish ponds although it is the men who were trained.

The criteria that were used to select fish farmers of Economic stimulus program beneficiary's disadvantaged women as only 26.6% of them against 73.3% of men were beneficiaries of the project as the owners of the project.

Progress has been made by law makers in Kenya in constitution of gender policies and laws but despite of this gender sensitive programmes and policies implementation remains weak. This is because this shows that there is disengage between practice and policies as exhibited in ESP enrollment and implementation, where gender equality was not considered.

The flow of information regarding government funded and initiated programs is not gender responsiveness and therefore there is a need for efficient information dissemination to ensure equal gender access that can avoid biased benefits of resources.

The issue of intersectionality - It's not only men and women concern or issues, other gender disparity influencing factors such as age, religion, class, race, and ethnicity are inevitable factors and should be fully incorporated when assessing and carrying out fish farming programs.

## **5.6. Recommendations**

Based on the findings and conclusions of this survey, the following are recommended;

1. The study showed that the distribution of the Economic Stimulus Program fish ponds, gender parity was not observed, gender parity should be put in place to ensure that in case of such project gender equality is adhered in sharing national resources.
2. The research has found out that training most of men fish farmers attended training in fish farming but they did not apply the skills appropriately because they were committed somewhere elsewhere, so the responsibilities of fish pond management were left to the women were not trained. To avoid this both men and women should be trained so that there can be effective management of fish ponds in case one partner is not around in management of family fish ponds.
3. Government of Kenya should ensure the following takes place;
  - a) Support programs and gender sensitive policies and programs that will enhance economic, social and political women's empowerment in a way that ensure active participation in fish farming based on national accepted principles of women empowerment and gender equality.
  - b) Empower Women and ensure gender mainstreaming in all government funded fish projects to ensure equality in fish farming
  - c) Provide more training on fish farming approaches and techniques, women rights, land ownership rights, and gender equality awareness are essential to avoid men dominance in fish farming and gender disparity in fish farming in Kirinyaga County.
  - d) Ensure public participation and consultations before the kick of the government funded project to avoid hindrances such as gendered cultural believes and other obstacles. This therefore will encourage the culture of bottom up participatory approach that will encourage community project ownership and full active participation.
  - e) Ensure (law) affirmative action on two third gender rule is followed to the later to enable women to be endowed with opportunities that will help to have change that is positive in fish farming for the next generation.
  - f) Promotion of equal gender access to material resources such as land and income as well as other opportunities reduces the barriers they hinders them to participate in fish farming and other activities.

### **5.6.1. Opportunities for Further research**

Based on this study finding, the following issues need further investigations. These include:

1. The detailed study on gender based fish production of farmers under status of Economic Stimulus to determine if there are production disparities in women and men owned fish ponds in order to fill the gender gap in fish farming in Kirinyaga County.
2. The social impact on the community of gender parity as a result of fish farming in the area that is culturally accepted to compare and contrast with non fish eating communities to assess the need level of community awareness and sensitization on gendered fish farming.

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### References

- [1]. Abdur Rouf, K. (2016). Bank services to Women in Development (WID), Gender and Development (GAD), Women in Business (WIB), Women and Development (WAD) and Women in Environment (WED) approach in Bangladesh. *International Journal of Research Studies in Management* , 5 number 2, 97-106.
- [2]. African Journal of Agricultural Research. Social capital and knowledge for the transition towards sustainable use of aquatic ecosystems. 7 (8), pp. 1324-1330. (ISSN 1991-637X), PP 32.
- [3]. Bowen, G. A. (2009). Document Analysis as a Qualitative Research Method. *Qualitative Research Journal* , 9, no. 2, (DOI 10.3316/QRJ0902027.), 27-40.
- [4]. Brugere, C. (2014). Mainstreaming gender in transboundary natural resources projects – the experience of the Bay of Bengal Large Marine Ecosystem (BOBLME) project. *Environmental Development* (11), 84–97.
- [5]. Brummett, R. E., & R.P, N. (1995). *Aquaculture for African small holders*. ICLARM Technical report No.46.
- [6]. Burns, R. P. (2008). *Business Research Methods and Statistics Using SPSS*. SAGE Publications .
- [7]. Charo-Karisa H, G. M. (2010). *Overview of the Fish Farming Enterprise Productivity Program*. End of Year Report Fish Farming Enterprise Productivity Program Phase I, Aquaculture Development Working Group Ministry of Fisheries Development, Kenya.
- [8]. Chen, M. (1997). A guide for assessing the impact of microenterprise services at the individual level. . *AIMS Project Report, USAID/G/EG/MD. Washington,DC, Management Systems International* .
- [9]. Choo, P. B. (2008). Gender and fisheries. *Guest editorial* (Development 51), 176–179.
- [10]. Coax, J. (2013). *Assessment report on small scale fisheries in Africa*. <http://masifundise.org.za/wpcontents/uploads/203/01/AU-Report Africa.pdf>. (Last accessed December, 2016).
- [11]. Cobin, J., & Strauss, A. (2008). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (3rd ed.). Thousand Oaks, CA: Sage.
- [12]. Coglari, G. (2008). *Gender & Development*. 16, No. 2.
- [13]. Constitution of Kenya. (2010). *Revised Edition 2010 Published by the National Council for Law Reporting with the Authority of the Attorney General*.
- [14]. Cornelle, Q. (2016). A Gender Analysis of the Adopted Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication: Constraints and Opportunities. *Gender in Aquaculture and Fisheries: The Long Journey to Equality Asian Fisheries Science Special* (Issue 29S : 149-160 Asian Fisheries Society ISSN 0116-6514 .Technical Paper.).
- [15]. County Government Kenya (C.G.K). (2013-2017). *Kirinyaga County First Integrated Development Plan*. Kirinyaga: <https://cog.go.ke/images/stories/CIDPs/Kirinyaga.pdf>. Accessed on January 2017.
- [16]. County Government of Kenya (C.G.K). (2016-2017). *Kirinyaga County annual Development plan*. Kiringaga: <http://kirinyaga.go.ke/Downloads/Annual%20Development%20Plan%202016-2017.pdf>.
- [17]. Cowton, C. (1998). The use of secondary data in business ethics research. *Journal of Business* .
- [18]. Crenshaw, K. (1989). Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics. *University of Chicago Legal Forum* (ISSN 138–67).
- [19]. Davis, D., & Gerrard, S. (2000). Introduction: Gender and resource crisis in the North Atlantic fisheries. *Women's Studies International Forum* 23 , 279–286.
- [20]. De Graaf, G., & Garibald, L. (2014). The value of African fisheries. *FAO fisheries and aquaculture* (circular No. 1093.), 82.
- [21]. Denscombe, M. (2007). *The Good Research Guide* (3rd edn). Buckingham: Open University Press.
- [22]. DeVaus, D. (2002). *Surveys in Social Research* (5th edn). Routledge.
- [23]. Dillman, D. (2007). *Mail and Internet Surveys: The Tailored Design Method* (2nd edn, 2007 update).
- [24]. Dzah, E. D. (2011). *Gender Dynamics of Climate Change in Ghana: An Intersectional Perspective*. Dissertation. *International Institute of Social Studies*.
- [25]. Easterby-Smith, M., Thorpe, R., Jackson, P., & Lowe, A. (2008). *Management Research* (3rd edn). Sage .
- [26]. Edwards, P. (2000). Aquaculture, Poverty Impacts and Livelihoods. *Natural Resource Perspectives*, (Number 56, ODI).
- [27]. Edwards, P. (2000). Aquaculture, Poverty Impacts and Livelihoods., London. *Natural Resource Perspectives, Number 56, ODI* .
- [28]. Edwards, P. R. (2002). 'Increasing response rates to postal questionnaires: systematic review'. *British Medical Journal*, (No. 324, May, pp. 1183–91.).
- [29]. Elson, D. (1995). "Gender Awareness in Modeling Structural Adjustment." *World Development Ethics* , 17 (No. 4, pp. 423–34.).
- [30]. Elson, D. G. (2007). Mainstream, heterodox and feminist trade theory. In: van Staveren, I., Elson, D., Grown, C. and Cagatay, N., eds. 2007.
- [31]. Fakoya, K. A., Go Jimoh, A., & Akintol, S. (2001). Fakoya K. A.; Owodeinde, F. Go Jimoh, A. and Akintolp, S. L. (2001) an overview of the challenges and prospects in developing an aquaculture industry in Lagos state, Nigeria. Department of Fisheries, Faculty of science, Lagos state University, P.M.B. 1087.
- [32]. FAO. (2008). Achieving poverty reduction through responsible fisheries. *Lessons from West and Central Africa* . , 190.

