

**GENDER IMPACT STUDY
OF
THE KENYA MARKET-LED AQUACULTURE PROGRAM (KMAP)**

**NOVEMBER 2016
NAIROBI**

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List of Acronyms

AAK	Aquaculture Association of Kenya
AFIPEK	Kenya Fish Processors and Exporters Association
AGMARK	Agricultural Market Development Trust
AGRA	Alliance for a Green Revolution in Africa
AIDS	Acquired Immunodeficiency Syndrome
ASAL	Arid and Semi-Arid Land
ASDS	Agricultural Sector Development Strategy
CAADP	Comprehensive Africa Agriculture Development Programme
CAPI	Computer Assisted Personal Interview
CBOs	Community Based Organizations
CDF	Constituencies Development Fund
CEDAW	Convention on the Elimination of all forms of Discrimination against Women
CSR	Centre for Social Responsibility
EAC	East Africa Community
ECOSOC	Economic and Social Council
ERS	Economic Recovery Strategy
ESP	Economic Stimulus Programme
FGDs	Focus Group Discussions
FGM	Female Genital Mutilation
GoK	Government of Kenya
HIV	Human Immunodeficiency Virus
ICRA	International Centre for Research in Agriculture
ICRW	International Centre for Research on Women
ICT	Information and Communications Technology
KEMFRI	Kenya Marine and Fisheries Research Institute
KES	Kenya Shillings
Kg	Kilogram's
KIIs	Key Informant Interviews
KMA	Kenya Maritime Authority
KMAP	Kenya Market-led Aquaculture Programme
KWS	Kenya Wildlife Services
LBDA	Lake Basin Development Authority
LVEMP	Lake Victoria Environment Management Program

LVFO	Lake Victoria Fisheries Organization
M ²	Metre square
NARDTC	National Aquaculture Research Development and Training Centre
NEMA	National Environment Management Agency
NGEC	National Gender and Equality Commission
NGO	Non-Governmental Organization
NSA	Non-State Actor
OCAT	Organizational Capacity Assessment Tool
SAIOMA	Strengthening of Agricultural Inputs and Outputs Markets
SDP	Sustainable Development Goals
SMS	Short Message Services
SOFA	State of Food and Agriculture (FAO)
SOFO	Successes, Obstacles, Failures and Opportunities
SPSS	Statistical Package for Social Sciences
SRA	Strategy for Revitalizing Agriculture
STATA	Statistics and Data
SWOT	Strengths, Weaknesses, Opportunities and Threats
ToR	Terms of Reference
TUFAK	Tuna Fisheries Alliance of Kenya
TV	Television
UNSRC	United Nations Staff Recreation Council
WEF	Women Enterprise Funds
WFC	World Fisheries Centre
WWF	World Wildlife Fund for Nature
YEF	Youth Enterprise Fund
Yr.	Year

Acknowledgement

The gender impact assessment study was commissioned by the Kenya Market-led Aquaculture Program of Farm Africa and executed by ETC East Africa Consultants. The study was carried out by a team of 9 researchers under the Team Leadership of Dr. Bell Okello. Other team members were Charles Oduol, Dr. Andrew Dibo, Esau Kwach, Christine Mburu, Mercy Kokonya, Faith Opere, Faith Nanjala and Esther Mathenge. Dr. Davis Onduru supported the team with ICT and data management.

The team of consultants is very grateful to Farm Africa, and KMAP staff in particular for the opportunity to contribute towards the program. The team appreciates especially Arnoud Meijberg, Teddy Nyanapah and Maureen Nyachwaya. The team would not have succeeded in the assignment without the willingness and cooperation of fish farmers (men and women), key opinion leaders, elders, religious leaders and administrators in various parts of the country. The team appreciates the support received from county government officers in the Department of Agriculture, especially Fisheries section. The team expresses its gratitude to all the commercial aquaculture firms, feed manufacturers, NGOs and other stakeholders who supported the study in one way or the other.

Finally, the team appreciates the support given by ETC EA support team in Nairobi.

Foreword

Ensuring gender equality is a specific goal of the Sustainable Development Goals (SDGs) of the United Nations that the international community has committed to. Farm Africa is proud to be an INGO that not only talks gender equality but also walks the talk. As part of the walk, Farm Africa applies gender responsive approaches to all its programming, and uses evidence from the field to formulate its implementation framework that ensures gender attributes and dynamics are fully mainstreamed in its activities.

Farm Africa is currently implementing the Kenya Market-Led Aquaculture Program (KMAP), a four-year game changing project on aquaculture in Kenya. While the focus is commercialization of the value chain, gender equality is a key part of the agenda. For this reason, KMAP commissioned ETC EA to undertake this gender study with the overarching goal of informatively supporting KMAP to ensure that women, men and youth are given opportunities to be the best they can be in the aquaculture value chain (integrating gender in the project).

Findings from the field study offer very interesting yet challenging scenarios in KMAP's quest to mainstream gender in the project. Among the highlights from the study are:

- Most farmers practicing aquaculture consider the fishponds to be family or household assets and investments. This is a significant dynamic and shows that years of awareness creation and training are beginning to bear fruit.
- There are very few insurmountable cultural and traditional obstacles and barriers for effective participation of women in aquaculture, largely because it is fairly new enterprise.
- Yet the study finds that on the average, women's involvement, participation and benefits are less than men's throughout the aquaculture value chain. A fundamental obstacle to women's full participation in aquaculture remains the cultural norms of access and control over the primary resource – land.
- Other key issues that must be addressed include: women have inadequate access to affordable credit, knowledge, information and fish pond inputs.

In addition to the beneficiary perceptions on gender equality and obstacles or barriers to women's effective participation, the study highlighted two more important dynamics on gender within the aquaculture value chain:

- FARM Africa's staff do not have adequate knowledge, skills and experience in integration gender in such a project, and would require their capacities enhanced to effectively discharge the component on gender equality.
- Capacities of Fisheries extension officers from the county governments on gender is fairly low and of significant concern. KMAP will work and walk together with these officers to ensure that progressive work towards commercialization of aquaculture is not undermined but reinforced.
- Farm Africa reiterates its commitment to gender equality and will direct its energy and resources to ensure a more egalitarian outcome from the project. In particular, the organization and KMAP in particular will thoroughly interrogate the recommendations proposed by the consultants, and work towards implementing them though-out the project's life.
- From its experience, Farm Africa is conscious that integrating gender in aquaculture within the project areas will eventually be successful, but will be a slow and process-based activity. Luckily, the consultants have worked with KMAP to ensure that recommendations are closely monitored using a robust gender responsive M&E framework.

Executive summary

Aquaculture is a sub-sector of fisheries that is showing significant growth in the country, no doubt following the Economic Stimulus Program of the Kenya Government in 2007/8. Both men and women are actively engaged in the enterprise. However, for a majority of the farmers, aquaculture remains an enterprise with great potential and promise, only a few well established farms have consistently benefited. Being a fairly new sub-sector, aquaculture does not suffer from traditional and cultural practices that inhibit the participation of women. The study on gender impact in aquaculture carried out in 11 counties of Kenya (Bungoma, Busia, Homa Bay, Kakamega, Kiambu, Kisii, Kisumu, Machakos, Migori, Siaya and Vihiga) found no cultural or traditional barriers to women's participation in aquaculture. More than 95% of survey and FGD/KII respondents (male or female) reported that fish ponds are owned as assets of the household (owned by both men and women), even though men largely carry the owner's tag.

Women are actively engaged in all key nodes of the aquaculture value chain, from hatching fingerlings to processing and marketing. However, women's participation is not at the same level as that of men. While fish ponds are 'household assets', female respondents had in general fewer and smaller fish ponds compared to their male counterparts. Differences were also observed in pond management, where men were more involved in pond construction, feeding and harvesting compared to women. In general, male respondents reported using a greater feed diversity than women. Men made most of the critical pond management decisions including where to site ponds, size of ponds, where to source fingerlings, quantity to source, what and when to feed the fish as well as when to harvest. Though men made most of the decisions, findings from the survey and FGD/KII clearly show that women were involved in the decision making process.

In support of their engagement in aquaculture, many farmers (both men and women), but mostly women have formed or joined common interest self-help groups that promote aquaculture. In these groups, members learn and share ideas and information from each other. The groups also act as attraction points for other stakeholders interested in getting entry points to and engaging with farmers. Some groups have evolved to become cooperatives. However, the study found that women played peripheral roles in the running and management of the groups.

Benefits from engaging in any enterprise are critical towards self-fulfillment and satisfaction with one's participation. This study found that women were involved in decision making on the use of revenues, that almost 50% of women take control of revenue decisions, and that more than 95% of the respondents were happy with how the revenues were shared. However, more women respondents would prefer a 50:50 sharing of aquaculture revenue. In addition, most women would like to be fully involved in revenue sharing decisions.

Household survey data revealed that though there were no traditional or cultural barriers to their active engagement in aquaculture, women's involvement in most nodes of the value chain (apart from processing and selling/marketing) was much lower than expected. There are three main reasons for this: first, aquaculture is a capital heavy enterprise, especially when one begins because of the need to maintain the fish (feeding, cleaning ponds) for at least six months. Most women do not have the kind of resources to continuously invest in the ponds for this long; secondly, very few farmers (men or women) have reported morale boosting incomes.

In most counties, farmers own 1-2 ponds' of less than 600 m², and more than 50% of them have never harvested. Women tend to shy away from what they consider as high-risk enterprises that do not have assured returns for the household; third, most of the women respondents do not have

adequate information, knowledge and skills in aquaculture. Very few of them accessed formal training in aquaculture, while most have received 'instructions on aquaculture' from their husbands.

As presently practiced, aquaculture within the counties visited is largely a subsistence or hobby activity despite the clear intention and desire by farmers for it to be a profitable commercial enterprise (except for the few commercial fish farms). Husbandry, especially feeding of fish is poor, productivity and returns are low, negligible or negative. However, farmers engaged in producing fingerlings reported making good money. In addition, women engaged in processing and marketing/selling of fish were happy with their returns, although they sold small quantities of fish daily (less than 1,000 pieces). So there is great room to improve management and productivity, and therefore commercialization by both men and women.

Women farmers face several constraints and challenges in aquaculture including: inadequate access to quality fingerlings and fish feeds, inadequate capital to invest in commercial aquaculture, low levels of skills and knowledge in the enterprise and poor access to technical and market information.

From the foregoing, it is surmised that women's involvement, participation and benefits from the current aquaculture activities is at best low, with significant room for improvement. Because in the villages' aquaculture is regarded as a family/household enterprise, any plans to enhance the participation of women in the sub-sector must take care not to disenfranchise men. The development options must be designed to recognise the role of men while targeting women. Harmony at the household level, through intra-household communication and cooperation, though a slow process, is the most viable path to enhancing women's participation in commercial aquaculture. Of course there are women who are either single or widowed, whose participation does not need the cooperation of men.

The study is proposing the following options as viable pathways of promoting the participation of women in commercial aquaculture for KMAP to consider:

- Review the criteria for the selection of aquaculture farmers into the project, specifically to allow active women farmers who have less than 3 ponds (or less than 900 m²) to be participants in the project.
- Invest in targeted sensitization and awareness creation in areas with high potential for aquaculture – generally those with adequate water sources and land, focusing on what the sub-sector is and the potential benefits, especially with the involvement of women. Access to fingerlings and quality fish feeds were identified as priority constraints, yet most farmers, especially women indicated they have inadequate capital to invest in the subsector. KMAP can facilitate linkages/work with established fish farms, firms and millers to enhance access to these inputs. Specifically, KMAP can pilot the One Acre Fund Model, where contracted farmers can access the inputs on credit through their groups and pay back monthly during the production cycle. In addition, KMAP can also pilot a Fish Farm Inputs Savings and Loans model (modelled on AGMARK/ICRW farm inputs savings and loans models) to encourage farmers to save for the fish inputs. A third avenue is for KMAP to establish linkages with existing government run funds – Women Enterprise Fund and the Youth Development Enterprise Funds to provide women farmers with loans that will support their aquaculture ventures. It is unlikely that the largely risk averse farmers will seek for commercial loans to invest in aquaculture.

- KMAP should facilitate access to quality capacity building targeted at women farmers. This should include targeted practical training sessions that are gender responsive (e.g. venue, location, time, language of delivery, mode of delivery, staff with gender knowledge, visualization materials) with monitoring support, access to appropriate cutting edge information e.g. through mobile phones and participation in information exchange and sharing platforms like demonstration farms, shows and exhibitions. This may be an expensive activity because KMAP needs to have its staff trained with basic gender knowledge, local staff as community own resource persons (here is an opportunity to hire some active women aquaculture farmers), and a robust monitoring system that can respond to emerging needs of the farmers. For demonstrations, it is recommended that KMAP eschews the practice of conducting such in well-established (already commercial and profitable firms), but should instead select small-medium performing and preferably women owned and managed farms. As much as possible, KMAP should engage a few women extension staff to work alongside male officers, even if it means hiring on short contracts, officers from the fisheries department.
- As part of supporting commercialization of aquaculture, KMAP will need to strengthen linkages with county officers from the fisheries sector, as well as other key stakeholders. Already, some counties like Kakamega have shown their readiness to invest in and support aquaculture in the county. This can be an excellent opportunity for mutually beneficial engagement.

1.0 Introduction

1.1 Background

Globally, aquaculture production has shown tremendous growth since 2006 and now provides 50% of all fish for human consumption¹. Kenya has also recorded remarkable growth in this sub-sector, with ever-rising demand for fish. Fisheries and aquaculture play an important food (protein), employment and income-generating role in Kenya's Vision-2030² Strategy. The Agricultural Sector Development Strategy (ASDS)³ 2010-20215 and 2010 - 2012 have identified aquaculture as a critical sub-sector in the strategy and implementation plans. In Kenya, the first recorded aquaculture activity was in 1920⁴, mainly introduced for sport purposes by the colonial powers. As a commercial activity, the history of aquaculture in Kenya is brief – with commercial oriented activities noted only since the 1960s⁵.

1.2 Aquaculture in Kenya

Aquaculture refers to the breeding, rearing, and harvesting of plants and animals in all types of water environments. It is now commonly associated with the breeding and rearing of fish in confined or semi-confined environments. In Kenya, aquaculture can be broadly categorized into are two main systems, marine (mariculture) and fresh water aquaculture. In this report, aquaculture refers to breeding and rearing of fish in inland fresh water systems.

There is a growing body of grey and published literature on Kenya's aquaculture system⁶. While initiatives to promote aquaculture in the country can be traced to the 1950s, the sector can be described as still largely underdeveloped, though there has been rapid growth witnessed in the last ten years mainly ascribed to the Economic Stimulus Program of the 2008/2013 period. Data on the actual production is quite varied; a market study by Deloitte⁷ indicated figures of 49 MT a year, while Munguti *et al.* estimate annual production at 20 MT a year. Until 2006, annual production from aquaculture never went beyond 2 MT/yr., but this increased exponentially to 5.8 MT/yr. following the government's economic stimulus program (ESP) of 2007. This increase resulted in recognition of the sector as one with potential for growth, improved nutrition and rural incomes in the country.

Over the last 10 years, aquaculture has been the fastest growing sub-sector in Kenya, recording more than 98% growth in yields between 2010 and 2014 (Fig. 1). This growth was largely fuelled by the Economic Stimulus Program (ESP) of the GoK as well as increased private sector players and catalytic action by NGOs e.g. the TrilateralTilapia⁸ project. Data from the Kenya National Bureau of Statistics (KNBS) of 2015 recorded production of 24,000MT of fish from fishponds.

¹ FAO 2015. State of the World Fisheries and Aquaculture 2014.

² Vision 2030 -

³ ASDP

⁴ Yongo et al 2010. Problems and Prospects in Developing Aquaculture for Livelihood Enhancement in Gucha, Meru and Taita-Taveta in Kenya. A Baseline Study. Ministry of Fisheries

⁵ Nora Jacobi 2013: Examining the Potential of Fish Farming to Improve the Livelihoods of Farmers in the Lake Victoria Region, Kenya. A PhD Thesis, University of Akureyri

⁶ See for example, Munguti et al, 2014.

⁷ Project Red Velvet – Market Study on the aquaculture sector in East Africa. 2015

⁸ TrilaterlTilapia – BMZ/PSDA

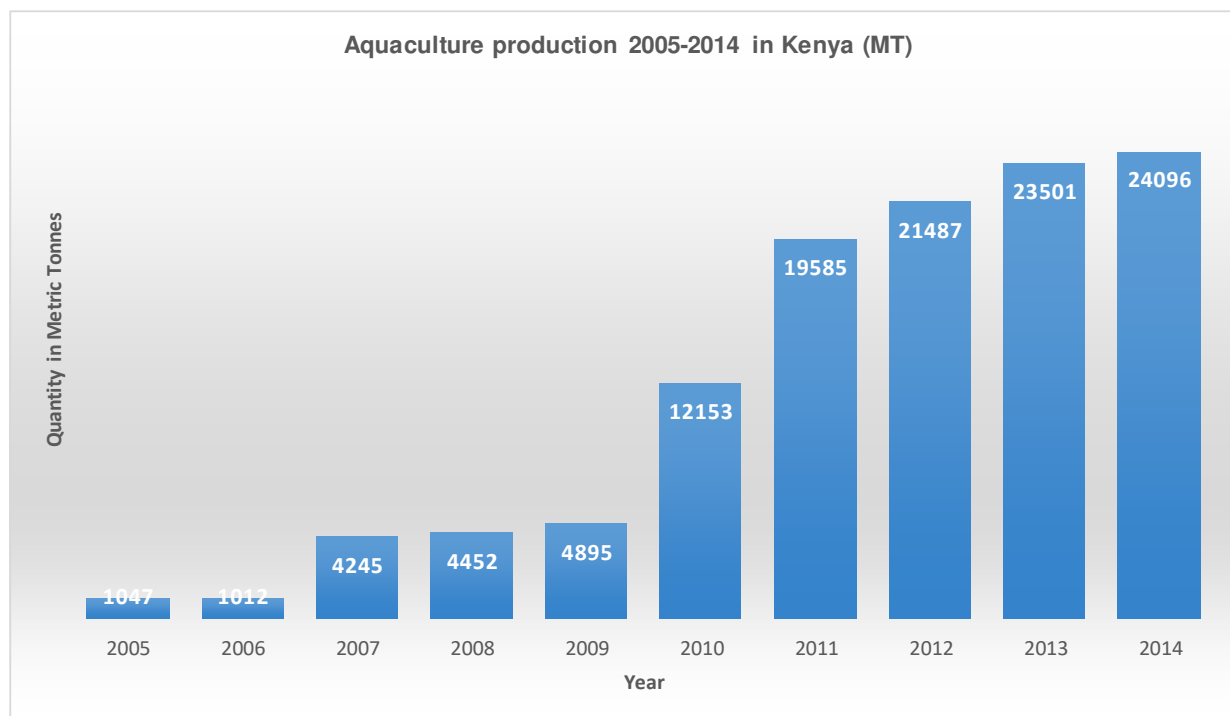


Figure 1: Aquaculture production in Kenya (MT) 2005 - 2014

To spur further growth in aquaculture to meet the growing demand for fish, key actors in Kenya – the Government, Non-Governmental Organizations and the Private sector have individually and collectively invested in the sector. The Government of Kenya (GoK) through the then Ministry of Fisheries injected huge sums of money to catalyse the sub-sector through the Economic Stimulus Program (ESP) of 2009. This was a one-off investment that saw more than 48,000 fish ponds of 300 m² set up in more than 200 constituencies in Kenya, mainly to stimulate interest in the sub-sector, create employment especially for the youth and spur general economic growth amid a potential recession in the country.

The main species in Kenya’s fresh water aquaculture are the Nile tilapia (*Oreochromis niloticus*) at about 69% of the yields and the African cat-fish (*Clarias gariepinus*) 21% of the yields. Trout (*Oncorhynchus mykiss*) was introduced in 1948 as a game (sport) fish. Common carp (*Cyprinus carpio*) was introduced in mid 70s from Japan, and taken to central Kenya by fisheries officers⁹. The rest of the farmed fish include black bass, koi carp and goldfish¹⁰.

Most of the fish farmers in Kenya’s aquaculture sector can be categorized as small-scale (at least 95%), with the ESP making a significant contribution to this. The ESP supported the establishment of an estimated 48,000 ponds and subsidized inputs (feed and fingerlings) as a means to scale up smallholder aquaculture, giving farmers access to increased incomes and protein. The ESP also constructed four regional cold stores and processing centres, intended to be managed by local fish farmer associations, although only the Kakamega one is being readied for operation, the rest are not currently in operation.

⁹ Charles Oduol, pers comm

¹⁰ Otieno MJ 2011. Fishery Value Chain Analysis: Background report. FAO Rome.

1.3 Gender and aquaculture

A scan of publications with in-depth information on Kenya's aquaculture indicates a significant gender-blindness to the approach. Very few publications mention the different roles and contributions of women and men to the sector. This despite the growing interest the subject of gender and fisheries has in the world. Indeed, the World Fisheries Centre has a full gender department. An article in the *Journal Development*¹¹ raised the stakes on gender and fisheries, noting that most of the research work and data related to gender and fisheries is largely from Asia. They concur that gender and fisheries has not received its worthwhile share of space in literature.

All the Government of Kenya blue prints on economic development including the Economic Recovery Strategy for Wealth and Employment Creation (ERS), the Strategy for Revitalizing Agriculture (SRA), the Vision 2030, ASDS and even the Constitution of Kenya 2010 have laid great emphasis on gender equality. However, the implementation of all the programs, including in aquaculture hardly mention any efforts to ensure the involvement of women and the youth. For instance, while the ESP purposed to generate food, employment and incomes for the youth, it is doubtful how much of the investment ever went to the youth directly. Issues of social equality (SOFA 2015) are critical if countries are to meet their strategic development goals, especially in agriculture. SOFA 2015 makes very specific mention of the need to ensure women are involved in aquaculture. In Kenya, some significance is being given to the subject as evidenced by recent publications¹². Kiumbuku et.al¹³ have examined and found forms of gender inequalities within the sector in Trans Nzoia County.

Most of the evidence on the role of women in fisheries, and dynamics in gender and fisheries come from Asia¹⁴ and to some extent Western Africa. Studies and publications from Asia have particularly highlighted dynamics in gender and fisheries, and especially women and fisheries¹⁵. Indeed, gender analysis in fishing communities in the developing countries is still in its infancy¹⁶ - but observations from most fishing communities e.g. Western Kenya indicate that men, women and children (including the youth), play different, often complimentary roles in the fish value chain.

Because aquaculture is a relatively new field without long-held customs and traditions, gender related barriers to being involved in it are likely to be few and easy to surmount. That notwithstanding, it is a fact that traditions and cultural practices that so serve everyday lives in many communities are still applied in aquaculture. Women's contribution to fisheries is now being documented, but there is still a significant paucity of data and anecdotal evidence on how, what works, and when, especially in African fisheries.

¹¹ Choo et al, 2008; Guest Editor, Gender and Fisheries. *Development* 2008. 51, 175-179.

¹² Nzaga et al, Economically feasible options for increased female participation in Kenyan aquaculture value chain

¹³ Samuel Kiumbuku, Jane Mutinda, Jeanne Bernard 2013: Forms of Gender Inequalities in Fish Farming in Kwanza Division, Trans Nzoia County, Kenya. *Research on Humanities and Social Sciences* www.iiste.org. ISSN 2222-1719 (Paper) ISSN 2222-2863 (Online) Vol.3, No.15, 2013

¹⁴ Choo et al (eds.) 2006. Global symposium on Gender and Fisheries, Seventh Asian Fisheries Forum, 2004, World Fish Centre and Asian Fisheries.

¹⁵ Williams et al, 2002. Global symposium on Women in Fisheries. Sixth Asian Fisheries Forum, World Fish centre, Malaysia.

¹⁶ Gender and Fisheries & Aquaculture – BMZ Future makers and GIZ – web paper

Generally, the different roles of men, women and the youth in agriculture, and more recently in aquaculture have not been given due attention, with the assumption that there is homogeneity. This assumption is dangerous because empirical data from several studies now clearly show that men and women (even from the same household as man and wife) do not always have the same interests in a joint activity, contribute differently, are affected differently by the outcomes in the respective activities and always benefit differently. The same truism is therefore likely to manifest in aquaculture.

The predominant view of the role of women in the fish value chain as being more involved in post-harvest and marketing remains prevalent. However, aquaculture is a relatively new activity, and is only recently becoming a commercial activity in most smallholder units in Kenya. Formative observations from the field indicate that women can be involved in all nodes of the aquaculture value chain – from research/breeding, production and marketing of fingerlings, production of fish in ponds, management of the ponds/farms, to harvesting, processing, marketing and selling. In addition, women are also involved in agro dealerships and specialist aqua-shops that deal in aquaculture equipment and inputs; also as technology developers and extensionists. However, the degree of involvement of women in the sector is not really known or been quantified. The different roles women and men play in aquaculture is largely based on assumptions. Because of this dearth of information, strategies of ensuring that women are involved, participate in and benefit from aquaculture projects are not clear. While the Kenya constitution 2010 and the Sustainable Development Goals (SDGs) are clear about gender responsive programming, with no clear strategies, these goals are difficult to achieve. At the moment, Kenya does not have a clear policy on gender equality in aquaculture. Often lost in the vocabulary of integrating gender in activities is research. A vibrant, sustainable, profitable aquaculture requires quality responsive research – new germ plasm, new production techniques, new marketing techniques, post-harvest handling and processing/packaging, cooking techniques. Women have a huge role to play as researchers at various levels. It is important to have research that is gender responsive¹⁷, collect sex disaggregated data along the value chain in order to design practical and appropriate interventions and policies.

1.4 Institutional arrangement for fisheries in Kenya

The fishing industry in Kenya is under the administrative control and management of the Ministry of Agriculture, Livestock and Fisheries, with the Fisheries Department directly in charge. The industry is governed through the Fisheries Act (Cap 378) and the Marine Act (cap 371). The Government also has several institutions that play a role in the fisheries sector including; Kenya Marine and Fisheries Research Institute (KEMFRI), Kenya Wildlife Services (KWS), National Aquaculture Research Development and Training Centre (NARDTC), Lake Basin Development Authority (LBDA), Kenya Maritime Authority (KMA), National Farmers Information Service (NAFIS), National Environment Management Agency (NEMA), Coast Development Authority, Kenya Marine Forum and the East African Community (EAC).

At the Non-Governmental level are the following: Kenya Fish Processors & Exporters Association of Kenya (AFIPEK), Aquaculture Association of Kenya (AAK), Lake Victoria Fisheries Organization (LVFO), World Wildlife Fund for Nature (WWF), Tuna Fisheries Alliance of Kenya (TUFAC) and the East African Wildlife Society. More recently, the World Fisheries Centre (WFC) has increased its presence in the sector. All these institutions play various roles in the fish industry in Kenya.

¹⁷ Advancing gender responsive agricultural research in sub-Saharan Africa. CGIAR 2016.

To support aquaculture, there are a number of government and private fingerlings suppliers e.g. Sagana fish farm, Wakhungu fish farm and Kisii Fish Multiplication Centre (GoK run/managed), Jambo fish farm, Dominion fish farm and Green Algae (Private companies) and Mwea aqua fish farm (Community/farmer run).

From the foregoing, one can deduce that aquaculture has a huge potential in Kenya, especially given the suitable climatic conditions. However, this potential can only be realized if adequate consideration is given to ensure that all men, women and the youth keen to play a role in the sector are given adequate opportunities to be the best they can be.

This entails ensuring that all those keen are actively involved, participate and benefit from any aquaculture initiative. To ensure that men, women and youth are adequately involved, there is need to have an in-depth understanding of the implementation context, the community and gender dynamics and how the prevailing implementation environment can affect or impact it. A good starting point is to undertake a detailed gender analysis at various levels. A gender analysis will give rise to a gender strategy and action plan. But these two pieces must be effectively supported by staff with adequate knowledge and skills.

1.5 Kenya Market-led Aquaculture Program (KMAP)

In line with the recently formulated Sustainable Development Goals¹⁸, specifically Goals on no poverty, zero hunger, gender equality and on decent work and economic growth, Farm Africa has received funding from the Embassy of the Kingdom of the Netherlands to implement the Kenya Market-led Aquaculture Program (KMAP).

Farm Africa is a Non-Governmental Organization (NGO)/Non State Actor (NSA) founded in 1985 with a vision “a prosperous rural Africa” and mission “to reduce poverty permanently by unleashing African farmers’ abilities to grow their incomes and manage their natural resources sustainably”. Farm Africa has a rich tradition and track record of successfully implementing impactful grassroots development projects and improving relevant policies on agricultural development. With experience in the Eastern African countries, Farm Africa currently works in Ethiopia, Kenya, Tanzania and Uganda with focus on strengthening the various agricultural value chains. Specifically, Farm Africa supports the beneficiaries in value addition for their products and harvest, and links them to markets in order to establish viable, sustainable and profitable income-generating enterprises through various approaches including building their capacities and promoting the enactment of relevant enabling policies.

KMAP is a four-year project that was conceived within the context of the rising demand for fish in Kenya over the last 15 years. The project will be implemented over a four-year period in western Kenya and areas around Nairobi. The rising demand for fish has created numerous opportunities for fish farming and this offers significant economic benefits, especially to the rural communities. Fish farming does not rely on the depreciating natural resource as seen in capture fisheries (e.g. from lakes and the oceans).

The project will directly support 1,100 farmers and selected traders with technical and business training, and link them to markets and inputs suppliers (fingerling producers, feeds resellers) to ensure sustainability. An important philosophical underpinning of KMAP is the strong business orientation – fish farming as a business. KMAP will also promote the consumption of farmed fish and identify (new) market segments for farmed fish and fish products, thus directly contributing to both income generation and quality nutrition (fish is a very nutritious food).

¹⁸ United Nations

KMAP will be implemented with a strong value chain lens, with players and actors at different nodes of the value chain. A second overarching philosophy of KMAP is the desire to contribute to gender equality, and specifically to promote the involvement, participation and benefits to women in aquaculture. It is this desire to fully integrate women in the project through gender mainstreaming that has informed the need to have an aquaculture gender impact study. The goal and objectives of KMAP are reproduced in Text Box 1.

Text Box 1: Goal and objectives of KMAP

Goal: A vibrant aquaculture industry that generates sustainable incomes, food security and employment.

Objectives:

1. Sustainably increase production and productivity of medium to large-scale fish farmers, hatcheries and fish feed producers
2. Increase access to markets for medium to large-scale fish farmers and inputs suppliers

1.6 Purpose and Scope of the Gender Impact Study

Farm Africa has taken the bold step to ensure that women are involved, participate in and benefit from the KMAP project. For this reason, it has commissioned a consultancy study to inform it on the best ways to achieve the full involvement and participation of women. The study is guided by a clear Terms of Reference (ToR) – see Appendix 1. The ToR also lays out the purpose and objectives of the study (Text Box 2).

Text Box 2: Objectives of the Gender Study

- Assess the gender dimensions within the aquaculture value chain, looking at gender roles, participation, access to and control of resources & benefits, beliefs & perceptions and legislation at household, community & policy level with a focus on the project area (West of Kenya and surrounding of Nairobi).
- Identify the desires of and opportunities and barriers for women to actively engage in and benefit from the aquaculture value chain in the KMAP project areas and appropriate solutions to overcoming these barriers.
- Make recommendations to the project on how to mainstream gender in the design of KMAP, with particular reference to approaches and activities to enhance the engagement of and benefits for women along the value chain. This includes making recommendations for more gender sensitive objectives, activities and indicators in the project design,
- Build the capacity of KMAP Farm Africa staff in order to mainstream gender.

KMAP targets to mainstream gender in aquaculture through a pre-project implementation Gender Impact Assessment. From the assessment, KMAP would like to have a practical approach that will empower women to benefit from engaging in the aquaculture value chain.

Integrating¹⁹ or mainstreaming²⁰ gender in such a program (especially a new field like aquaculture) will be a dynamic process. KMAP is being implemented in a very complex space that is also evolving, but largely controlled by existing social, cultural, economic and political actions.

¹⁹ Gender Integration entails the identification and subsequent treatment of gender differences and inequalities during program/project design, implementation, monitoring, and evaluation. see <http://degrees.fhi360.org/2013/09/gender-integration-making-it-a-reality/>

²⁰ "Mainstreaming a gender perspective is the process of assessing the implications for women and men of any planned action, including legislation, policies or programmes, in any area and at all levels. It is a strategy for making the concerns and experiences of women as well as of men an integral part of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres, so that women and men benefit equally, and inequality is not perpetuated. The ultimate goal of mainstreaming is to achieve gender equality."

This requires an in-depth understanding of the prevailing gender dynamics (as well as the social, cultural, political and economic), the direction of the dynamics (whether evolving towards a more egalitarian society or regressing away from it), the general support or lack of it from the intended beneficiaries, the understanding and skills of the implementing agencies, the wherewithal and support of the leaders within the implementing agency. Farm Africa has elaborated the scope of work for the study (Text Box 3). Critical in the scope of work, and which the consultants are in full agreement with is the need to enhance internal capacity of Farm Africa staff in gender (gender and agriculture). In addition to the this scope, it is the objective of Farm Africa to get a good estimate of the number of men, women and youth who are engaged in the different nodes of the aquaculture value chain.

Text Box 3: Questions client proposed for the study

1. Assess the gender dimensions within the aquaculture value chain, looking at gender roles, participation, access to and control of resources & benefits, beliefs & perceptions and legislation at household, community & policy level with a focus on the project area (West of Kenya and surrounding of Nairobi).
2. Identify the desires of and opportunities and barriers for women to actively engage in and benefit from the aquaculture value chain in the KMAP project areas and appropriate solutions to overcoming these barriers.
3. Make recommendations to the project on how to mainstream gender in the design of KMAP, with particular reference to approaches and activities to enhance the engagement of and benefits for women along the value chain. This includes making recommendations for more gender sensitive objectives, activities and indicators in the project design,
4. Build the capacity of Farm Africa staff on how to achieve gender equality.

1.7 Structure of this report

This report is made of five chapters. The current chapter (Chapter 1) provides a background and objectives of the study. In chapter 2, the approach and methods used are presented. Chapter 3 presents and discusses findings from the gender analysis and related information on the study. This section is intended to provide a detailed context on the current gender issues and dynamics in relation to aquaculture. The findings and deductions/inferences from this section provide the building blocks for chapter 5. Chapter 4 discusses findings of Farm Africa gender needs assessments, results that are used in designing a capacity building plan for KMAP/Farm Africa staff in gender and aquaculture. In chapter 5, options for practical integration of gender are presented and discussed, based on the context from chapters 3 and 4. Finally, chapter 6 presents conclusions and recommendations for KMAP. Unless expressly stated, findings presented in Chapter 3 and 4 are based on data from the household and individual staff surveys. As much as possible, information from Focus Group Discussions and Key Informant Interviews are presented to support/augment the household survey data or to point out divergences in the two sets of data. For avoidance of doubt, household survey data and KII/FGD data were collected concurrently as stated in chapter 2.

For practical purposes, all other data/information that would have ordinarily got into an Appendix are presented in a stand-alone Annex to this report. The information includes the ToR, tools used, stakeholders met and additional data that deemed informative and useful.

1 <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

2 Munguti *et al.* 2014. An overview of Kenyan Aquaculture; current status, challenges and opportunities for development. *Fish Aquat Sci* 17(1) 1-

2.0 Approach and Methodology

2.1 Approach

In consultation with the client, a process based-participatory approach was applied in conducting this study, this entailed in-depth engagement with the potential beneficiaries and other stakeholders in the project, including Farm Africa Staff, GoK Staff, the private sector and other actors in the sector.

First, the consultants undertook a rapid review of both grey and published literature which, was updated as the study progressed (See Annex to this report, Appendix 2). Using information from the literature survey and initial discussions with Farm Africa Staff, the consultants developed tools for field investigation (Annex to report, Appendix 3), refined the methodology and identified key potential respondents and a sampling frame. This process resulted in an inception report that was shared with the client.

Gender analysis is at the core of this consultancy, to assess gender-based value chain constraints and design a gender mainstreaming approach to ensure optimum participation of women, men and young people, in the fish value chain and integrate gender-based activities fully into all programme interventions. The key objective is to ensure maximal involvement, participation and benefits to women.

Aquaculture farmer and their main associates, including groups, sources of inputs (fingerlings and feeds), sources of information and technology are the primary source of gender dynamics. The consultants used structured questionnaires, Key Informant Interviews and Focus Group Discussions to get information on various gender and contextual elements.

2.2 Data collection

Data on gender and aquaculture was collected from a sample of different targets, including households actively engaged in aquaculture in respective counties, opinion leaders on cultural and development issues within the counties, key private sector players in the sector, selected NGO actors and representatives of county governments in the fisheries offices.

For household interviews, the initial design at inception was first to get a list of aquaculture farmers in each of the counties, and based on it, use a random sampling approach. However, the consultants could not access reliable lists of aquaculture farmers. Secondly, it emerged that the farmers were not randomly distributed within the counties (because aquaculture is dependent on availability of water – either streams/rivers or dams, lakes). Other factors that influenced the sampling approach used were the available time for the exercise, and the resources (money) to conduct a credible data collection exercise.

The consultants used the following approach:

- 1) Consultations with Ministry of Fisheries officials on the concentration of aquaculture farmers within a given county.
- 2) Where distribution of aquaculture farmers was reasoned to be more or less even, a random sample of two sub-counties was done. Where the distribution was un-even, the consultants made a purposive selection of two sub-counties. Finally, where distribution of farmers was very sparse, sampling was done in more than two sub-counties.