- [33]. FAO. (2006-2016). CWP Handbook of Fishery Statistical Standards. *Section J: Aquaculture. CWP Data Collection*. (Updated 10 January 2002. <http://www.fao.org/fishery/cwp/handbook/j/en.>)
- [34]. FAO EAF-Nansen Project. (2015). Gender audit and recommendations for mainstreaming gender in EAF-Nansen Project. *FAO EAF-Nansen Project Report No. 24*, 28.
- [35]. FAO. (2006). Food and Agricultural Organization. State of world aquaculture. *Fisheries Technical Paper*.
- [36]. FAO. (2006). Gender policies for responsible fisheries. *FAO, Rome, Italy*, 12.
- [37]. FAO. (2009). Measuring the contribution of small scale aquaculture: an assessment. *FAO Fisheries and Aquaculture Technical Paper, 534*, 180.
- [38]. FAO. (2011). The state of food and agriculture: Women in agriculture-closing the gender gap for development. *Rome, Italy: FAO*.
- [39]. (<http://www.fao.org/docrep/013/i205e/i205e.pdf>).
- [40]. FAO. (2014d). The state of World fisheries and aquaculture 2014. *Food and Agriculture Organization of the United Nations, Rome*, 243.
- [41]. FAO. (2016). The State of World Fisheries and Aquaculture 2016. *Contributing to food security and nutrition for all*, 200.
- [42]. FAO. (2012). The State of World Fisheries and Aquaculture. <http://www.fao.org/docrep/016/i2727e/i2727e.pdf>, 230.
- [43]. FAO. (2011). World aquaculture 2010. *FAO Fisheries and Aquaculture Technical Paper*.
- [44]. Ghauri, P., & Grønhaug, K. (2005). *Research Methods in Business Studies: A Practical Guide* (3rd edn). Harlow: Financial Times Prentice Hall.
- [45]. Githukia, C. M., Obiero, K. O., Manyala, J. O., Ngugi, C. C., & Quagrainie, K. K. (2014). Consumer Perceptions and Preferences of Wild and Farmed Nile Tilapia (*Oreochromis niloticus* L.) and African Catfish (*Clarias gariepinus* Burche 1822) in Urban centres in Kenya. *International Journal of Advanced Research ISSN 2320-5407*, volume 2 (issue 7), 694-705.
- [46]. Gopal, N., Williams, M. J., Porter, M., Kusakabe, K., & Choo, P. S. (2014). Gender in aquaculture and fisheries: Navigating change. *Asian Fisheries Science* 27S, 268 pp.
- [47]. Government of Kenya (GOK). (2009). Economic Stimulus Programme, government printers- Nairobi.
- [48]. Government of Kenya (GOK). (2008-2012). Government of Kenya- Tigania District Development Plan government printers- Nairobi.
- [49]. Government of Kenya (GOK). (2009). Kenya Population and Housing Census, Kenya National Bureau of Statistics. Nairobi.
- [50]. Green, D. (2008). *From Poverty to Power*. London: Oxfam Publication.
- [51]. Hancock, A. M. (2007). When multiplication doesn't equal quick addition: Examining intersectionality as a research paradigm. *Perspectives on Politics*, 5(1), 63-78.
- [52]. Hankivsky, O. (2014). Intersectionality 101. The Institute for Intersectionality Research & Policy. ISBN: 978-0-86491-355-5.
- [53]. Hastein, T., Hjeltnes, A., Lillehaug, J., Skare, U., Berntssen, M., & Lundebye, A. K. (n.d.). Hastein, T.B., A. Hjeltnes, J. Lillehaug, U. Skåre, M. Berntssen and A.K. Lundebye, (2006) Food safety hazards that occur during the production stage: challenges for fish farming and the fishing industry. *Rev. Sci. Technol.*, 25(2): 607-625. Food and Agric.
- [54]. HLPE. (2014). *Sustainable fisheries and aquaculture for food security and nutrition. A report by the high level panel of experts on food security and nutrition of the committee on World Food Security*. Rome 118 PP.
- [55]. Hornby, S. A. (1994). *Oxford Advanced Learner's Dictionary. 4th Indian Edition*. Calcutta: Oxford University Press; p. 1330.
- [56]. International Fund for Agricultural Development (IFAD);. (2012). *Transforming agricultural development and production in Africa: Closing gender gaps and empowering rural women in policy and practice; Results of a joint programme of the Salzburg Global Seminar*.
- [57]. J, W. M. (2016). How are Fisheries and Aquaculture Institutions Considering Gender Issues?. *Gender in Aquaculture and Fisheries: The Long Journey to Equality Asian Fisheries Science Special* (Issue 29S, 21-48 Asian Fisheries Society ISSN 0116-6514, Australia).
- [58]. J., C. (2013). *Assessment report on small scale fisheries in Africa*. [http://masifundise.org/za/zpcontents/uploads/2013/01/AU-Report\\_Africa.pdf](http://masifundise.org/za/zpcontents/uploads/2013/01/AU-Report_Africa.pdf).
- [59]. John, E. C. (1984). *Sociology: An introduction: NY: Macmillan*.
- [60]. K, U. M. (2010). *Budget speech for the fiscal year 2010/2011 Effective dates 1st July 2010 – 30th June 2011*.
- [61]. Kaimenyi, C., Kinya, E., & Chege, S. M. (2013). *An Analysis of Affirmative Action: The Two-Thirds Gender Rule in Kenya*, *International journal of business, humanities and technology Vol. 3 No. 6*.
- [62]. Kamau, W., Kimani Elishiba, E., & Wamue-Ngare, G. (2014). *Gender relations in utilisation micro finance resources among women in Kiharu Constituency, Murang'a County, Kenya*.
- [63]. Kenya bureau of statistics. (2009). Kenya Population, Census and Housing.
- [64]. Kenya. (2010). *Constitution of Kenya*. National Council for Law Reporting with the Authority of the Attorney General.
- [65]. Kimathi, A. N., Ibuathu, C. N., & Guyo, H. S. (2013). *Kimathi Antoney Njagi. (2013) Factors Affecting Profitability of Fish Farming Under Economic Stimulus Programme in Tigania East District, Meru County, Kenya, IOSR Journal of Business and Management (IOSR-JBM) e-ISSN: 2*.
- [66]. Kirinyaga County annual Development plan. (2016-2017).
- [67]. <http://kirinyaga.go.ke/Downloads/Annual%20Development%20Plan%202016-2017.pdf>.
- [68]. Kirinyaga County First Integrated Development Plan . (2013-2017). <https://cog.go.ke/images/stories/CIDPs/Kirinyaga.pdf>. Accessed on January 2017.
- [69]. Kiumbuku, S., Mutinda, J., & Bernard, J. (2013). Forms of Gender Inequalities in Fish Farming in Kwnza Division, Trans Nzoia County, Kenya. *Research on Humanities and Social Sciences*, Vol.3 (No.15, ISSN 2222-1719 (Paper) ISSN 2222-2863).
- [70]. Kothani, C. (2004). Research Methodology: method and technique 2 nd ed. In C. Kothani, *Research Methodology: method and technique 2 nd ed*, p. 37.
- [71]. Kothari. (2004). *Research Methodology Methods and Techniques* (second revised ed.). New Delhi: New age international publications.
- [72]. Kumar, R. (2011). *Research methodology A step-by-step Guide for beginners*. 3rd edition. Sage publication Ltd .
- [73]. Lentisco, A., & Alonso, E. (2012). On Gender Mainstreaming Strategies and Tools in Fisheries Development Projects: RFLP Gender Strategy and Lessons from the Asia-Pacific Region. *Gender in Aquaculture and Fisheries. Moving the Agenda Forward Asian Fisheries Science Special Issue Vol.25S:105-117 Asian Fisheries Society ISSN 0116-6514*.
- [74]. Lungu, A., & S.M.C. H. (2008). *Assessing migration and mobility patterns, access to health services and vulnerabilities of female fish traders in the Kafue Flats, Zambia*. The WorldFish Center project report 1970.
- [75]. Lwenya, C. A., & Abila, R. O. (2001). The role of women in artisanal fish processing and trading on Lake Victoria (Kenya). *African Journal of Tropical Hydrobiology and Fisheries* 10: 1-2.

- [76]. Maal, B. (2013). Rich aquaculture – poor fisheries communities – growth, equity and gender in rural communities. *the Global symposium on gender in aquaculture and fisheries, 1-3 May 2013, Yeosu, Korea.*
- [77]. Madanda, A. (2003). Commercialization and gender roles among Lake Victoria shore fishing communities of Uganda. *Department of Women and Gender Studies, Makerere University, Kampala, Uganda*, 66 pp.
- [78]. Maina, J., Mbuthia, P., Ngugi, J., Omolo, B., Orina, P., Wangia, S., et al. (2014). Influence of social-economic factors, gender and the Fish Farming Enterprise and Productivity Project on fish farming practices in Kenya. *Livestock Research for Rural Development*, Volume 26, Article 36. (Retrieved December 19, 2016, from <http://www.lrrd.org/lrrd26/2/main26036.htm>).
- [79]. Medard, M., Sobo, F., Ngatunga, T., & Chirwa, S. (2000). Women and gender participation in the fisheries sector in Lake Victoria.
- [80]. Ministry of Fisheries Development (MOFD). (2010). Implementation guidelines for the fish farming enterprise and productivity programme (FFEPP) phase 2.2010/2011.
- [81]. Ministry of Fisheries Development. (2011). *The Fish Farming Enterprise and Productivity Programme (FFEPP) Phase 2010 - 2011. Implementation Guide Lines. Ministry of Fisheries Development.* Museum Hill, Kenya: Ministry of Fisheries Development.
- [82]. Ministry of Fisheries Development. (2011). The Fish farming enterprise and productivity programme (FFEPP) Phase 2010/2011. *Implementation guidelines. Ministry of Fisheries Development, Museum Hill, Kenya.*
- [83]. Mitchell, V. (1996). 'Assessing the reliability and validity of questionnaires: an empirical example'. *Journal of Applied Management Studies*, Vol. 5, (No. 2, ), pp. 199–207.
- [84]. Musa, S., Aura, C., Owiti, G., Nyonje, B., Orina, P., & Charo-Karisa, H. (2012). Fish farming enterprise productivity program (FFEPP) as an impetus to *Oreochromis niloticus* (L.) farming in Western Kenya: Lessons to learn.
- [85]. Muthoni, G. C., O., O. K., O., M. J., & Ngugi, C. (n.d.). Consumer Perceptions and Preferences of Wild and Farmed Nile Tilapia (*Oreochromis niloticus* L.) and African Catfish (*Clarias gariepinus* Burche).
- [86]. Mwai, J., Njenga, S., & Barasa, M. (2016). Knowledge, attitude and practices in relation to prevention and control of schistosomiasis infection in Mwea Kirinyaga county, Kenya. *Mwai et al. BMC Public Health* :16:819.
- [87]. Mwamuye M, K. (2010). Factors influencing adoption of Dairy technologies in Coast province, Kenya. *MA Thesis University of Nairobi Kenya*.
- [88]. Mwamuye, M. K., Cherutich, B. K., & Nyamu, H. M. (2012). Performance of Commercial Aquaculture under the Economic Stimulus Program in Kenya. *International Journal of Business and Commerce*, Vol. 2, (No.3: Nov 2012[01-20] (ISSN: 2225-2436)).
- [89]. Mwangi. (2008). Aquaculture In Kenya; Status, Challenges And Opportunities.
- [90]. Nations, United. (2002). Gender mainstreaming An overview. *United Nations Office of the special adviser on gender issues and advances of women, New York.*
- [91]. Ngugi, C., Bowman, J., & Omolo, B. (2007). A New Guide to Fish Farming in Kenya.
- [92]. Njagi, K. A., Njati, C. I., & Guyo, H. S. (2013). Factors Affecting Profitability of Fish Farming Under Economic Stimulus Programme in Tigania East District, Meru County, Kenya. *IOSR Journal of Business and Management (IOSR-JBM)*, Volume 15, (e-ISSN: 2278-487X, p-ISSN: 2319-7668. Issue 3 (Nov. - ), PP 25-36 accessed at :[www.iosrjournals.org](http://www.iosrjournals.org)).
- [93]. Orina, P., Maina, J., Wangia, S., Karuri, E., Mbuthia, P., Omolo, B., et al. (2014). Situational analysis of Nile tilapia and African catfish hatcheries management: a case study of Kisii and Kirinyaga counties in Kenya. *Livestock Research for Rural Development*, Volume 26 (Article #87. Retrieved January 14, 2017, from <http://www.lrrd.org/lrrd26/5/orin26087.html>).
- [94]. Owiti, G. O. (2014). Influence of social-economic factors, gender and the Fish Farming Enterprise and Productivity Project on fish farming practices in Kenya.
- [95]. Özyay, O. (2011). Implications of Trade Policy Changes on Gender Inequalities. *Fe Dergi*, 3(2), pp. 33-53.
- [96]. Quist, C. (2016). A Gender Analysis of the Adopted Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication: Constraints and Opportunities. *Gender in Aquaculture and Fisheries: The Lo.*
- [97]. R.P., B. R. ((1995)). *Aquaculture for African smallholders.* ICLARM. Technical report.
- [98]. R.P., B. R. (1995). *Aquaculture for African smallholders.* ICLARM Technical report.
- [99]. Raimond, P. (1993). Management Projects. *London: Chapman & Hall.*
- [100]. Rajaratnam, S., Cole, M. S., Longly, C., Kruijssen, F., & Sarapura, S. (2016). Gender inequalities in access to and benefits derived from the natural fishery in Barotse Flood plain, Zambia South Africa. *Gender in Aquaculture and Fisheries. The long journey of equality. Asia Fisheries science special* (issue 29S 49-71, ISSN 0116-6514.).
- [101]. Ramos, M. M., Marina, L., Ferreyra, C., & Shelton, P. (2009). The CGIAR Virtual Library Bridging the Gap between Agricultural Research and Worldwide. <http://www.igi-global.com/chapter/cgiar-virtual-library-bridging-gap/19894>.
- [102]. Reeves, H., & Baden, S. (2000). *Gender and Development: Concepts and Definitions Prepared for the Department for International Development (DFID) for its gender mainstreaming intranet resource.* Institute of Development Studies. ISBN 1 85864 381. UK: Rome, Italy. p. 12.
- [103]. Robinson, J. D. (2009). Managing counterinforming: An interactional practice for soliciting information that facilitates reconciliation of speakers' incompatible positions. *Human Communication Research* (35.), 561-587.
- [104]. Robson, C. (2002). *Real World Research* (2nd edn). *Oxford: Blackwell.*
- [105]. Salunier, C., Bentley, S., Gregor, F., MacNeil, G., & Rathwell, T. E. (2009). Gender Mainstreaming: Developing a Conceptual Framework for En-Gendering Healthy Public Policy, Maritime Center of excellence for women's health, promoting social change through policy-based research in women's health, Canada.
- [106]. Samuel, L. (2007). Women, work and fishing: An examination of the lives of fisherwomen in Kerala. *Kerala. South Asia Research* 27, 205–227.
- [107]. Saunders, M., & Lewis, P. a. (2009). *Research methods for Business Students* (5th edn.). *Harlow: FT Prentice Hall*.
- [108]. Scientific, Technical and Economic Committee for Fisheries (STECF) – The Economic Performance of the EU Aquaculture Sector. (2012). exercise (STECF-13-03).2013). *Publications Office of the European Union, Luxembourg, EUR 25975 EN, JRC 81620*, 237 pp.
- [109]. Shitote, Z., Wakhungu, J., & China, S. (2012). Challenges Facing Fish Farming Development in Western Kenya *Greener Journal of Agricultural Sciences*, Vol. 3 (5), (ISSN: 2276-7770), pp. 305-311.
- [110]. Spade, J., & Valentine, C. (2011). The Kaleidoscope of Gender: Prisms, Patterns and Possibilities. *New Delhi: Pine Forge Press and Sage.*
- [111]. Stewart, D., & Kamins, M. (1993). *Secondary Research: Information Sources and Methods* (2nd edn). *Newbury Park, CA: Sage.*
- [112]. Sultana, F. (2010). Living in hazardous waterscapes: Gendered vulnerabilities and experiences of floods and disasters. *Environmental Hazards*, 9(1), 43–53.
- [113]. Sumudra. (1995). No woman, no sustainable fishing. *Gender, globalisation and fisheries workshop. 6-12 May 2000, St. John's NF*