- 3) In each county, the consultants targeted 20 aquaculture households for quantitative interviews. At least a third of these (6-7) were to be women. These respondents were distributed as a target of 10 in each sub-county. The sample size was based largely on the time available for the household interviews to be conducted.
- 4) The consultants used a purposive sampling approach to reach the aquaculture farmers. As much as possible, only those with active ponds were interviewed. More often than note, farmers themselves directed the researchers to other aquaculture farmers.

Qualitative data collection: Purposive selection and snowballing was used to identify and sample respondents for all the KII and FGD interviews.

The consultants held Key Informant Interviews (KIIs) with selected individual aquaculture farmers. The farmers were purposively selected with support of either key informants in the respective counties or County Department of Fisheries officials. On a few occasions, private sector practitioners, retired fisheries officials or knowledgeable members of the community or local cooperatives directed the consultants to these farmers.

Farmer groups: The consultants sought support from the public, fisheries officials, hatcheries and local knowledge of the project areas to reach out to groups of farmers engaged in aquaculture. Most often, there were just 2-3 groups in each sub-county and purposive sampling was used. In addition, the availability of the groups for Focus Group Discussions also dictated if or not the consultants met with the groups.

Business people in fisheries (including fish markets): KMAP had already commissioned a study on the fish market in Kenya. The consultants sought to compliment this from a gender angle and purposively visited a few select markets where fish is sold and or processed.

Local elders, Religious leaders and Women Leaders: The consultants used their own knowledge of the project areas, contacts made with fisheries officers, leading aquaculture farmers and publicly available information to seek out and hold discussions with the local elders, religious leaders and local women leaders. Availability of the respondents from this target group was key in holding the KIIs.

Private sector actors: Officers from KMAP (Farm Africa) provided a list of key private sector actors (hatcheries, farms, feed manufacturers) that the consultants contacted. Again, time and availability determined to a great deal private sector actors the consultants interviewed.

Aqua-culture stockists: The consultants contacted AGMARK, an NGO that has built the capacity of agrodealers nationally to access a database of aqua-stockists. All agrodealers in the database do not undertake exclusive stocking of aquaculture products, and though the consultants expanded this list to include any agrodealer stocking aquaculture products, only two were available for the interviews.

Ministry of Agriculture, Department of Fisheries: The consultants made appointments and visited the County Departments of Agriculture, Fisheries sections of all the 13 KMAP project counties.

The senior researchers trained enumerators and research assistants on how to collect data and take notes. Enumerators used Computer Assisted Personal Interviewer (CAPI), with data collected transmitted and stored in a cloud server and later downloaded for analysis. The team used digital recorders to capture information from FGDs and KIIs. These data were later transcribed and cleaned for analysis. The consultants also undertook a gender capacity needs assessment by sending a self-administered questionnaire to the Farm Africa staff.

Data collected lasted 16 days in the field, though only 10 days were initially planned. This is due to the sparse distribution of farmers or their availability (In many farms visited, the research assistants did not find the farmers – most of who were away in the cities e.g. Nairobi, Kisumu, Mombasa, Nakuru and Eldoret). Data was collected from respondents summarized in Table 1).

Quantitative and qualitative data were collected by two sets of researchers, one set focusing on households, and the other on qualitative data from various sources through FGDs and KII. Data collection went on concurrently, and the respondents of the two sets of interviews were different. While the two sets of researchers were in touch during the interviews, qualitative researchers were not privy to the quantitative data, and vice versa.

2.3 Data Analysis

All quantitative data collected through CAPI was downloaded from the server and cleaned before being subjected to tests of integrity and normality. Using a pre-designed analysis template, data were analysed using SPSS software. Summary tables, frequencies and charts were then made from the analysis.

All qualitative data from the FGDs, KII and observations were transcribed from the recorders, compared with the notes taken, cleaned and harmonised. The data were then grouped into similar categories and subjected to trends analysis – and deductions made.

The consultants used analysed data from the two sources to synthesize critical information relevant to the key questions and scope of work in the ToR to draft this report.

Table 1: Summary of respondents the team interacted with

Category	Number of respondents achieved
Existing individual aquaculture farmers	20 farmers (M14, F6)
Farmer groups	9 groups through FGDs (9)
Business people in fisheries	7 people (M3, F4)
Households in project areas	223 (M151, F72) respondents
Elders	12 KII
Religious leaders	3 (M2, F1) Largely gave same information to elders
Women leaders	4 had same views and opinions with key women farmers
Women business people	9
Agro dealers	2 (F2) ; unable to get many to give interviews)
Feed manufactures	4 (Dominion, Jewlet, Hesao, Suna fish)
Fingerling breeders	9 (M5, F4)
Ministry of fisheries	10
Other stakeholders	10
Fish markets	6
Fisheries officers	16 (M13, F3)

2.4 Gender Induction Workshop for KMAP staff

Following the submission of the study draft report, the consultant together with KMAP leadership organized an intensive two-day induction workshop on gender and aquaculture in Kisumu. During the workshop attended by 10 KMAP staff, the consultant took the participants through the findings of the report, and more specifically, the key gender issues. As part of the induction training, the participants were introduced to key gender terminologies and concepts, gender analysis, gender responsive monitoring and evaluation, and were asked to develop 'their gender action plans' based on their experiences and report presentation. Details are shared in Annex 1 to this report.

3.0 Findings

3.1 General information from the field surveys

3.1.1 Demographic information of household respondents

The survey enumerated 223 households. More men (68%) than women (32%) were interviewed with quite some variation across the counties. At least 40% of the respondents were women in Machakos, Kisumu and Busia, while Siaya (15%), Migori (18%) and Bungoma (22%) had the least number of women interviewed. Of the women interviewed, 26% were household heads compared to 84% for the men (Table 2).

Table 2: Summary of households enumerated

Attribute	Females	Males	Total
No respondents	72	151	223
% respondents	32.3	67.7	
No HH Heads	19	128	147
% of HH heads within sex category	26	85	
% Literacy of respondent			
• Illiterate	1.4	2.0	1.8
• Primary	33.3	21.9	25.6
• Secondary	37.5	40.4	39.5
• Tertiary certificate	8.3	9.9	9.4
• Tertiary diploma	6.9	12.6	10.8
• Tertiary university	12.5	13.2	13.0
Role of respondent in aquaculture			
• Caretaker	0.0	6.6	4.5
• Laborer	1.4	0.0	0.4
• Manager	1.4	8.6	6.3
• Family member	23.6	1.3	8.5
• Owner	70.8	82.8	78.9
• Other	2.8	0.7	1.3
Age category of respondent			
• 19 - 25	12.5	87.5	3.6
• 26 - 35	36.4	63.6	9.9
• 36 - 55	33.6	66.4	49.3
• > 55	31.3	68.7	37.2

Majority of those enumerated were owners or household members (more than 78%). Of the women interviewed, 70% were pond owners or family members (23.6%), usually a spouse (Table 3).

Almost 87% of the respondents are more than 36 years of age. More than 37% are older than 55 years. However, women respondents were evenly distributed in the 26-55 age categories (Figure 2). Very few of the respondents were under 25 years, indicating that the youth are not as actively engaged in aquaculture. The average number of people per household is six (6), with more women (3.2) than were men (2.9). Both women and men had been engaged in

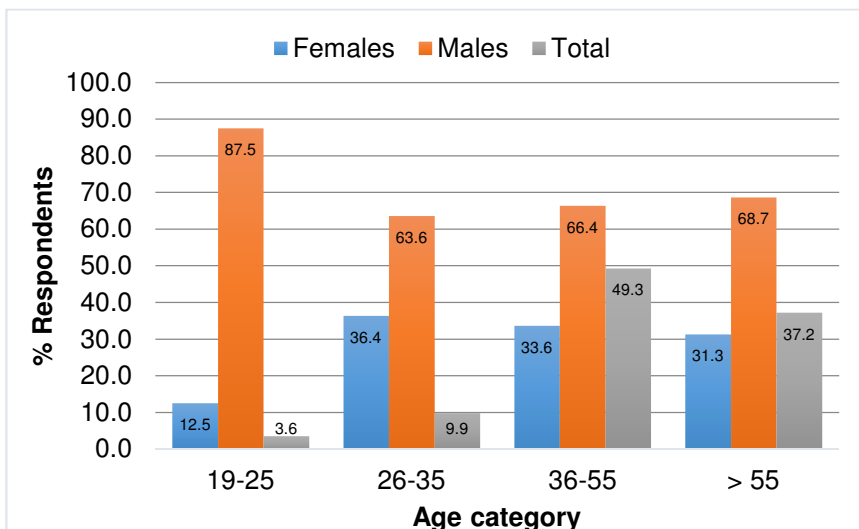


Figure 2: % distribution of age categories among respondents by sex

aquaculture for a mean of 5.5 years. More than 72% of the respondents had secondary school level of education.

At least 65% of female respondents had secondary education or above. Men and women had similar levels of highest education level attained, but, significantly more women than men had Primary school as their highest level of education.

Overall, the recorded levels of education among women is adequate to start and run aquaculture successfully.

3.1.2 Ownership of Ponds

Data in Table 3 indicates sex-disaggregated ownership of the various pond types, but care is needed in interpreting the data. Sex disaggregation in Table 3 is based on the sex of respondents. Overall, the study interviewed 176 actual owners of ponds made up of 51 (29%) women and 125 (71%) men. Most respondents own two main pond types – earthen and lined earthen (Table 3).

When actual ownership is considered, women just edge men in the average number of earthen ponds owned, while men own slightly more of the lined ponds than women. However, men own significantly more dams than do women (Figure 3). Results from focus group discussions showed that households (not individual men or women) own most fishponds. The ponds are regarded as household assets. There were cases where men specifically gave some ponds to their wives. Qualitative interviews (FGDs and KIIs) revealed that men are the de-facto owners of ponds, but most ponds belong to the household or family. It is not fair to try and label ponds as being owned by men or women.

Table 3: Main types of fish ponds respondents own by sex (Proportions in brackets)

Pond Type	Attribute	Females	Males
Earthen Ponds	No of respondents owning	51 (71%)	117 (77%)
	Mean number of ponds owned	3	3
	Max number of ponds owned	9	9
Lined Ponds	No of respondents owning	20 (27%)	33 (22%)
	Mean number of ponds owned	3	3
	Max number of ponds owned	9	9
Dams	No of respondents owning	1 (1%)	2 (1%)
	Mean number of ponds owned	1	2
	Max number of ponds owned	1	2
Tank Ponds	No of respondents owning	0 (0%)	3 (2%)
	Mean number of ponds owned		7
	Max number of ponds owned		9
Cages	No of respondents owning	1 (1%)	0 (0%)
	Mean number of ponds owned	2	0
	Max number of ponds owned	3	0
Other Ponds	No of respondents owning	4 (5%)	0 (0%)
	Mean number of ponds owned	3	0
	Max number of ponds owned	4	0

Other types were dams, tank and cage ponds. Types and number of ponds owned varied among the counties. Both female and male respondents owned a similar number of earthen and lined ponds. The implication of the findings on pond types is that KMAP will have to focus improvement of aquaculture production and productivity using technologies that are appropriate for the earthen and lined ponds.

Secondly, almost all ponds were located on family land. Most of the family land is ancestral, whereby ownership is vested in men. But the ponds are managed and used by the 'household'; often, men are hardly present to undertake day-to-day management of the ponds.

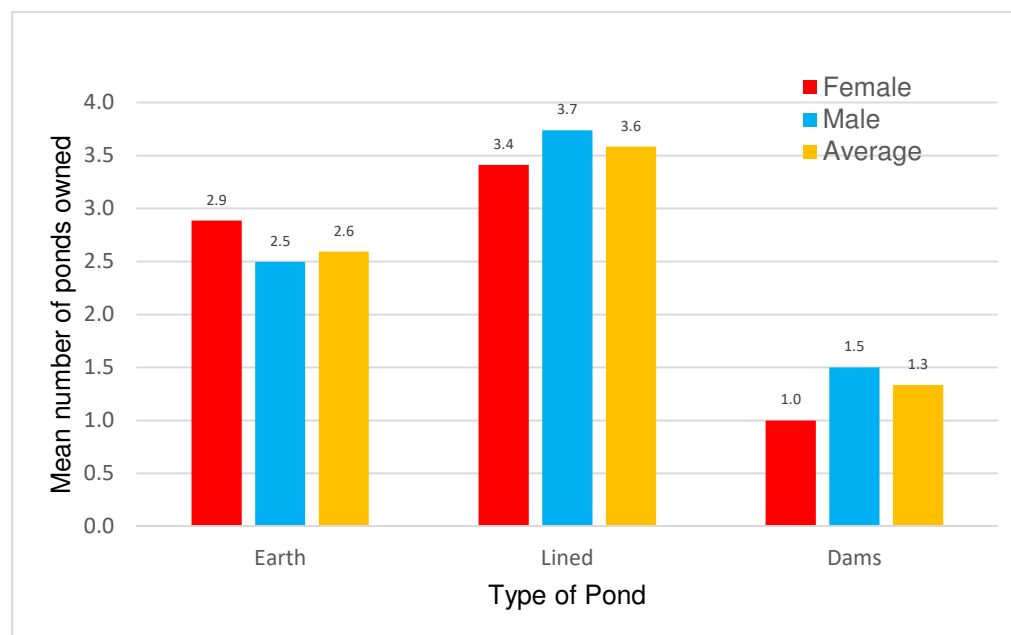


Figure 3. Mean ownership of different pond types between men and women

In Table 3, earthen ponds were the most commonly owned type. The sizes of the ponds varied greatly between counties and the respondents. All respondents who received ESP ponds had a similar size – 300 m². However, those who constructed their own ponds (earthen) had varied sizes ranging from 35 m² (males) to 1,900 m² (males). In general, male respondents reported bigger pond sizes than female respondents (Figure 4). This may be linked to the fact that men were largely more responsible for the construction of ponds, especially the earthen ponds

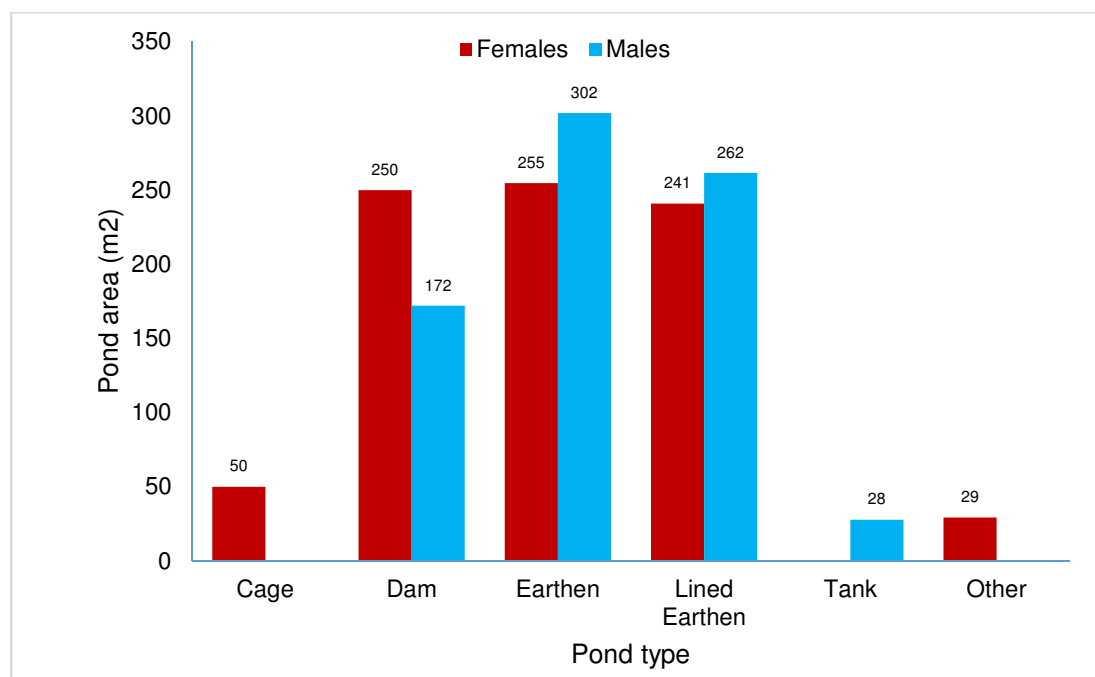


Figure 4: Sizes of different types of ponds respondents own

3.1.3 Access to and control over resources

Land ownership

More than 80% of all ponds are situated within family-owned land (ancestral land), with just over 13% of the ponds constructed in parcels of land that were bought. This means more than 90% of the land is actually family land. The former land is largely under the control of household heads, usually the man (Figure 5). There was little variation among the counties on the location of ponds with respect to land; similarly, there was little variation between male and female respondents on whose land the ponds were constructed in. In most of the counties, ownership of land is vested in men. More than 70% of land is ancestral, and therefore, passed on to sons. While the Kenya Constitution 2010 is clear on land ownership, the Matrimonial Property Act 2013 clearly defines matrimonial property; instructively, the act states that property acquired before a marriage – including ancestral land, cannot be classified as matrimonial property. Yet the act is silent on contributions made to the value of the property through marriage, mostly by women.

***“Among the Bukusu, all land belongs to the man. Therefore, as head of household, the man must give authority and blessings to the women to use the land. However, things have now changed, we hear women have rights, but we never refuse a good idea. We all want more income. We support what our wives say and do.*”**

In the whole of this area, husband and wife sit, discuss and make joint decisions – you can confirm this from the women” – Francis Makhakha – Munyaa women group.

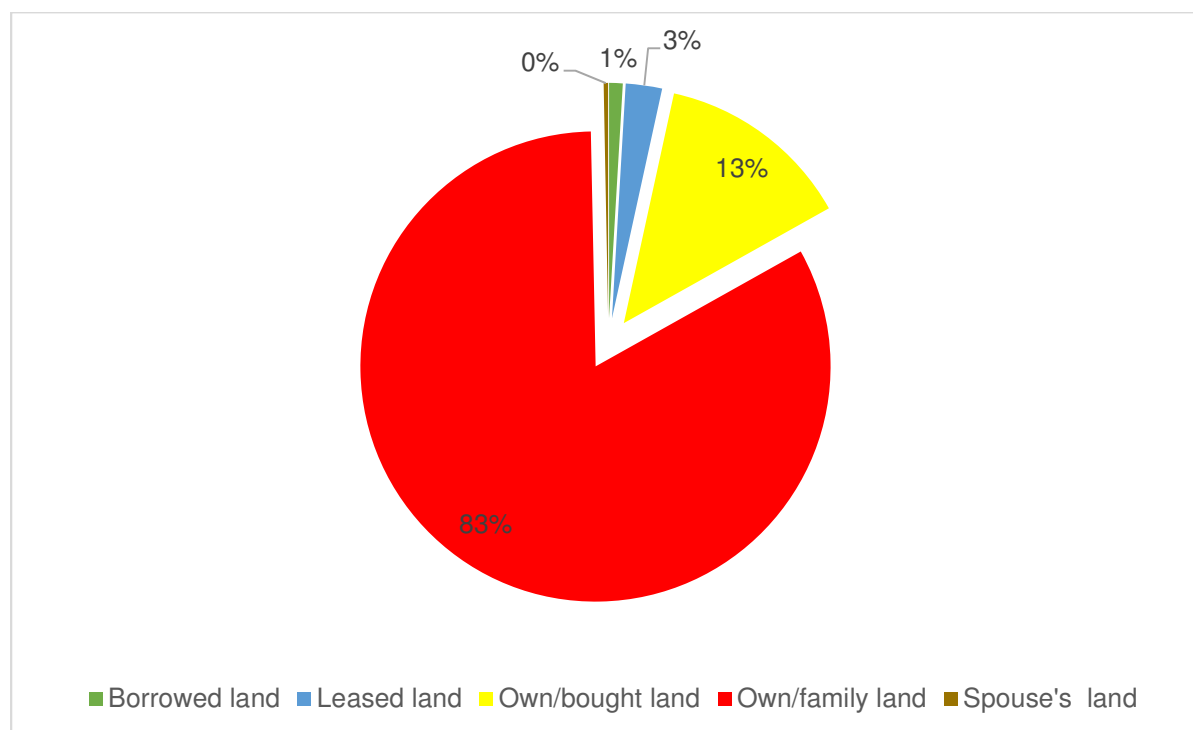


Figure 5: Percent frequency of land where ponds were constructed

There is so much ambiguity on matrimonial land property because by tradition and cultural norms, once a woman is married, she is regarded as the owner of the home – including all the land. She has access to the land although there are restrictions on the extent to which she can use it e.g. how much land to put on which crop, which part of land to use for what crop. Often, she has to consult with the husband before she invests in various land-based enterprises. On the other hand, when she is widowed, she is regarded as the absolute owner of the land, holding it trust for her children. While men do not have similar restrictions, the emerging trend is for them to consult with their wives. Putting up fish ponds is one enterprise where women must consult with their husbands – especially location and size of the ponds.

Discussions (FGDs and KIIs) with various stakeholders indicate that men are still the predominant landowners; women/wives need men’s concurrence to carry out any activity on the land. Men determine what, where, when and size of ponds to be constructed. Increasingly, voices from men and women indicate that decisions on the location, size and number of ponds are made after discussions between husband and wife, and in a few cases, involvement of other members of the household.

While technically men own most of the land, women (wives) are allowed access in all the counties visited. Access is often limited, and men tend to make the final decisions. Noteworthy is that some of the ponds were constructed on leased land or land that was borrowed. No one can construct ponds without access to or ownership (in any form) of land. However, since Kenya Constitution 2010, women have rights to land.

“Now I cannot sell or lease my land without my wife’s consent. Access to land should not be used as an excuse for women not to venture into fish production. They have access, and now half of the control”. Benjamin Ruto – Fisheries officer, Busia.

Water for aquaculture

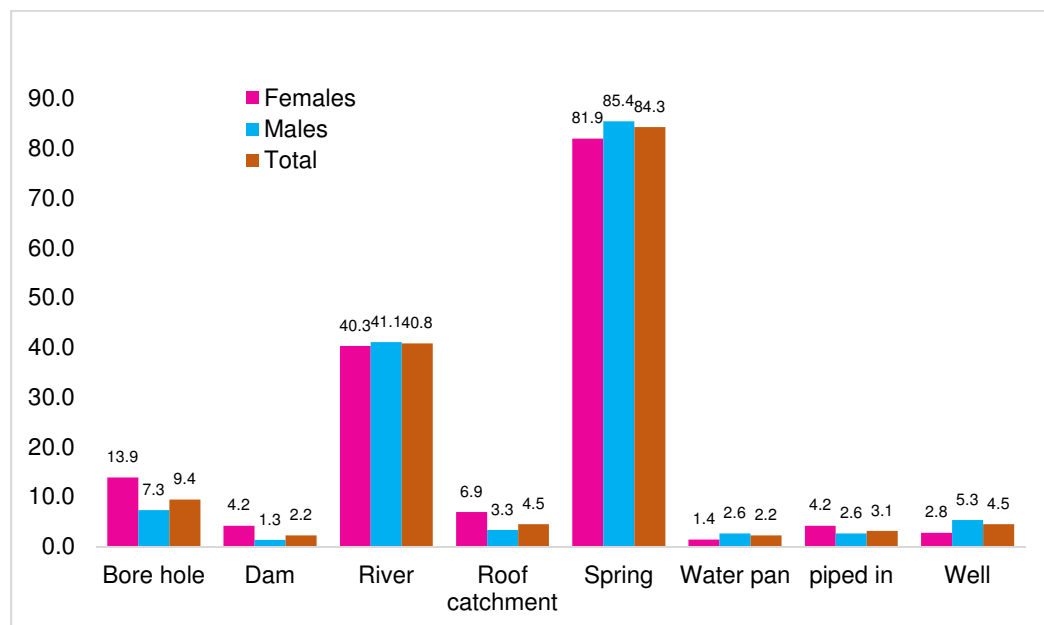


Figure 6: Main sources of water for fishponds

Springs were the major sources of water, and that there were no differences between male and female respondents on the main water sources (Figure 6). Rivers were second to springs in importance as sources of water. A point to note is that conservation of the water catchments is critical if aquaculture is to be sustainable, given that 80% of the respondents’ source water from springs, which can be very vulnerable to climate change and environmental degradation. The main water sources showed great variation between the counties; a fact ascribed to the different agro-eco climatic, agro-ecological and geomorphology in the various counties. Springs were the most important water sources for Bungoma, Busia, Kakamega, Siaya and Vihiga; while rivers were critical for Migori, Homa Bay, Machakos and Kisumu. Kiambu had an even distribution of the main water sources. Boreholes were important for ponds in Machakos County.

Water sources dictate ease of access – distance, quality and volumes. The survey found that 93% of the respondents do not pay for the water used in their ponds. This is presumably because the ponds are situated in the paths of the springs and rivers, or source water from own wells and boreholes. Still, 5% of the respondents reported paying for the water. At least 7% of female respondents indicated they pay for water used in their ponds compared to 4% for male respondents. Mean monthly cost of water for those paying was KES 2,550/= and the maximum paid was KES 20,000/=.

3.2 Analysis of stakeholders in the aquaculture value chain

3.2.1 Stakeholders in aquaculture value chain

The study found main stakeholders engaged in one way or the other in the aquaculture value chain. Table 4 provides a summary of the actors and Figure 7 gives a graphic illustration.

Table 4: Summary of stakeholders in the aquaculture value chain

Stakeholder	Prevalent node of operation	Comment
Local small-holder farmers	Main node is production (from --Ha) A few engaged in producing fingerlings	Most started aquaculture during ESP. Majority have less than 3 ponds. Ponds in name of men, but recognized as belong to households. Women can participate in several nodes.
Large scale commercial farms	Most take part in all the nodes – fingerlings, production, sales/marketing, feed production; provide technical support to small scale farmers	Invested heavily in high tech production technologies; employ many staff (at least 5), often have own hatcheries and cold rooms.
Commercial hatcheries	While key activity is production of fingerlings, most also produce fish for sale from ponds. Some make and sell fish feeds. Also offer technical services to visitors	There are big hatcheries like Dominion, Jambo, and Pioneer etc. The team came across many smallholder farmers who also produce fingerlings – e.g. all produce fingerlings for sale. Most also produce fish for sale from ponds. Production of fingerlings is quite lucrative but wrought with many potential technical hitches. This is an opportunity where well-trained women aquaculturalists can play a big role and actively participate given the small land size needed.
Small scale fingerling producers	Produce fingerlings Engage in production of table fish May undertake rudimentary formulation and production of own feeds	Are many, produce both tilapia and catfish. Quality not quite assured, have relative small catchments, not well known by most farmers. Great potential to support nearby farmers access fingerlings.
Small scale fish dealers in local markets	Buying from farmers, Processing and selling of fish (drying, frying, refrigerating) then selling (retail and wholesale)	Virtually all fish dealers in markets are women, although men were found selling non-pond produced fish like dagga and <i>ochonga</i> . Small-scale fish dealership is a sector that can be improved to take in more women that are interested.
Large scale fish sellers	Buy fish in large quantities and mostly sell to retailers or for export	Most of the big commercial farms sell fish – to both large consumers and small-scale fish dealers. They can provide opportunities for employment of women.
Research organizations and researchers	Improve on fingerling germplasm Pass on technical information	It includes researchers in breeding, production, storage, marketing etc. Mostly men involved, but an opportunity for women to participate
Regional development organizations	Key node is fingerling production Invariably, production and	e.g. LBDA, TARDA, LVFO, LVEMP

Stakeholder	Prevalent node of operation	Comment
	extension support	
Aquaculture Association of Kenya AAK	No clear node yet -	Still finding its footing, has no clear strategy and activities for farmers
Feed manufacturers	Formulation, production and selling of feeds	Are very few, Formulate and sell fish feeds to farmers. Area with great challenges with respect to quality, demand, costs and distribution networks. Often produce feeds for livestock (cattle and poultry)
Feed manufacturer association	Advocacy group for feed manufacturing	Supports the feed manufacturers and provides standards as well as advocacy for the millers.
GoK/County Ministry of agriculture and extension officer	Offer technical support and extension services	Charged with promotion of aquaculture including technical expertise and formulation of policies. Most counties have very few women employees (ascribed to structural issues); most counties have very little budgetary allocations for fisheries (including aquaculture). Ministry staff would like to have strong linkages with KMAP. Ministry implements gender blind projects
NGOs	Technical support and extension services	Work in various nodes of aquaculture, bring in projects, and mobilize technical expertise. Have a huge opportunity to promote and institutionalize gender equality in their spheres (often limited).
Fish exporters	Sales, marketing and import of fish	Export fish, but in recent months also import fish. Importation fills in the demand gap, but also restricts some markets for local farmers.
Agro dealers (aquaculture shops)	Selling of aqua-products, limited on demand technical support	Stock and sell aquaculture inputs – especially feeds and limited equipment. An excellent opportunity for women to own and run the businesses.
Consumers	Key buyers of fish	Very extensive group – from small retail to big firms and institutions
Farmer organizations	Sales and Marketing Technical support Advocacy	Many self-help groups and cooperatives serving aquaculture farmers in various stages of formation and operations. May be key to supporting small scale farmers access inputs, markets and technical know-how

Sex disaggregated roles and responsibilities across the aquaculture value chain

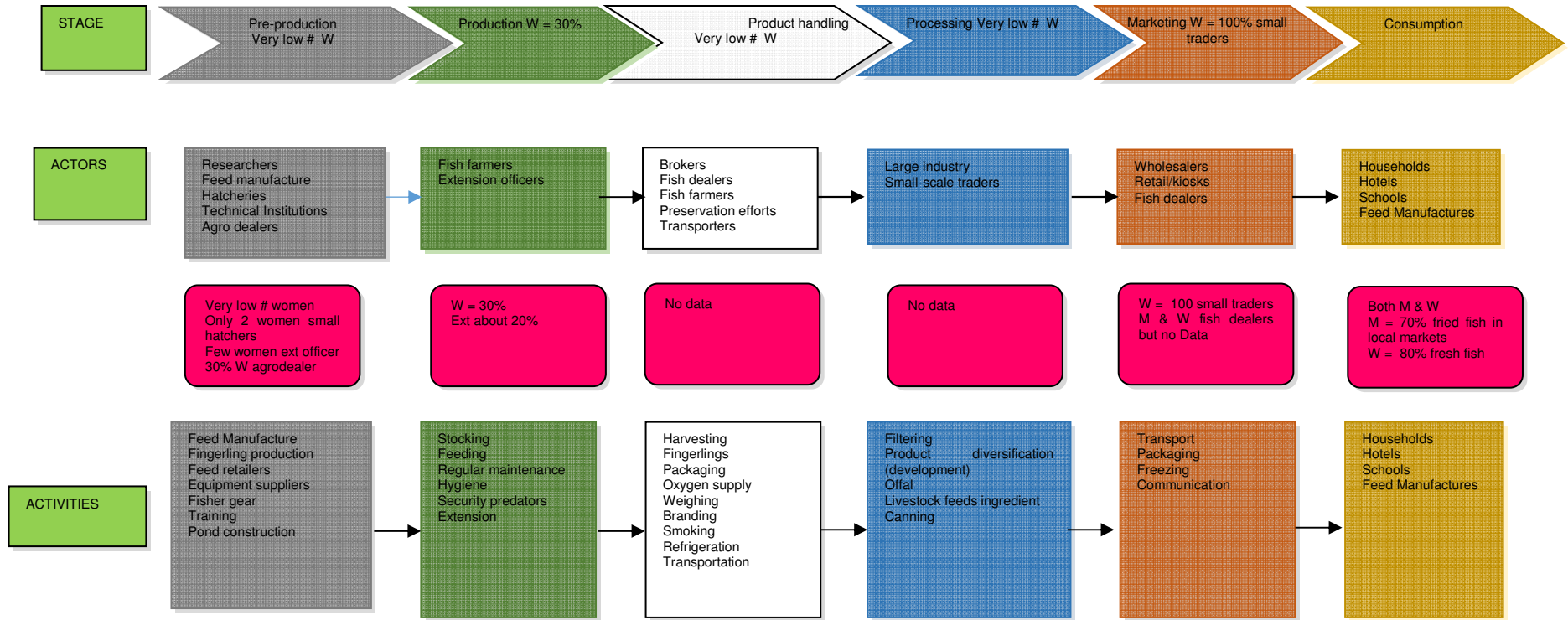


Figure 7: Diagrammatic expression of the aquaculture value chain with women’s presence and influence shown in %

3.3 Gender analysis and the involvement of men, women and the youth along the aquaculture value chain

3.3.1 Sex disaggregated dynamics in aquaculture: main roles and responsibilities for selected pond production tasks

The study examined the following pond management tasks with respect to roles and responsibilities: Pond construction; Putting in fingerlings; Pond cleaning/maintenance; Feeding fish; Overall pond management; Fish harvesting; marketing/sales; processing; and record keeping. Results presented here are based on what the respondents reported on who actually does what in their respective aquaculture practices (not on whether the respondent was male or female).

Production tasks and activities

Pond Construction: Men were largely responsible for the physical construction of ponds. Women too participate in physical construction although majority of them provide resources (money) for the pond construction. Table 5 gives a summary of who does what (percentage) in smallholder aquaculture.

Table 5: Summary (%) of main tasks performed by men and women in the ponds

Task/Activity	Female respondent	Male respondent	Female worker	Male worker
Construction	26	38	0	29
Cleaning & Maintenance	50	67	1	24
Input Fingerlings	43	45	0	19
Feeding	7	27	5	32
Harvesting	19	18	1	36
Market/sell	53	64	4	13
Processing	71	68	9	20
Record keeping	68	81	0	10
Pond Management	10	20	1	16

At least 26% of the women respondents took part in pond construction compared to 38% for men, although overall, men (79%) did most of the construction (either as owners, hired labor or group members) compared to women at 21%, a fact corroborated by FGDs and KIIs. While KMAP will work with aquaculture farmers who already own ponds, this finding indicates construction of new (additional) ponds targeting women will need support e.g. labour costs or machinery to be successful. Additionally, resources may have to be invested in enhancing cooperation of men to support women in constructing the ponds.

“You see this pond, I’m the one digging it. My husband can help and support me, but women all over here do everything in the ponds – even harvesting”. – Emily Walela, Kanduyi.

Maintenance of ponds: Like in pond construction, men were more involved in maintaining and cleaning the ponds than were women. Female respondents reported that half of them (50%) took part in cleaning/maintenance work, compared to 67% of the male respondents.

Putting in fingerlings was a job done by a similar proportion of female (43%) and male (45%) respondents. Male workers made some significant contribution in inputting the fingerlings.

Feeding the fish: While data from FGDs and KIIs indicated that women played a key role in feeding of fish, household data indicates that mostly men (respondents – 27% and male workers 36%) fed the fish, with just about 7% and 5% of female respondents and female workers respectively. Most farmers fed fish in the mornings and in the evenings.

Harvesting of ready fish was done equally by both female and male respondents. Male workers provided significant support (36%). Just about 50% of all respondents had **harvested** any fish from their ponds. Of those who did, significantly more men (28%) than women (13%) undertook the activity. The data shows that men/husbands (15%), male workers/relatives (14%) and women/wives (19%) were evenly involved in harvesting of fish. The impression from KII and FGDs was that women were not as involved in fish harvesting as were their husbands. Indeed, in Bungoma, while men said there was nothing wrong with women getting into the ponds to harvest fish, they expected women to put on trousers. ***“In Kibukusu, our women can go harvest the fish, but they must put on trousers” – Kizito Wamalwa, Elder in Bungoma.***

Harvests from the ponds were typically low (Table 6), actually way below national averages. Production and yield per unit area from the various counties are compared in Table 10. Yields and production per unit area varied greatly between the counties, as well as between male and female respondents. Siaya recorded the highest mean yield per unit area among female respondents, while Kiambu had the greatest mean yields amongst the male respondents.

Table 6: Mean maximum yields (Kg) and mean production kg/m² from the counties by sex

County	Female			Male		
	Minimum	Maximum	Mean	Minimum	Maximum	Mean
Bungoma	1.2	1.5	1.3	0.4	5.0	2.6
Busia	0.5	1.3	1.1	0.7	1.3	0.8
Homa Bay	0.0	7.0	2.8	0.6	4.8	3.0
Kakamega	0.0	0.6	0.3	0.2	0.4	0.3
Kiambu	0.0	10.4	1.9	0.0	62.5	4.7
Kisii	0.4	2.8	1.3	0.0	4.0	1.6
Kisumu	2.7	11.9	4.9	3.3	6.7	4.8
Machakos	0.0	2.0	0.4	0.0	1.6	0.2
Migori	3.3	4.0	3.7	0.0	4.4	3.4
Siaya	0.3	41.7	14.6	0.0	6.2	1.4
Vihiga	0.5	13.6	3.4	0.7	4.7	1.9

FGD and KII found that quite a number of ESP beneficiaries did not harvest any fish. Indeed most of the fish have stunted growth. **“Yields is too small/ fish size small. Fish haven’t matured for over 12months” – Ebusundi youth group – Vihiga.** These farmers blamed inadequate feeds and poor germplasm for their predicament. However, Stanley Imbusi from Sinyalu had this to say: **“everything about fish growth and sizes has to do with husbandry – you must feed them well with appropriate feeds – not necessarily from the factories – one must know what they feed, and the fish will grow. I have done it with factory feeds and my own formulated feeds, and been very successful. Send them to me for training.”** Through the FGDs and KIIs, the study found that most farmers do not have adequate or correct equipment for harvesting fish. The design of most ponds makes it difficult for women especially, to effectively harvest the fish. Women found it easier to harvest from ponds with outlets that they could easily empty, and then collect the fish.