- [114]. Todaro, M., & Smith, S. (2009). Economic Development. *Boston: Pearson Addison Wesley Elson, D., Grown, C. and Cagatay, N., 2007. Mainstream, heterodox and feminist trade theory. In: van Staveren, I., Population K, Census H. Kenya bureau of statistics. 2009.*
- [115]. Turpie, J., B, S., L, E., & J, B. (1999). Economic value of the Zambezi Basin wetlands. *Zambezi basin wetlands conservation and resource utilisation Project.* (<http://www.anchorenvironmental.co.za>).
- [116]. Uhuru, M. K. (2009). *Budget speech for the fiscal year 2009/2010 Effective dates 1st July 2009 to 30th June 2010.* Available on the internet at: [www.treasury.go.ke](http://www.treasury.go.ke).
- [117]. Uhuru, M. k. (2010). *Budget speech for the fiscal year 2010/2011 Effective dates 1st July 2010 – 30th June 2011.* Available on the internet at: [www.treasury.go.ke](http://www.treasury.go.ke).
- [118]. UN Women, OSAGI Gender Mainstreaming. (2010). *Concepts and definitions; Committee on the Elimination of Discrimination against Women*. General recommendation No. 28 on the core obligations of States parties under article 2 of the Convention on the Elimination of All Forms of Discrimination against Women: <http://www.un.org/womenwatch/osagi/conceptsanddefinitions.htm>.
- [119]. United Nations Development Program (UNDP). (2010). Human development report 2010: 20th Anniversary Edition. *The real wealth of nations: pathways to human development. United Nations, New York.*, 227 pp.
- [120]. United, N. (2002). Gender mainstreaming An overview. United Nations Office of the special adviser on gender issues and advances of women, New York.
- [121]. Wamue, G., & Njoroge, N. (2011). Gender Paradigm Shift Within the Family Structure in Kiambu, Kenya. *Afr. J. Soc. Sci., 1 (3) 10- 20.* Wood J (2011). *Gendered Lives Communication, Gender and Culture.* Boston: Wadsworth Publishers.
- [122]. Wawire Nelson H.W. Nafukho Fredrick M., Wawire, N. H., & Nafukho, F. M. (2010). "Factors affecting the management of women groups' micro and small enterprises in Kakamega District, Kenya". *Journal of European Industrial Training,* Vol. 34 (Iss 2), pp. 128 – 152.
- [123]. Weeratunge, N., K.A., S., & C.P., S. (2010). Gleaner, fisher, trader, processor: Understanding gendered employment in fisheries and aquaculture. *Fish and Fisheries 11:*, 405–420.
- [124]. Weeratunge, N., & K, S. (2009). Gleaner, fisher, trader, and processor: Understanding gendered employment in the fisheries and aquaculture sector. *In FAO-IFAD-ILO Workshop on Gaps, trends and current research in gender dimensions of agricultural and rural employment: Differentiated pathways out of poverty, Rome, Italy.*, 32 pp.
- [125]. Williams, M. (2011). Better Science, Better fish and better life, paper presented at the plenary session of the Ninth Asian Fisheries and Aquaculture Forum, (April 2011, Shanghai, China.), 21-25.
- [126]. Williams, M. (2008). Why look at fisheries through a gender lens? *Development 51:*. 180–185.
- [127]. Williams, M., Porter, M., Choo, P., Kusakabe, K., Vuki, V., & Bondad- Reantaso, M. (2012). gender in aquaculture and fisheries : Moving the agenda forward,. pp 1–13. .
- [128]. Williams, S., Hochet-Kinbongui, M., & Nauen, C. (2005). Gender, fisheries and aquaculture.
- [129]. Williams, S., M., H.-K., & C.E, n. (2005). Gender, fisheries and aquaculture: Social capital and knowledge for the transition towards sustainable use of aquatic ecosystems. 32 pp.
- [130]. World Bank. (2011). *world development report 2012: Gender equality and development Washington, DC World Bank.*
- [131]. World health organization. (2016). <http://www.who.int/gender-equity-rights/understanding/gender-definition/en/> accessed in December 2016.