Marketing and processing: Data from the survey showed that both women and men actively engage in selling/marketing and even processing the fish from the ponds. Both men and women search for markets, and help in ensuring that the fish is sold. A greater proportion of (64%) than female (53%) respondents reported that they marketed/sold their fish produce. On the other hand, slightly more female (71%) than male (68%) respondents took part in processing the fish. Women are better at marketing and selling fish – that is mainly their role.

Record keeping and overall pond management was mostly done by men. In general, men performed more tasks than women with respect to the physical activities and tasks of fish production from ponds. An examination of daily profiles of men and women with fish ponds showed that women are engaged over much longer hours on both productive and reproductive activities compared with men (Fig 8)

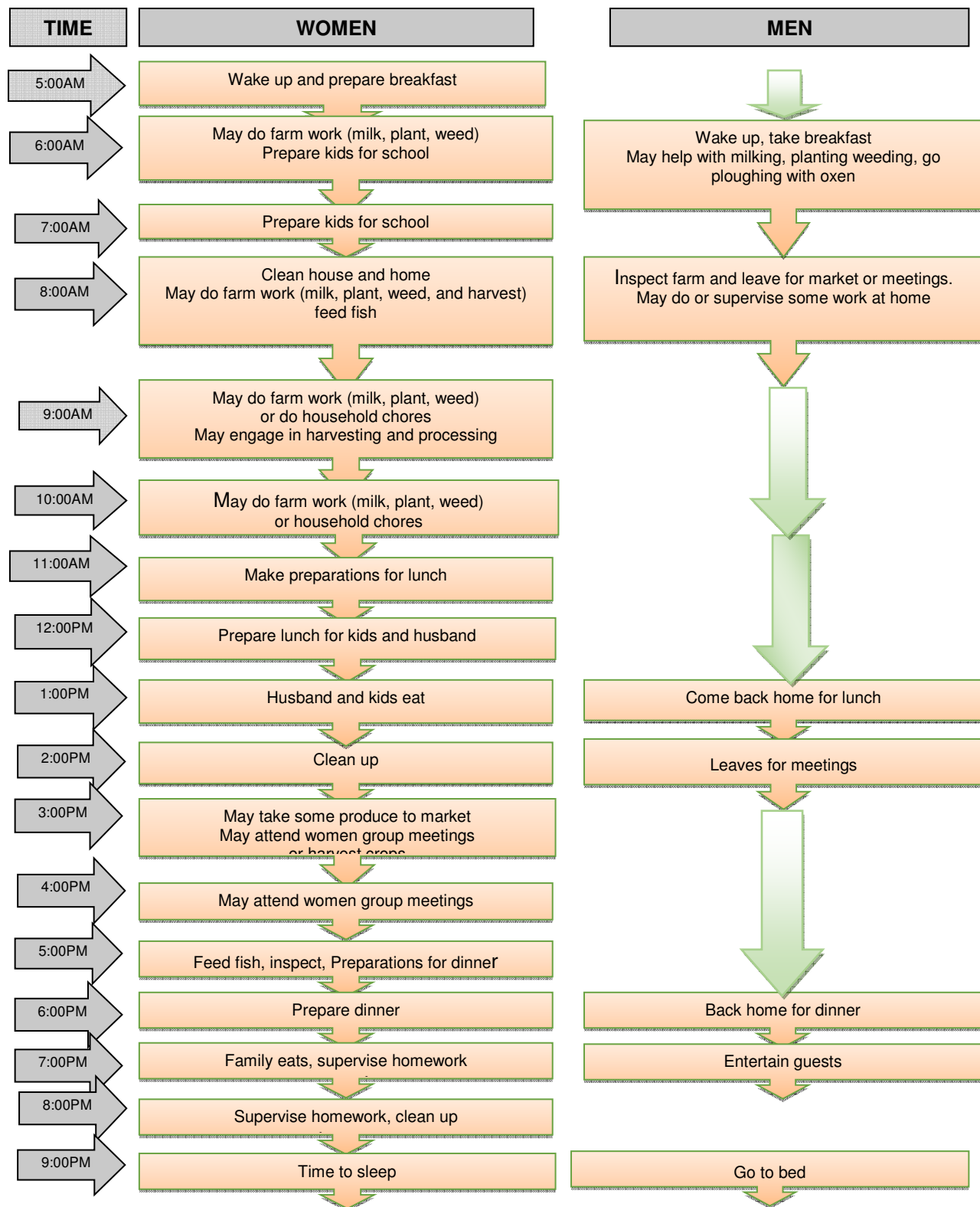


Figure 8: Daily activity profiles of men and women farmers

A summary of the main tasks and those who perform them based on reports from the respondents is presented in Figure 9.

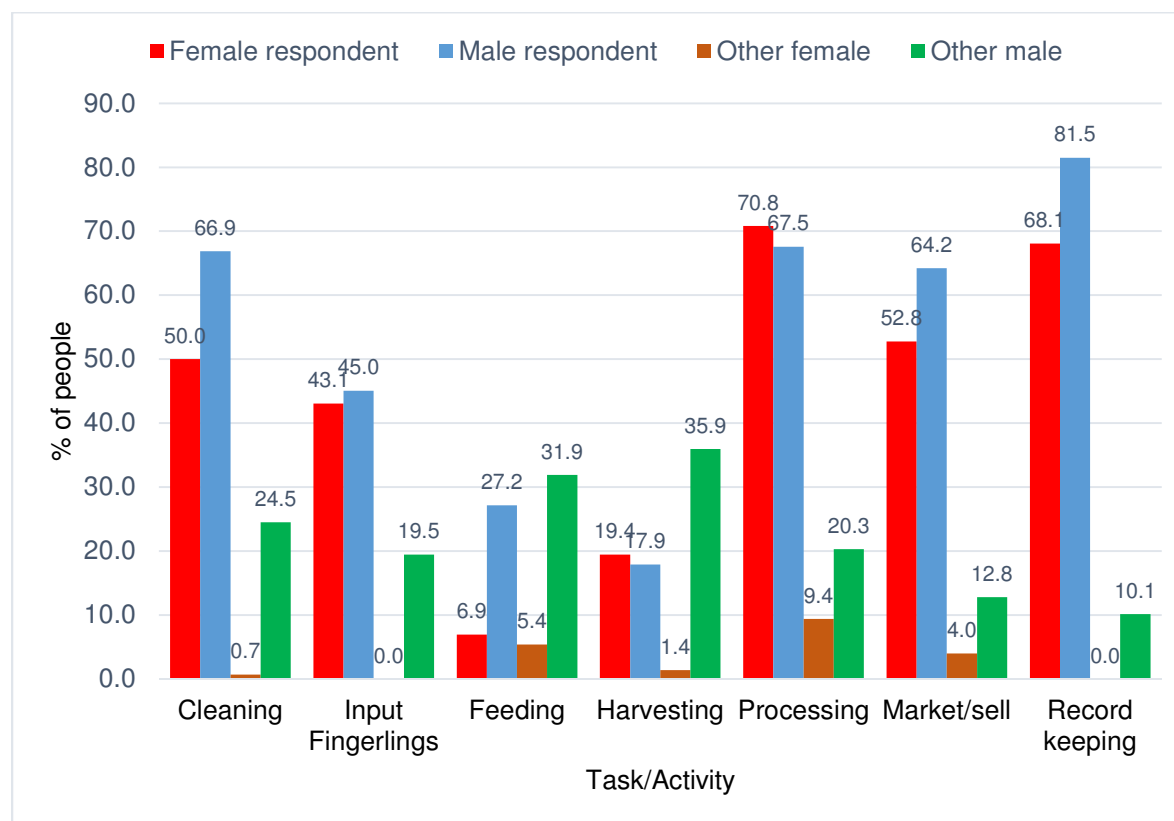


Figure 9: Summary of % of men and women performing various tasks/activities in the aquaculture

Most of the tasks carried out in the ponds were done by own or family labour (Table 7).

Table 7: Main sources of labour for the fish-ponds

Respondent	Employed		Family work		Friend/Group work	
	No	Yes	No	Yes	No	Yes
Female	43.1	54.2	19.4	77.8	90.3	6.9
Male	46.4	52.3	25.8	72.8	89.4	9.3
Average	45.3	52.9	23.8	74.4	89.7	8.5

From the presentations above, it can be deduced that:

- To a large extent, both men and women respondents are involved in all nodes of the aquaculture production value chain.
- Men are heavily involved in the more labour demanding aspects of the value chain – pond construction, pond cleaning and harvesting.
- Women respondents are more involved in sales/marketing and processing. But more male respondents than expected were involved in sales/marketing. Sales and marketing is an activity that the owners of the ponds (men and women) hardly entrusted to workers or relatives.
- Feeding is largely done by workers – most of whom are males. Significantly, fewer female respondents were involved in feeding the fish than earlier expected/assumed.

Access to and use of aquaculture inputs

The main inputs for aquaculture captured during the study were fingerlings, fish feeds, capital (money), information/extension services and insurance.

a) Fingerlings:

The Government (Ministry of fisheries, or County Department of Fisheries) and hatcheries collectively contributed 86% (Figure 10) of the fingerlings. Other sources were from other farmers and others (especially rivers and lakes). GoK refers mainly to the ESP program as well as GoK run hatcheries like Sagana, Chwele, KEMFRI and LBDA. Hatcheries include private commercial hatcheries like Dominion farms (see Annex 1). Visits to farmers during FGDs and KIs revealed the presence of quite a few farmers with small-scale hatcheries, mostly producing by order. The hatcheries are often small – ranging from 50 – 300 m². Most of the clients who buy these fingerlings buy just a few at a time – 200 to 1000 fingerlings.

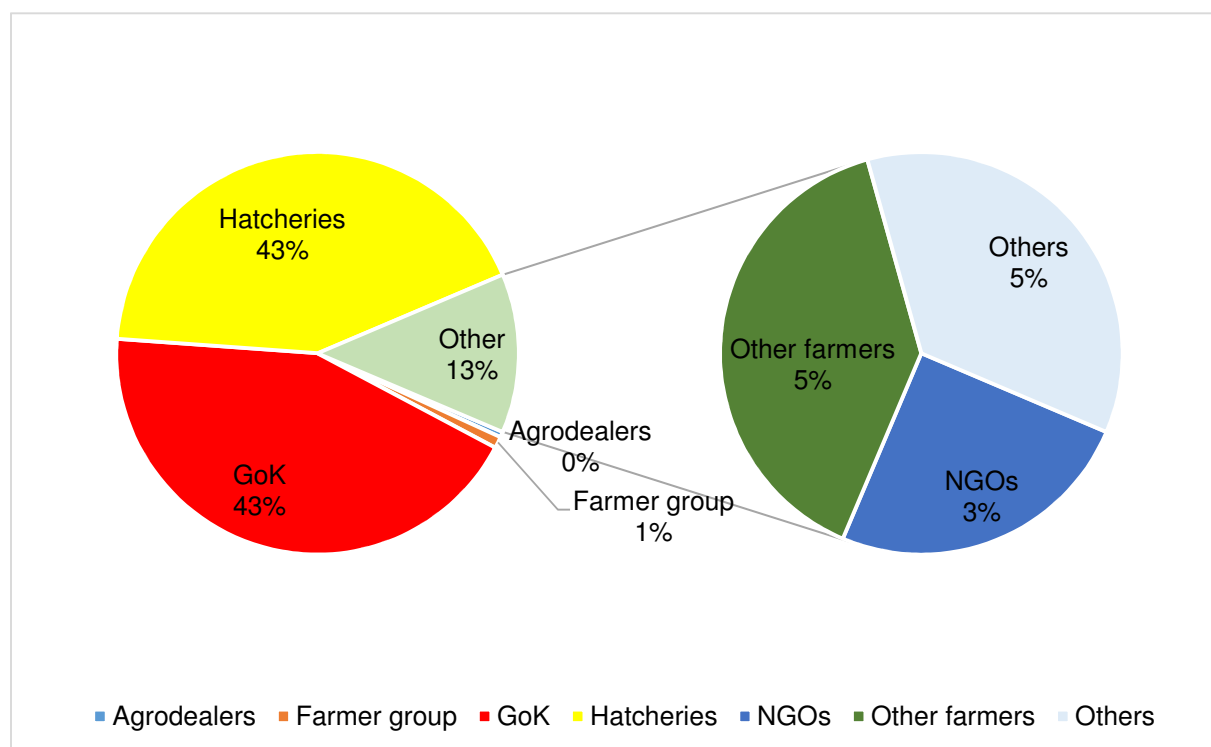


Figure 10: Main sources of fingerlings respondents use (%)

Tilapia (96%) was by far the most popular fish type the respondents cultured (Figure 11). There were no differences between male and female respondents on the main fish type. African catfish was the second frequent type of fish the respondents reported. Other fish types were koi carp and the trout in very few ponds.

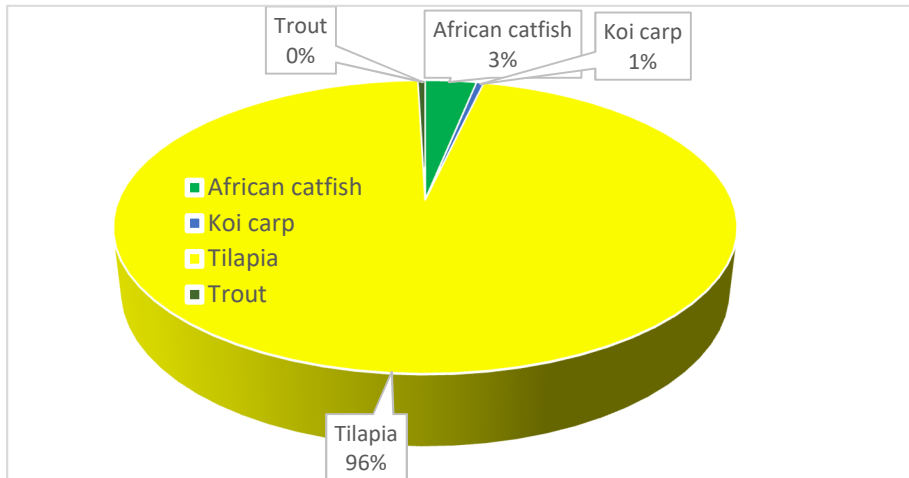


Figure 11: % of main fish types respondents cultured

Most respondents preferred to source for mono-sex fingerlings, but quite a few of the ponds visited during KII and FGDs had mixed sex tilapia and catfish. The main sources of fingerlings varied among and between respondents and counties. Some farmers placed catfish in tilapia ponds with hopes of controlling the tilapia population. A few farmers made mistakes and put the two fish types together. The more common explanation during FGDs and KIIs was that the fingerlings sourced were contaminated (had both sexes even when farmers had paid for mono-sex) but most of the big hatcheries refuted this as noted by a KEMFRI researchers.

“We provide fingerlings, and we are looking at improving the seed in terms of growth performance, quality and quality species diversity in Nile tilapia and catfish by providing brooding stock. We have adequate quality and quantity” Priscillah Mboya – KEMFRI Kisumu.

Some farmers did not have adequate knowledge on fingerlings to stock, and thus bought any fingerlings, only to learn much later the need to stock mono-sex. The source of fingerlings used depends on other factors – e.g. availability of the type needed as well as distance to the source of fingerlings. Survey data shows that respondents distance to fingerlings varied greatly (Figure 12), even within a County. In general, respondents did not always go to the nearest sources of fingerlings.

Secondly, FGD and KII discussions revealed that many respondents did not know of the many sources of fingerlings, even those near them. Therefore, many respondents resorted to sources they knew, trusted or had heard about. All the sources of fingerlings visited had both tilapia and catfish. None specialised in either species, although tilapia is by far the most sought after type.

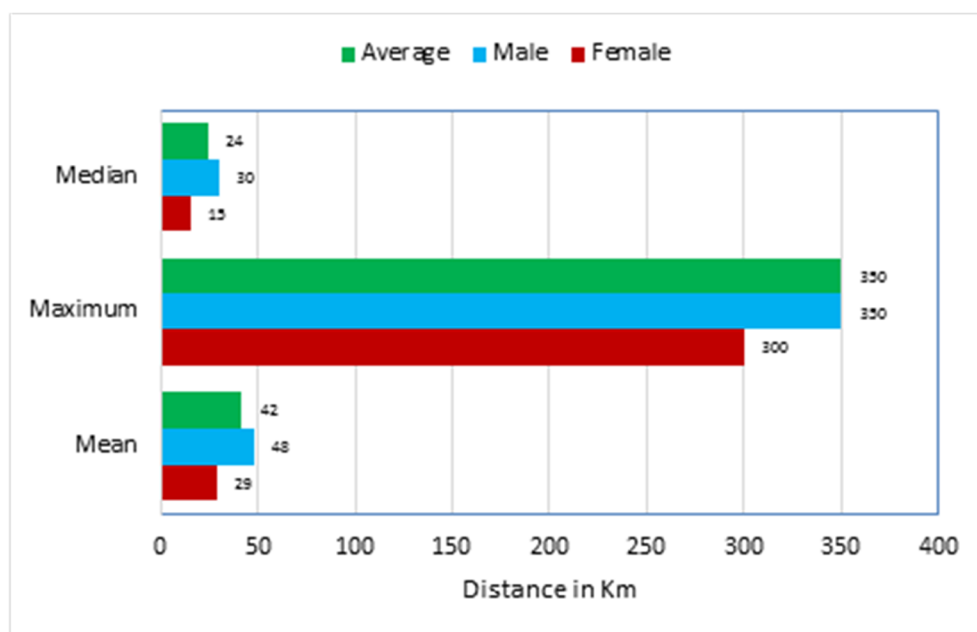


Figure 12: Mean distance farmers travelled (km) to source of fingerlings

When distance to the sources of fingerlings is analysed, it is clear that female respondents on average purchased their fingerlings from sources nearer to them. On the other hand, men could travel over 350 km to access fingerlings of their choice. FGD and KII discussions revealed that when nearby sources had no fingerlings (quality, quantity), female farmers left the task to men, who could travel further because women were encumbered by other domestic chores to source and fetch the fingerlings.

Cost of fingerlings could also be a factor. The costs varied from KES 3/= to a max of KES 50/= (Table 8). Variation was recorded within and between Counties. However, no significant differences in the mean per unit cost of fingerlings was observed although there were differences in the maximum paid, with men paying much higher than women do (on maximum per unit prices).

Table 8: Per unit prices respondents pay for fingerlings between counties

County	Mean	Minimum	Maximum	Median
Bungoma	4.4	0.0	7.0	5.0
Busia	8.0	7.0	10.0	7.0
Homa Bay	3.9	0.0	7.0	4.0
Kakamega	5.8	0.0	8.0	7.0
Kiambu	7.6	0.0	50.0	4.0
Kisii	4.8	0.0	20.0	5.0
Kisumu	5.4	3.0	8.0	5.0
Machakos	2.2	0.0	10.0	0.0
Migori	5.8	4.0	10.0	6.0
Siaya	5.8	0.0	10.0	5.0
Vihiga	6.8	5.0	10.0	7.0
Average	5.4	0.0	50.0	5.0

Where minimum prices are indicated as zero, the farmers received fingerlings free of charge, especially from Government sources. The hatcheries visited confirmed that they sell mono-sex fingerlings to the farmers. Even small holder farmers (with 2-3 ponds dedicated to fingerling production) indicated they breed and sell mono-sex fingerlings.

b) Fish Feeds:

Following the end of the ESP program, fish farmers now have to source for and purchase their own fish feeds. This study found that farmers use a variety of feeds for their ponds, including fish feeds, fertilizers, household waste, livestock dung and pond lime (Figure 13).

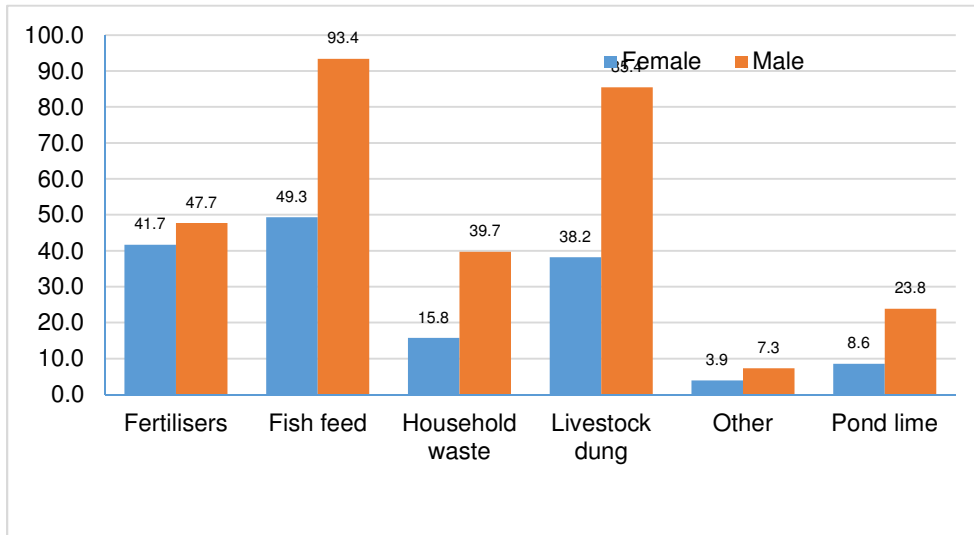


Figure 13: Inputs used in the ponds by respondents

Specifically, fish feed and livestock inputs were the most used by both male and female respondents. Many participants in FGDs and KIIs stated that they formulate their own feeds, some using mixtures that have hardly been tested. Data from the survey shows a healthy diversity of feeds fed to the fish (Figure 14), but the jury is out on whether the quality and quantity given is adequate, or can lead to the desired yields. However, in all the inputs used, there were significantly greater number of male respondents using various feeds than were female respondents.

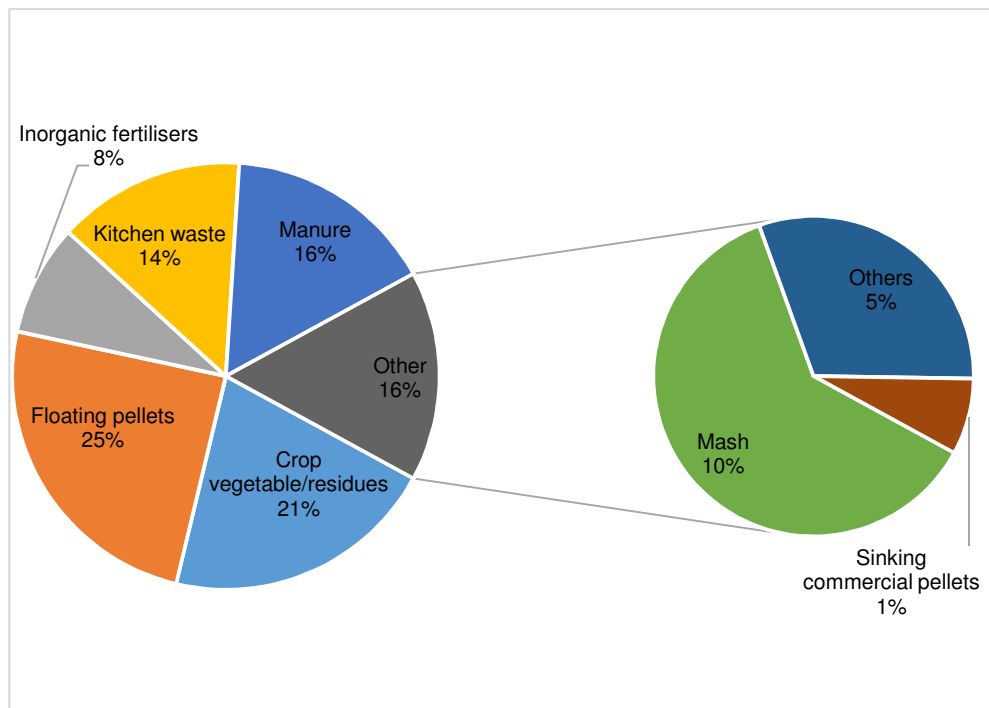


Figure 14: % Frequency response types of feeds fed to fish

Table 9 shows the differences between female and male respondents on the feed types they use in their ponds. More male than female respondents used the floating pellets (which fish eat more efficiently) than the sinking feeds.

Table 9: Main sources (% frequency) of different fish feeds respondents use in the ponds

	Crop/vegetable residues	Floating pellets	Inorganic fertilizers	Kitchen waste	Manure	Mash	Sinking commercial pellets	Others
Female	61.1	68.1	22.2	34.7	48.6	20.8	2.8	9.7
Male	60.9	74.2	25.8	45.0	46.4	32.5	4.0	16.6

It is worth noting the high number of respondents using floating pellets. Crop residues were also high on the frequency of use list (Figure 12). Discussions during FGDs and KIIs indicated that most farmers do not feed fish with the required minimum amounts/standards.

Many respondents voiced their concerns about the cost of feeds, their physical availability as well as the quality. Indeed, many KII and FGD participants persistently questioned the quality of the feeds from manufacturers. In response, many manufacturers indicated that they always have adequate quantities of quality feeds but have no buyers, and most of them have reduced the output – though they were ready to meet any demands.

“We have enough feeds but no markets – only a few farmers buy. Production of quality feeds needs capital that we do not have if the market is surprised” Edwinah – Hesao feeds.

Physical accessibility is another factor influencing fish feeding and feeds used. When feeds are far from the farmers, the costs of accessing them increases. There is also the likelihood of farmers resorting to their own concoctions to feed the fish, especially when they are not able to access (for reasons of costs, physical location) the desired ‘quality’ feeds.

The survey found that farmers travel a mean of six kilometres to buy fish feeds (and often, they are unsure of the quality). The distances varied significantly between the counties. The maximum recorded distance to buy fish is 600 Km (See Annex 1 to this report); (probably the farmer went to buy raw materials so as to formulate own feeds). Both male and female respondents travelled a similar mean distance to access the feeds.

Interventions to improve productivity in aquaculture, and especially those targeting to increase the participation of women in the sector must craft approaches that address the issues of access to quality and adequate feeds. Secondly, there is need to impress upon aquaculture farmers the benefits of quality feeds, and demonstrate this practically to them.

c) Access to aquaculture information and extension services

Accessing contemporary information and technology is a pre-requisite for good profitable farming all other factors constant. At least 95% of the respondents reported having received some technical support or extension. Most of the technical information and extension support was received from the Government (71%) and “Other farmers” (55%), see Table 10. More male (72%) than female (69%) respondents received support from the government. During KII and FGDs, respondents in most counties repeatedly indicated that they last saw GoK extension officers during the ESP, and very rarely during the new county government system. For this reason, many did not have adequate knowledge and techniques of managing their fishponds, in spite of having received some technical training or information in the past.

Table 10 Main sources (% frequency) of technical and extension support on aquaculture for respondents

Respondent	Female	Male	Average
No support information	5.6	4.6	4.9
Government	69.4	72.2	71.3
Research institution	2.8	4.6	4
NGOs	0	6.6	4.5
Private companies	0	5.3	3.6
Farmer groups	12.5	18.5	16.6
Other farmers	56.9	54.3	55.2
TV/Radio	1.4	0	0.4
Internet	6.9	4.6	5.4

Inadequate support from government agencies charged with technical support and extension has resulted in two main outcomes: i) low levels of production – there were very many farmers who have never harvested any fish; ii) many farmers seek such support from wherever they can glean information – e.g. other farmers. However, Kakamega and Busia Counties are working closely with the farmers and farmer organizations. Both have facilitated the formation of cooperatives for aquaculture. Kakamega County has invested money to re-equip the fish processing and storage plant constructed during the ESP.

The study noted that the department of fisheries in all the counties suffer from inadequate budget allocation, and even the little allocated is not guaranteed to be available, so staff lack resources to visit and support farmers. Demo ponds in some counties, e.g. those on the shores of Lake Victoria for the BMUs are in dire straits of disrepair or totally out of use.

Table 10 indicates that few farmers accessed information from the groups they belong to, many preferring to contact other farmers (most likely those doing well) for information and learning. From the KII and FGDs, it was obvious that many farmers were hardly aware of the existence of better performing farmers, who were more knowledgeable. While many of the big farms encourage local/surrounding farmers to visit and learn from their farms, very few farmers take this up, as evidenced by data in Table 9. In addition, many farmers prefer that technical officers visit to give them support in their farms/ponds – but this is not possible, given the low staffing rates in most of the fisheries departments.

While women farmers (during FGDs and KIIs) did not strongly indicate a preference for female technical officers, past research indicates that women often feel motivated when trained by female experts, at least during part of the training time^{21,22}. However, a few female key informants made a strong pitch for female extension officers and female led demo plots.

“For aspiring female fish farmers to succeed, they need to be mentored by experienced ones like me. When the project starts, bring the women over, invite even a female extension officer, we shall set up a practical demonstration pond to teach them and mentor them all the way” - Mrs Buteyo J, fish farmer in Bungoma. Adds Ann Ouma from Vihiga ***“at times as fish farmers, there are things we need to discuss with fellow women technical officers, but they are so rare. Women officers will better understand our issues”***

During this study, a few women requested that they be given access to female experts, where they can freely share and learn more of the art, social and science in fish farming, instead of the factual information most male officers provide.

d) Access to capital and financial support.

Capital: Grants and credits: About 25% of the respondents indicated that they had received any form of financial support for their aquaculture activities. More male (28%) than female (20%) respondents indicated they had received financial support. The support was in form of grants (93% of support) and credit, which formed about 7% of the total support (Table 11). None of the female respondents reported getting any credit. All the credit went to male respondents. Almost all the support (93%) was from Government of Kenya related institutions (ministries, Constituency Development Funds or County Governments), with less than 1% coming from farmer groups and the rest from NGOs.

²¹ Jiggins, Janice, R. K. Samanta, and Janice E. Olawoye. 1997. “Improving Women Farmers' Access to Extension Services. <http://www.fao.org/docrep/w5830e/w5830e0b.htm>

²² Marguerite Berger, Virginia DeLancey and Amy Mellenchamp 1984. Bridging the gender gap in agricultural extension. ICRW, W.DC

In all cases, proportion of male respondents reporting have received financial support was greater than female respondents. Overall, very few respondents received financial support. In western Kenya (Kisumu, Migori, Siaya, Homa Bay, Kisii, Busia, Bungoma, Vihiga and Kakamega), there is general apathy towards loans; people fear taking loans but look forward to grants. In Central Kenya, farmers tend to take greater risk, including seeking for loans. Secondly, women in general seek permission from their spouses before taking loans or even seeking financial assistance. According to elders interviewed (especially in western Kenya), there is a stigma associated with seeking loans or accepting financial assistance, and women have to consult their husbands before engaging. The team found (during FGDs and KIIs), that most of the farmers were not quite aware of the many sources of finance e.g. WEF and YEDF, or if they were, were not clear on how to access monies. But the overriding reason is that most farmers were not sure if aquaculture was a profitable venture that they would risk to take loans for, especially the women.

Table 11: % frequency of respondents receiving different types of financial support and main source

Sex	Received support		Type of financial support		Source of financial support		
	No	Yes	Credit	Grant	GoK (County, CDF, ESP)	NGO	Farmer group
Female	77.8	19.4	0.0	19.4	19.4	0.0	0.0
Males	70.9	27.8	2.6	25.2	25.8	1.3	0.7

Contract farming is a means of ensuring that one produces for a definite market with assured returns. The survey shows that contract farming has not been adopted by most farmers, with less than 6% of the respondents engaged in any form of contract farming. Of these, there were fewer women than men, with just over 4% of the female respondents reporting that they produced on contract and another 3% reporting they produce on contract at times. Almost 7% of male respondents produce on contract with about 2% producing on contract at times.

The FGD and KII discussions revealed that contract farming is fairly complex, and the information from prospective contractors/firms is not always accessible to all interested farmers, especially those in far flung rural areas. Men are more likely than women to access such information. But again, most ponds produce for the 'household' and not men or women.

Farming insurance is a recent phenomenon in Kenya's agricultural space, especially for smallholder farmers. Most often, it has targeted the crop sector, and more recently, the livestock sector. It is not yet well developed. The survey revealed that just four (3 males and 1 female) reported that they had taken some form of insurance for their farms.

Marketing of pond fish

KMAP commissioned a market study for the project, and we refer to the findings²³. In addition to the contents of this report, this survey found three types of markets for aquaculture:

²³ KMAP: Market Study of the Kenya Aquaculture Market
Study Highlights Presented to Farm Africa on 17 June, 2016

Structured contract farming – for table fish and fingerlings. For fingerlings, this market is fairly well organized. Organizations (NGOs, GoK Institutions, or farmers (individual, group or cooperatives) interested in fingerlings make formal requests and reservations (often with commitment of some deposit payment) to the hatcheries.

Many of the small hatcheries (located within smallholder farms) do not often get contracts, but occasionally get requests in advance to produce a given number and type of fingerlings.

However, for fish, the team did not come across specific contract farming arrangements. Most farmers – both smallholder and large commercial farms produce and seek for markets. They often have informal arrangements of supplying fish to resellers including butcheries, fish millers/processors, and retail markets.

Local markets – These are markets located in small to large towns, mostly run by county governments. In these markets, stalls are set up to sell fish that is fresh, fried, or dried mostly by women. They get fish from capture fishermen or fishponds. The fish dealers form loose associations that take care of their welfare and lobby/advocate for their issues with county governments. Most of the fish dealers do not have facilities for preserving fresh fish – they either fry or dry them. Often they deal with small quantities of fish – less than 100 pieces a day.

Local people and institutions – fish farmers, groups and cooperatives sell to local people who visit their farms or stores (often have deep freezers to preserve the fish).

Institutions like schools, colleges are markets that buy large quantities of fish from farmers or traders.

In between, intermediaries may act as brokers to get the fish to the consumers. In general, most retail consumers prefer fish from capture fisheries (Lake Victoria) although most of them do not know the difference in taste between fish from pond or those from the lake. Fish from the lake tend to be bigger, while ponds have relatively smaller fish (300 gm). Supply of fish from both ponds and lake is very erratic, but demand remains high year round as more and more people develop a taste and liking for fish.

According to the fish dealers, male customers mostly seek to buy fried fish, while women buy fresh and dried fish ostensibly because it is easy for men to prepare or just eat the fried fish, while women are able to prepare fresh and dried fish. Most farmers indicated the availability of market for the fish but lamented the low/poor market prices offered for pond fish. Typically, farmers sell fish at KES 100 - 200/= per piece depending on size of fish, time and quantity of fish being sold. A visit to the local fish traders confirmed the huge latent demand, but they decried the small sizes. In western Kenya, fish from ponds cannot outcompete fish from Lake Victoria. While in central Kenya, customers do not have strong preferences. Information from FGDs and KIIs was that husbands/men searched (marketed) for the markets/buyers, while women/wives were charged with the actual selling of the fish products.

Table 12: State of fish sold by respondents

Category	Sell raw fish		Sell Processed fish	
	No	Yes	No	Yes
Female	9.7	87.5	59.7	37.5
Male	9.9	88.7	70.2	28.5
Average	9.9	88.3	66.8	31.4

Farm gate traders are by far the most significant and biggest buyers of fish from the farmers according to 57% of the respondents (Figure 15). Traders from the local markets are the next important players in buying pond fish. There were hardly any differences between male and female respondents on their main fish buyers.

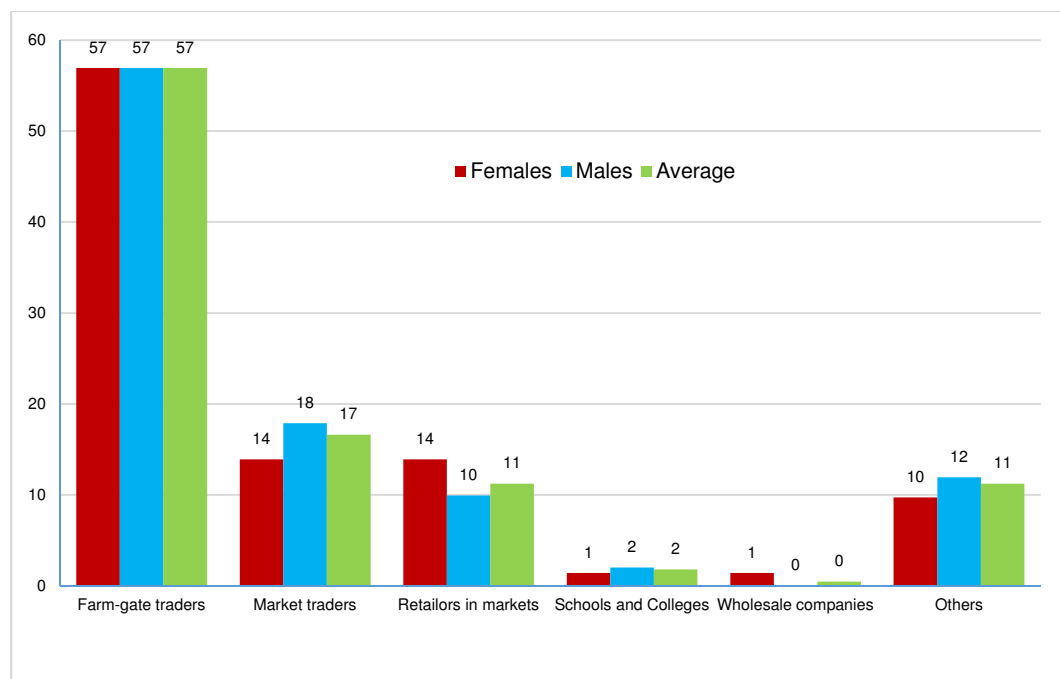


Figure 15: Main buyers of fish from fish farmers (%)

Membership in common interest groups

As part of their support mechanisms, quite a few respondents have joined or belong to members of self-help groups or local/county fish farming cooperatives. Just over 57% (54% of females and 59% of males) belong to fish oriented groups or organizations e.g. cooperatives. Membership to groups varied significantly among the counties. Machakos and Bungoma recorded the greatest frequency of members belonging to groups, while Migori had the lowest.

On average, the mean number of men in the groups was marginally higher than the number of women. While there is no apparent reason for this, the survey noted that a higher proportion of women were members of self-help groups, which may include fish-farming as one of the key activities. It is noted that the ESP promoted clustering of fish farmers and formation of fish groups for moral and technical support to the farmers.

Fewer farmers enrolled in formal cooperatives or farmer associations, preferring instead the self-help groups and Community Based Organizations (Figure 17). From the households interviewed, the farmer groups had an impressive total membership of about 3,098, with 1,368

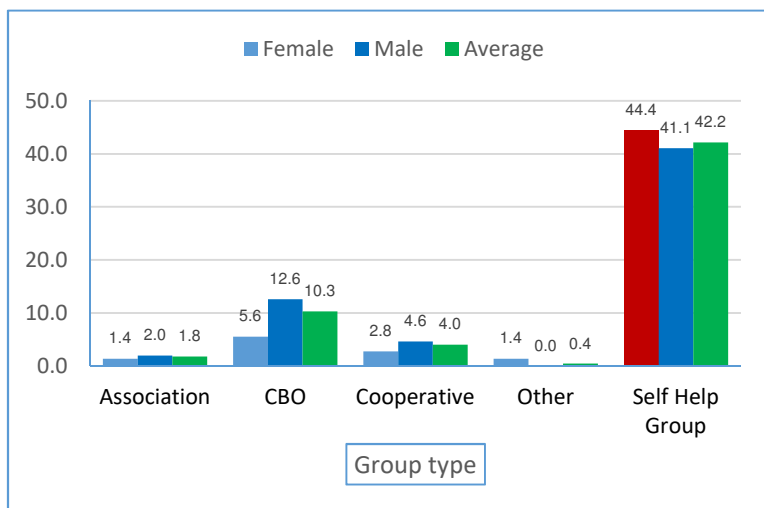


Figure 16: Proportion of respondents belonging to different group types

(women) and 1,764 (men) members. Given the mean number of people per group and disaggregated by sex, men are likely to dominate the discussions and activities of the groups. Indeed, the survey found men to occupy high-level important positions in the groups like Chairman, Secretary and Coordinator, while women were almost always the treasurers. It is important that women too are given opportunities to be in leadership positions; first, it gives them an avenue to learn and gain experience in leadership; secondly, giving women opportunities to lead is critical in enhancing gender diversity at any level. Research²⁴ shows that when women are involved in leadership positions, chances of profitability are high – women are better at managing risks than men are, at the back of women’s mind is always providing adequate food (quantity and nutrition for the family) and supporting wealth creation, and the fact that women are more adept

Farmers’ self-help groups, Community based organizations (CBOs) and Cooperatives were the common organizations farmers organized themselves around. Cooperatives are finding their way back to the western Kenya area, but they are still too young to be assessed. The respondents joined the groups for various reasons. Moral support, sense of belong, access to markets and accessing extension services were the most frequent reasons male and female respondents gave (Figure 18). Therefore, these farmer organizations play roles beyond the technical pieces, given the high scores for moral support. It is during these moral support events that farmers learn about new technologies and exchange information, undergo farmer-to-farmer trainings among others. However, it is a concern that the proportion of female respondents was always lower in each of the main reasons for belonging to groups (Figure 18). At least 70% of the respondents reported that they gave their fellow farmers some technical information. More male (74%) than female (62%) of the respondents gave other farmers technical information or taught their fellow farmers husbandry and related themes in aquaculture.

²⁴ Marcus Noland, Tyler Moran and Barbara Kotschwa 2016. Is gender diversity profitable? Evidence from a global survey. Working paper – Peterson Institute for International Economics, Washington, DC.

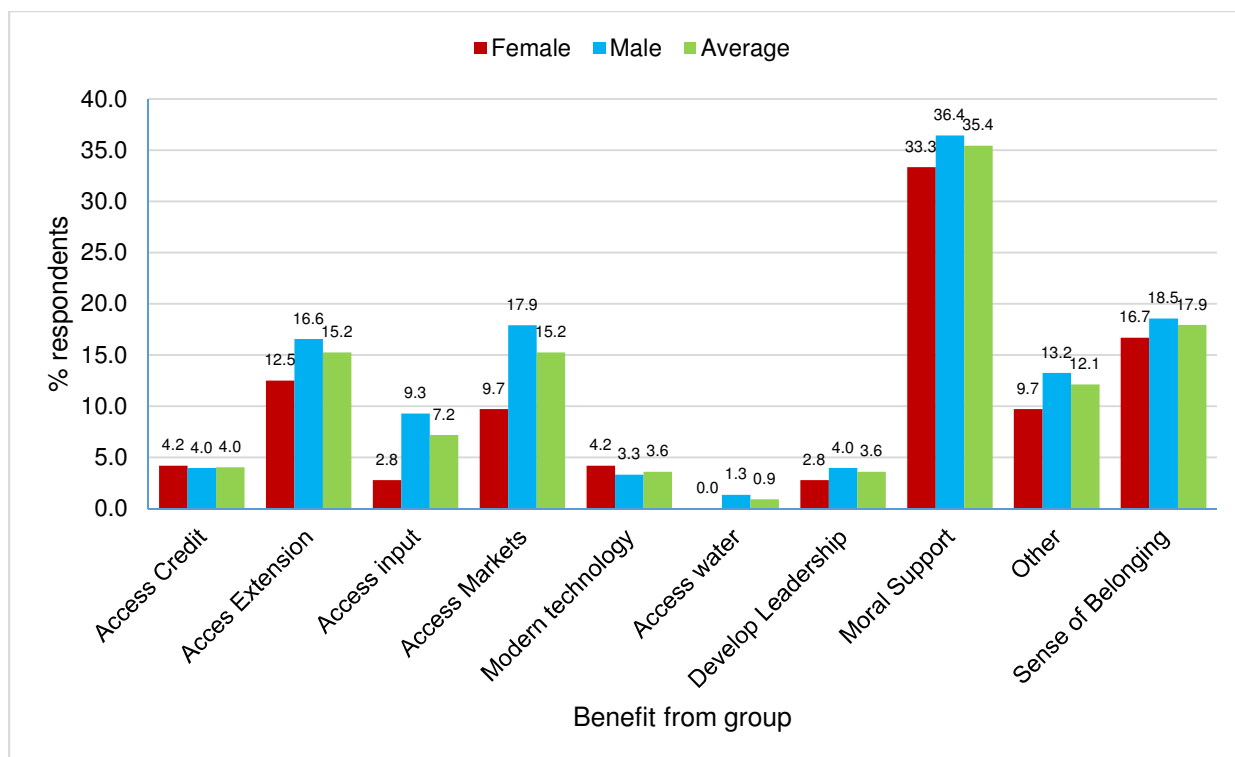


Figure 17: Benefits respondents receive or perceive from membership of fish-farmer groups

3.3.2 Decision making on the aquaculture value chain at household level

The study assessed decision making on key tasks of the value chain, focusing on who makes the final decision based on the following elements: Pond construction; Putting in fingerlings; Pond cleaning/maintenance; Feeding fish; Overall pond management; Fish harvesting; marketing/sales; processing; and record keeping.

To a very large extent, **decisions on pond construction** – location, where, size, when and by who were made by men (60%) although women (20%) also made some decisions. Male workers or relatives also participated in decision-making, filling in for the remainder of the decisions. 70% of the male respondents made decisions on pond construction compared with 63% for the female respondents.

Decisions on **maintenance and cleaning** of ponds was also a male preserve – with 68% of the decisions made by men (husband, male workers/relatives). The data shows that female respondents took active roles in making decisions on pond maintenance and cleaning (65%), though fewer than male respondents (75%).

Inputting fingerlings into the ponds was a decision that both male (71%) and female (72%) respondents made in equal measure. Male relatives or workers accounted for about 10% of the overall decision to put fingerlings into the ponds. Putting fingerlings into the ponds is a process that begins with searching, purchasing and shipping the fingerlings to the pond site. Because fingerlings are delicate with potential for huge losses, they are often put into the ponds immediately they are shipped to site. Therefore, the decisions surrounding it are made long before they are purchased.

With respect to **feeding the fish**, the survey confirms that both male (64%) and female (63%) respondents made the decision on when, what, and how to feed them on an even keel. Male workers and relatives also contributed to the decisions on feeding the fish.

Men and women shared decisions on **overall pond management**. Survey data shows that 71% and 69% of male and female respondents respectively made decisions on overall pond management. This lends credence to the assertions made during KII and FGDs that the ponds were largely owned and managed by the households and not fully owned and controlled by either women or men. As in the other elements, male workers/relatives contributed to making decisions on pond management.

More male (66%) than female (57%) respondents made decisions on **harvesting of fish** – this includes, when and how much. However, male workers/relatives were also instrumental in making decisions on harvesting. Harvesting is a critical node in the aquaculture value chain; after husbandry/production, harvesting (when, how, how much) determines the revenues a farmer can get after 5-7 months of work. The data indicates that the decisions are largely made jointly – a result confirmed from the KII and FGDs.

During KIIs and FGDs, participants reported that often, members of the households do harvest fish for domestic consumption, especially when the fish are of table size. This decision is often made in consultation, especially between the man and woman of the home.

On marketing/selling, female respondents (76%) predictably made significantly more decisions than the male respondents (64%) did. Male relatives/workers also weighed in with about 10% decisions made from them. This finding corroborates findings from KII and FGDs, and the generally held view that women are more adept and skilled at selling/marketing fish and fish products.

A similar proportion of female (60%) and male (53%) respondents indicated that they make decisions on **processing**. The figure from the males is higher than would be expected because of the general notion that processing is an activity more attuned to women than men are. Results from KIIs and FGDs indicated that processing activities were largely a preserve for the women. Processing is an activity where survey data shows an increased activity of female workers/relatives taking part in decision-making (Figure 19).

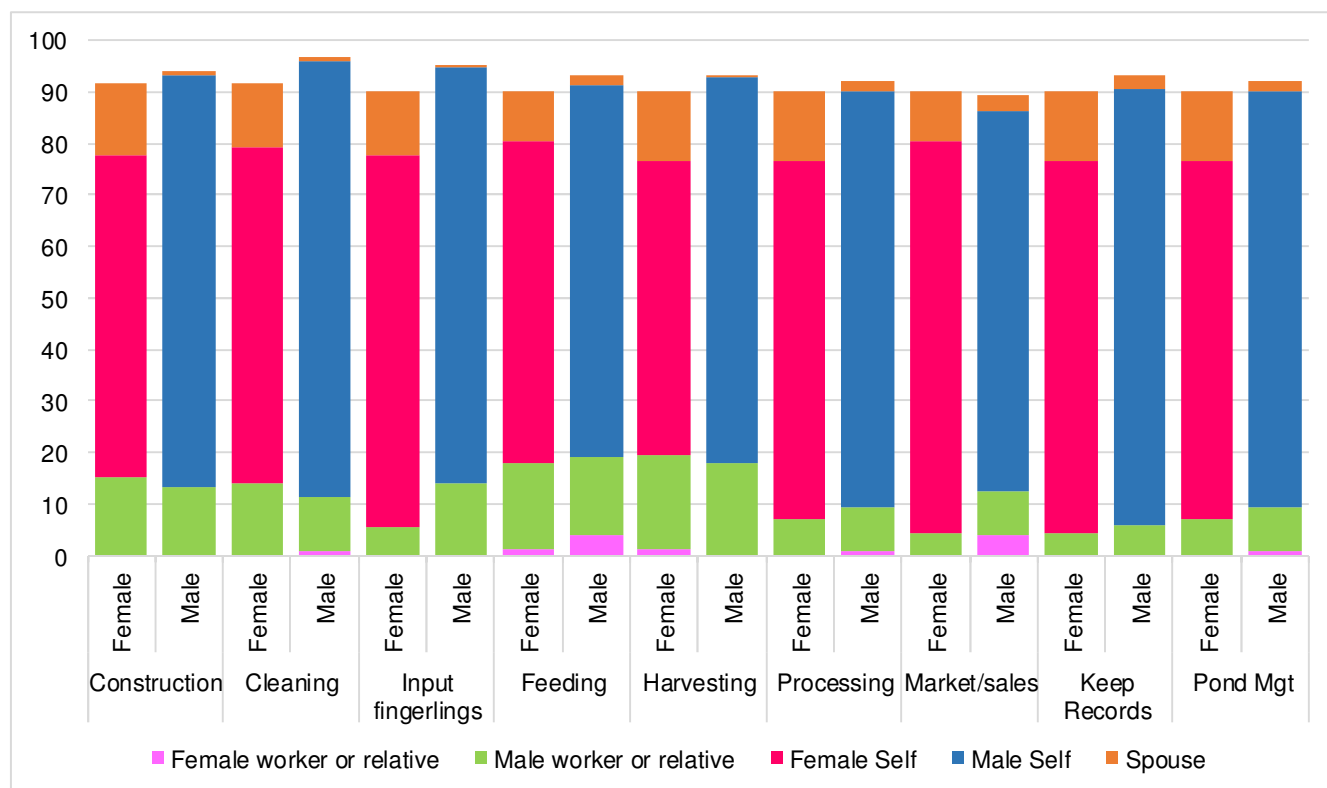


Figure 18: Main decision makers (%) on key pond tasks/activities

Sharing revenues from aquaculture

An interesting angle from the survey shows that 47% of the female respondents take charge/control of the income generated from fish farming. This is larger than expected, but still well below the 60% of male respondents reported. Just over 8% of the female respondents reported that their spouses take control, while 42% indicated that they share the control of the incomes with their spouses. On the other hand, only 15 of male respondents reported that their wives take control of incomes from the fishponds. At least 33% of the male respondents reported that they share the control of incomes with their spouses.

The findings on sharing of resources corroborates the outcome of the KII and FGDs where consensus among participants was that income from the fish ponds is shared and used within the household, without either husband or wife taking absolute control (Table 13). Male respondents reported that farm managers (8%) do take control of the revenues from the ponds, but surprising no female respondent mentioned farm managers as taking any control.

Table 13: Percent frequencies on who takes charge/control of revenues from aquaculture

Respondent	Absolute control (all respondents)	Relative (respondents in row)	Spouse	Sharing	Manager
Females	15.7	47.2	8.3	41.7	0.0
Males	40.8	60.3	1.4	33.1	8.6
Average	35.9	35.9	9.7	35.9	5.8

In general, 98% of the respondents were happy with the existing control of incomes from the ponds – with female respondents slightly lower at 94% compared to 97% of the male respondents. Nevertheless, when asked if they could make propose any changes to the control of incomes, most of the respondents indicated that they were happy with the current decision making arrangements. However, more female than male respondents indicated they would prefer a 50:50 sharing, while more male respondents indicated they would like to take more control (Figure 20).

It is instructive that a smaller proportion of women compared to men would like to have total control on decisions of income management, yet men already take more control. This indicates that women prefer sharing of decision-making.

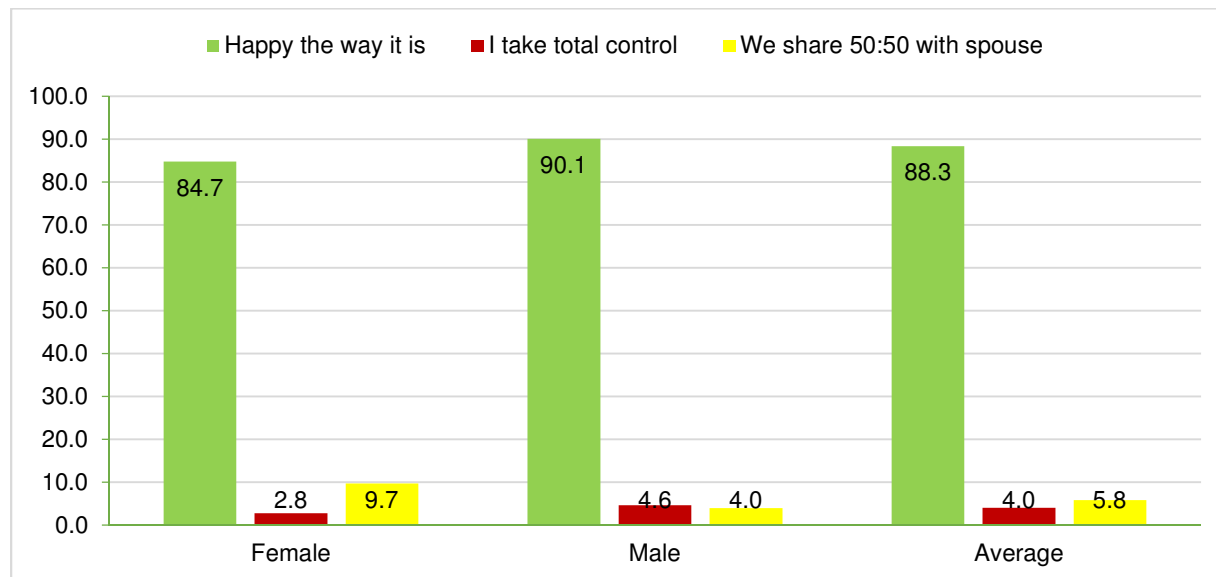


Figure 19: Preferences of respondents on preferred control on incomes from current practice

Key deductions on decision making at household levels

While more men in general, and male respondents specifically made most of the decisions along the aquaculture value chain, significant proportions of women (wives) did make decisions too. Therefore, it can be deduced that quite a few of the decisions were taken after joint discussions at the household level.

Both men and women respondents (survey and KII/FGDs) strongly expressed the fact that they engage in aquaculture as a household enterprise, and try their best to consult over the entire value chain activities they engage in. However, there were some tasks that men took more control over than did women. On the other hand, there were tasks that women performed more than men.

Of course, there were respondents who did not give space and support to their spouses (wives) to engage actively in the culture. Secondly, women were emphatic that their participation in the aquaculture value chain was contingent on the activity generating incomes and being profitable, and that they could see and feel the benefits of their engagement. When the activity did not bring in incomes, most women slowly but steadily reduced their involvement.

A second take home is that most households (especially men) would prefer that aquaculture and other agricultural activities be assessed from a household basis, and that concerted efforts be made to promote a culture of consultation (communication) and cooperation within the household. This would encourage working together and enhance success of the enterprises.

In cases where one was a widow or a co-wife (in polygamous marriages), women preferred to be given own ponds to manage. This is largely because of the many social dynamics that take place within the larger families, with schemes to deprive widows and ‘the less favourable wives’ their rightful place. These schemes do not have any traditional or cultural basis, but are excuses for economic gain.

Equitable sharing between men and women within a household on decision-making, especially sharing of incomes from an activity is a key determinant on the success or failure of the enterprise. Women have been known to vote with their feet – walk away from the activity (because more often than not, they already have loads of production and reproduction roles and responsibilities to attend to).

3.4 Gender lens examination of challenges facing aquaculture farmers

3.4.1 Production challenges

The most cited challenges facing farmers were access to farm inputs (fingerlings, quality fish feeds, water), access to information and technology, capital and credit (Figure 21).

On access to fingerlings, the main challenges mentioned were distance to the hatcheries being very far (almost 40% of the respondents). Even after reaching the hatcheries, farmers often found the types and quantities of fingerlings they need being unavailable. More male respondents mentioned the challenge of distance than did the women.

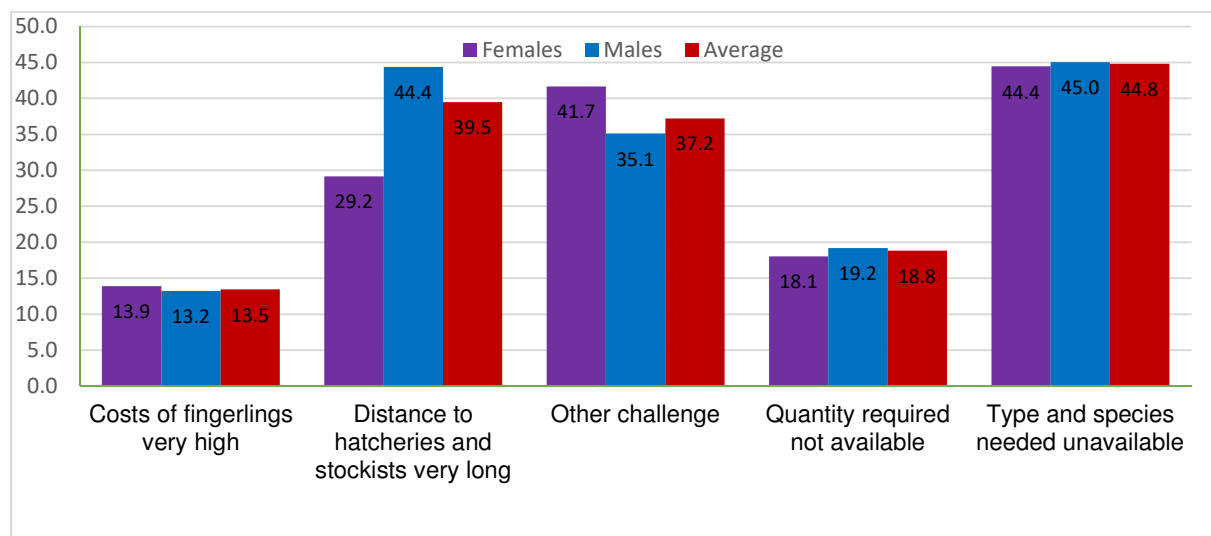


Figure 20: Main challenges respondents cited in accessing fingerlings

In Section 3.2, data showed that on average, male respondents travelled much further than women in search of fingerlings. There were variations between counties, but not significantly nested to sex of respondent.

Poor prices of fish products was the main challenge in marketing/selling fish. In general, female respondents reported more intense challenges in each of the five elements under marketing that were assessed (Figure 22). Other issues mentioned in relation to marketing challenges are inadequate markets and fluctuating demand for fish products.

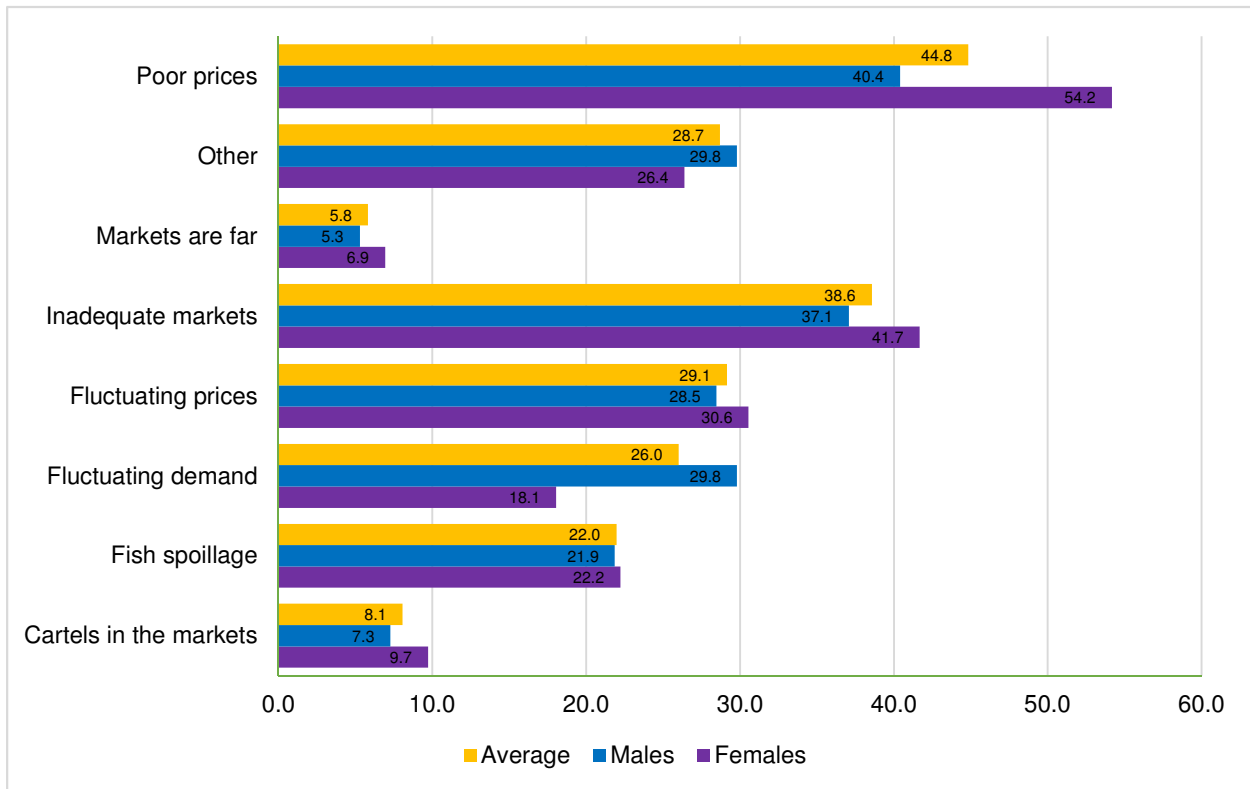
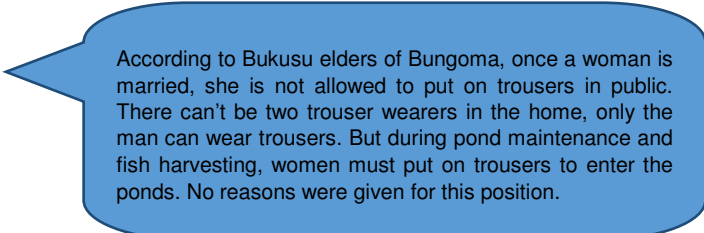


Figure 21: Major market related challenges facing respondents

During FGDs and KII, it was found that most farmers were inputting fingerlings at the same time and harvesting at the same time, thereby flooding the market with their fish. There is need for better planning of fish production, as well as planned harvesting. Fluctuation of prices is dependent on supplies of culture fisheries. The general impression from the team is that there is adequate market for most of the fish.

The respondents also mentioned the issue of cartels in the markets. Visits to the local markets selling fish found most sellers to be women, and organized into groups, each with her space for operations. The fish dealers have some informal arrangements on how they operate, make daily or weekly contributions to their welfare and development funds, hence people outside the close-knit circle of traders will always find it a tall order to join in.

Majority of the female respondents (56%) felt that there were no challenges in aquaculture specific to women compared to 49% of the male respondents. Overall, 47% of all respondents thought that there were women specific challenges in aquaculture (Figure 23).



According to Bukusu elders of Bungoma, once a woman is married, she is not allowed to put on trousers in public. There can't be two trouser wearers in the home, only the man can wear trousers. But during pond maintenance and fish harvesting, women must put on trousers to enter the ponds. No reasons were given for this position.

In general, there were three standouts challenges specific to women aquaculture farmers; the first is access to and control over land for pond construction (35% of all respondents). Male respondents also flagged inadequate access to land. Inadequate access to capital/credit (32%) was the second important challenge affecting the participation and success of women fish farmers. However, it is noted that there are funds available for all women e.g. the Women Enterprise Fund and the Youth Enterprise Development Funds that women can access. In addition, many financial institutions no longer require land as a collateral to give loans. However, women have not been able to take full advantage of the existing facilities for various reasons, including the fact that many of them may have heard, but do not know or understand how to access the loans. Based on FGD and KII discussions, it is doubtful if men (husbands) would be willing to allow their spouses to get credit for aquaculture, especially in western Kenya, where most respondents are risk averse, and have a fear of loans. In addition, there is general apathy towards loans in western Kenya. This fear is based on fact and myths about loans – that ancestral lands and all property would be auctioned in case one failed to pay off the debts. Secondly, women fear that when households access loans, men are likely to disappear (to go enjoy the money and come back broke), leaving them with burden to repay the loans.

Furthermore, women were largely skeptical about the viability of the fishponds as many ponds had taken over a year and had not been harvested, because of retarded growth. Women made it clear during FGDs and KIIs that they would only invest in ventures they were certain to bring in incomes and good returns, not losses. For many of them, their experience was losses – (ESP program). Respondents singled out harvesting, training in aquaculture, accessing appropriate technology, quality feeds and fingerlings as stand out challenges.

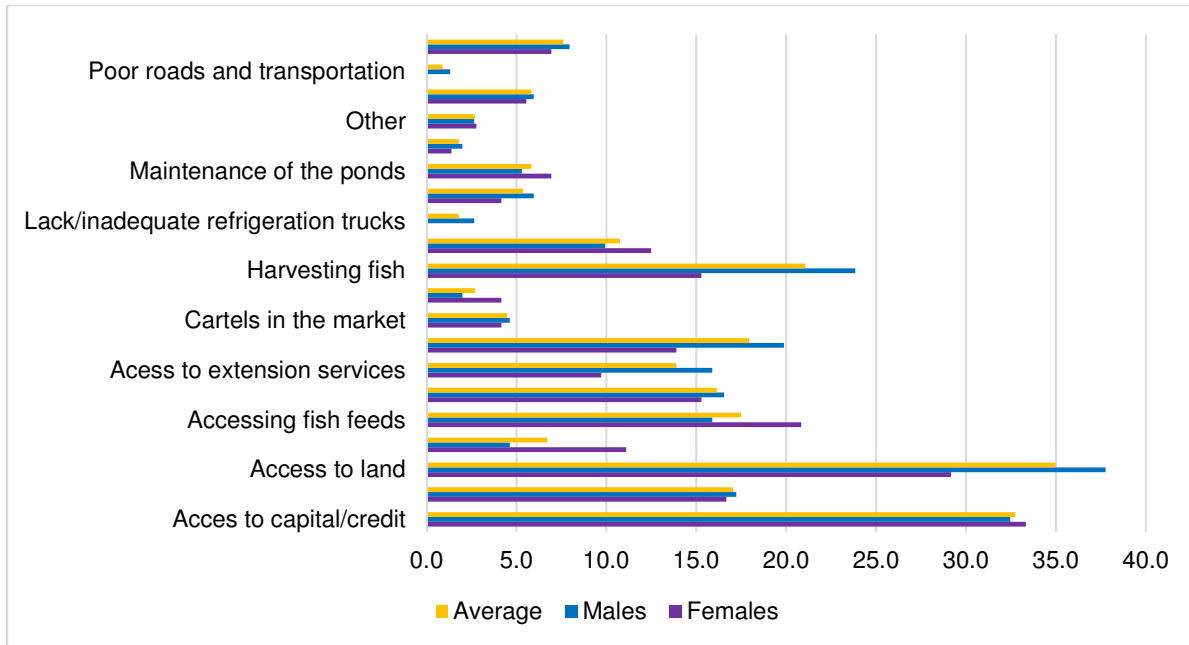


Figure 22: Challenges respondents singled out as being specific to women

3.5 Cultural, traditional practices, beliefs and related dynamics in aquaculture

This study reaffirmed that there are no clear traditional or cultural practices that target women in aquaculture. All respondents stated that there are no cultural restrictions known to them that in any way would encumber women in aquaculture. Women were free to participate in any node of the aquaculture value chain. Less than 2% of all respondents indicated that there were any traditional or cultural practices that would hinder women to participate in aquaculture. However, in Bungoma County, men interviewed during KII and FGDs indicated that women are expected to wear trousers when they get into the ponds for maintenance or harvesting the fish. In general, most communities have designated roles in aquaculture based on gender. For instance, men do not “process” (fry) or sell the fish in the markets. Almost all people selling fresh or fried fish in the market are women. However, men also do sell fish (*omena/dagga*) and fish feed (*ochonga*) in the markets visited.

3.5.1 Perception of suitable pond production tasks for women

The study examined the perception of respondents on cultural and traditional stereotypes on women with respect to their handling of various routine pond tasks (Figure 24).

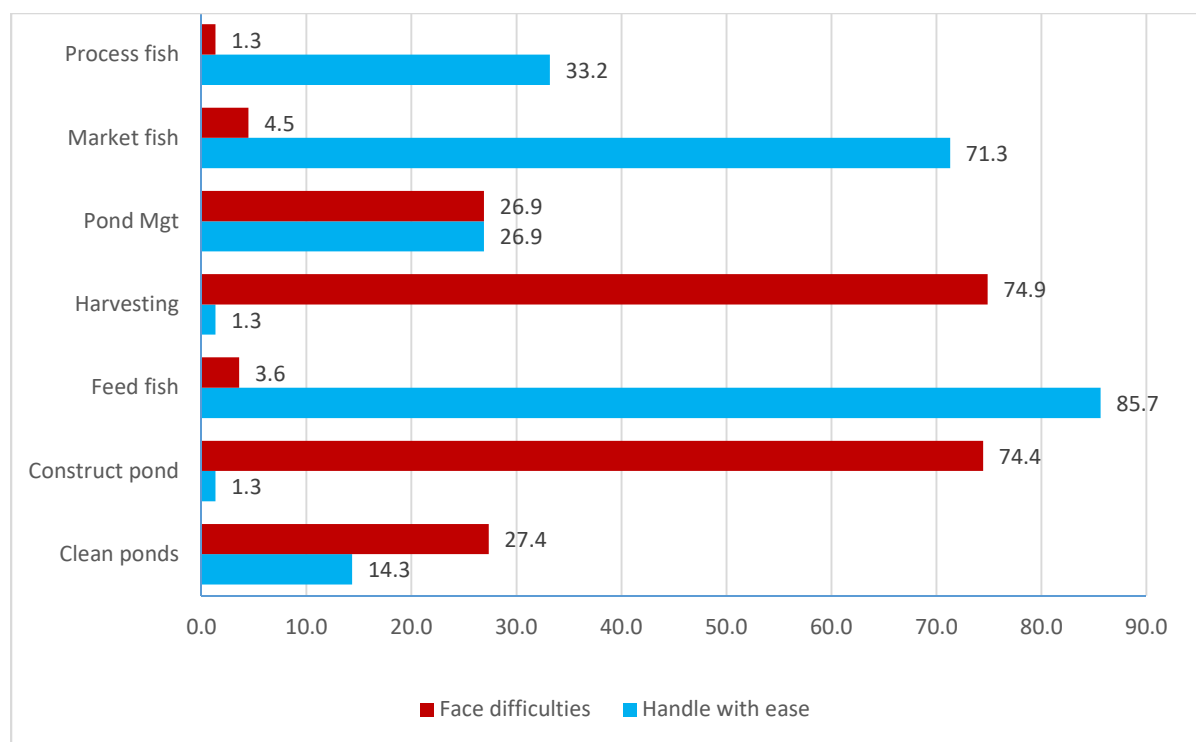


Figure 23: Respondents perception on the ease and difficulty with which women handle selected tasks

The result was that there were tasks that both female and male respondents gave markedly similar scores on all the tasks under review. In general and has already been stated, the respondents thought that women face difficulties in constructing, cleaning ponds, and harvesting fish from the ponds; but found it quite easy to feed the fish, market/sell the fish. Opinion was divided on general management of ponds, with a general score of 26%. Surprisingly, female respondents marginally thought they could not handle general pond management with ease compared with the response from males (Table 14).