APPENDIX A SURVEY INTERVIEWS ETHIOPIAN CIVIL SERVICE UNIVERSITY TITLE: GENDER DISPARITY AND ITS IMPLICATIONS IN FARMING SET UP. CASE STUDY OF FISH FARMING PROJECTS OF 2009 UP TO 2011 IN KIRINYAGA COUNTY KENYA.			
	Item	Responses (themes)	codes
1	Criteria that was used to identify ESP fish farmers	Regions/locations/climate Size of the farm –Fish pond was to be supposed be 300M <sup>2</sup> Water availability youth and women groups yes	Case 001
2	Who benefited with more fish ponds	Men	
	Can hinder gender equality in fish farming	“Social behavior of the people such culture stereotypes where youth and women don’t own land”	
3	Government consideration of gender equality in fish farming	Not much because politicians had powers to influence on fish ponds distribution and men benefited more.” 1 st phase politicians interfered such as the office of area member of parliament and this lead to disparity in fish ponds distribution.	
4	How gender disparity in fish pond distribution affected women and fish production.	“In 1 <sup>st</sup> phase women most women benefited because most men believes that the fish farming is just for children, women and youth” Women got source of income to pay school fees and as nutrition. “Most men give management to women up to harvesting and selling because men were dealing with cash crops such as tea” Most men were trained but they did not apply their training skills in fish pond management. Household chores and lack of training by women was a problem to women and in management of the fish ponds. Women have domestic work, little knowledge	

5	Initial construction of the fish ponds	Youth were involved but men dominated because women have perception that hard work is for men.	
6	Who works most in the fish ponds/management of fish farms	Women because men take fish farming as a domestic work and most of the time men are not at home. Management of the fish ponds women work most in fish ponds because men takes it as a domestic but where fish pond are at a commercial scale men takes the management.	
1	Criteria for fish ponds distribution	Land availability Water availability Ones willingness	case002
2	Gender equality observation	Culturally men's own the land Information about the ESP disadvantaged women because they did not got information in advance	
3	Observation of Affirmative action	Culture does not allow this Before kick of of the project farmers recruitment should be done Observation of gender rule	
4	Impacts of disparity in fish ponds distribution on women	Management was left to women e.g. feeding and a woman feels that they don't own the fish ponds so this lead to low production. Women are too busy doing other domestic work such as feeding the chickens and cows, fish is not attended because don't give a audible warns that can make them to be remembered like other animals.	
	Culture factors	Women are not financially stable because men's controls all the resources. Some women don't like fish e.g. my mother don't like the smell of smell of the fish.	
		"Men's control all the finances, feels so superior and controls everything even what their women have"	
	Training/control of resources	"Most men were trained on fish farming skills through seminars but they could not allow their women attend the training" Extension was given equally between men and women.	
	Family issues	Family issues can hinder gender parity/	
	Criteria used to identify ESP farmers	-Land availability Water availability political influence	case003
	Gender consideration in ESP ponds distribution	men had more fish ponds because of male dominance, political activeness where men are more politically active than women	
	Gender disparity on Fish production	Men who benefited were not committed and this led to low fish production, some men never give enough credit to fish.	
	Why affirmative action not observed Men's dominance	Political interference Men being head of family influence final decisions.	
	Criteria used in ESP	water and land Political interference	case004
	Why women never benefited	Women were busy doing domestic work.	
	Why affirmative action not followed	Information dissemination was poor.	
	How to minimize gender equality	Ensure equal distribution of resources	
	Criteria used in identifying ESP fish farmers.	Income levels Land ownership and	case005
	Who do management in the fish ponds most of the time	water Men	

<p><i>Impacts of distribution on production and women</i></p>	<p><i>ESP who took as their own benefited but those who took as government project didn't because they waited for the government to do everything for them</i>  <i>Political influence in fish pond distribution</i>  <i>Cultural factors women thinks that that fish belongs to men, fish are for luos not kikuyus</i></p>	
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**APPENDIX B  
 SURVEY QUESTIONNAIRE  
 ETHIOPIAN CIVIL SERVICE UNIVERSITY**

**Dear Respondents,**

The aim of this questionnaire is to identify the current gender equality in the fish farming sector particularly in Kiriinyaga County.

Women’s presence in fish farming remains segregated and their efforts and their contribution remains unrecognized, therefore this study will investigate and assess the gender disparity in all levels of fish farming and indentify the women’s role in fish production.

The results collected from this survey questionnaire will be analyzed in order to outline the obstacles preventing women to have equal participation in fish farming and to have better and more dynamic working conducive with fairness in fish farming. This study will also recommend and give mitigation measures for gender inequality and direct the way forward for the obstacles in achieving gender equity in fish farming. The study will not only encourage empowerment of women in the society but will also give general improvement of gender equality in statistics.