Table 14: % Perception of female and male respondents on ease/difficulty of handling pond tasks

Ease of handling task	Handle with ease		Face difficulties	
	Females	Males	Females	Males
Respondent				
Clean ponds	11.1	15.9	29.2	26.5
Construct pond	1.4	1.3	73.6	74.8
Feed fish	80.6	88.1	4.2	3.3
Harvesting	0.0	2.0	77.8	73.5
General management pond	25.0	27.8	20.8	29.8
Market fish	72.2	70.9	2.8	5.3
Process fish	30.6	34.4	1.4	1.3

3.5.2 Perception of value chain nodes more suitable to women

The most frequently selected node in the aquaculture value chain by both female and male respondents as being most suitable for women is marketing and selling of fish (Figure 25)

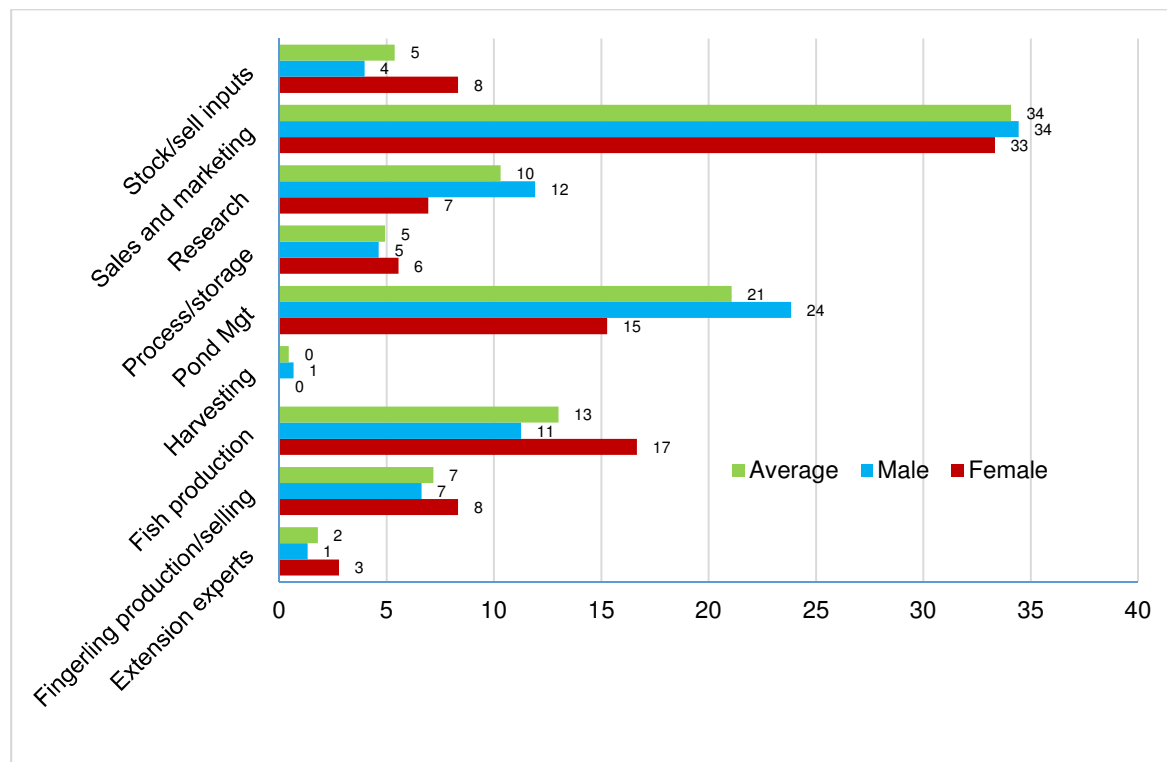


Figure 24: Most preferred value chain node for women to operate

Even female respondents scored themselves low on some nodes like harvesting, and fingerling production. It is assumed that the responses in Figure 25 are not because of innate inability of females, but more to do with exposure and technical knowledge that the respondents have acquired over time. The responses have very little to do with traditions or culture, although cultural stereotyping was evident in the nodes male respondents selected.

During FGDs and KIs, it was made clear that there were no cultural or traditional practices that would stand in the way of women to practice aquaculture. Additionally, the team found many women who run their farms without any encumbrances. None of the respondents in the quantitative survey reported any potential difficulty or problem if the project would promote women to participate in aquaculture emanating from traditional or cultural practices. Only 3% of the respondents indicated that men might be uncomfortable if women are promoted to participate in aquaculture. In short, women are likely to face the usual challenges they face in other sub-sectors – including skills, knowledge, access to capital and credit.

While there were no reservations about women engaging in aquaculture, more than 80% of the respondents reported that women would still engage in other livelihood activities even if they were to practice aquaculture. Indeed, the finding in the field is that all smallholder aquaculture practitioners had mixed farms and other businesses. All farms had crops like beans, maize, bananas, livestock like cattle, chicken; and households were engaged in other businesses or employment e.g. teachers, shop-keeping or traders in various fields.

The main reasons advanced for this is to spread risks and maximise on ventures that are profitable at the time (Figure 26).

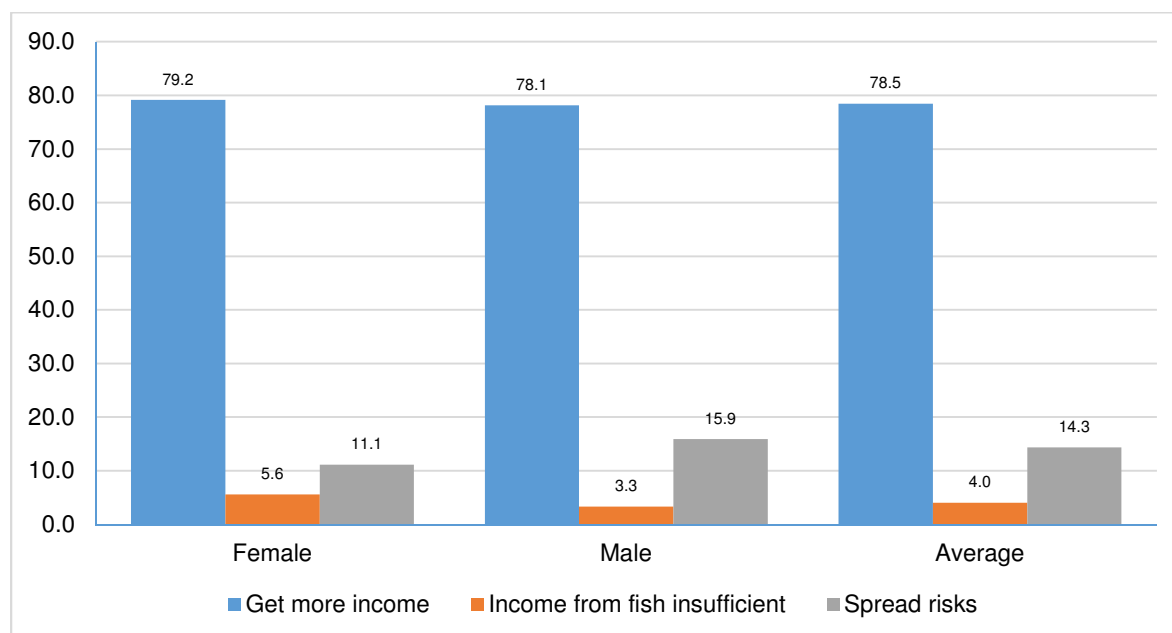


Figure 25: Main reasons for respondents to engage in additional activities

3.6 Benefits and Impacts of aquaculture

Information from KII/FGDs and the quantitative survey are emphatic that despite the challenges many of them have faced in aquaculture, the practice is of great benefit to those who succeeded. Among the benefits and impacts include increased incomes at the household level, improved household health, and increased knowledge and awareness (Figure 27). When farmers go for trainings, they learn more than what they had been taught earlier, especially from other participants. Trainings also expose them to more information.

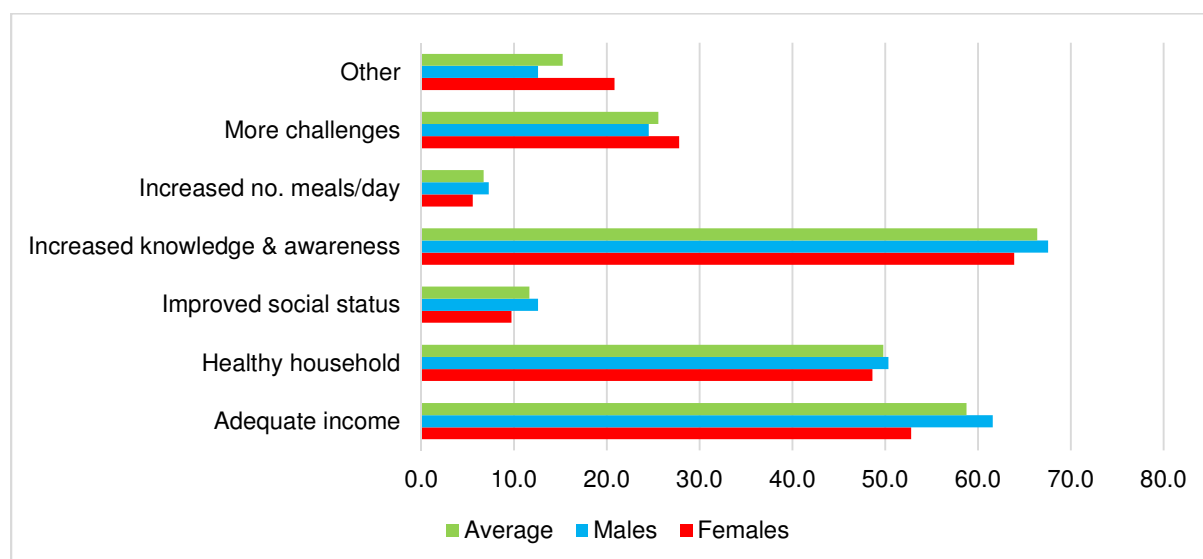


Figure 26: Perception of respondents on the benefits received from aquaculture

Some respondents have not seen any benefits, largely because they have not harvested. Therefore, quite a few reported problems and challenges, not benefits. According to the trick with aquaculture is with the feeding. When you get the feeding right, the fish will grow and there will be a harvest. Because the amount of time needed to tend to the ponds is very little, aquaculture is very suitable for women, especially those working from home (farming and small businesses).

But for one to get maximum benefits, there is need to diversify, e.g. into poultry and livestock, crops and conservation agriculture. In aquaculture, feeding is the key²⁵.

3.7 Gender lens analysis of the policy environment for aquaculture

Kenya constitution 2010 provides for equal treatment of all; it bars any form of discrimination on the basis of gender, tribe or religion. This therefore gives a firm foundation for gender equality in all aspects of life. However, institutionalization of the letter and spirit of the constitution on this aspect has not been fully actualized. While there are laws to guarantee that neither gender will form more than 70% of any institution, it has been a tall order to actualize it.

National Gender and Equality Commission (NGEC). NGEC derives its mandate from the Constitution of Kenya 2010 in Articles 10, 27, 43, 59 and Chapter 15 among others. Article 10 provides for the national values and principles of governance, which include human dignity, equity, social justice, inclusiveness, equality, human rights and non-discrimination. Specifically, Article 27 of the Constitution sets out the principle of equality and freedom from discrimination by stating that, every person is equal before the law and has a right to equal protection and benefit under the law. While NGEC has an elevated and strategic position with respect to gender equality, its activities have not been felt in the lives of men and women.

ASDP is the blue print that drives the agricultural sector for the next 10 years. It has boldly identified the need to achieve gender equality. ASDP follows closely in the footprints of its predecessor, the Strategy for Revitalization of Agriculture (SRA). During the implementation of the SRA, most agricultural sector ministries established gender desks at a minimum, or gender units, and even trained many employees on Gender. However, with the transition to County Governments, many gender issues have been left on paper, as county governments struggle to find their footing and focus on perceived priority areas and sectors. Measures towards gender equality have been left on the back banner.

CAADP – is an initiative of the African Union to spur agricultural growth in the continent. Development of ASDP has been anchored on its tenets. However, the principles laid in CAADP remain that, and very little if any have implemented.

County Governments are a new organ of governance that Kenya constitution 2010 gave birth to, and is still a very new organ that is still struggling to find its footing. While various departments in respective County governments have pledged to work towards inclusivity and gender equality, there is very little action on the ground. Agriculture is now a devolved function and managed by the County Governments. The national Government sets policies. However, implementation of the national policies remains a challenge, especially those touching on gender equality.

While the constitution remains the supreme law and policy, implementing some of its key tenets, especially relating to gender equality remains a challenge. While gender related intuitions have been created and operating, very little is implemented on the ground.

²⁵ Laban Mwango – fish farmer in Chirobam, Lurambi

Fisheries Act Cap 378: In agriculture, especially in fisheries and aquaculture, attempts to review and update policies relevant to contemporary practices have not been achieved. Indeed, there is no policy guiding the practice of aquaculture, and therefore, gender in aquaculture. So the policy environment for aquaculture or gender in aquaculture is non-existent. The only guidance in the sector is the Fisheries Act Cap 378 laws of Kenya.

Non-State Actors (NSA). This includes NGOs, CBOs and private sector companies. Many NGOs and CBOs have constitutions and policies for promotion of gender equality. Especially for International and National NGOs, gender equality and non-discrimination is a key pillar, even if most are driven by the donors. While quite a few of the NGOs and CBOs do not have internal capacity and structures to promote gender equality, many of them make attempts. Even in aquaculture, some of the NGOs e.g. GIZ have in the past tried to implement gender responsive aquaculture programs. For CBOs, there is great variation, and the team did not encounter any in the field of aquaculture. However, farmer groups and cooperatives are active in aquaculture, but most have un-written rules and policies on gender equality and non-discrimination. However, in real practice, these organizations hardly give women equal opportunities to be the best they can be through effective involvement, participation and gain.

In fact, most farmer organizations visited had less than three female office bearers, usually the treasurer and assistant chairperson or secretary. Worse still, most of those in the position of treasurer do not even have a firm grounding on organization finances – usually left for the Chairman/Secretary.

Therefore, an enabling policy environment is urgently required to help drive gender equality in aquaculture. While many may argue that there are indeed few women in aquaculture, this study has shown that women are actually very active in various nodes. An enabling policy environment will ensure women contribute their worth to the sector and overall national goals.

3.8 SWOT and SOFO analysis for increasing involvement of women in aquaculture

Strengths	Weaknesses
<ul style="list-style-type: none"> • Availability of suitable ecosystem for aquaculture. • Relatively Low capital requirement for investment including low start up and maintenance costs. • Good returns on investment. • Most ponds located at home where most women are based and conduct their daily activities • A good source of additional income for the family • Strengthening food security and decreasing stress on the other food resources(food diversification) • Fish accepted as food and has ready market • Capable of absorbing all gender and youth in its programs • It is easy to gain technical know-how to 	<ul style="list-style-type: none"> • Women may not have access to start-up capital • Women have inadequate control over and access to land for aquaculture • Poor and inadequate infrastructure from source to markets • Poor or weak extension services • High fish perishability, availability of customers at harvest and poor marketing strategies • Low budget allocation by both governments to support aquaculture • Weak information and educational programs • Lack of comprehensive policy for aquaculture promotion and regulation for sustainability • Inadequate technical staff to support the value chain

<p>do aquaculture</p> <ul style="list-style-type: none"> • Low demand on labor for most of the production cycle 	<ul style="list-style-type: none"> • Poor marketing and market infrastructure, Inconsistent fish prices, lack of power/refrigeration and high cost of transport • Women often work long and hard, but do not have equitable access to • Inadequate supply of quality fingerlings • Inadequate supply of quality feeds
Opportunities	Threats
<ul style="list-style-type: none"> • Availability of unpolluted suitable environment resources for aquaculture (water temporary and soils) • Huge market for fish products all over the county – there is Increased awareness of end users to the importance of fish as food, income and employment (internal/external) • Big demand for fish as food • Diminishing annual fish production from the natural sources as the lake • Good potential for commercialization and profits • Many nodes of the value chain where women can fit in with minimal resources • Technological innovations to make work easy in most nodes of the value chain • Aquaculture does not require large tracks of land. • High possibilities of intensification • Relatively high literacy levels among women 	<ul style="list-style-type: none"> • Inconsistent availability and quality of fingerlings • Unavailability of quality feeds • Thieves and predators (monitor lizards, otters, mongoose and incidence of bacteria and fungi) • Perception that farmed fish has negative taste, is undersize, degrades fast and is sold after the trader has sold all fish from natural sources • Quack breeders, low quality feeds • Unequal sharing of incomes at household level • Threat from imported farmed fish of the same species but higher in quantity and cheaper in price • High cost of feeds, fertilizers and other inputs(some are imported and do not arrive on time) • Retention of experienced and qualified personnel, or unavailability of labor when needed • Market demand can be seasonal • Environmental disasters as floods, extreme drought can come without advanced warning

SOFO analysis of aquaculture programs from a gender lens

Strengths	Obstacles
<ul style="list-style-type: none"> • Empowering program – gives incomes and nutrition <p>Training of farmers – knowledge, skills Catalysed interest in aquaculture Constructed ponds for farmers, and provided them with inputs. Some basic training in aquaculture (though it focused mostly on men).</p>	<p>Gender blind approach – Unsustainable subsidies Extension services Farmer mind set of free government inputs Unequal access and control over land and decision making Inadequate capital for women to invest Most farmers did not have a business mind-set when venturing into aquaculture Poor governance in distribution of ESP ponds</p>
Failures	Opportunities
<ul style="list-style-type: none"> • No sustainability strategy <p>Did not create adequate inputs supply systems and networks</p>	<ul style="list-style-type: none"> • Interest in sub-sector already created • Many ponds in place • There is renewed interest in aquaculture

<p>Do not have appropriate exit strategies Did not address sharing of resources</p>	<ul style="list-style-type: none"> • Idle GoK technical/extension capacity • New ICT to disseminate information to farmers • Establishment of structured markets and contract farming • Exploring possibility of linking small holder farmers to established commercial farms • Innovative finance models e.g. One Acre fund, FFISLs • Introduction and facilitation of gender equality measures like intra-household communication and cooperation • Putting in place community own resource persons to support farmers • There are no traditional/cultural barriers preventing women from aquaculture
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4.0 Gender skills and capacity at Farm Africa for KMAP

In general, most of the Farm Africa staff who responded to the self-administered questionnaire have some basic even if not very accurate understanding of what gender means, especially in reference to aquaculture. Consequently, a majority of them would like to have a better understanding of gender, and practical skills on how to apply it in the field.

The staff would like to gain knowledge on “How to” of gender practically in the field. This will entail having a good grounding of the gender, gender analysis and how to use the results of such analysis to improve their projects.

Most respondents were rather ambivalent of the importance of gender to Farm Africa as an organization, unsure if knowledge of gender and an organization wide integration of gender is useful.

Areas of interest to most staff were:

- Understanding what gender really is;
- Integrating gender in programs;
- How to undertake gender analysis;
- Gender responsive budgeting; and
- Gender responsive monitoring and evaluation.

Most of the staff think that understanding women’s and men’s roles in agriculture (production, processing and marketing) and intra-household patterns of decision making, time allocations and access to resources will significantly improve project design and implementation thereby addressing gender inequalities.

Based on the needs assessment, a tailor made training for staff in gender and agriculture is proposed for the staff. The modules will not make the staff gender experts, but will give them adequate theoretical understanding and practical knowledge of integrating gender in the project, as well as respond to emerging gender issues as they implement the project. Like in many projects without a gender specialist, it may be necessary to seek technical support of a gender expert on a needs basis to address any emergent gaps.

5.0 Options for gender integration in KMAP

5.1 Gender gaps identified in the aquaculture value chain

The study found many gaps in aquaculture value chain as presented in Chapter 3. While there are gender gaps, it must be emphasized that in most households with fishponds, women are involved, participate and benefit from aquaculture. However, the degree of involvement, participation and benefits are generally low and vary between households as well as counties. Key gender gaps identified are summarized below:

Women's technical know-how, skills and experience in aquaculture is much lower compared to men. More men than women have attended training sessions and been exposed. Very few women have been trained; most get their knowledge and skills from their husbands and fellow farmers. However, men are not known to be good at sharing and passing information. Women do not have adequate skills in managing the ponds, fish feeding, processing and preservation. Where they have skills, they lack facilities. Women tend to receive much lower levels of technical support from extension workers compared to men. Most extension workers tend to seek for household heads (usually men), to share information with.

General information on aquaculture tend to reach men compared to women; so women are generally at a disadvantage on current issues, advances and opportunities in the sub-sector. Men tend to control radios and access lots of information from the market place and their networks compared to women.

For women to effectively participate in commercial aquaculture, they will require to have adequate knowledge and skills in the subject matter. This study has shown that many women farmers need access to more technical information. FGDs and KIIs clearly show that most women farmers accessed aquaculture information from their spouses, groups or fellow farmers. Few attend formal aquaculture training. The main barriers to women's access to information and technology (training) in aquaculture are largely related to:

- i) When ESP introduced aquaculture, men were the targets for the project and trainings;
- ii) Women were largely cautious on adapting an enterprise they were not certain would bring in the incomes proponents of aquaculture had promised;
- iii) There was and still is, a general shortage of aquaculture field extension officers;
- iv) Because of their reproductive (at least 50% of female respondents are between 19 and 35 years) and productive roles at home, women shy away from residential training.
- v) Women indicated that they were more comfortable being trained through practical sessions, and would like to have women trainers as well, not men only;
- vi) There has hardly been any meaningful aquaculture training after the end of the ESP;
- vii) While many of the female respondents have at least primary level of education, most training sessions are conducted in English, and quite a few of them shy from attending trainings they do not understand. Indeed, at least five women requested that they be trained in languages they can understand and relate to;
- viii) One-off trainings are inadequate – the preference for most women is continuous support and education, which ensures that they grasp all the necessary skills;

- ix) Quite a number of women expect that after trainings, they will be given inputs – fingerlings and feeds. If these are not provided, they lose motivation to go for more training sessions – as they say – “what is the need if I can’t get the inputs they train us on”?

With agriculture as a devolved function to the counties, none of the counties had an adequate budget to undertake training of aquaculture farmers – most of the trainings are carried out by NGOs. Again, the NGOs target practicing aquaculture farmers, with most people attending being men.

Enhancing the knowledge and skills of women in aquaculture will entail quite some work with focus on communication in languages women can comprehend, timing that is suitable for women (taking into account their other roles and responsibilities), continuous support to encourage them, practical sessions so that they can learn by doing, availing women trainers that they can relate with in some aspects of their farming, among others.

Most of the land on which ponds are constructed are owned and controlled by men. While women have access to use, they have very limited decision-making powers on key aquaculture practices. However, it must also be stressed that the study team did not find any evidence of men restricting their wives’ access to land. Rather, the spirit of discussion at the household level was pretty high even if, men made final decisions on land use. Again, the amount of land currently reserved for aquaculture is small, while profitable commercial aquaculture would ideally require one to have at least four ponds to ensure all year production. For this reason, encouraging farmers to lease land suitable for aquaculture farming (especially in western Kenya), and intensifying productivity of the small pieces of land they own through appropriate production techniques may bear fruits. In addition, the farmers should be encouraged to continue with their mixed farm models, where they have several enterprises on one farm, but they should focus on increasing productivity.

Women were at a great disadvantage of accessing aquaculture inputs like quality fingerlings and fish feeds. Most women did not know the sources of quality fingerlings, (on average, the best sources of known quality fingerlings like the big hatcheries are located quite far from most farmers), while quality fish feeds were regarded as expensive and largely unavailable. Few agro dealer shops stocked fish feeds. Most women have limited sources of income and spend quite a bit of their time handling both productive and reproductive chores, they hardly get time to go in search of quality fingerlings and fish feeds. Moreover, the distribution network of fingerlings and fish feeds is still nascent, patchy, weak and poor. Men do have a little more time and more money than women do, and can often get time to access the inputs.

The amount of time that is spent on general pond management is generally low once the ponds are established. However, for commercial production, the ponds need maximum attention. Women often have lots of tasks at home and may not adequate time for this. However, women indicated that they were able to optimally allocate time to various activities, and would invest more time to aquaculture if its returns were high and motivating enough.

Capital: aquaculture is a capital-intensive activity, especially if it is commercially oriented. Women tend to have very little capital to invest in capital-intensive ventures. Furthermore, women are more cautious about the investments they make.

In addition to having very little capital to invest for such long periods of time (5-7 months), women do not have adequate access to affordable loans. While the Women Enterprise Fund and the Youth Development Enterprise Funds offer opportunities for affordable loans, accessing the loans remains a challenge. The latter is restricted to people below 35 years. Furthermore, one must belong to a group to access the loans – which makes it tricky for individual interested farmers. Commercial loans from banks are available, but the cost of these loans are largely beyond most women farmers. Moreover, some banks still request for collateral (e.g. land, buildings, shares etc.) that majority of prospective women farmers do not own or have access to.

In the past, many aquaculture projects targeted anyone with a pond. For commercial production, there is need to have at least 600 m² of fishponds. To enable women to effectively participate, options are to intensify production from the few small ponds that women (actually most households) have access to or introduce technologies that have high productivity on small pond sizes.

While the study found general cooperation between men and women in aquaculture at the household level, women need to get a little more support from their husbands and other men to succeed in the business. Women requested to have much more support – physical, financial, technical and moral support from their husbands to effectively commercialize their production

Demand for fish is quite high (AFIPEK 2016); the mean supplies are much lower than the mean demand. In addition, most of the fish traders are women. However, accessing the markets can be tricky for women. While women can sell fish more easily than men can, selling a full harvest from a pond requires good planning and access to markets that are profitable. Quite often, women end up selling fish in markets that pay poorly.

Sharing of incomes from ponds was largely skewed in favor of men. Efforts must be directed to enhance more equitable decision making and sharing of revenue from aquaculture.

A staff needs assessment on gender revealed that the project staff require some skills and support to fully integrate gender in the project, as well as respond to emergent gender dynamics. Therefore, an induction workshop on gender and aquaculture is proposed.

5.2 Opportunities for women involvement and participation in aquaculture value chain

5.2.1 Summary of opportunities

Opportunities exist for women to be involved, participate in and benefit from each and every major node of the aquaculture value chain. What women need is to be empowered through exposure, encouragement and support. Table 15 gives a summary of opportunities that women can take to participate in the value chain.

Table 15: Opportunities for women to engage in various nodes of aquaculture value chain

Value chain Node	Opportunity for women involvement	Comment
Pre-production (research, feed manufacture, hatching, agro dealerships)	Women can be involved in all activities in this stage either as employees or as owners of businesses. Realistically, opportunities exist in hatcheries (small village based hatcheries, agro dealerships)	Women's opportunities in pre-production are largely dependent on structural issues including education and exposure. Access to capital or credit may catalyse their profitable involvement
Production	Entails establishment and management of ponds. Opportunities exist for women to own pond design and construction companies, fishponds and managers of the ponds.	Women can participate as employees or owners. Need for capacity building, exposure, access to land and credit/capital.
Product handling and processing	Starts from harvesting, processing and storage. Women can manage the harvesting process, and actually participate in harvesting (if ponds are designed appropriately), are adept at processing the produce. Huge opportunity for women	Women will need harvesting skills (art and science), some capital to own or manage the processes.
Sales and marketing	Fieldwork shows this to be one of the nodes where women face little competition from men.	

5.2.2 Supporting infrastructure to promote active and beneficial participation of women in aquaculture

Section 5.1 and 5.2.1 have identified gender gaps and opportunities for women to participate in the aquaculture value chain. There is need for some basic infrastructure and support (Figure 28). Women farmers would require start up grants, reliable sources of quality fish feeds, accessible quality fingerlings, reliable information and technology, extension support, and sources of affordable capital to thrive in aquaculture.

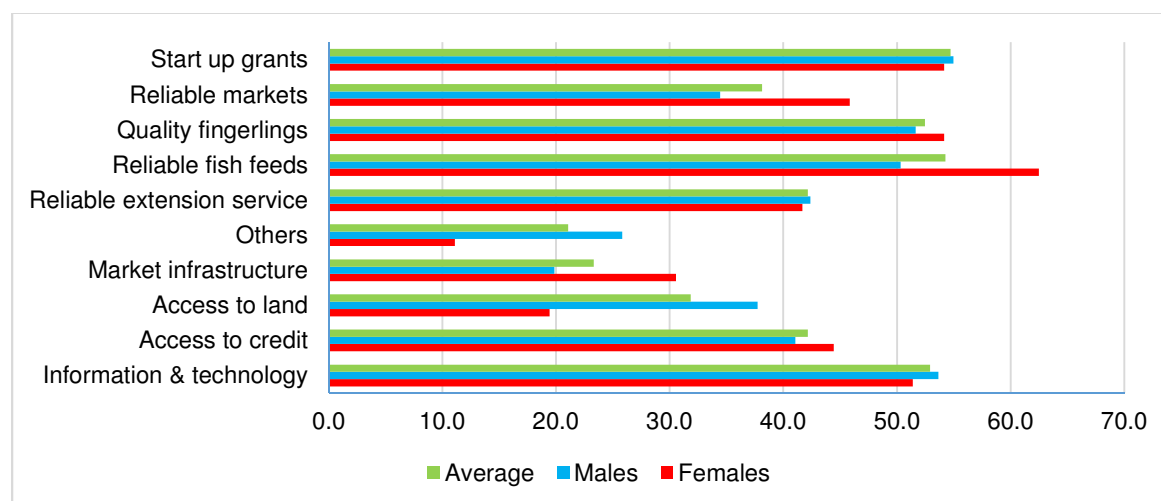


Figure 27: Important elements necessary for profitable engagement in aquaculture by women

5.2 Key gender action plans for KMAP project

Analysis of gender issues and dynamics from the contextual operating environment to the aquaculture value chain point to four main issues to be addressed for women to effectively participate in commercial aquaculture. It is emphasized yet again that:

Women are already involved and participate at various degrees in almost all the nodes of the aquaculture value chain.

The study did not find any traditional/cultural barriers that would inhibit the participation of women in aquaculture.

While aquaculture was introduced to be an income generating and food/nutrition activity, the profitability of the enterprise is open to question in more than 80% of the households. Most fish farmers can be classified as subsistence fish farmers – with very low profit margins if at all.

Women reported some benefits from aquaculture, including increased incomes and food.

To promote commercial aquaculture, especially among women farmers, focus should be placed on:

- Women need to have pre-requisite technical ability to operate their fish farms. This includes knowledge, especially on the productive nodes of the value chain. Attention should be put on quality of fingerlings used, management of fingerlings, quality and quantity of feeding, pond management including record keeping and appropriate harvesting and handling techniques. Several approaches can be used to improve women's technical know-how and ability in aquaculture; targeted training, women to women training, exposure visits, women led demonstration ponds, provision of technical information, support from local area fish experts, use of ICT to avail information etc.
- Improved access to aquaculture inputs – especially quality fingerlings and feeds, as well as pond management equipment.
- Improved intra-household communication and cooperation (ICC²⁶), especially between husband and wife for more equitable decision making and sharing of revenues. If men are adequately sensitized to be supportive, and all indications are that most of them are willing to be supportive, women can be a tremendous success in commercial aquaculture.
- Support to structured marketing – this can be achieved through farmer groups and cooperatives, involvement of county governments and fish traders. If possible, facilitation of production/sales contracts between farmers and traders be tried out on a pilot basis.
- Access to capital – through grants or loans is necessary given the relatively heavy investments needed in aquaculture. While commercial loans are largely beyond most farmers, and government funds are difficult to access, the following are proposed:

²⁶ ICRW successfully piloted the ICC model in Siaya and Vihiga counties with immediate and significant results. KMAP can apply a similar model.

- Using the One-Acre-Fund model: where interested farmers are signed up, trained and given conditions under which they can access necessary pond inputs over the production cycle on credit. The farmers start monthly repayments for inputs received until they clear the loans. This approach helps farmers reduce the burden of seeking for initial heavy investments because they receive loans for inputs when needed, while repayments are smoothed out over the production period.
- Promote a fish farm inputs savings and loans; fish farmers are encouraged to join small groups (majority of them are in these groups), where they are taught how to save and loan each other with the ultimate aim of having adequate capital to invest in production.
- Because fish take 5-7 months to be ready, one may target to save the entire amount or only the amounts needed for each phase during the production cycle. The International Centre for Research on Women (ICRW) and AGMARK have piloted this approach with great success in western Kenya.
- Some County governments are keen on aquaculture e.g. Kakamega. The project can explore means of partnering with them and pooling resources to establish and manage a fund that women farmers can access and repay. However, this will be wrought with political dynamics that may prove a challenge to implement.
- Continuous technical and monitoring support. While some counties have very active fisheries officers, they are few, ill-equipped and poorly facilitated to give optimal services. A way out is to recruit and build the capacity of community based own resource persons to provide this service. The project can facilitate the village based resource persons and pay them a small stipend. Such persons should be those with own ponds, with gender equality given priority during recruitment.

Table 16 below provides a broad summary of possible action points to support the promotion of women in commercial aquaculture.

Table 16: Broad summary of key gender issues, proposed options and proposed activities to actualize the options

Gender Issues/Gap	Proposal	Activities
<p>Women do not have control over land to construct ponds; they have inadequate access to the land.</p>	<p>Sensitization of men and women on benefits of aquaculture to the household and the value of women’s contribution to aquaculture and benefits they would draw. Support the actualization of women land and property rights, and the provisions of the Matrimonial Property Act, 2013 (Cap4).</p>	<ul style="list-style-type: none"> • Encourage intra-household communication and cooperation between men and women for the good of the household on resource (land sharing) and best uses. • Create awareness amongst men and women on land user rights, and the potential of cooperation and partnership to the entire household. • Encourage women to buy, borrow or lease land to construct ponds.
<p>Pond management involves heavy labor for women especially, construction, harvesting and filling in water (from distant water sources).</p>	<p>Promotion of gender responsive approaches and technologies e.g. water pumps and appropriate pond designs. Use of hired labor to construct ponds and harvest fish</p>	<ul style="list-style-type: none"> • Encourage men (spouses and male household members) to support women on taking up certain activities, which can be a physical challenge to women like pond construction. • Promote user friendly technologies to ease the workload e.g. pumps. • Encourage groups to help each other carry out certain pond activities. • Use appropriate designs that reduce drudgery and labor – e.g. appropriate dam designs for ease of harvesting.
<p>Fewer women have access to market and market information</p>	<p>Enhance access to markets and market information.</p>	<ul style="list-style-type: none"> • Support women farmers to organize their harvesting to synchronize supplies and avoid oversupply to markets • Promote culture of contract farming that ensures a market for the farmers • Use of ICT to avail market information to women farmers e.g. on mobile phones (sms, twitter) • Link and collaborate with County governments to improve market infrastructure • Facilitate big producers to support small holders in marketing (agency farming, CSR). • Build capacity of women to price their produce according to agreed/acceptable standards e.g. weighing. • Facilitate the strengthening of farmer groups/cooperatives and support their organizational and institutional capacity to undertake sales and marketing on behalf of the members. • Facilitate farmer groups to access market information through various means (digital or paper based). • Strengthen linkages with county governments and partners to improve market infrastructure (storage, ice making, processing etc.)
<p>Women have inadequate knowledge and skills on</p>	<p>Build the skills and technical know-how of women aquaculture farmers.</p>	<ul style="list-style-type: none"> • Design and implement appropriate technical trainings in aquaculture that women can participate in. (Ensure time, venue, duration, language are appropriate).

Gender Issues/Gap	Proposal	Activities
<p>aquaculture. Women hardly attend training sessions on aquaculture.</p>		<ul style="list-style-type: none"> • Encourage/promote farmer-to-farmer trainings for women aquaculturalists. • Make use of women owned aquaculture farms as demo farms for women to learn from other women. • When need be, make use of women trainers as part of the facilitation teams during training sessions. • As much as possible, use practical training approaches – for women to learn as they do. • Establish community based own resource persons (men and women) to provide on-going technical and monitoring support to the farmers, especially women. • Facilitate the inclusion of women to participate in (aquaculture) shows/exhibitions. • Allocate/reserve quotas (30-50%) for women to participate in conferences, trainings, seminars, education tours. • Facilitate women to access information, knowledge and technologies through their groups and use of ICT (e.g. mobile phones (twitter, sms, WhatsApp)). • Use well trained trainers to work with women farmers – avoid conflicting information and approaches. • Farm Africa staffs should be trained on gender to gain basic gender knowledge before conducting trainings with farmers. • Sensitize men on the need to allow their spouses time to attend and participate in trainings.
<p>Women do not have adequate access to quality pond inputs (feeds, fingerlings and equipment) due to long distances, unavailability of the inputs or high costs of the inputs</p>	<p>Formulate practical strategies to enhance access to the inputs by women.</p>	<ul style="list-style-type: none"> • Pilot the One-Acre Fund loan model • Pilot the Fish Farm Inputs Savings and loan models • Linkage with commercial farmers to support smallholder out grower farms on contracts • Encourage agrodealers to stock aquaculture inputs and equipment, train them on these inputs • Support strengthening of fish farmer groups to jointly access farm inputs • Encourage women (in their groups) to access Government run funds e.g. WEF, YEF etc. • Link up with County Governments to support farmers access inputs
<p>Many women have low confidence in aquaculture (they assume it is an activity for men)</p>	<p>Empower women through exposure, capacity building and supporting their aquaculture businesses</p>	<ul style="list-style-type: none"> • Expose the doubtful women farmers to successful counterparts through exchange visits. • Conduct appropriate training (knowledge and skills) as indicated earlier. • Facilitate women to access inputs and markets • Identify role model farmers to mentor and support willing female farmers. • Facilitate the establishment of reward schemes to motivate women farmers.

Gender Issues/Gap	Proposal	Activities
		<ul style="list-style-type: none"> • If taken on board, community own resources persons can play a great role in monitoring and supporting women farmers in their journey of fish farming. • Facilitate women to women sharing of knowledge and experiences (groups meet and share/exchange). • Avail video shows of successful women aquaculturalists • Encourage women to take part in different nodes of the aquaculture value chain where they are most comfortable (e.g. sales and marketing).
<p>Women have inadequate access, control and decision-making power on fish farming activities, especially incomes.</p>	<p>Promote intra-household communication and cooperation on their income generating activities.</p>	<ul style="list-style-type: none"> • Hold sessions and conversations with farming households and impress upon them the actual benefits of cooperation and sharing –resources and benefits. • Work with successful households as role models to encourage the culture of communication and cooperation within households. • Encourage men to support their spouses in the farming business – by sharing access and control over decision-making and benefits. • Encourage record keeping on the farm activities, including expenditure, production and incomes to promote openness and accountability. • In groups and cooperatives, encourage co-registration of men and women as members.
<p>Women have limited access to credit to invest in aquaculture (availability, tough credit conditions, inadequate collateral)</p>	<p>Facilitate gender responsive innovative financial products.</p>	<ul style="list-style-type: none"> • Work with partners to develop women friendly credit products. • Facilitate women to have access to information on available credit products so that they can choose from a rich menu. • Include lessons/topics on access to credit during training sessions. • Explore possibility of using One-Acre fund credit model. • Explore possibility of promoting Farm Inputs Savings and Loans Model. • Explore use of cooperatives to give farmer friendly loans. • Encourage women to access funds from Women Enterprise Fund (WEF), Youth Enterprise Fund, and Devolved government loans/funds. • Establish and strengthen linkages with other stakeholders providing appropriate (affordable and accessible) innovative finance.
<p>Low participation of women in fish farming groups.</p>	<p>Sensitize fish farmers to join farming groups.</p>	<ul style="list-style-type: none"> • Work with local agents e.g. community own resource persons and Ministry Agriculture (fisheries staff) to encourage increased membership and participation of women in fish farm organizations (groups and cooperatives.) • Work with stakeholders to ensure actualization of 2/3 rule in fish farm organizations (e.g. women to get more involved in management positions, not treasurer only). • Support capacity building of women officials in fish farm organizations.
<p>Low staff capacity on</p>	<p>Enhance the capacities of staff and</p>	<ul style="list-style-type: none"> • Staff working in project to be trained on gender to gain basic knowledge on

Gender Issues/Gap	Proposal	Activities
understanding of gender equality and related dynamics in aquaculture.	farmers on gender equality.	gender equality in aquaculture. <ul style="list-style-type: none"> • Work towards addressing the gender issues identified, and which will emerge during project implementation. • When need be, encourage the recruitment of women as part of the field staff for the project.
Women lack awareness on how to become fish farmers	Empower them through appropriate information, knowledge and skills.	<ul style="list-style-type: none"> • Develop mass media programs that target the promotion of women to be fish farmers. • Encourage potential female fish farmers to attend and participate in training. • Encourage potential female fish farmers to visit and learn from successful fish farmers and relevant Ministry of Agriculture (fisheries department) officers. • Team up with other partners whose objective is to support through grants, and refer interested farmers to them for start-up support. • Review KMAP farmer selection criteria to take up female fish farmers with 2 ponds (600m2). • Encourage such women participate in other nodes of the aquaculture value chain as start, before venturing into fish farming.

5.3 Input by KMAP staff on options they have of addressing contemporary and felt gender issues in aquaculture

KMAP staff developed a gender action plan based on the findings of the gender study, an action plan that closely mirrors what has been presented in 5.2. Because the staff developed this action plan, it is presented here to form part of the guide for gender integration in the project. The action plan is presented in Table 17.

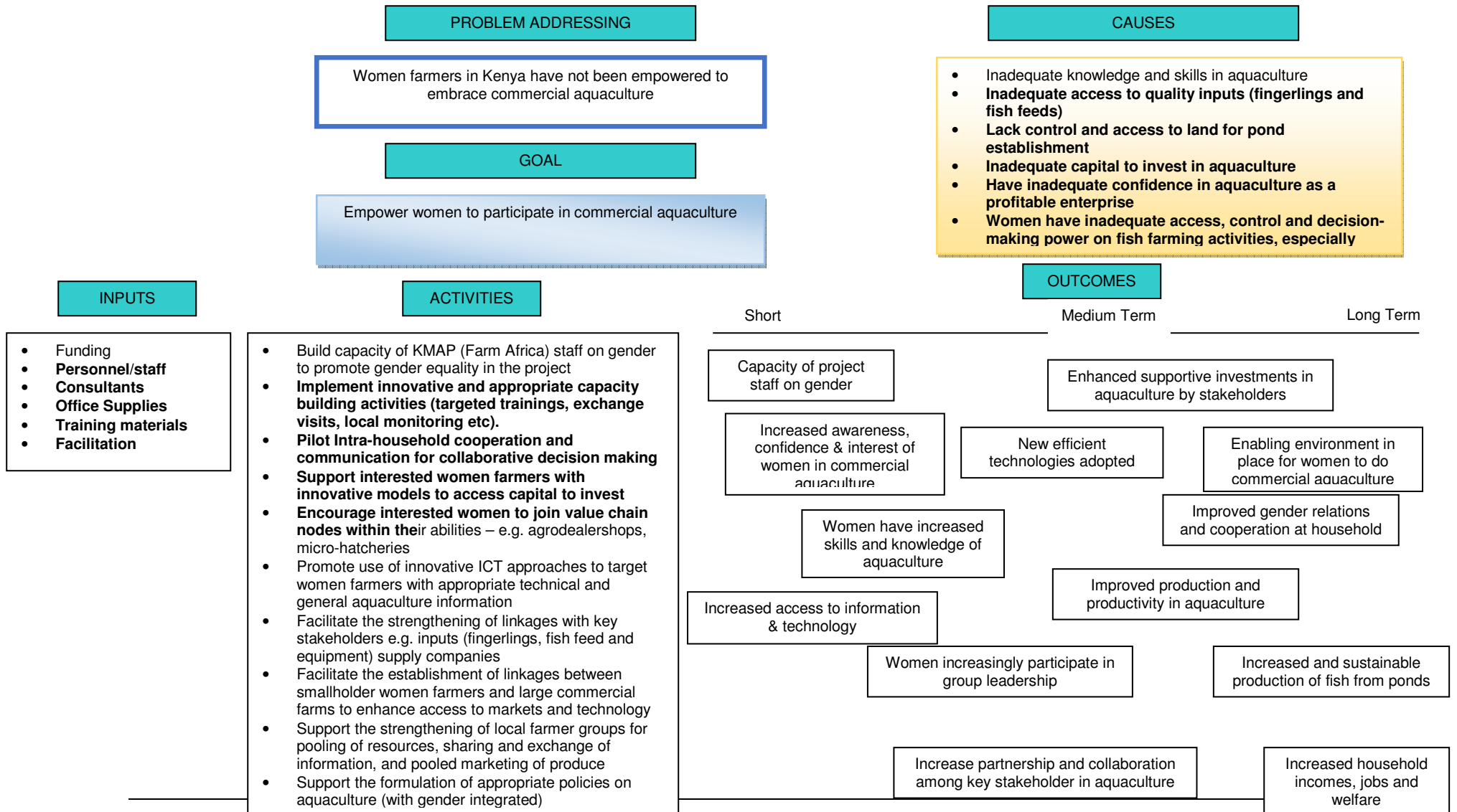
Table 17: Gender Action Plan developed by KMAP Staff

No	Gender Issues	Options to address	Proposed KMAP action	Responsible lead
1	Men own and control most of the land, and also fish ponds. Men make final decisions on siting, size and no of fish ponds, so women are disadvantaged. Few women enrolled in KMAP project	Promote the concept of aquaculture as a joint business, co-owned and co-managed by the household; encourage women to buy or lease land and put up ponds Review criteria for admitting farmers into KMAP with objective of encouraging more women to join	Link up with rights based organizations to support concept of joint ownership or access and control over land KMAP to review and lower the criteria for recruiting women fish pond farmers - (at least 500 -600 sqm) of ponds	Team leader project coordinator
2	Both men and women are engaged but the men are more pre-dominant across all nodes of the value chain	Equally share responsibilities; train all parties in the household; encourage pond designs eg harvesting troughs, sloping edges that make it easy for women	Engage women and men through ICC Enhance opportunities of women to access technical skills and experience to engender their participation	Project Coordinator; Field officers
3	Low literacy levels	Train in local languages; offer practical and demonstrations; illustrations and pictorial trainings - focus on visualization; group the participants according to their levels of understanding; design to train men while targeting women; engage more female trainers and extensionists;	Use of local facilitators who know local languages Use of visualization techniques during training Promote practical - learning by seeing and doing	Project Coordinator; Field officers
4	While both men and women do not have adequate capital to invest in aquaculture, women are disproportionately disadvantaged in accessing capital to invest because of institutional and structural obstacles	Enhance awareness of existing affordable and accessible funds, Encourage VSL (village saving and lending); create revolving fund targeting women; credit input schemes;	Link women farmers to financial institutions Support farmers to write bankable proposals build capacity of farmers to negotiate for credit inputs from credible suppliers Refer/recommend farmers to other organizations/Gok Depts that offer affordable credit Promote progressive investments - 1 pond to 2..and re-investment of revenues in aquaculture	All
5	Women have poor access to quality inputs (fingerlings and feeds)	Strengthen linkages with inputs suppliers and distributors to enhance their reach and physical access to farmers; Facilitate/empower local agrovets to stock	Establish and strengthen win-win linkages with inputs suppliers Link smallholder women farmers to established large scale farmers	All

		aquaculture inputs; Encourage and promote inputs suppliers to invest in extension support and demand creation activities Promote and facilitate self-regulation and monitoring amongst inputs suppliers to ensure quality of inputs	with inputs supply capacity Encourage and facilitate agrodealers in aquaculture dense areas to stock aquaculture inputs Facilitate awareness of and strengthen linkages with inputs suppliers	
6	Sharing incomes from pond activities largely skewed in favor of men	Promote intra-household communications to encourage joint decision making and equitable sharing and planning the use of incomes;		
7	Women have low levels of technical know-how/skills and knowledge on aquaculture	Design innovative capacity building strategies that specifically reach/target women; Allocate a minimum proportion of training slots to women Increased number of trainings to ensure some reach women farmers Design trainings that are localized, if possible non-residential Promote more practical training sessions - ensure distance, location, venue, staffing, timing, mode of facilitation are responsive to needs of women too. Pilot and encourage FFS - model farmers to train	Design innovative hands-on practical training/capacity building sessions that are gender responsive, if possible target women; Ensure attendance criteria do not exclude women - e.g. high fees, distant training venues, many residential trainings, language of training; if possible, use small scale female farmers as demonstration ponds, encourage exchange visits to other female farmers and progressive farmers; Pilot and promote Fish Farm Schools (FFS)	
8	Women lack or have inadequate access to information: Most aquaculture extension officers are men; most mass media gadgets (radios and phones are owned and controlled by men)	Advocate for and Promote the training and hiring of more female extension officers Advocate for and promote Joint sharing of resources e.g. radios during awareness and demand creation events, as well as exhibitions and relevant public fora Advocate for and promote the dissemination of information through mobile phones - sms or twitter	Design an innovative gender responsive communication strategy Target women with IEC materials Promote use of ICT - mobile telephony information e.g. sms, twitter	
9	Decision making is largely under control of men	Promote the concept of intra-household communication and cooperation to encourage participation of men and women in decision making at household level. Create awareness and train women on technical aspects so as to contribute more in decision making;	Seek partnerships to promote ICC	

5.3 Gender responsive monitoring and evaluation for KMAP

5.3.1 Logic model



5.3.2 Gender responsive indicators

Text Box 4 gives a short definition of gender responsive indicators. These indicators improve planning and programming.

Text Box 4: Definition of gender responsive indicators

A gender responsive (gender sensitive or gender indicator measures changes relating to gender equality over time and can be quantitative or qualitative (in which case one can use an index). These can indicators can be based on sex disaggregated data, which can be measured separately for men and women

The indicators proposed for KMAP project have been selected to focus on the possible outcomes of the proposed gender action plans (Table 18).

Table 19: Draft outcome indicators for proposed gender action plan

Proposed outcome	Indicator	Definition
Project staff have improved capacity on Gender	Increase in number and sex of staff able to integrate gender in their work	Staff who are confident they have skills and knowledge to apply gender lens in their work Staff actively applying gender knowledge in their work
Women have increased awareness, confidence and interest in commercial aquaculture	Increase in number of women actively engaged in commercial aquaculture value chain	Number of women undertaking defined activities in various nodes of aquaculture with a commercial orientation – e.g. produce or sell inputs (fingerlings or feed), managing ponds, research,
Women skills and knowledge of aquaculture improved	Increase in number and quality of improved technologies that women have adopted in aquaculture	The number of women whose skills and knowledge in various aspects of aquaculture have improved Nature and types of new skills women using in aquaculture
New efficient aquaculture technologies adopted	Change in number and type of new technologies women farmers adopt in aquaculture	Number and type of new technologies and number of women adopting them
Gender relations at home have improved	Increase in number of men and women collaborating and working together on their aquaculture	Number of men and women reporting increased consultations, communication and cooperation in decision making on aquaculture activities
Women farmers have improved access to inputs	Increase in number of women using quality aquaculture inputs. Quantity of quality fingerlings fish farmers have bought (per month disaggregated by sex) Quantity (numbers) of quality fish feed fish	Number of women using quality fingerlings, fish feeds and equipment in their ponds

Proposed outcome	Indicator	Definition
	farmers have bought (per month disaggregated by sex)	
Strengthened linkages between and among key stakeholders	Increase in contacts, collaboration and partnerships between and among stakeholders	Number of stakeholders reporting improved working relations, partnerships and collaboration between and among themselves
Stakeholders enhance investments in aquaculture	Increase in number and type of stakeholders, and number type of investments stakeholders make	The number of stakeholders reporting investments they make in the value chain that support aquaculture e.g. markets, feed manufacturers, training, technical support to small holders etc.
Enabling environment for women to invest in and practice commercial aquaculture	Nature and types of gender responsive policies formulated and implemented to support women in aquaculture	Policies enacted to support women farmers to access land, inputs, markets and share incomes from aquaculture
Improved production and productivity in aquaculture	Number of men and women reporting increased production and productivity from their ponds Increase in yields (kg/m ² / year) of fish (disaggregated by sex) Feed conversion ration of fish farm enterprises (disaggregated by sex)	Number of men and women reporting Increased yields of fish and fingerlings from their ponds over time
Increased sharing of aquaculture incomes at home	Increase in proportion of incomes that women farmers access from aquaculture	Number of women reporting improved access to a share of incomes from the ponds Number of women reporting increased participation in decision making on sharing and use of revenues with their spouses
Farmers practicing sustainable aquaculture	Increase in number of farmers (men and women) adopting sustainable aquaculture practices	Sustainability in terms of conserving the environment, especially water sources, appropriate design of ponds, harvesting techniques etc
Improved household incomes and welfare	Increase in number of households reporting increased incomes or jobs from aquaculture Quantity of fish sold per farm enterprise per year (disaggregated by sex) Value of fish sold per fish per farm enterprise per year (disaggregated by sex) Gross margin of fish farm operations (%) per fish farm enterprise (disaggregated by sex)	The number of households whose incomes have increased from aquaculture, the change in incomes, number of jobs created, amounts of monies paid, and types of expenditure used on the incomes Measures income from fish sold by sex of pond owner per year Gross margin calculations (inputs vs outputs)

Proposed outcome	Indicator	Definition
Women have improved access to aquaculture information and technologies	Number of women accessing new/relevant aquaculture information Number of women applying improved aquaculture technologies (e.g. aeration kits developed by Larive)	
Fish farmers have increased access to markets and market	Number of fish farmers able to sell all their fish produce by quantity and price for each harvest (disaggregated by sex) Number and type of market information that fish farmers (number of farmers by sex) access in a production cycle	
Improved participation in group activities and leadership by women	Increased number of women enrolled and actively participating in groups Number of women occupying meaningful leadership positions in group Perception of fish farmers (disaggregated by sex) on the performance and benefits of the group	Number of women members participating in aquaculture groups Number of women in influential leadership positions e.g. chairman, secretary or coordinators
Improved OCAT score	OCAT scores for fish farm enterprises (disaggregated by sex of owner)	

6.0 General Conclusions and Recommendations

6.1 Conclusions

Study finds that both women and men are involved in, participate in and benefit from aquaculture. However the involvement, participation and especially benefits is not always equitable between the gender – basically because men have greater access to and control over resources and decision making. In general, most respondents consider that the ponds in their homes belong to the household, and not any specific gender.

1. However, the study also found that activities like pond construction and fish harvesting are mostly done by men (although women often participate). Women actively participate in feeding, processing and selling fish.
2. There are no traditional or cultural practices that bar women from engaging in any node or part of the aquaculture value chain. Women are free to invest in and participate in any node of the value chain. However, men own land on which ponds are situated; often, women have to seek their blessings to access land to construct ponds.
3. While women certainly have many chores both productive and reproductive, almost all women the team interacted with were firm in their ability to plan well and optimize on their time allocations for various duties, including profitable ventures like fish farming.
4. More than 90% of the respondents interviewed (quantitative and qualitative surveys) cannot be classified as commercially oriented. The operations are small in size and scope, husbandry is poor or wanting, and the yields are rather low. They can be termed as subsistence fish farmers, which is greatly at variance with the initial objective for which the fish ponds were introduced by the ESP.
5. Most of the fish ponds in operation or idle were constructed through the ESP. More than 70% of them are currently dormant. Most farmers cannot access inputs like quality fingerlings and fish feeds. The free inputs received from the GoK during ESP engrained a culture of dependence. Most farmers' mind-set is tuned to waiting for the next set of free inputs from the government.
6. The ESP project massively succeeded in catalysing interest in aquaculture, and many farmers are keen to continue with fish farming. This interest is a huge opportunity for new projects to build on. While the ESP was a gender blind project, lessons from the ESP clearly show the need for integrating gender in the programs.
7. Effective integration of gender into KMAP is contingent upon the project staff having some basics of 'how to' in gender. However, most of the staff do not have the skills and grounding in gender to effectively integrate gender in their activities.
8. The main obstacles women face to effectively engage in commercial aquaculture are inadequate access to capital (savings, grants and credit), low technical skills and experience in aquaculture, and difficulties in accessing quality fingerlings and feeds. While fish-production from ponds may seem easy on paper, it is a highly technical process that needs good science, skills, art and guile for one to succeed and make profits.

9. There are several opportunities and entry points for women to be commercially involved in aquaculture – and at all nodes of the value chain. The low-lying fruits include pond husbandry/management, processing, marketing and selling fish. Women can also participate in other nodes of the value chain, including research, extension, agrodealerships and commercial marketing.
10. Linkages between key actors and stakeholders were largely weak, and have potential to be strengthened to create synergy.
11. While both men and women belonged to fish farming groups and cooperatives, women's membership numbers and participation in leadership was low.
12. Staff developed great interest in learning and understanding more about gender and aquaculture during the gender induction workshop; KMAP staff developed a gender action plan to guide their activities in integrating gender in the project.

6.2 Recommendations

1. The report has identified some entry points for effective promotion of women to participate in commercial aquaculture. To address some of the critical constraints, the following recommendations should be tried out;
 - a. Use innovative approaches to enhance the technical competence of women in aquaculture. Examples include appropriate capacity building/empowerment activities e.g. targeted training of interested women in aquaculture. Issues of time, venue, duration, language and practical sessions should be borne in mind as the trainings as carried out.
 - b. Ensure that men are not disenfranchised. The project should hold conversations with men using the intra-household cooperation and communication approach to enhance men's agreement and partnership.
 - c. Pilot micro-production technologies e.g. in raising fingerlings. Women farmers can be trained to raise fingerlings in backyard tanks – as long as they have adequate sources of water. In addition to tanks, the project can explore the use of small cage nets in specific parts of the ponds for women to produce fingerlings in an intensive system. The project can also explore and pilot other small-sized intensive and high-return technologies suitable for women.
2. Women farmers require continuous support, monitoring and information to enhance efficiency and productivity of their enterprises. Support from the Department of Fisheries may not be adequate. We propose the following:
 - a. The project to hire community own resources persons, build their capacities and facilitate them to interact with the selected and interested women fish farmers. The project may pay them a stipend. All such resource persons should already be fish farmers. The project should also pick enterprising women as part of the team.
 - b. The project should support or facilitate the establishment of demo-plots among up-coming farmers. It is critical that demo plots should avoid farmers who are well established and operating at a very intensive scale. Priority should be given to middle level farms that are doing well, and if possible, some that are run by women should be selected.

- c. Facilitate exchange visits to well-run established farms for local women farmers to learn and get exposed to what they should aspire for. The project should encourage interested farmers to pay full or partial costs for such exchange tours.
 - d. Encourage farmer-to-farmer learning. Project should identify promising farmers willing to share their experiences with other farmers, and encourage farmer to farmer learning.
 - e. Many farmers have mobile phones – the project should facilitate the design of an appropriate text message service or use twitter to spread important aquaculture messages to the farmers.
 - f. If need be, establish linkages and work with fisheries officers based in the field, with facilitation and motivation costs.
 - g. Use fish farm groups and cooperatives to reach many farmers for training, information, sharing information and learning, and joint activities.
3. Strengthen linkages with other stakeholders e.g. fish feed manufacturers, fingerling producers, feed and equipment stockists/distributors, technical service providers, action researchers, fish markets/traders, funding institutions (WEF, YEF), policy makers (Ministry of Agriculture) and the County Governments.
 4. Support the strengthening of fish farmer groups/organizations, with specify focus on women’s active and effective participation in group activities including leadership.
 5. Pilot and promote an ‘out-grower’ fish production system, where commercial farms partner with and sub-contract smallholder farmers to produce fish on contracts. Ensure that women are part and parcel of the contract to guarantee women get paid as well.
 6. Pilot innovative finance approaches to support women to access fishpond inputs. We propose the use of One-Acre-Fund Model, where women farmers are given credit (usually inputs in kind) on a needs basis, and they pay back in instalments every month during the production cycle. A second approach, which is not mutually exclusive from the first approach, is a Fish-farm inputs savings and loans model. In this model, farmers (majority already belong to women only or mixed groups) are encouraged to start saving money for purchase of inputs. They can borrow money as they save and repay it with interest. When they require inputs, they can purchase them in bulk (get economies of scale) together, and distribute to each member based on their contributions. Because fish production requires a once off input for fingerlings and a continuous supply of quality feeds, this is a practical model with great potential for aquaculture.
 7. Integrating gender in any program requires that staff involved must have a basic understanding of gender, and the ‘how to’ of practical integration. The staff underwent an induction workshop on gender; progress made during this workshop must be built upon with further more detailed trainings, and practical sessions. In addition, interested staff should delve a little deeper in understanding gender. However, such short courses do not make one a gender expert, and it is hereby recommended that the project seeks for Technical Assistance wherever the need arises. The induction training should target all project staff, and if possible, the entire staff of Farm Africa – integrating gender successfully requires that all staff are on the same page, and that there should be a focal point on who gender issues are addressed, and who can galvanise the rest of the staff to address gender issues in the project.



**GENDER IMPACT STUDY
OF
THE KENYA MARKET-LED AQUACULTURE PROGRAM (KMAP)
Annex 2: Proposed Gender Action Plan**

**NOVEMBER 2016
NAIROBI**

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List of Acronyms

AAK	Aquaculture Association of Kenya
AFIPEK	Kenya Fish Processors and Exporters Association
AGMARK	Agricultural Market Development Trust
AGRA	Alliance for a Green Revolution in Africa
AIDS	Acquired Immunodeficiency Syndrome
ASAL	Arid and Semi-Arid Land
ASDS	Agricultural Sector Development Strategy
CAADP	Comprehensive Africa Agriculture Development Programme
CAPI	Computer Assisted Personal Interview
CBOs	Community Based Organizations
CDF	Constituencies Development Fund
CEDAW	Convention on the Elimination of all forms of Discrimination against Women
CSR	Centre for Social Responsibility
EAC	East Africa Community
ECOSOC	Economic and Social Council
ERS	Economic Recovery Strategy
ESP	Economic Stimulus Programme
FGDs	Focus Group Discussions
FGM	Female Genital Mutilation
GoK	Government of Kenya
HIV	Human Immunodeficiency Virus
ICRA	International Centre for Research in Agriculture
ICRW	International Centre for Research on Women
ICT	Information and Communications Technology
KEMFRI	Kenya Marine and Fisheries Research Institute
KES	Kenya Shillings
Kg	Kilogram's
KIIs	Key Informant Interviews
KMA	Kenya Maritime Authority
KMAP	Kenya Market-led Aquaculture Programme
KWS	Kenya Wildlife Services
LBDA	Lake Basin Development Authority

LVEMP	Lake Victoria Environment Management Program
LVFO	Lake Victoria Fisheries Organization
M ²	Metre square
NARDTC	National Aquaculture Research Development and Training Centre
NEMA	National Environment Management Agency
NGEC	National Gender and Equality Commission
NGO	Non-Governmental Organization
NSA	Non-State Actor
SAIOMA	Strengthening of Agricultural Inputs and Outputs Markets
SDP	Sustainable Development Goals
SMS	Short Message Services
SOFA	State of Food and Agriculture (FAO)
SOFO	Successes, Obstacles, Failures and Opportunities
SPSS	Statistical Package for Social Sciences
SRA	Strategy for Revitalizing Agriculture
STATA	Statistics and Data
SWOT	Strengths, Weaknesses, Opportunities and Threats
ToR	Terms of Reference
TUFAK	Tuna Fisheries Alliance of Kenya
TV	Television
UNSRC	United Nations Staff Recreation Council
WEF	Women Enterprise Funds
WFC	World Fisheries Centre
WWF	World Wildlife Fund for Nature
YEF	Youth Enterprise Fund
Yr.	Year

Acknowledgement

The gender impact assessment study was commissioned by the Kenya Market-led Aquaculture Program of Farm Africa and executed by ETC East Africa Consultants. The study was carried out by a team of 9 researchers under the Team Leadership of Dr. Bell Okello. Other team members were Charles Oduol, Dr. Andrew Dibo, Esau Kwach, Christine Mburu, Mercy Kokonya, Faith Opere, Faith Nanjala and Esther Mathenge. Dr. Davis Onduru supported the team with ICT and data management.

The team of consultants is very grateful to Farm Africa, and KMAP staff in particular for the opportunity to contribute towards the program. The team appreciates especially Arnoud Meijberg, Teddy Nyanapah and Maureen Nyachwaya. The team would not have succeeded in the assignment without the willingness and cooperation of fish farmers (men and women), key opinion leaders, elders, religious leaders and administrators in various parts of the country. The team appreciates the support received from county government officers in the Department of Agriculture, especially Fisheries section. The team expresses its gratitude to all the commercial aquaculture firms, feed manufacturers, NGOs and other stakeholders who supported the study in one way or the other.

Finally, the team appreciates the support given by ETC EA support team in Nairobi.

Foreword

This Annex contains additional data and information for the report: Gender Impact Study of the Kenya Market-Led Aquaculture Program (KMAP).

All useful data, including charts and tables, tools used during the study, persons and organizations interviewed as well as the bibliography (literature consulted) are in this Annex.

The Annex has several main sections – starting with additional data (charts and tables), the Terms of Reference, the tools used, list of people consulted and the bibliography.

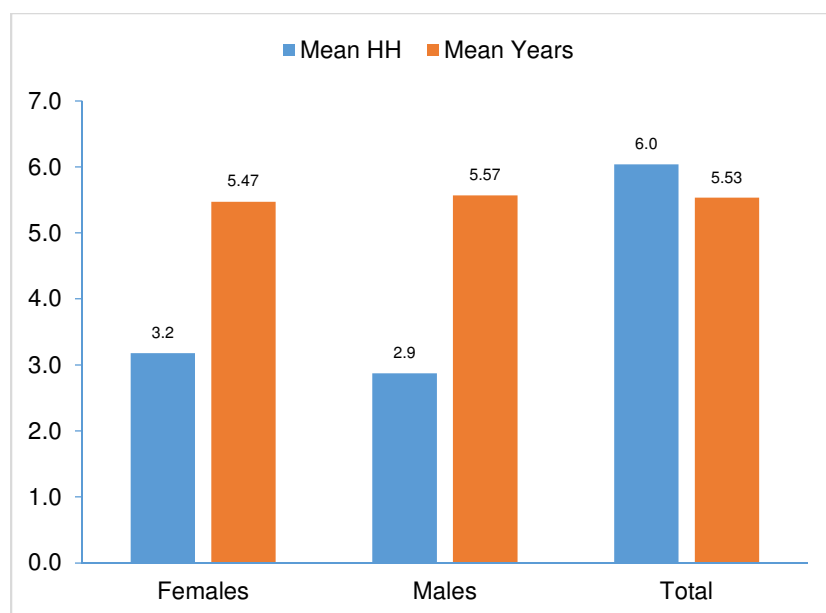


Figure 1. Mean number of occupants per household

Table 1: Frequency of land ownership type on which the ponds are constructed between counties

		Ownership of land where ponds are constructed				
County	Sex	Borrowed land	Leased land	Own/bought land	Own/family land	Spouse's land
Bungoma	Female	0	0	0	6	0
	Male	0	0	0	23	0
Busia	Female	0	0	0	11	0
	Male	0	0	0	18	0
Homa Bay	Female	0	0	0	6	0
	Male	0	0	0	11	0
Kakamega	Female	0	0	0	16	0
	Male	0	0	0	24	0
Kiambu	Female	0	0	5	7	0
	Male	1	3	15	15	0
Kisii	Female	0	0	0	7	0
	Male	0	2	1	10	0
Kisumu	Female	0	1	0	7	1
	Male	0	0	0	11	0
Machakos	Female	2	0	7	5	0
	Male	0	0	15	5	0
Migori	Female	0	0	0	3	0
	Male	0	0	0	14	0
Siaya	Female	0	0	0	5	0
	Male	0	2	0	29	0
Vihiga	Female	0	0	0	14	0
	Male	0	0	0	18	0

Table 2. Main sources of fingerlings respondents accessed by County

County	Agro dealers	Farmer group	GoK	Hatcheries	NGOs	Other farmers	Others
Bungoma	5.6	0.0	50.0	11.1	5.6	16.7	11.1
Busia	0.0	6.7	0.0	80.0	6.7	6.7	0.0
Homa Bay	0.0	0.0	47.1	41.2	5.9	0.0	0.0
Kakamega	0.0	0.0	9.5	81.0	9.5	0.0	0.0
Kiambu	0.0	0.0	40.0	36.7	0.0	3.3	16.7
Kisii	0.0	0.0	78.9	15.8	0.0	0.0	0.0
Kisumu	0.0	0.0	66.7	13.3	0.0	13.3	0.0
Machakos	0.0	0.0	72.7	21.2	0.0	0.0	6.1
Migori	0.0	0.0	64.7	35.3	0.0	0.0	0.0
Siaya	0.0	0.0	0.0	85.0	10.0	0.0	5.0
Vihiga	0.0	5.6	22.2	50.0	0.0	22.2	0.0
Total	0.4	0.9	42.6	41.7	3.1	4.9	4.5

Table 3: Sizes of various ponds owned by female and male respondents in m²

Pond type	Females			Males		
	Mean	Minimum	Maximum	Mean	Minimum	Maximum
Cage Pond	50	0	100			
Dam Pond	250	250	250	172	44	300
Earthen Pond	255	110	660	302	45	1900
Lined Earthen Pond	241	45	450	262	35	400
Tank Pond				28	1	100
Other Pond	29	4	75			

Table 4: Main sources of fingerlings for aquaculture farmers

Name of Farm	Ownership	Area
Sagana Fish Farm	Fisheries Department	Sagana-Kirinyaga County
Kiganjo Trout Hatchery Center	Fisheries Department	Kiganjo – Nyeri County
Chwele Fish Farm	Lake Basin dev. Authority	Chwele -Bungoma County
Wakhungu Fish Farm	Fisheries Department	Busia County
Kisii Fish multiplication Center	Fisheries Department	Kisii Municipality Kisii County
Kibos Fish Farm	Lake Basin dev. Authority	Miwani Kisumu County
Yala Fish Farm	Community via Millennium Project	Yala Siaya County
Dominion Fish Farm	Private Company	Yimbo Siaya County
LVEMP	Ministry of Environment	Regional around Lake Victoria
Alupe Fish Farm	Lake Basin Development Authority	Busia
Mwea Aqua Fish Farm	Community with USAID support	Kirinyaga
Green Algae	Private	Muranga
Mabro Fish Farm	Private Individual	Siaya County
Jewlet Fish Farm	Private Individual	Rakwaro Homabay County
Rongo Fish Farm	Lake Basin dev. Authority	Rongo Migori County
Mabera Fish Farm	Private Individual	Kuria Migori County
Jasa Fish Farm	Private	Thika
Jambo Fish Farm	Private company	Mumias, Kakamega County

Table 5: Distances respondents in different counties travel to buy fish feeds

County	Mean	Minimum	Maximum
Bungoma	6.08	0	16
Busia	7.73	0	27
Homa Bay	39.29	0	180
Kakamega	7.52	1	23
Kiambu	10.15	0	68
Kisii	54.33	7	500
Kisumu	37.43	0	71
Machakos	31.97	0	600
Migori	58.47	5	240
Siaya	17.85	0	120
Vihiga	8.11	0	42
Total	24.48	0	600

Table 6: % Frequency of people responsible for performing various fish pond tasks

Task	Sex	Do not apply	Female worker or relative	Group member (female)	Group member (male)	Male worker or relative	Self	Spouse
Cleaning	Female	9.7	0.0	0.0	1.4	22.2	50.0	9.7
	Male	4.7	1.2	0.6	0.6	19.9	59.1	0.0
Construction	Female	5.6	1.4	0.0	1.4	51.4	26.4	8.3
	Male	7.6	2.3	0.0	1.2	43.3	33.3	0.6
Feeding	Female	8.3	0.0	0.0	2.8	63.9	6.9	8.3
	Male	8.8	1.2	0.6	3.5	47.4	24.0	0.0
Harvesting	Female	44.4	5.6	0.0	0.0	16.7	19.4	4.2
	Male	45.0	4.7	0.0	0.6	11.7	15.8	5.8
Market/sell	Female	20.8	0.0	0.0	0.0	5.6	52.8	6.9
	Male	18.7	0.0	0.0	0.6	4.1	56.7	0.6
Pond Management	Female	18.1	0.0	0.0	2.8	48.6	9.7	8.3
	Male	11.7	0.0	0.6	1.8	49.1	17.5	0.0
Processing	Female	2.8	0.0	0.0	0.0	6.9	70.8	5.6
	Male	10.5	4.1	0.6	0.0	7.6	59.6	0.6
Input Fingerlings	Female	2.8	5.6	0.0	1.4	36.1	43.1	2.8
	Male	1.8	7.6	1.2	0.6	23.4	39.8	11.1
Record keeping	Female	1.4	0.0	0.0	0.0	5.6	68.1	9.7
	Male	3.5	0.0	0.0	0.0	6.4	71.9	0.6

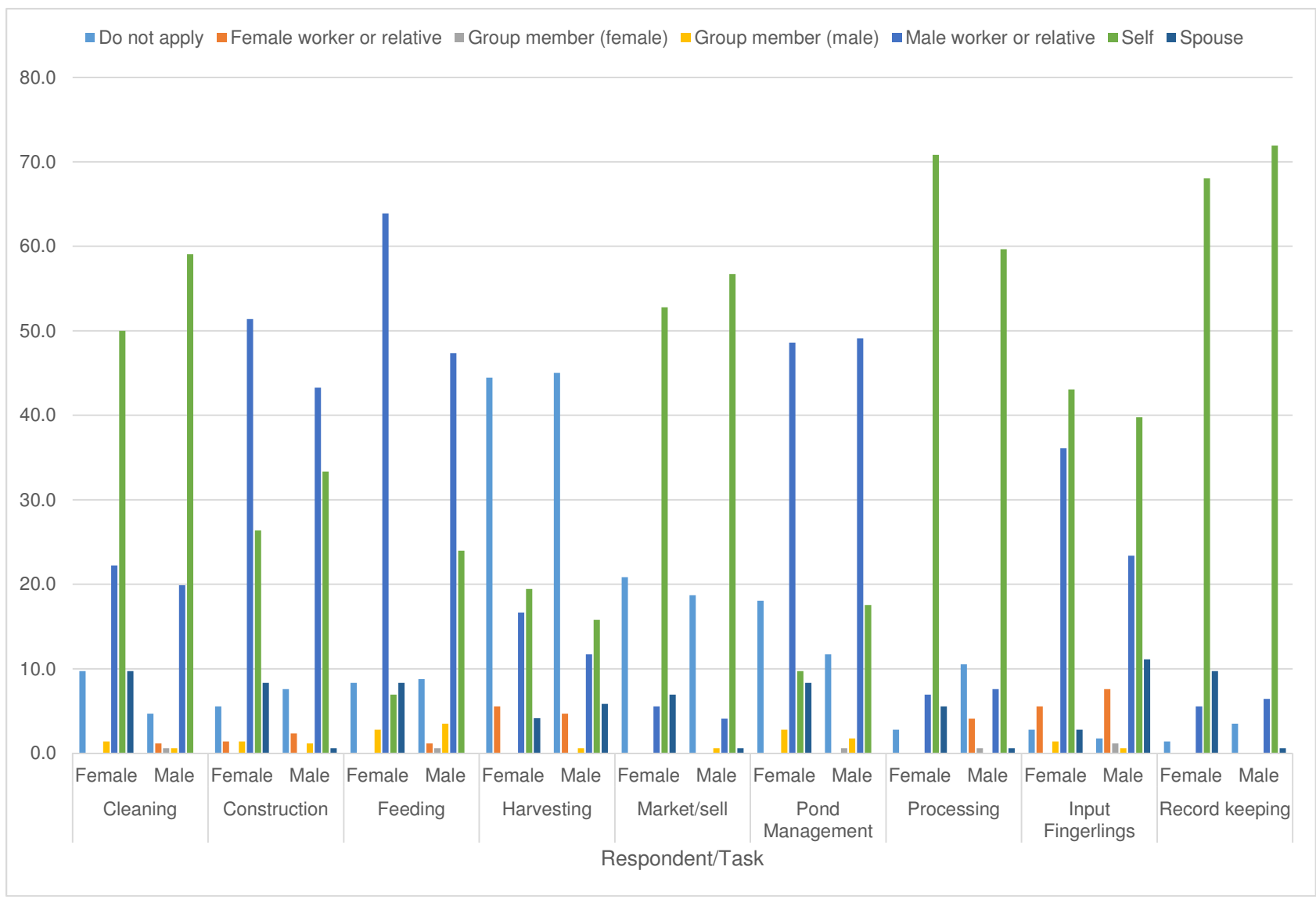


Figure 2: % Frequency of tasks performed by different people

Table 7. Main decision makers on various aquaculture tasks at household level

Task	Sex	Do not apply	Female worker or relative	Male worker or relative	Self	Spouse
Cleaning	Female	2.8	0.0	13.9	65.3	12.5
	Male	0.6	0.6	9.4	74.9	0.6
Construction	Female	4.2	0.0	15.3	62.5	13.9
	Male	1.2	0.0	11.7	70.8	0.6
Feeding	Female	2.8	1.4	16.7	62.5	9.7
	Male	1.2	3.5	13.5	63.7	1.8
Harvesting	Female	4.2	1.4	18.1	56.9	13.9
	Male	2.3	0.0	15.8	66.1	0.6
Market/sell	Female	2.8	0.0	4.2	76.4	9.7
	Male	2.3	3.5	7.6	64.9	2.9
Pond Management	Female	2.8	0.0	6.9	69.4	13.9
	Male	0.6	0.6	7.6	71.3	1.8
Processing	Female	9.7	2.8	9.7	59.7	8.3
	Male	5.3	5.8	9.4	53.2	9.4
Input Fingerlings	Female	4.2	0.0	5.6	72.2	12.5
	Male	1.2	0.0	12.3	71.3	0.6
Record keeping	Female	2.8	0.0	4.2	72.2	13.9
	Male	0.6	0.0	5.3	74.9	2.3

Table 8: Stakeholder linkage matrix for key stakeholders in aquaculture

STAKEHOLDER	STAKEHOLDER														
	F-farmers	F-Dept	KEMFRI	LBDA	Com-hatchery	Feed manf	FF Groups	BMU	Insts	GoK	LVEMP	Fish traders	Agro-dealers	Brokers	Com farms
Fish farmers		6	3	6	10	6	10	0	4	2	6	9	6	8	10
Fisheries dept			9	9	2	1	3	5	3	9	9	9	5	1	6
KEMFRI				2	6	3	3	0	0	9	9	3	6	2	6
LBDA					6	2	3	3	0	2	9	4	6	4	6
Commercial hatcheries						6	10	0	6	2	2	3	8	1	10
Feed manufacturers							9	0	10	2	1	3	8	6	10
Groups								0	0	0	0	6	6	4	10
BMU									0	3	8	9	1	2	0
Institutions (multiplication ctr, AFIPEK, KIT)										3	6	2	5	0	6
GoK											9	9	4	0	1
LVEMP												2	5	2	3
Fish traders													2	9	6
Agro-dealers														1	7
Middlemen(brokers)															7
Fish farms															

Strong linkages were found between farmers and stakeholders where they interact with more often, e.g. sources of fingerlings (commercial farms and hatcheries).