This questionnaire is meant only for academic research with an aim of fulfilling the condition for award of master’s degree in governance and development in Ethiopian Civil University, Ethiopia. Rest assured that all answers were to be treated confidential.

**APPENDIX B**

**Definitions**

**Gender** refers to the roles and responsibilities of men and women that are created in our families, our societies and cultures. It also includes the expectations held about the characteristics, aptitudes and likely behaviors of both women and men (femininity and masculinity).

In 2003, the European Commission has defined gender as the social differences between women and men that are learned, changeable over time and have wide variations both within and between cultures.

**Gender analysis** is the collection and analysis of sex-disaggregated information. Men and women both perform different roles. This leads to women and men having different experience, knowledge, talents and needs. Gender analysis explores these differences so policies, programmes and projects can identify and meet the different needs of men and women. Gender analysis also facilitates the strategic use of distinct knowledge and skills possessed by women and men.

**Gender equality** means equal visibility, empowerment and participation of both sexes in all spheres of public and private life. (Council of Europe, 1998)

**Gender mainstreaming** is the organization, improvement, development and evaluation of policy processes, so that a gender perspective is incorporated in all policies at all levels and at all stages, by the actors normally involved in policy-making (Council of Europe, 1998)

Systematically incorporating the specific conditions, priorities and ne eds of men and women into all policies in order to promote activities based on gender equality or to mobilise all general policies and measures specifically for the purpose of achieving equality by actively and openly taking into account at the planning stage their possible effects on the respective situations of men and women, monitoring them and assessing them (Commission Communication COM(96) 67 final of 21 February 1996).

**Gender equity** is the process of being fair to women and men. To ensure fairness, strategies and measures must often be available to compensate for women’s historical and social disadvantages that prevent women and men from otherwise operating on a level playing field. Equity leads to equality (UNFPA, 2017)

**APPENDIX B**

**Section A: Demographic data**

The objective of this section is to collect demographic data from all respondents that will assist the researcher in analysis of the data.

1. Please tick the box that represents your sex below.

Female  Male

2. What is your age category?

Below 18 years  18 and 35 years  35 and 50  50+

3. What is the highest education level you attained?

None  Primary  Secondary  College  University

4. Please indicate your marital status. Tick in the box

Single  Married  Divorced  Separated  Others

5. Do you have any children? Please tick appropriate box.

Yes  No

6. Do you have your own a fish farm. If yes give the name of the farm

7. Where is your fish farm located? Sub-county \_\_\_\_\_

Ward \_\_\_\_\_

8. Do you own the land where they are? If no explain why

\_\_\_\_\_  
 \_\_\_\_\_

**APPENDIX B**

**Section B causes of gender disparity in fish farming**

The objective of this section is to investigate causes of gender disparity in fish farming in Kirinyaga County.

9. Did government consider gender equality when it was distributing Economic stimulus program funds for fish pond construction or fish farming? If no why do you think it didn't?

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

10. In your view do you think is an impediment to women not to have equally benefited to men in phase and two fish projects funded by government of Kenya in 2009-2011? And how?

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**APPENDIX B**

**11. In the following statements indicate the level of disagreement.**

Causes of gender disparity in fish farming						
5-Strongly agree,4-Disagree,3-Neutral,2-Agree,1-strongly disagree.						
		5	4	3	2	1
1	The national policy on gender equality was fully Observed in enrollment and implementation Economic stimulus program on fish projects of 2009-2011.					
2	The national policy on gender equality was fully Observed in enrollment and implementation Economic stimulus program on fish projects of 2009-2011.					
3	Men's dominance in the family discouraged women from benefiting with government funded fish projects of 2009 – 20011?					

4	Women involvement in government funded fish farming of 2009-2011 was impeded by men's rule (patriarchy) Gender disparity in fish farming is due to high illiteracy rate in women.					
5	Gendered roles such as household chores impede women involvement in fish farming					
6	Limited access to finance to women as opposed to men prevents their involvement to fish farming.					
7	Cultural factors such as non fish eating habits blocked women involvement in fish farming					
8	Others factors such as poor market for fish, lack of knowledge on fish farming, lack of awareness fish farming discourages women from fish farming.					

**APPENDIX B**

**Section C Level of gender disparity in fish farming**

The objective of this section is to gather information on the level of gender disparity in the fish farming sector. Therefore this helps to know the magnitude of disparity in order to know the mitigation measures that can be taken.

Please indicate your overall level of disagreement in the table given below.

5-strongly agree, 4-Disagree, 3-Neutral, 2-Agree, 1-strongly disagree.						
1	Women benefited with more fish ponds from the government funded fish farming project of 2009-2011.	5	4	3	2	1
2	Men benefited with more fish ponds in government sponsored fish farming projects of 2009-2011					
3	Only men controls the funds received from the fish ponds					
4	Women works mostly in the fish pond husbandry than men in family owned fish farms					
5	Men makes major decision on management of fish ponds and control of other resources unlike women in the family					
6	Men have more knowledge and management skills in fish farming unlike women					
7	Men are frequently and the most trained by government who are trained on fish farming unlike women					
8	Fish pond owned by men are ones that are frequently visited by extension officers unlike the ones owned by women.					

**APPENDIX B**

**Section D role of women in fish farming**

15. To what extent do you agree with the following women roles in fish farming?

Key 1-to very low extent,2-low extent,3-not at all,4-to a high extent,5- very high extent						
		5	4	3	2	1
1	Women are the most ones who were involved in initial fish pond construction as compared to men.					
2	In most cases women takes the responsibility of fish pond management such as feeding fish, water quality management, as well as fish gutting, fish harvesting and marketing of fish					
3	Women are the ones who keep watch on fish predators in most of the time in fish ponds					
4	Women are the ones who controls income from the sale of fish harvested in fish ponds					
5	Women makes decision on fish pond activities without consulting men					
6	Women work more than men in fish farms					

**APPENDIX B**

**Section E. What are the impacts of gender disparity on fish production and on women welfare?**

The essence of this section is to know if there is any significant difference in fish production that is brought by gender disparity and also to know how women are affected by their low participation fish farming.

**16. Please indicate your overall level of agreement**

5-strongly agree, 4-Disagree, 3-Neutral, 2-Agree, 1-strongly disagree.						
		5	4	3	2	1
1	Unequal distribution of Fish Farming Enterprise and productivity program funds for constructing fish ponds between men and women result to low fish affects fish production.					
2	Women have the authority to utilize funds gained from fish farm					
3	Low number of women in fish farming reduces fish production volume in the Kirinyaga County.					
4	Gender disparity in fish farming contributes to women low standard of living.					
5	Gender disparity in farming does not have any effect in fish production					
6	Women discrimination in fish farming denies them a source of income and livelihood.					