7.2 Terms of Reference

Introduction

Farm Africa was founded in 1985; and has a track record of implementing successful grassroots development projects and improving relevant policies on agricultural development. We currently work in Ethiopia, Kenya, Tanzania and Uganda. We support our beneficiaries in value addition for their products and harvests and link them to markets in order to establish viable income-generating enterprises.

Farm Africa has received funding from the Embassy of the Kingdom of The Netherlands (EKN) to implement the Kenya Market-led Aquaculture Programme (KMAP). In order to support the design of the project implementation, Farm Africa is seeking to engage a consultant with experience in conducting research into gender dynamics, opportunities and challenges to develop recommendations for the approach to empower women to benefit from engaging with the aquaculture value chain. The research should assess the household, community, cultural and legislative factors affecting –gender based constraints and opportunities for women to benefit from engagement with the aquaculture value chain in the selected project areas.

The assessment will cover time and labour constraints, access to services, gender roles at different levels of the value chain and any market failures hindering women’s ability to engage in and benefit from aquaculture. This study will identify the specific challenges inhibiting women’s full engagement and market based mitigation strategies.

Background to KMAP

The demand for fish in Kenya is rising, which has created opportunities for fish farming that offers significant economic benefits and, unlike capture fisheries, does not rely on a depreciating natural resource. KMAP is a four year project that will support 1100 farmers and a few traders with technical and business training, and link them to markets and input providers to ensure sustainable growth of their business. Input providers such as 3-4 fingerling producers and 2 feed producers will receive technical support and support in marketing. Through networking events such as existing agricultural shows the different players in the value chain will be linked to each other and potential investors can be attracted with fact based economic models and linking them to expertise. KMAP will also promote the consumption of farmed fish and identify (new) market segments for farmed fish and fish products.

KMAP Objectives

KMAP will develop a vibrant aquaculture industry that generates sustainable incomes, food security, and employment through the following objectives:

- 1) Sustainably increase production and productivity of medium to large scale fish farmers, hatcheries and fish feed producers.
- 2) Increase access to markets for medium to large scale fish farmers and input suppliers.
- 3) Enhance the enabling environment to support aquaculture development.

Gender in aquaculture and implication for KMAP

KMAP targets to mainstream gender in aquaculture through a pre-project implementation Gender Impact Assessment. Women are involved in aquaculture from “pond to platter”,

and are responsible for the nutritional well-being of households. A 2013 study on options for women in the aquaculture value chain identified the main opportunities for women as fish marketers and as fish farmers. Since it is less labour intensive than other farming enterprises, and is usually carried out in a small area close to the home, fish farming is readily adopted by women. The issues that came out of this study are that main constraints for women to enter aquaculture are lack of knowledge, land ownership, and control of financial resources. KMAP would like to get more detailed insights on the opportunities and constraints for women in the project areas to enter aquaculture. KMAP aims to integrate the findings of the study into the project so as to empower women in becoming engaged in aquaculture and hereby have a more sustainable effect on the lives of these women and their families, especially in terms of food security and nutrition and income. The long-term outcome of gender mainstreaming within the KMAP project will be the achievement of greater and more sustainable human development for all involved in the aquaculture sector in Kenya.

The general objectives of the gender study for KMAP are to:

1. Assess the gender dimensions within the aquaculture value chain, looking at gender roles, participation, access to and control of resources & benefits, beliefs & perceptions and legislation at household, community & policy level with a focus on the project area (West of Kenya and surrounding of Nairobi).
2. Identify the desires of and opportunities and barriers for women to actively engage in and benefit from the aquaculture value chain in the KMAP project areas and appropriate solutions to overcoming these barriers.
3. Make recommendations to the project on how to mainstream gender in the design of KMAP, with particular reference to approaches and activities to enhance the engagement of and benefits for women along the value chain. This includes making recommendations for more gender sensitive objectives, activities and indicators in the project design,
4. Build the capacity of KMAP Farm Africa staff in order to mainstream gender.

Research Questions

The following research questions should be answered in the study:

4.1.1. Assess the gender dimensions within the aquaculture value chain, looking at gender roles, participation, access to and control of resources & benefits, beliefs & perceptions and legislation at household, community & policy level with a focus on the project area (West of Kenya and surrounding of Nairobi).

1. What are the present gender roles along the aquaculture value chain and how is the current level of participation of women and men in these roles in respect of the four dimensions by which gender inequality can be assessed: participation, resources, norms and values and rights?
2. What is the current situation of women's and men's inclusion at the different levels of the aquaculture value chain? Key challenges and enablers should be highlighted in terms of women's roles, functions, ownership and (decision) power.
3. What are the future/historical trends concerning male and female positions in perspective of the aquaculture sector?
4. How does the political, policy and social environment affects gender equity in aquaculture?

5. Where is there greater participation of women or men in the aquaculture value chain? What are the reasons for this?
6. Where do opportunities or entry points exist to encourage an equitable division of labor and equal opportunity along the aquaculture value chain?
7. Who has access to and control of resources and services with regards to the aquaculture subsector?
8. In what decision-making levels do men and women participate? At national, community, and household level.
9. What opportunities exist to enable women to move from subsistence fish farming to market oriented production?
10. Do women participants along the aquaculture value chain have mobility, access to training, access to market information, and access to productive resources?
11. What is the level of production and use of technological inputs in women managed fish Farms?
12. Do women in aquaculture enterprises have access to agricultural inputs, training, credit, and markets?

This initial assessment should determine the intensity of the gender equality deficit and thereby feed into determining the priority to be attached to gender equality in formulation, monitoring and development of the KMAP interventions. The initial assessment also provides a benchmark against which to assess programme outcomes.)

4.1.2. *Identify the desires of and opportunities and barriers for women to actively engage in and benefit from the aquaculture value chain in the KMAP project areas and appropriate solutions to overcoming these barriers.*

1. What are the Strengths, Weaknesses, Opportunities and Threats for increasing the involvement of women along the value chain from the point of view of both men and women?
2. How can the program build on the strengths and make use of the opportunities to enhance the engagement of and benefits for women are suitable for women to be involved in the value chain and how can they be enabled to do so?

4.1.3. *Make recommendations to the project on how to mainstream gender in the design of KMAP, with particular reference to approaches and activities to enhance the engagement of and benefits for women along the value chain. This includes making recommendations for more gender sensitive objectives, activities and indicators in the project design,*

1. What are lessons learned in Kenya and other countries for gender mainstreaming in similar situations (e.g. agri business)? What strategies, methods and tools can be applied for KMAP?
2. What suggestions do you have to mainstream gender along the aquaculture value chain in KMAP, and what particular suggestions do you have to mainstream gender along the value chain in the project design (objectives and benefits, strategies, indicators and tools for assessing gender mainstreaming)?
3. Which tools for monitoring intended and un-intended impacts for gender equality can be employed for KMAP?
4. Based on the findings of the gender study, what specific recommendations do you have to mainstream gender in the project design? Differentiate between low-hanging fruits and long term interventions.

5. Which qualitative and quantitative indicators measuring gender balance for KMAP are important to identify the essential data to be collected that will be useful for the comparison of impacts of a programme.

4.1.4. Build the capacity of Farm Africa staff on how to achieve gender equality.

1. Hold a workshop that discusses the finding of the gender study with a way forward on how to use the proposed tools and approaches for equality in the control of the aquaculture value chain in a 2-day workshop.

Deliverables

A gender study report that responds to the specific research questions mentioned above. This includes a description of the current situation and trends of gender along the aquaculture value chain in KMAP project areas, and suggestions/recommendations to mainstream gender in KMAP.

- A workshop to present and discuss the findings of the gender study and work through the design of KMAP so as to make this more gender sensitive. The workshop will be organized by Farm Africa.

The consultant should have the following competencies:

- Knowledge and work experience in gender analysis focusing on women in agricultural value chains (with experience in Kenya, fish value chains preferred)
- Strong interpersonal and intercultural communication skills, and networking capacities
- Multi-stakeholder facilitation skills
- Fluency in English and strong communication, analysis and writing skills.

Submission requirements:

The consultant is required to provide a technical and financial proposal by **17th of May** to procurementkenya@farmafrica.org cc to: kmap@farmafrica.org

The technical proposal needs to include:

- Detailed research methodology, indicating the tools and methods for each of the research questions mentioned above.
- Time frame.
- Roles and responsibilities of the research team (unless one consultant can do this).
- Report outline will need to be specified.
- Literature to be consulted.
- References of previous studies carried out.

The study will be planned for the month of **May/June** with submission of the **final report latest by 20th of June.**

Annex: Project summary

The proposed Kenya Market-led Aquaculture Programme (KMAP) is designed to address three major challenges relating to food production, nutrition and agriculture incomes in Kenya:

1. **Food insecurity:** Many Kenyan families remain food insecure because they produce neither enough food crops for home consumption nor enough income from cash crops or products to pay for their household food needs. KMAP will address this directly by increasing production of fish for home consumption and sales for at least

9,100 households through aquaculture. It will create the conditions and momentum needed to facilitate a sustainable aquaculture industry.

2. **Nutrition:** Many Kenyans have insufficient access to dietary protein which leads to high levels of stunting in young children. By increasing the availability of fish, KMAP will contribute a new and affordable source of protein to at least 1.2 million people.
3. **Incomes:** Aquaculture is already generating enough net income to contribute to the nutritional and household needs for 3,500 farmers assisted through previous projects managed by Farm Africa. Some of these, especially those with three ponds or more, are deriving most of their farm income from aquaculture and have the potential to grow into fully commercial enterprises. KMAP will adopt and develop the lessons learned from these interventions, and other initiatives in Kenya and around the world, to fully commercialize at least 1,100 aquaculture farmers and establish the foundation for a competitive industry based on many thousands of mid-size enterprises in the future.

KMAP is a pilot project that will contribute to the development of a sustainable aquaculture industry in Kenya. The project's main hypothesis is that developing the aquaculture value chain will make a significant contribution to rural development and food and nutrition security, while generating sustainable incomes and providing employment opportunities. It will achieve this goal through implementation of strategic interventions in production, marketing and policy.

Production: Dwindling fish stocks in Lake Victoria, Kenya's primary source of fish, has resulted in a 64% decline in the country's overall fish production in the last five years, leading to a threefold increase in the price of fish. Aquaculture is one of the best alternatives to replace declining catches from wild fisheries and meet the growing demand for fish.

- To increase production to 4,000 MT/year, KMAP will work with fish farmers to intensify and commercialize their pond outputs by applying improved practices and introducing new technologies e.g. from The Netherlands through PUM and Dutch companies.
- Since the biggest constraint to improving pond yields is the unavailability or unaffordability of high quality inputs, KMAP will work with commercial producers to improve feed quality, and with research stations to increase fingerling stocks.
- The project will provide technical and business training to build the capacity of participating enterprises (farmers, input providers and traders), and create a more efficient and commercially sustainable aquaculture value chain.

Marketing: The demand for fish, especially tilapia, in the domestic market is increasing and is expected to continue on an upward trend. Currently little or no farmed fish is available in Nairobi markets, although 80% of wild caught fish is transported to the capital. Fish farmers normally sell their produce to traders at the farm gate, which is transported in baskets (without cold storage) and sold at local town markets. Yet, because of the low and inconsistent supply, it is becoming unaffordable to rural communities. We estimate that without any change in current levels of captured fish, there will be an annual deficit of 10,000 tons in the next five years. Market efficiency is low and changes are needed to increase the availability of fish in rural and urban markets.

- KMAP will prioritize linking and organizing market channels. We will help participating fish farming enterprises to understand and meet market demand.
- Jointly with other investors, the project will support the development of aggregation centres with cold storage facilities to improve health and safety standards and extend product shelf life.
- We will work with traders to increase their capacity to off-take larger volumes (as production increases) and link them to national level buyers to create a viable supply chain.
- Market studies suggest that Kenyans prefer wild-caught over farmed fish. To understand this preference better, the project will carry out consumer and fish tasting surveys. Based on the results, a promotional and educational campaign will be designed and implemented in target areas to attract new consumers and start to build market acceptability of farmed fish.

Policy: The enabling environment for aquaculture development is weak but there is strong government interest and support for the sector.

- KMAP will build the capacity of trade associations to represent fish farmers and facilitate cooperation between the private sector and government policy and regulatory agencies. Specialist support will be provided to associations to increase their technical capacity to provide member services and to take and negotiate policy positions.
- As the main technical assistance project supporting the aquaculture industry, KMAP will support improved coordination at national level by providing evidence based analysis and experience to donors, government, the private sector and civil society to facilitate a more focused, coordinated approach to aquaculture development.

Implementation: KMAP will be implemented by Farm Africa and five key partners with a wealth of local and international experience.

7.3 Tools used

7.3.1 Confidentiality and informed consent form

(GENERAL FOR ALL INTERVIEWS)

Hello. My name is.....and I work for the ETC East Africa Ltd, a consultancy company contracted by FARM Africa to undertake a Gender Impact Study, for its Kenya Market Led Aquaculture Program being implemented in 11 counties including ETC EA is based in Nairobi Kenya. We are conducting a study to find out how best we can involve and enhance women’s participation in aquaculture and through, this increase their incomes and improve household nutrition. We would like to hear your input and suggestions on how we can do this, so that your suggestions and those of others selected to give their views are factored in during the final refining of the program implementation, and therefore, support how best to involve women. We will first explain what we are going to do.

Procedures: We will begin with an interview now. If you are willing, we will ask you questions about fish farming, those involved, traditional and cultural beliefs and practices, gender relations and dynamics in the community and in relation to fish farming, and your general suggestions on how the program can best ensure that women participate and benefit too from the intervention.

This interview will take an hour to an hour and a half of your time. And with your permission, we may record the proceedings.

Risks: We will take precautions to keep any information you give us during the interview confidential. For example, your name or other identifying information will not appear on any of our records of responses. During the interview, you can decline to answer any particular question, or stop the interview at any point. Your responses will be available only to the team conducting this study. There is also the possibility that someone may approach us during the interview to find out what we are discussing. We intend to do this interview in private; if someone approaches us, we will stop the interview until we can continue in private.

Benefits: There are no direct and immediate benefits to you for participating in this interview. There may be indirect benefits later from the project inputs for selected beneficiaries.

Confidentiality: At the end of the study, we will put all the answers together and make a report. We will not identify you by name, nor identify your business in the report. Your responses to this interview will be seen *only* by the researchers, and will be stored in a locked place under our control. What you share with us will be used for our research work as well as for designing programs to help agro-dealers and farmers.

Compensation: You will not receive money for participating in the interviews and the training.

Voluntary Participation: Taking part in this study is completely voluntary. If you choose to take part, you may stop at any time or skip any questions that you do not want to answer. Please note that your choice to take part in this interview or not to take part in this interview will in no way affect or hinder your business, or your participation in the training. If you have any questions or concerns about taking part in this study, please feel free to talk to me and I will be happy to answer your questions to the best of my abilities. You can also ask questions at any time about the project. You can take this consent form with you if you want to review it further.

Persons to Contact: If you want to talk to anyone about this study because you think you have not been treated fairly or think you have been harmed in any way by joining the study, or you have any other questions about the study in the future, you may speak directly with the person in-charge of this project team: Bell Okello at 722.713.701.

* * *

I certify that I have read discussed the consent procedures above with the interviewee/participants and continued only on consent.

Name of Enumerator: _____

Signed: _____

Date: _____

THANK RESPONDENT. BEGIN INTERVIEW.

7.3.2 Checklist for key informants (religious leaders, community leaders)

Date:
Start time
End time:
Interviewer:

A. Background

Sex:
Age:
Designation:
Years in the position:

NOTE TO THE INTERVIEWER:

- PLEASE MAKE SURE TO EXPLAIN THE PURPOSE OF THE INTERVIEW AND RECEIVE WRITTEN CONSENT
- PLEASE TAKE INITIATIVE WHERE APPROPRIATE TO ASK FOLLOW-UP QUESTIONS OR TO PROBE FOR DETAILS KEEPING IN MIND THE MAIN QUESTIONS LISTED IN THE GUIDE NEED TO BE ANSWERED WITHIN THE 60-90 MINUTE INTERVIEW
- ENSURE THAT YOUR NOTE-TAKER IS READY TO START TAKING NOTES
- ENSURE THAT THE TAPE RECORDER IS WORKING, HAS ADEQUATE TAPING TIME AND IS SWITCHED ON.

We would like to ask you some questions regarding the norms and traditions pertaining to the status of men and women in your community, their roles and responsibilities with respect to fish farming (aquaculture).

1. Are there any norms and traditions practiced by communities in _____ county/community in relation to fish farming/production that you know of?
2. What are some of these norms and traditions? (PROBE ON THE SEVERITY OF THE NORMS AND TRADITIONS AND HOW WIDESPREAD THEY ARE WITHIN THE COMMUNITY. ARE THEY ARE STAGNANT OR FLEXIBLE AND HAVE BEEN CHANGING/EVOLVING)
3. Do you think these norms and traditions impact fish production by men/women positively or negatively? How? PROBE SEPARATELY FOR MEN AND WOMEN IN TERMS OF ACCESS TO PRODUCTION RESOURCES AND INPUTS (fingerlings and feeds), INFORMATION AND SKILLS, DECISION MAKING -WHAT TO REAR, WHERE TO ESTABLISH PONDS, USE OF INPUTS, USE OF REVENUE/MONEY, HARVESTING, LABOR, MANAGING THE FISH IN THE PONDS (FISH HUSBANDRY), MARKETING OF FISH PRODUCTS, PROCESSING, ACQUACULTURE EXTENSION, AQUACULTURE RESEARCH)
4. Do these norms and traditions impact household members' desire to fish farm access to food? Is there a difference in how they impact men's, women's, girls' and boys' fish farm?

5. Are you aware of any specific cultural issues that constrain the participation of women in aquaculture? Name them? Are there any observed dynamics towards changing for the better?
6. Describe in general the - Gender roles and responsibilities profiles;
7. Describe the - Daily profiles of men and women;
8. Identify the key Stakeholders in the aquaculture sector – use the stakeholder analysis matrices;
9. Discuss the Stakeholder relationship - use a matrices;
10. Are organized fish farmer (aquaculture) producer groups widespread in your community? How are they organized?
11. What role do you think producer groups can play to help maximize on the positive impacts of norms and traditions practiced by the community to help increase fish production and improve food and nutrition security.
12. What role can they play to help minimize on the constraints faced by men and women in an effort to increase/improve aquaculture production and promote gender equality?
13. With respect to the practices mentioned in relation to aquaculture, do you know of any practices in general agricultural production that enhance women's place in society? What about in aquaculture?
14. Do you know of any interventions at the group level that can help reduce the constraints and promote gender equality?
15. Are there any specific activities implemented by the Administration/religious office that can help promote gender equality in the aquaculture value chain?
16. On the self help groups and CBOs in the area, do you think that men, women and the youth are well represented in leadership and management
17. What changes in the aquaculture sector have you seen in the last 5 years? E.g. number of farmers, volume of fish production, yield, species farmed, inputs, extension services, group membership, demand, markets, prices (time line)
18. What are the additional livelihood activities of fish farmers
19. What are the Challenges and opportunities in the sector you are aware of
20. What do you think would help overcome the challenges? Include value addition
21. What do you think would help you make the most of the opportunities?
22. Are you aware of any previous and/or current development support e.g. projects, government, private sector and how effective were these to the aquaculture sector?
23. What obstacles (from a gender equality position) do you see and what do you think can be done to redress this?
24. To achieve equal involvement, participation and benefits by men, women and youth in the aquaculture, what do you think will work? Probe as before?
25. Given a choice, what specific nodes of the aquaculture value chain would you promote women to participate in most? Please explain?
26. Are there specific nodes that you think women should not actively participate in? which ones, why?
27. Overall, do you think women should be encouraged and facilitated to participate in various nodes of the aquaculture chain? Please explain? Why
28. What are your views about projects or activities specifically targeting to improve the lot of women farmers in general?

We have now come to the end of our session.

Do you have any questions or additional suggestions for us with respect to this interview?

Thank you very much for your time and patience. As promised, all your responses will be treated with utmost confidentiality.

7.3.3 Checklist for Key Informant Interviews (KII) – stakeholders from key institutions

Date:
Start time
End time:
Interviewer:

A. Background
Sex:
Age:
Institution:
Designation:
Years in the position:

NOTE TO THE INTERVIEWER:

- PLEASE MAKE SURE TO EXPLAIN THE PURPOSE OF THE INTERVIEW AND RECEIVE WRITTEN CONSENT
- PLEASE TAKE INITIATIVE WHERE APPROPRIATE TO ASK FOLLOW-UP QUESTIONS OR TO PROBE FOR DETAILS KEEPING IN MIND THE MAIN QUESTIONS LISTED IN THE GUIDE NEED TO BE ANSWERED WITHIN THE 60-90 MINUTE INTERVIEW
- ENSURE THAT YOUR NOTE-TAKER IS READY TO START TAKING NOTES
- ENSURE THAT THE TAPE RECORDER IS WORKING, HAS ADEQUATE TAPING TIME AND IS SWITCHED ON.

We would like to ask you some questions regarding the norms and traditions pertaining to the status of men and women in your community, their roles and responsibilities with respect to fish farming (aquaculture).

Policies, performance of women,

1. What is the role of your institution in aquaculture in Kenya? Probe for legal existence, functions, activities
2. Do you know of any norms and traditions practiced by communities and specific farmers in relation to fish farming/production?
3. What are some of these norms and traditions? (PROBE ON THE SEVERITY OF THE NORMS AND TRADITIONS AND HOW WIDESPREAD THEY ARE WITHIN THE COMMUNITY. ARE THEY ARE STAGNANT OR FLEXIBLE AND HAVE BEEN CHANGING/EVOLVING)
4. Do you think these norms and traditions impact fish production by men/women positively or negatively? How? PROBE SEPARATELY FOR MEN AND WOMEN IN TERMS OF ACCESS TO PRODUCTION RESOURCES AND INPUTS (fingerlings and feeds), INFORMATION AND SKILLS, DECISION MAKING -WHAT TO REAR, WHERE TO ESTABLISH PONDS, USE OF INPUTS, USE OF REVENUE/MONEY, HARVESTING,

LABOR, MANAGING THE FISH IN THE PONDS (FISH HUSBANDRY), MARKETING OF FISH PRODUCTS, PROCESSING, AQUACULTURE EXTENSION, AQUACULTURE RESEARCH)

5. Do these norms and traditions impact household members' desire to access food? Is there a difference in how they impact men's, women's, girls' and boys' fish farm?
6. Are you aware of any specific cultural issues that constrain the participation of women in aquaculture? Name them? Are there any observed dynamics towards changing for the better?
7. Are organized fish farmer (aquaculture) producer groups widespread in the sector? How are they organized? Probe: self help groups, associations, cooperatives etc.
8. What role do you think producer groups can play to help maximize on the positive impacts of norms and traditions practiced by the community to help increase fish production and improve food and nutrition security.
9. What role can they play to help minimize on the constraints faced by men and women in an effort to increase/improve aquaculture production and promote gender equality?
10. With respect to the practices mentioned in relation to aquaculture, do you know of any practices in general agricultural production that enhance women's place in society? What about in aquaculture?
11. Do you know of any interventions at the group level that can help reduce the constraints and promote gender equality?
12. On the self help groups and CBOs in the area, do you think that men, women and the youth are well represented in leadership and management
13. What changes in the aquaculture sector have been seen in the last 5 years? E.g. number of farmers, volume of fish production, yield, species farmed, inputs, extension services, group membership, demand, markets, prices (time line)
14. What are the additional livelihood activities of fish farmers
15. What are the Challenges and opportunities in the sector you are aware of
16. What do you think would help overcome the challenges? Include value addition
17. What do you think would help fish farmers, especially women to make the most of the opportunities?
18. Are you aware of any previous and/or current development support e.g. projects, government, private sector and how effective were these to the aquaculture sector?
19. What obstacles (from a gender equality position) do you see and what do you think can be done to redress this?
20. To achieve equal involvement, participation and benefits by men, women and youth in the aquaculture, what do you think will work? Probe as before?
21. Given a choice, what specific nodes of the aquaculture value chain would you promote women to participate in most? Please explain?
22. Are there specific nodes that you think women should not actively participate in? Which ones, why?
23. Overall, do you think women should be encouraged and facilitated to participate in various nodes of the aquaculture chain? Please explain? Why
24. What are your views about projects or activities specifically targeting to improve the lot of women farmers in general?
25. Does your organization undertake any specific activities to promote the participation of women in the aquaculture value chain?
26. What are some of the activities?

27. Are there any policies at national or institutional level that are targeted at promoting participation of women in the aquaculture value chain?
28. Which node of the value chain do you think is most suitable for women and why?
29. What suggestions do you propose for the promotion of women's participation in aquaculture value chain?
30. What suggestions do you have for the reduction or elimination of constraints/challenges fish farmers face in the aquaculture sector?
31. Data is an essential ingredient in the success of any enterprise, including aquaculture. What data do you keep, and how do you source it? If the data you have adequate, accurate and reliable?
32. What in your view is the value or research in promoting aquaculture and specifically women in aquaculture?
33. Do you have any other comments, suggestions in relation to the aquaculture value chain?
34. Are there any specific activities implemented by the Administration/religious office that can help promote gender equality in the aquaculture value chain?

We have now come to the end of our session.

Do you have any questions or additional suggestions for us with respect to this interview?

Thank you very much for your time and patience. As promised, all your responses will be treated with utmost confidentiality.

7.3.4 Checklist for Input Suppliers – fish feeds/fingerlings (KII) Discussion Guide

Date:
Start time:
End time:
Interviewer:

A. Background

Sex:
Age:
Years in the position:

NOTE TO THE INTERVIEWER:

- PLEASE MAKE SURE TO EXPLAIN THE PURPOSE OF THE INTERVIEW AND RECEIVE WRITTEN CONSENT
- PLEASE TAKE INITIATIVE WHERE APPROPRIATE TO ASK FOLLOW-UP QUESTIONS OR TO PROBE FOR DETAILS KEEPING IN MIND THE MAIN QUESTIONS LISTED IN THE GUIDE NEED TO BE ANSWERED WITHIN THE 60-90 MINUTE INTERVIEW
- ENSURE THAT YOUR NOTE-TAKER IS READY TO START TAKING NOTES
- ENSURE THAT THE TAPE RECORDER IS WORKING, HAS ADEQUATE TAPING TIME AND IS SWITCHED ON.

We would like to talk about the demand and supply dynamics in aquaculture/fish input markets in the region.

1. What aquaculture inputs do you supply to fish farmers in the region?
2. What are the channels of distribution that you use? PROBE: DIRECT SALES TO FARMERS, AGRO-DEALERS, OTHER COMMERCIAL ENTITIES?
3. Which aquaculture inputs do you mostly supply to men/ women agro dealers/inputs stockists (PROBE SEPARATELY FOR MEN AND WOMEN? PROBE ALSO QUANTITIES THAT MEN/WOMEN BUY)
4. Are you always able to meet the demand of agro-dealers for aquaculture inputs? (PROBE-DIFFERENT SPECIES/VARIETIES and FEEDS FOR DIFFERENT SEASONS, DIFFERENT VARIETIES OF FERTILIZER ETC)
5. Are you aware of any gender differences in the demand and use of the various inputs you supply – types, varieties, packaging, services etc?
6. Does your company have any strategies of ensuring that both men and women agro-dealers access the inputs they need in an effort to promote gender equality in the agro dealership business (probe on who is given credit facilities, amounts-ranges, grace period, duration for repayment etc.)
7. What strategies does your company have to support men and women agro-dealers to help increase their farmer customer base?(Probe-training, new technologies, farmer field days, on-farm demonstrations)

8. What specific programs does your company have to promote gender equality in the aquaculture value chain? (Probe-linkages, output marketing)
9. What do you think your company can do to ensure that both men and women farmers access aquaculture inputs on time (Probe-in terms of availability of desired inputs affordability, transportation, packaging etc?)
10. What role (other than sale of inputs) do you think agro dealers can play to help reduce constraints faced by men/women farmers in their effort to increase fish/food production and incomes?
11. What role do you think organized aquaculture production groups can play to help reduce the negative impacts of norms and traditions practiced by the community to help increase fish production, incomes and promote gender equality
12. What aquaculture production interventions are there at the group level that can help reduce constraints to increased production?
13. What changes in the aquaculture sector have you seen in the last 5 years? E.g. number of farmers, volume of fish production, yield, species farmed, inputs, extension services, group membership, demand, markets, prices (time line)
14. What are the additional livelihood activities of fish farmers
15. What are the Challenges and opportunities in the sector you are aware of
16. What do you think would help overcome the challenges? Include value addition
17. What do you think would help you make the most of the opportunities?
18. Are you aware of any previous and/or current development support e.g. projects, government, private sector and how effective were these to the aquaculture sector?
19. What obstacles (from a gender equality position) do you see and what do you think can be done to redress this?
20. To achieve equal involvement, participation and benefits by men, women and youth in aquaculture programs, what do you think will work? Probe as before?
21. Have you come across women doing aquaculture? If yes, have you ever known or become aware of any gender specific constraints that they face? What are these constraints? Are they specific to women only, or they are general.
22. To the best of your knowledge, how can these constraints facing women in aquaculture be addressed?
23. In your view, which nodes of the aquaculture value chain should we encourage women to participate in? why
24. Currently, do you know of any traditional or cultural barriers that may prevent women from participating in these nodes of the value chain?

We have now come to the end of our session.

Do you have any questions or additional suggestions for us with respect to this interview?
Thank you very much for your time and patience. As promised, all your responses will be treated with utmost confidentiality.

7.3.5 Aquaculture dealers/agrodealers stocking fish inputs (KII) Discussion Guide

A. Background	
Unique Identifier for discussion:	
County:	
Agro-dealer Name:	
Agro-dealer's Sex:	
Name of facilitator:	
Date of discussion:	

Date:
Start time:
End time:
Interviewer:

NOTE TO THE INTERVIEWER:

- PLEASE MAKE SURE TO EXPLAIN THE PURPOSE OF THE INTERVIEW AND RECEIVE WRITTEN CONSENT
- PLEASE TAKE INITIATIVE WHERE APPROPRIATE TO ASK FOLLOW-UP QUESTIONS OR TO PROBE FOR DETAILS KEEPING IN MIND THE MAIN QUESTIONS LISTED IN THE GUIDE NEED TO BE ANSWERED WITHIN THE 60-90 MINUTE INTERVIEW
- ENSURE THAT YOUR NOTE-TAKER IS READY TO START TAKING NOTES
- ENSURE THAT THE TAPE RECORDER IS WORKING, HAS ADEQUATE TAPING TIME AND IS SWITCHED ON.

We would like to ask you some questions regarding your operations in the aquaculture value chain, as well as the norms and traditions pertaining to the status of men and women in your community, their roles and responsibilities with respect to fish farming (aquaculture).

1. How many years have you been a stockiest of aquaculture inputs?
2. What aquaculture products and services do you offer? [PROBE FOR ALL SERVICES/PRODUCTS ALSO OBSERVING WHAT IS IN THE SHOP]
3. Do you train/advise farmers on the products/service you offer [TRAININGS INCLUDE DEMO PONDS, FIELD DAYS WITH SUPPLY COMPANIES, USE OF CHIEF'S BARAZA]?
 - a. Where? When? How often? What information do you give to them? How do you do this?
 - b. Do you offer the same type of training to women/men? With the same frequency? In the same location? At the same time? Using the same trainer?
 - c. Do women attend these training more/less than men?

4. Do you offer output services? When? For what type of aquaculture products?
 - a. Do women/men farmers seek marketing services? How often? For what products in relation to aquaculture?
5. Do you extend credit facilities to women/men and youth (men and women) farmers – explain (how, range, security, when)? Do women and men seek the same type of credit? What is your experience with repayment of credit facilities you offer men and women farmers?
6. Can you describe your customer base? [PROBE FOR EACH CATEGORY OF CUSTOMER AND EACH PRODUCT/SERVICE: ARE THEY MOSTLY INDIVIDUAL FARMERS OR GROUP OF FARMERS? MOSTLY WOMEN OR MEN?
7. Does the customer base change by type of products/services?
8. Of various products you supply, which ones are most demanded products by men fish farmers and by women fish farmers?
9. Are there particular seasons (long season and short season) where some products and services are more in demand than others? Is there a notable/observable difference between men and women?
10. Of various services you provide, which ones are demanded most by men farmers and by women farmers during different seasons?
11. Do you think that women and men (and youth) need different services? If so, why?
12. Do you provide any specific product/service just to men farmers versus women vs. youth (men and women) farmers [PROBE FOR DIFFERENT PRODUCTS, E.G. TRAINING, CREDIT]?
13. What do you think are the constraints fish farmers face in seeking your products/services [PROBE FOR DIFFERENT CONSTRAINTS, E.G. DISTANCE, TRANSPORT COSTS, STOCKING OF VARIETY, RIGHT INPUT FOR THE AREA; PROBE BY GENDER]?
14. Are there constraints specific to men, women and youth (men and women)
15. Do you think that women and men and youth need to be outreached differently?
16. What suggestions can you give to improve the outreach to more farmers? [PROBE FOR WOMEN/MEN FARMERS]. WHAT SUGGESTIONS DO YOU HAVE TO ENHANCE THE RELATIONSHIP BETWEEN YOU AND THE FARMERS [PROBE FOR MEN/WOMEN]?
17. Comment on the different products/services you offer – usefulness, challenges, how to make them of better use/benefit to farmers [PROBE FOR WOMEN/MEN FARMERS].
 - a. For example, what are your thoughts about the benefits of demo farms/ponds to men and women farmers?
18. In general, how are you doing as an agro-dealer business? Are you making profits/losses? Are there seasonal fluctuations?
19. What constraints do you face as a businessperson in doing business with farmers (men and women)?
20. What opportunities are there for you to improve on your business – profits, services, products, stock level? E.g. training (in what area)
21. Anything you want to add about agro-dealers and their services?
22. What changes in the aquaculture sector have you seen in the last 5 years? E.g. number of farmers, volume of fish production, yield, species farmed, inputs, extension services, group membership, demand, markets, prices (time line)
23. What are the additional livelihood activities of fish farmers

24. What are the Challenges and opportunities in the sector you are aware of
25. What do you think would help overcome the challenges? Include value addition
26. What do you think would help you make the most of the opportunities?
27. Are you aware of any previous and/or current development support e.g. projects, government, private sector and how effective were these to the aquaculture sector?
28. From your experience, is it easy for men, women, youth (men/women) to be agrodealers
29. What should be done to encourage more women and youth (men/women) to be agrodealers
30. Do you know of any specific traditional or cultural practices that would stop/discourage women from participating in the aquaculture value chain?
31. Given a choice, which node of the aquaculture value chain would you recommend or promote women to participate in? Why

	Men	Women	Comment
Products			
Cereals/pulses			
Horticultural			
Fertilizers			
Crop protection			
Vet drugs			
Animal feeds			
Fish feeds			
Fishing gear			
Farm Tools/equipment			
Services			
Information/advice			
Soil testing			
Output marketing			
Vet services			
Crop insurance			
Credit services			
Support to groups/training			

We have now come to the end of our session.