**APPENDIX B**

**Section F: Mitigation measures to curb gender disparity in fish farming**

The rationale for section is to come up with the recommendation for curbing or minimizing gender inequality in fish farming.

17 What weaknesses can you identify within the national policy on gender equality that causes gender inequality in fish farming program and how the weakness be avoided

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18. In your view what should be done to avoid gender disparity in fish farming?

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19. In your view does National policy on gender promotes gender equity in fish farming? If no why?

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20. In your view what do you think should be done to ensure gender equality in future fish farming programs sponsored by government

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21. Are there actions addressing gender roles and combating stereotypes in fish farming? If yes please name them

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22. Was affirmative action adhered in fish farming government sponsored projects (Fish farming enterprise productivity program? If no what why do you think it was not followed?

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23. What action should be taken to avoid cultural practices that promote gender disparity in fish farming?

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**APPENDIX  
CURRICULUM VITAE**

**C**

**P.O BOX 189-60600**

**MAUA**

**EMAIL: gthuraniranira@gmail.com**

**CONTACTS: 0723463227**

#### PERSONAL DETAILS

Name: Godfrey Thurania M'mariu

Gender: male

Date of birth: 9/9/1980

Languages: English, Kiswahili and kimeru

Citizens: Kenyan

Marital status: single

#### MAIN OBJECTIVE

To harness my training and experience gained to add value to the employer and impart me with more skills and knowledge for optimum output and work with ease.

#### EDUCATION BACKGROUND

2015 – 2017 Master of Arts In Governance and Development (Ethiopian Civil Service University, Ethiopia)

2015 – 2018 Master of science in sustainable Aquaculture (St. Andrews University, Scotland, UK)

2009-2012 Bachelor of Science Degree in wildlife management (Moi University)

2011-2012 Certificate in Conflict analysis and Resolution (United States of America Institute of peace)

2007-2008 Bird biology (Cornel Lab of ornithology in U.S.A) Home study online course

2006-2008 Computer certificates

2002-2004 Kenya Certificate of Secondary Education

1996-2002 Kenya Certificate of Primary Education

#### PROFESSIONAL EXPERIENCE

1. Lewa wildlife conservancy

4<sup>th</sup> September –to 27<sup>th</sup> December

##### *Key duties and responsibilities*

- Ecological; monitoring
- Collecting, analyzing and lodging ecological data into the computer
- Writing of scientific report

2. NATIONAL MUSEUM OF KENYA, ORNITHOLOGY DEPARTMENT 1<sup>st</sup> December 2005-6<sup>th</sup> June 2006

##### *Key duties*

Bird's identification and classification

Collecting and analyzing specimens

Cleaning and treatment of specimens

Taxidermy

Assisting in research projects

### 3. NAIROBI NATIONAL PARK

8<sup>th</sup> may 2005 – February 2007

#### *Key duties*

- Data review and data compilation
- Ecological monitoring
- Animal counts and surveillance
- Report writing
- From 25<sup>th</sup> October to 5<sup>th</sup> November – I participated in natural resource inventory in OldonyoSabuk National Park.
- From 14<sup>th</sup> October to 16<sup>th</sup> October –I participated in post burning survey – Done to indentify impacts of prescribed burning conducted before the onsets and offset of rains.
- From 2011 June up to date – I have been working as fish farming extension officer

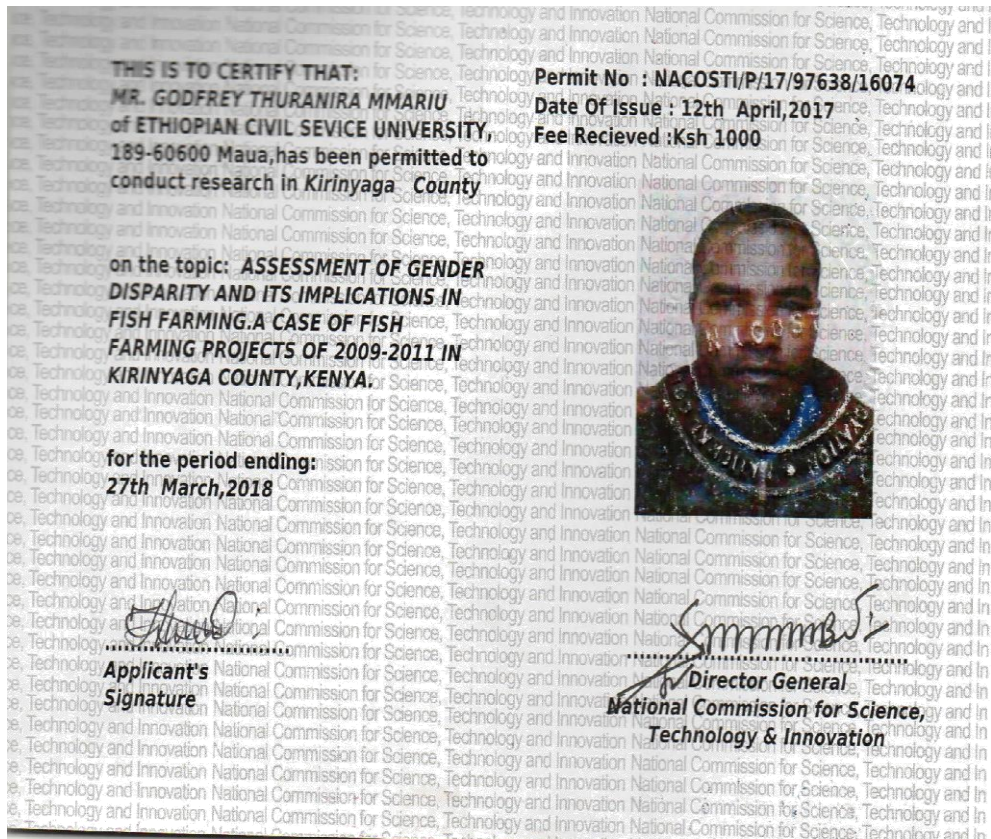
Ministry of agriculture livestock and fisheries

26<sup>th</sup> June 2011- 2015

#### *Key duties*

Fish farming extension services; Conservation and preservation of natural fisheries' in natural wetlands, training of farmers in fish farming, conducting of water quality, supply and distribution of fingerlings, supervision of fish pond construction and management, training farmers on record keeping ,harvesting report writing among other duties and responsibilities.





### 3. INTERESTS AND HOBBIES

Playing volley ball ,  
Swimming  
Athletics  
Watching games especially football

### 4. REEREES

I. George Amutete  
Wildlife control officer at Jomo Kenyatta international airport Nairobi

P.O. Box 19087-00501  
Nairobi, Kenya  
Email address: George.amutete@ka.go.ke  
Phone no: 0726115121

II. Dr. kimanziJohnstone  
P.O. Box 112 Eldoret  
Phone number: 0719756850  
Email address:kimanzijo@gmail.com

III. Dr. Okelo Odwori

University of Eldoret

P.O. BOX 1125 Eldoret

Email address:okeloodwori@yahoo.com. Phone contact: 0725752684

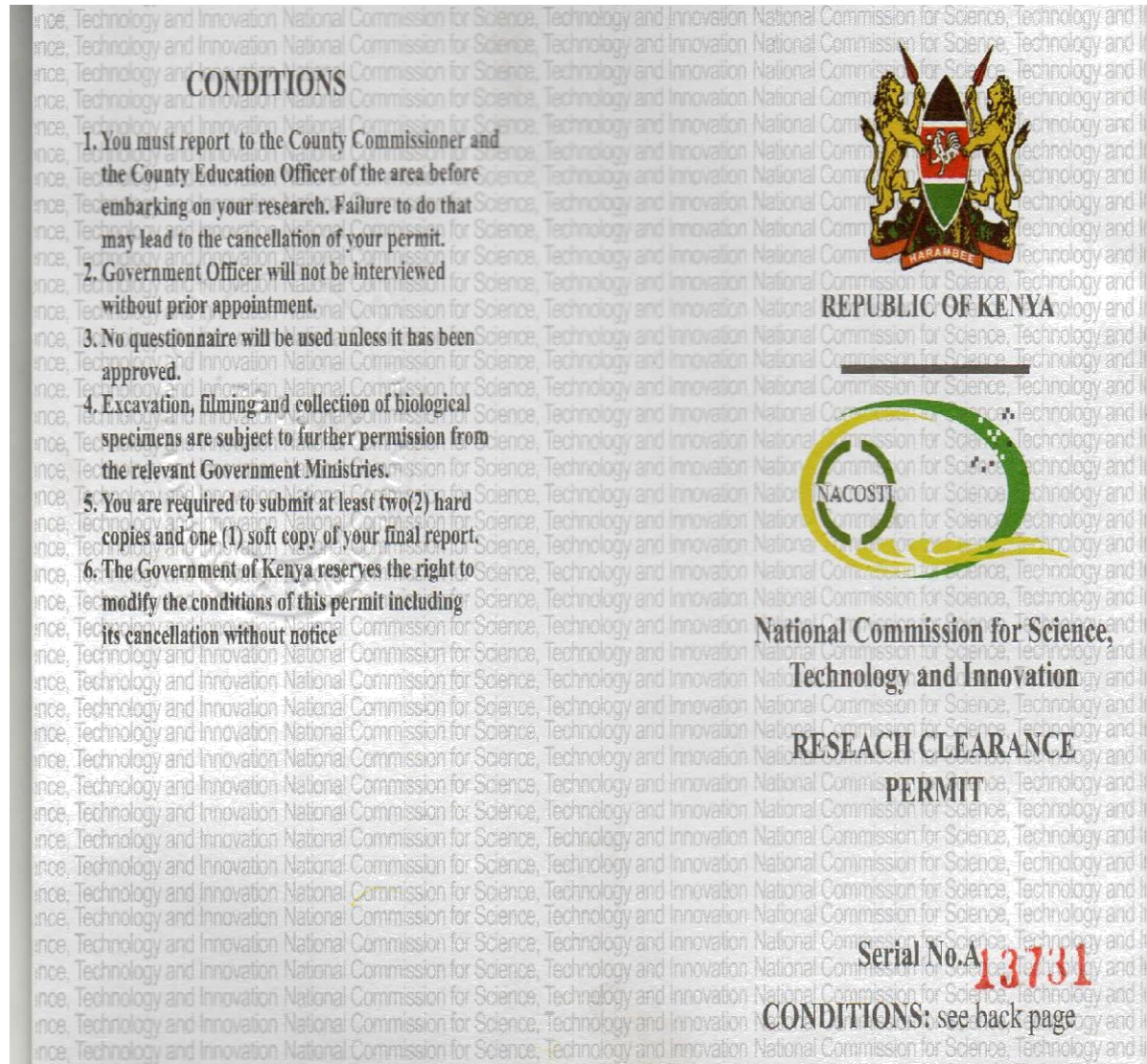
IV. Dr. Muchai Muchane

University of Eldoret

P.O. BOX 112 Eldoret

Email:mmuchaim@yahoo.com. Phone contact: 0722286133

**APPENDIX D  
RESEARCH PERMIT AND AUTHORITY LETTER  
APPENDIX D  
RESEARCH PERMIT AND AUTHORITY LETTER**



**APPENDIX D**



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

Telephone: +254-20-2213471,  
2241349,3310571,2219420  
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when replying please quote

9<sup>th</sup> Floor, Utalii House  
Uhuru Highway  
P.O. Box 30623-00100  
NAIROBI-KENYA

Ref. No **NACOSTI/P/17/97638/16074**

Date: **12<sup>th</sup> April, 2017**

Godfrey Thurania Mmariu  
Ethiopian Civil Service University  
**ETHIOPIA.**

**RE: RESEARCH AUTHORIZATION**

Following your application for authority to carry out research on "*Assessment of gender disparity and its implications in fish farming. A case of fish farming projects of 2009-2011 in Kirinyaga County, Kenya.*" I am pleased to inform you that you have been authorized to undertake research in **Kirinyaga County** for the period ending **27<sup>th</sup> March, 2018.**

You are advised to report to **the County Commissioner and the County Director of Education, Kirinyaga County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

  
**BONIFACE WANYAMA**  
**FOR: DIRECTOR-GENERAL/CEO**

Copy to:

The County Commissioner  
Kirinyaga County.

The County Director of Education  
Kirinyaga County.

*National Commission for Science, Technology and Innovation is ISO 9001:2008 Certified*

**RESEARCH PERMIT AND AUTHORIZATION LETTER**

APPENDIX E. Kirinyaga Map 1



**APPENDIX F**



**ETHIOPIAN CIVIL SERVICE UNIVERSITY**  
**COLLEGE OF LEADERSHIP AND GOVERNANCE**



Addis Ababa Ethiopia

**AFRICA INSTITUTE OF GOVERNANCE AND DEVELOPMENT (AIGAD)**

**CERTIFICATE OF ORIGINALITY**

I hereby declare that this submission is my work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor materials to which to a substantial extent has been accepted for award of any other degree or diploma of a university or other institute of higher learning except where due acknowledgement is made in the text.

I also declare that the intellectual content of this thesis is the product of my work, even though I may have received assistance from others on style, presentation and language expression.

**GODFREY THURANIRA M'MARIU**

AIGAD Student

Date: \_\_\_\_\_

Sign: \_\_\_\_\_

**Noted by:**

Ryan A. Claveria

Advisor

Date: \_\_\_\_\_

Sign: \_\_\_\_\_

**Approved by:**

Berhanu Beyene  
Institute Director

Date: \_\_\_\_\_

Sign: \_\_\_\_\_