Do you have any questions or additional suggestions for us with respect to this interview?

Thank you very much for your time and patience. As promised, all your responses will be treated with utmost confidentiality.

7.3.6 Fish market leaders (KII)/FGD Discussion Guide

Date:
Start time:
End time:
Interviewer:

A. Background

Sex:
Age:
Years in the position:

NOTE TO THE INTERVIEWER:

- PLEASE MAKE SURE TO EXPLAIN THE PURPOSE OF THE INTERVIEW AND RECEIVE WRITTEN CONSENT
- PLEASE TAKE INITIATIVE WHERE APPROPRIATE TO ASK FOLLOW-UP QUESTIONS OR TO PROBE FOR DETAILS KEEPING IN MIND THE MAIN QUESTIONS LISTED IN THE GUIDE NEED TO BE ANSWERED WITHIN THE 60-90 MINUTE INTERVIEW
- ENSURE THAT YOUR NOTE-TAKER IS READY TO START TAKING NOTES
- ENSURE THAT THE TAPE RECORDER IS WORKING, HAS ADEQUATE TAPING TIME AND IS SWITCHED ON.

We would like to talk about the marketing of fish, the fish market demand and supply dynamics in relation to gender (participation of men, women and the youth). Our aim is to find out how best to ensure women participate and benefit effectively in the fish markets.

1. For how long (when was this market established) has this fish market been operating?
2. What types of fish are mostly sold here – probe for fish species, fresh, fried, dried, etc
3. Which type of fish is most popular among the customers
4. Where do you source the different fish species/types
5. Which types of fish are the most popular in this market?
6. Who between men and women bring the most popular fish types?
7. Who are the main buyers of the fish types?
8. Who are the main sellers of the different fish types? Why
9. Are there specific functions of women in the market?
10. What roles do women play in the fish market?
11. Describe in general the - Gender roles and responsibilities profiles;
12. Describe the - Daily profiles of men and women;
13. Identify the key Stakeholders in the aquaculture sector – use the stakeholder analysis matrices;
14. Discuss the Stakeholder relationship - use a matrices;

15. Are there any known traditional or cultural roles that women are assigned to in the fish markets?
16. Are there any known traditional or cultural taboos on roles/activities of women in the fish market?
17. Do women traders face any specific constraints in the fish market? Are these constraints unique to women traders only?
18. Are there any known reasons that restrict more women from participating in the fish market (as traders or other roles)
19. In general, how many fish traders are active in this market? How many are women/men
20. How many of the fish traders belong to the traders group/association?
21. Is there a fish market group/association?
22. If so, when was it established?
23. Why was it established?
24. How many members does it have (men, women, youth)
25. How does it operate? Who can become members, when, conditions and benefits
26. What roles do women traders play in the traders group/association? Probe for positions and activities
27. What changes in the aquaculture sector have you seen in the last 5 years? E.g. number of farmers, volume of fish production, yield, species farmed, inputs, extension services, group membership, demand, markets, prices (time line)
28. What are the additional livelihood activities of fish farmers
29. What are the Challenges and opportunities in the sector you are aware of
30. What do you think would help overcome the challenges? Include value addition
31. What do you think would help you make the most of the opportunities?
32. Are you aware of any previous and/or current development support e.g. projects, government, private sector and how effective were these to the aquaculture sector?
33. In what roles should we promote women to actively participate in fish market/trading?
Why
34. How best can we promote/encourage/facilitate women to take up these roles?
35. Can men obstruct women's participation in these roles? How? How best to solve these?

Fish type	Major sources	Likely to bring most	Main buyers

We have now come to the end of our session.

Do you have any questions or additional suggestions for us with respect to this interview?

Thank you very much for your time and patience. As promised, all your responses will be treated with utmost confidentiality.

7.3.7 Fingerling breeders and suppliers - Hatcheries (KII) Discussion Guide

Date:

Start time:

End time:

Interviewer:

A. Background

Sex:

Age:

Years in the position:

NOTE TO THE INTERVIEWER:

- PLEASE MAKE SURE TO EXPLAIN THE PURPOSE OF THE INTERVIEW AND RECEIVE WRITTEN CONSENT
- PLEASE TAKE INITIATIVE WHERE APPROPRIATE TO ASK FOLLOW-UP QUESTIONS OR TO PROBE FOR DETAILS KEEPING IN MIND THE MAIN QUESTIONS LISTED IN THE GUIDE NEED TO BE ANSWERED WITHIN THE 60-90 MINUTE INTERVIEW
- ENSURE THAT YOUR NOTE-TAKER IS READY TO START TAKING NOTES
- ENSURE THAT THE TAPE RECORDER IS WORKING, HAS ADEQUATE TAPING TIME AND IS SWITCHED ON.

We would like to talk about the demand and supply dynamics in fish fingerlings for the aquaculture markets in the region in relation to gender (participation of men, women and the youth) in aquaculture.

1. For how long have you had this operation running (when did you open the hatchery)
2. What motivated the opening of the hatchery?
3. Did you receive any support to open the hatchery?
4. What species of fingerlings do you produce?
5. What other services do you offer practitioners in the aquaculture value chain?
6. What catchment area do you serve?
7. To whom do you sell the fingerlings? (Channels of distribution - Wholesalers, stockists, individual farmers), who are the significant ones?
8. Are most of your customers' men or women?
9. Where do you source the germplasm for the hatchery?
10. What support do you receive (technical, credit, marketing) to sustain your hatchery?
11. What are the major constraints you face as a hatchery?
12. Are you aware of women doing aquaculture?
13. Have you ever known or been made aware of any specific traditional or cultural constraints women face as (or trying to enter) aquaculture practitioners? Which ones, how do they affect?
14. What can be done to reduce the constraints?
15. In your view, should women be fish farmers? Why?
16. Apart from production, do you know if women participate in any other nodes of the aquaculture value chain (fingerling production, input supplies, extension/technical officers,

researchers, pond managers, harvesters, processors, marketing and selling, or using by products) of aquaculture? Specify which nodes you think women play a more prominent role in?

17. Given a choice, which node would you recommend for women to actively engage in?
18. What changes in the aquaculture sector have you seen in the last 5 years? E.g. number of farmers, volume of fish production, yield, species farmed, inputs, extension services, group membership, demand, markets, prices (time line)
19. What are the additional livelihood activities of fish farmers
20. What are the Challenges and opportunities in the sector you are aware of
21. What do you think would help overcome the challenges? Include value addition
22. What do you think would help you make the most of the opportunities?
23. Are you aware of any previous and/or current development support e.g. projects, government, private sector and how effective were these to the aquaculture sector?
24. What do you see as the potential constraints women will face when active in the selected nodes?
25. What should we do to promote women to own/run hatcheries? What constraints are they likely to face?
26. Does your company/firm provide any other support to promote women and men in aquaculture? What support, to who, when, how, challenges
27. What do you think your company can do to ensure that both men and women farmers access aquaculture inputs on time (Probe-in terms of availability of desired inputs affordability, transportation, packaging etc?)
28. Have you come across organized aquaculture groups? What is your opinion on how they are managed with respect to good governance and gender equality?
29. Do you think these groups can play a role in promoting the involvement, participation and benefits to women in aquaculture? Please explain.

We have now come to the end of our session.

Do you have any questions or additional suggestions for us with respect to this interview?

Thank you very much for your time and patience. As promised, all your responses will be treated with utmost confidentiality.

7.3.8 Farmer Groups/associations – group members

Date: Start time: End time: Interviewer:

A. Background

- | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> 1. Name of group: 2. Catchment area of group/farmers 3. Is group registered 4. When was group registered |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

NOTE TO THE INTERVIEWER:

- PLEASE MAKE SURE TO EXPLAIN THE PURPOSE OF THE INTERVIEW AND RECEIVE WRITTEN CONSENT
- PLEASE TAKE INITIATIVE WHERE APPROPRIATE TO ASK FOLLOW-UP QUESTIONS OR TO PROBE FOR DETAILS KEEPING IN MIND THE MAIN QUESTIONS LISTED IN THE GUIDE NEED TO BE ANSWERED WITHIN THE 60-90 MINUTE INTERVIEW
- ENSURE THAT YOUR NOTE-TAKER IS READY TO START TAKING NOTES
- ENSURE THAT THE TAPE RECORDER IS WORKING, HAS ADEQUATE TAPING TIME AND IS SWITCHED ON.
- MAKE A LIST OF THOSE PRESENT (BY SEX)

We would like to talk about the fish farmers' group/association in the region in relation to gender (participation of men, women and the youth) in aquaculture.

- How many members belong to the group – fill in table below and indicate those above and below 35 years

Sex	Below 25	25 - 35	35 – 45	45 - 55	Above 55
Men					
Women					

- What criteria do you use to admit/accept new members to your group? Who makes decision on acceptance of new members to your group?
- How easy is it for women farmers to join the group?
- What does the group do? Why was it set up?
- Objectives: (list up to 5)
- Activities: (list up to 8)
- Describe in general the - Gender roles and responsibilities profiles;
- Describe the - Daily profiles of men and women;
- Identify the key Stakeholders in the aquaculture sector – use the stakeholder analysis matrices;
- Discuss the Stakeholder relationship - use a matrices;
- Describe a daily/weekly routine of a male member aquaculturalist? What does a male aquaculturalist typically do in one round of fish farming?

12. Describe a daily weekly routine of a female member aquaculturalist? What does a male aquaculturalist typically do in one round of fish farming? (activity profile and seasonal calendar) -
13. What aquaculture activities are typically done by men (owner or not) probe for pond digging/construction, purchase of fingerlings, management of the pond, harvesting, processing, marketing, selling etc
14. Which activities are typically done by women? probe for pond digging/construction, purchase of fingerlings, management of the pond, harvesting, processing, marketing, selling etc
15. Are there activities that women would prefer to do that are not in the above list?
16. What are some of the benefits you enjoy as group member? PROBE: CREDIT, SAVINGS, LABOR POOLING, JOINT MARKETING, SOLIDARITY IN TIME OF NEED, ETC
17. What are the MAIN fish types kept by women and men farmers in your area?

Main fish types farmed by women	Main fish types farmed by men
1.	1.
2.	2.
3.	3.
4.	4.

18. What inputs are typically used in the production of these fishes? PROBE: CERTIFIED SEEDS, FERTILIZERS, FARM YARD/COW DUNG MANURE, ARTIFICIAL FEEDS
19. For these inputs, how would you rate the ease of access by men, women and youth (women and men)? (use a scale of 1-5, 5 very accessible in terms of distance, availability, cost, packaging etc)

	Men	Women	Youth men	Youth Women
Fertilizers				
Farm yard manure				
Feeds				
Fingerlings				
Pond equipment				

20. Where are these inputs typically purchased/procured from? PROBE: AGRO-DEALERS? OPEN AIR MARKET, SUPERMARKETS, KARI, MoA, INPUT SUPPLY COMPANY SALE PEOPLE, RELATIVES, FRIENDS, HATCHERIES, NGOS, FISH COMPANIES
21. Do you know what kind of services/products agro-dealers have to offer? PROBE: INPUT SALES, DEMOS, CREDITS, TECHNICAL EXTENSION, MARKETING
22. Are you as a group specifically tied to any agro-dealer/inputs supplier for accessing these products/services?
23. In households in your community, who (man/woman) makes the decisions on what fish to farm, in what season, on what plot?
24. If there was an opportunity to change how you do things on the farm, that is promising, that may increase your output, who in the household decides whether to go ahead and invest in it? PROBE: IN NEW INPUTS, TECHNOLOGY, EQUIPMENT? Who pays?
25. Who decides how much of the harvest to keep at home to consume, how much to market, where to market?
26. Do some members or the group as a whole have difficulty getting inputs you need individually? As a group? Explore for men, women, youth
27. Are there any known traditional/cultural practices that would hinder/prevent women from engaging in aquaculture? What are they? How prevalent are they? How do they affect women's engagement in aquaculture?

28. What specific nodes of the aquaculture value chain do your female members actively participate in?
29. What changes in the aquaculture sector have seen in the last 5 years? E.g. number of farmers, volume of fish production, yield, species farmed, inputs, extension services, group membership, demand, markets, prices (time line)
30. What are the additional livelihood activities of fish farmers
31. What are the Challenges and opportunities in the sector you are aware of
32. What do you think would help overcome the challenges? Include value addition
33. What do you think would help you make the most of the opportunities?
34. Are you aware of any previous and/or current development support e.g. projects, government, private sector and how effective were these to the aquaculture sector?
35. In your view, what should be done to promote active engagement of women in the aquaculture value chain – probe for particular nodes?

7.3.9 Checklist for Group leadership

1. What leadership positions exist in the group (age – 25 - 35; 35 – 50; > 50)

Position	Sex	Age group
Chairman		
Vice chairman		
Secretary		
Assistant secretary		
Treasurer		
Assistant treasurer		
Organizing secretary		
Coordinator		
Others		

2. Does the group have a constitution
3. How are leaders elected/selected in the group
4. For how long can one serve in a given position
5. Are the youth allowed to contest for positions
6. Are women allowed to contest for positions
7. After being elected into office, are new office bearers trained on how to manage the affairs of the group
8. How frequently does the group meet
9. During group meetings, are all – men, women, youth (men/women) given opportunities to participate
10. Do your groups give out regular loans for agricultural purposes? For any other purposes?
MAKE SURE TO NOTE BOTH
11. How do you decide who receives the loans? What is the process for approving and disbursing loans?
12. Amongst men, women, youth (men and women) members, who gets the most loans in your groups? Is allocation of loans to members in your opinion fair and equitable?
13. Is there a difference in how women, men and the youth (women and men) repay the loans? Explain
14. To what extent are the views of men, women and the youth taken into consideration when making decisions for the group

	Talk only	Considered not taken	Taken when have they have merit
Men			
Women			
Youth (men)			
Youth (women)			

15. Do all members have equal opportunity to be involved, participate and benefit from group activities

	Involved	Participate	Benefit
Men			
Women			
Youth (men)			
Youth (women)			

Choose from a) never b) at times c) always

16. As a member, are you happy with your involvement, participation and benefits from the group activities?

	Involved	Participate	Benefit
Men			
Women			
Youth (men)			
Youth (women)			

a) Not really b) fairly happy c) very happy

17. To the best of your knowledge, have there been occasions when some members have been denied involvement, participation or benefit because of their gender

18. To the best of your knowledge, what cultural issues exist that limit the involvement, participation and benefit of men, women and youth (men or women) in group activities

19. To the best of your knowledge, what should be done to enhance and optimize the involvement, participation and benefit from group activities of men, women and youth?

Probe for access, ownership, control of land, income, education/literacy levels, gender based violence, inadequate access to knowledge, capital, technology, information, time constraints etc

20. Are there other local issues that you think should be addressed to enhance involvement, participation and benefits of initiatives to women, men and youth (men and women)?

21. In your view, how does your group and community at large view giving equal opportunities for women, men and the youth (to be involved, participate and benefit) from development initiatives e.g. agriculture?

22. In your view, in order to promote equality in involvement, participation, and benefits, how best should this be approached in your community? Probe – focus on women, focus on men, focus on youth, and improve/enhance communication and cooperation? Involve both men and women, have specific activities for youth, men and women, or do nothing, training/seminars?

We have now come to the end of our session.

Do you have any questions or additional suggestions for us with respect to this interview?

Thank you very much for your time and patience. As promised, all your responses will be treated with utmost confidentiality.

7.4 Farm Africa Staff gender capacity needs assessment

Greetings from the ETC East Africa!

ETC East Africa at the invitation of the FARM AFRICA is conducting a gender and agriculture needs assessment for Farm Africa staff within the context of the KMAP project. The results of the needs assessment will feed into the design and content of an inception workshop on gender for FARM AFRICA staff for 2016.

The specific objectives of the needs assessment are to:

- Assess the understanding of FARM Africa staff of gender issues in the agriculture (and especially, the aquaculture) sector;
- Understand how staff currently integrate gender into their programming; and
- Determine what existing capacities and concerns exist related to integrating gender in on-going and new programming.

As a FARM Africa staff member, we would appreciate your participation in the survey as it will contribute to the development of a practical workshop that is oriented to your needs. The survey is brief and should not take more than a few minutes of your time. Your participation in this survey is voluntary and your responses will remain anonymous. Kindly complete the survey by **close of business July , 2016.**

If you have any questions, please contact me at b.okello@icrw.org.

Your responses will be treated with utmost confidentiality.

1. What does the term gender mean to you?

2. Would you like to have a better understanding of gender as it relates to your work?

- Yes
- No

3. Why do you not want to have a better understanding of gender?

4. What aspects of gender would you like to better understand? (select all that apply)

- Meaning of gender
- Gender analysis
- Gender responsive monitoring and evaluation
- How to integrate gender in project planning and implementation
- Gender budgeting
- Others _____

5. For what reason(s) would you want to have a better understanding of gender? (select all that apply)

- Achieve greater impact
- Work better with women beneficiaries
- Conform with donor requirements
- Know how to better apply tools of gender analysis
- To integrate gender in my work
- Others _____

6. Gender integration means taking into account both the differences and the inequalities between women and men in program planning, implementation and evaluation. What

do you think are the most important reasons for integrating gender in agricultural work? (select all that apply)

- Wellbeing: ensure that the wellbeing of all household members, including women, is improved.
- Communication and feedback: Create opportunities for women and men to communicate their needs and provide feedback to the project to ensure both women and men participate in and benefit from project activities.
- Project design and implementation: Improve project design and implementation by understanding women’s and men’s roles in agriculture (production, processing & marketing) and intra-household patterns of decision-making, time allocations and access to resources, in order to address gender inequalities in these areas.
- Minimizing risk: Address any adverse consequences the project may have for women or men.
- Target group: Women or women farmers are one of the main target groups of the activity/program/organization.
- Donors: To meet donor expectations.
- Other (please specify) _____

7. Please select the extent of your agreement or disagreement with the following statements about gender integration:

- Gender integration is very important to the success of my organization.
Strongly Agree Agree Disagree Strongly Disagree
- Gender integration adds more to my workload.
 Strongly Agree Agree Disagree Strongly Disagree
- Gender integration can help me to achieve my work objectives and advance professionally.
 Strongly Agree Agree Disagree Strongly Disagree
- Gender integration is a distraction from my organization’s core work.
 Strongly Agree Agree Disagree Strongly Disagree
- Gender integration is driven by donors.
 Strongly Agree Agree Disagree Strongly Disagree
- Working on gender issues can cause disruption in the household.
 Strongly Agree Agree Disagree Strongly Disagree
- Achieving gender equality will have a positive effect on my country’s economic development.
 Strongly Agree Agree Disagree Strongly Disagree

8. Have you ever had any training on gender?

- Yes
- No
- Participated in workshops on gender, but not really trained

9. In general, what aspects of gender have you received training on/been exposed to? (select all that apply)

- Gender analysis
- Gender responsive M&E
- Gender integration in program planning
- Writing gender related action plans
- Gender responsive budgeting
- Meaning of gender
- Others _____

10. Do you integrate gender in your work?

- Yes, always
- Yes, sometimes
- No

11. In what ways do you integrate gender in your work? (select all that apply)

- Conduct needs assessments that take into account both women's and men's interests and needs/require grantees to do so as part of program planning
- Create M&E systems that collect data on gender-related indicators and sex disaggregated data in a gender-sensitive way/require grantees to create such systems
- Engage in specific activities targeting men or women/fund programs with specific activities for women and men
- Hire staff with gender expertise/ensure grantees hire staff with gender expertise
- Budget for specific gender activities in my project or program area
- Others _____

12. What benefits have you seen from integrating gender in your work? (select all that apply)

- Greater participation by women and men
- Greater project benefits to women
- Greater appreciation of project by beneficiaries
- Greater satisfaction from project staff
- Increased number of confident and quality women and men leaders in community
- Enhanced food security
- Increased productivity
- More women taking part in lucrative nodes of value chains
- Improved harmony in households/reduced gender-based violence
- More girls given support, e.g. for school
- Enhanced community organization

- Equitable representation of women and men in common interest groups
- None
- Others _____

13. Does your organization (supervisor, board, management) support efforts to integrate gender in its work?

- Yes
- No

14. What challenges do you foresee facing in increasing your efforts to integrate gender in your work? (select all that apply)

- The project/program area in which I work does not directly relate to gender.
1. Yes 2.No
- Insufficient funds to implement gender integration in core activities/projects.
1. Yes 2.No
- Difficulty in finding staff/partners/grantees with sufficient gender expertise.
1. Yes 2.No
- Difficulty in finding partners/grantees interested in integrating gender.
1. Yes 2.No
- My own inadequate skills and know how about how to integrate gender.
1. Yes 2.No
- Difficulty in finding relevant gender tools, in general.
1. Yes 2.No
- Difficulty in finding gender tools in local languages.
1. Yes 2.No
- Difficult in finding or retaining qualified women staff.
1. Yes 2.No
- Difficulty in recruiting women project participants.
1. Yes 2.No
- Cultural resistance from communities to working on gender.
1. Yes 2.No
- Resistance from project staff/colleagues to working on gender.
1. Yes 2.No

Other (specify) _____

15. What support do you receive from FARM AFRICA in integrating gender in your work? (select all that apply)

- Finances – money for specific gender related activities
- Technical assistance
- Relevant tools
- Relevant literature
- M&E support/supervisory visits
- Feedback on activities
- Influencing the institutional leadership to cooperate
- None – no support
- Others _____

16. What other support and information would you like to receive in order to better integrate gender in your work? (select all that apply)

- An organizational gender strategy to guide gender practice
- Links to good sources of information on gender (books and articles)
- Tools for gender needs assessments
- Tools for gender responsive program planning/program reviews
- Tools to guide the creation of gender responsive M&E systems
- On demand technical support directly related to my work, to support initial gender integration efforts
- A gender community of practice with whom to discuss challenges and share successes
- Information on gender responsive budgeting
- More gender-relevant and sex disaggregated data to support programming
- None
- Other _____

We have now come to the end of our session.

Do you have any questions or additional suggestions for us with respect to this interview?
`Please feel free to write these here

Thank you very much for your time and patience. As promised, all your responses will be treated with utmost confidentiality.

Kindly email the responses to b.okello@etc-eastafrika.org

7.5 Questionnaire for household interviews

CONFIDENTIALITY AND INFORMED CONSENT FORM

Hello. My name is.....and I work for the ETC East Africa Ltd, a consultancy company contracted by FARM Africa to undertake a Gender Impact Study, for its Kenya Market Led Aquaculture Program being implemented in 11 counties including ETC EA is based in Nairobi Kenya. We are conducting a study to find out how best we can involve and enhance women's participation in aquaculture and through, this increase their incomes and improve household nutrition. We would like to hear your input and suggestions on how we can do this, so that your suggestions and those of others selected to give their views are factored in during the final refining of the program implementation, and therefore, support how best to involve women. We will first explain what we are going to do.

Procedures: We will begin with an interview now. If you are willing, we will ask you questions about fish farming, those involved, traditional and cultural beliefs and practices, gender relations and dynamics in the community and in relation to fish farming, and your general suggestions on how the program can best ensure that women participate and benefit too from the intervention.

This interview will take an hour to an hour and a half of your time. And with your permission, we may record the proceedings.

Risks: We will take precautions to keep any information you give us during the interview confidential. For example, your name or other identifying information will not appear on any of our records of responses. During the interview, you can decline to answer any particular question, or stop the interview at any point. Your responses will be available only to the team conducting this study. There is also the possibility that someone may approach us during the interview to find out what we are discussing. We intend to do this interview in private; if someone approaches us, we will stop the interview until we can continue in private.

Benefits: There are no direct and immediate benefits to you for participating in this interview. There may be indirect benefits later from the project inputs for selected beneficiaries.

Confidentiality: At the end of the study, we will put all the answers together and make a report. We will not identify you by name, nor identify your business in the report. Your responses to this interview will be seen *only* by the researchers, and will be stored in a locked place under our control. What you share with us will be used for our research work as well as for designing programs to help agro-dealers and farmers.

Compensation: You will not receive money for participating in the interviews and the training.

Voluntary Participation: Taking part in this study is completely voluntary. If you choose to take part, you may stop at any time or skip any questions that you do not want to answer. Please note that your choice to take part in this interview or not to take part in this interview will in no way affect or hinder your business, or your participation in the training. If you have any questions or concerns about taking part in this study, please feel free to talk to me and I will be happy to answer your questions to the best of my abilities. You can also ask questions at any time about the project. You can take this consent form with you if you want to review it further.

Persons to Contact: If you want to talk to anyone about this study because you think you have not been treated fairly or think you have been harmed in any way by joining the study, or you have any other questions about the study in the future, you may speak directly with the person in-charge of this project team: Bell Okello at 722.713.701.

* * *

I certify that I have read discussed the consent procedures above with the interviewee/participants and continued only on consent.

Name of Enumerator: _____

Signed: _____

Date: _____

THANK RESPONDENT. BEGIN INTERVIEW.

A01: Date (ddmmyyy):

A02: Start time (24hr format):

End time (24hr format):

A03: Survey number (e.g. KSM0001):

A. BACKGROUND

A1. Interviewer:

A2. Name of respondent:

A3. Respondent sex: 1. Male 2. Female

A3i. Are you the head of the household? 1. Yes 2. No

A4. Respondent age range: 1: Less than 18yrs 2. 19-25 yrs 3. 26-35 years 4. 36-55 yrs; 5. Greater than 55 yrs

A5. Respondent education: 1. Illiterate 2. Primary 3. Secondary 4. Tertiary certificate 5. Tertiary

Diploma 6. Tertiary University

A6. County: 1. Bungoma 2. Busia 3. H-Bay 4. Kisii 5. Kisumu 6. Machakos 7. Migori 8. Siaya 9. Vihiga

10. Kiambu 11. Nairobi 12. Kakamega

A7. Constituency

B: AQUACULTURE INFORMATION ON THE FARM

B1. What is your role in the fish farming business? 1. Owner 2. Caretaker 3. Laborer 4. Member of family 5. Manager 6. Other

B2. What is your household size (including yourself)? _____

B 3. For how long have you been an aquaculture farmer _____

What types of ponds do you own? Use the table below (Use area in meters squared)

B4. Pond type	B5: Owned (Yes/No)	B6. No Ponds	B7. Size Pond 1	B8. Size Pond 2	B9. Size Pond 3	B10. Size Pond 4	B11. Size Pond 5
Earthen							
Lined Earthen							
Dam							
Tank							
Cage							

Other _____							
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- B12. On whose land are the fish ponds located 1. Own/family Land 2. Leased land 3. Borrowed land 4. Own/bought land 5. Spouse's land (multiple responses possible; At least up to 3 choices)
- B13. What are the major sources of water for your pond? (Multiple responses possible) 1. River 2. Dam 3. Water pan 4. Roof catchment 5. Borehole 6. Water piped in from pipeline 7. Well 8. Springs
- B14. Do you pay for the water? 1. Yes 2. No 3. Sometimes
- B15. If you pay for water, what is your average monthly bill during production? Ksh _____
- B16. What types of fish do you keep/farm (Multiple answers possible)? 1. Trout 2. Tilapia 3. African catfish 4. Common carp 5. Koi carp 6. Goldfish 7. Other _____
- B17. Where do you source for the fingerlings? 1. Hatcheries 2. Agrodealers 3. NGOs 4. GoK 5. Farmer group 6. Other farmers 7. Other _____ (multiple responses)
- B18. How far is the source of fingerlings you use? _____ (km) [B19 deleted]
- B20. What are some of the challenges you face when sourcing for fingerlings? 1. Type and species needed unavailable 2. Quantity required not available 3. Distance to hatcheries and stockists very long 4. Cost of fingerlings very high 5. Other
- B21. What price do you pay per fingerling you buy? Ksh.....
- B22a. In addition to the fingerlings, what other inputs do you use in your pond? 1. Fish feed 2. Fertilizers 3. Pond lime. 4. Livestock dung 5. Household wastes 6. Other _____
- B22b. What type of feeds do you use in your ponds? 1. Floating pellets 2. Sinking commercial pellets 3. Kitchen waste 4. Crop vegetable/residues 5. Mash 6. Manure 7. Inorganic fertilizers 8. Other _____
- B22c How far is the source of fish feeds you use in your ponds?

In general, how easy is it for you to access the inputs when you need them? Use table below

B23: Inputs	B24: Ease of input access 1: very Easy; 2. With some difficulties; 3. With lots of difficulties 4: Do not use
Ease of input access	
Quality fingerlings	
Water	
Fish feeds	
Fertilizers	
Pond lime	

Household rubbish	
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B25. Are difficulties in accessing fingerlings and feeds in any way related to your being man or woman 1. Yes 2. No 3. Sometimes (*Skip to B26 when no difficulties reported*)

B26. Are you a member of a fish farming group? 1. Yes 2. No (*If No skip to Section C*)

B27. What type of group is it? 1. Self Help group 2. Cooperative 3. Association 4. CBO 5. Other

How many members are in the group? B28 Men _____ B29 Women _____ B29II Total---

B30. What are the benefits of being a member of the group? 1. Access to credit 2. Access to extension 3. Access to inputs 4. Access to modern technology 5. Access to markets 6. Access to water 7. Protection against harassment 8. Developing leadership qualities 9. Sense of belonging 10. Moral support 11. Others _____

B31. Is your fish farming insured? 1. Yes 2. No 3. I don't know

B32. If yes, what type of insurance did you buy? _____

C: PRODUCTION AND MARKETING

Please indicate your average fish yields per cycle in table below in your three best ponds

C1: Pond type	C2: Pond size (M ²)	C3: Minimum yield (kg)	C4: Maximum yield (kg)
Pond 1			
Pond 2			
Pond 3			

In your aquaculture farm, who is the main person who does the following? Please use the table below.

C5: Roles in farm	C6: Main person undertaking the work
	1: Self; 2: Male worker or relative; 3: Female worker or relative; 4: Spouse; 5. Group member (male); 6. Group member (female) 7. Do not apply (<i>use codes</i>)
Constructing pond	
Cleaning ponds	
Putting in fingerlings	
Feeding fish	
Harvesting fish	

Processing fish	
Marketing/selling	
Record keeping	
Overall management of pond	

In your aquaculture farm, who makes decisions on the following? Please use the table below.

C6ii: Roles in farm	C6iii: Main person undertaking the work
	1: Self; 2: Male worker or relative; 3: Female worker or relative; 4: Spouse; 5. Do not apply (<i>use codes</i>)
Constructing pond	
Cleaning ponds	
Putting in fingerlings	
Feeding fish	
Harvesting fish	
Processing fish	
Marketing/selling	
Record keeping	
Overall management of pond	

C7. Do you produce your fish under any contract farming? 1. Yes 2. No 3. Some times

C8. Have you received any financial support for your ponds? 1. Yes 2. No (*if No skip to C11*)

C9. What financial support did you get? 1. Credit 2. Grant

C10. Where did you get your *major* financial support from? 1. Bank _____ 2. Our farmer group 3. Cooperative 3. NGO 4. Fish company _____ 5. Government 6. Family and friends (county, CDF, ESP) (*select one*)

C10ii If credit was taken, what major collateral did you provide? 1. Land 2. Livestock 3. Group guarantee 4. Shares 5. House/building 6. None 7. Other _____

C11. Where do you get your technical information/support for your pond? 1. Government 2. NGOs 3. Research institution 4. Private companies 5. Farmer groups 6. Other farmers 7. TV and radio 8. Videos and documents 9. No technical support/information 10. Internet (*multiple responses*)

C12. Do you ever give technical support to other fish farmers? 1. Yes 2. No

C13. Do you sell raw fish? 1. Yes 2. No

C14. Do you sell processed fish? 1. Yes 2. No

- C15. Usually, who is your major fish product buyer? 1. Farm-gate traders 2. Market traders 3. Retailers in markets 4. Wholesale companies 5. Schools and colleges 6. Others _____
- C16. What challenges do you have/experienced in selling/accessing for your produce? 1. Inadequate markets 2. Poor prices 3. Markets are far 4. Cartels in the markets 5. Fluctuating demand 6. Fluctuating prices 7. Fish spoilage 8. Other (*multiple response*)

D: CULTURAL ISSUES, TRADITIONS AND BELIEFS

D1. In your community/area, are there any taboos, traditional or cultural restrictions for women to engage in aquaculture? 1. Yes 2. No 3. Sometimes (*If No skip to D5*)

D2. If yes or sometimes, what are these taboos or traditions?

D3. Over the last 3-5 years, have you seen any changes in these taboos/traditions? 1. Yes 2. No

D4. Please describe the changes if any? 1. Things have become better – 2. Things have worsened 3. They keep changing, sometimes better, sometimes worse

How many people work in your fish farm (fish farming activities only)? Fill in table below

D5: Category of people	D6: Work in your farm? (Yes/No)	Number working in fish farm			
		D7: Male (casual)	D8: Female (casual)	D8ii: Male (monthly pay)	D8: Female (monthly pay)
Employed					
Family					
Friend/group					

D9. For your ponds, which tasks do you think women (employees) handle effectively and with ease (*multiple responses*)? 1. Feeding the fish 2. Cleaning ponds 3. Harvesting 4. Processing fish 5. Marketing/selling 6. Constructing pond 7. Managing pond production generally

D10. Which pond management operations do you think women face difficulties in (*Multiple response*)? 1. Feeding the fish 2. Cleaning ponds 3. Harvesting 4. Processing fish 5. Marketing/selling 6. Constructing pond 7. Managing pond production generally

- D11. In general, how easy is it for women to become fish farmers? 1. Very easy – no restrictions 2. Relatively easy - Some traditional/cultural restrictions 3. Very difficult - a lot of cultural/traditional restrictions 4. It depends on one's pockets and ability
- D12. Are there any challenges in aquaculture you think are more specific to women? 1. Yes 2. No *(If No skip to D14)*
- D13. Please name the challenges. 1. Access to land 2. Access to appropriate technology 3. Pond management 4. Accessing equipment 5. Harvesting 6. Marketing/selling 7. Access to capital/credit 8. Accessing inputs (fingerlings) 9. Accessing fish feeds 10. Thieves/robbers 11. Cartels in markets. 12 Maintenance of the ponds 13. Lack/inadequate storage/refrigeration facilities 14. Lack/inadequate refrigeration trucks 15. Poor roads and transportation. 16. Floods and droughts 17. Access to extension services 18. Access to training on aquaculture 19. High staff turn over 20. Other _____
- D14. The aquaculture value chain is long, including from fingerling production to selling the finished product. In your opinion, which activity (node) within the value chain is more suitable for women to participate in? (*Select one Major*)? 1. Research into aquaculture 2. Fingerling production and selling 3. Fish production in ponds 4. Management of fish ponds 5. Harvesting of fish 6. Processing and storage 7. Sales and Marketing 8. Stocking and selling inputs (feeds, equipment) 9. Extension experts
- D15. What are the likely/potential challenges that women will face in that particular node/activity mentioned in D14? (*Multiple response*) 1. Access to land 2. Access to appropriate technology 3. Pond management 4. Accessing inputs 5. Harvesting 6. Marketing/selling 7. Access to capital/credit 8. Accessing inputs (fingerlings) 9. Accessing fish feeds 10. Thieves/robbers 11. Cartels in markets. 12 Maintenance of the ponds 13. Lack/inadequate storage facilities 14. Lack/inadequate refrigeration facilities 15. Lack/inadequate refrigeration trucks 16. Poor roads and transportation. 17. Floods and droughts. 18. Unreliable labour for the ponds 19. Other _____
- D16. Do you think there is a problem or one that is likely to come up if a project promotes women to participate in the node/activity? 1. Yes 2. No. *(If No Skip to D18)*
- D17. What problem? 1. Resistance from husband 2. Resistance from family members 3. Resistance from the community 4. Others
- D18. Are men likely to be comfortable if the project promotes women to participate in the node/activity you selected? 1. Yes 2. No
- D19. Who takes charge/control of the income generated from the fish farming? 1. Self 2. Spouse 3. Farm manager 4. We share with spouse?
- D20. Are you happy with the way the income/revenue is controlled? 1. Yes 2. NO
- D21. What suggestions would you make to improve on controlling the income/revenue generated? 1. I take total control 2. We share 50:50 with spouse 3. Happy the way it is.
- D22. In general, what support do you think women need to prosper as fish farmers: (pick from list; *multiple responses*) 1. Access to land 2. Access to appropriate information and technology 3. Access to credit 4. Start-up grants 5. Reliable extension services 6. Reliable sources of quality fingerlings 7. Reliable fish feeds 8. Reliable/stable/structured markets 9. Better market infrastructure 10. Other _____

- D23. If women undertook fish farming, would they be engaged in other/additional livelihood activities? 1. Yes 2. No. 3 Sometimes. *(If No skip to D25)*
- D24. If yes why? *(Major reason)* 1. Income from fish insufficient 2. Get more income 3. Spread risks 4. My hobby/passion to do more enterprises/activities
- D25. Since you started fish farming, what would you say have been the effect/benefits/impacts to you? 1. Adequate income 2. Healthy Household 3. Improved status in the community 4. More challenges 5. Worker problems 6. Increased knowledge and awareness 7. Increased number of meals per day 8. Other _____
- D26. What difficulties/challenges do you face as a fish farmer? 1. Access to land 2. Access to appropriate technology 3. Pond management 4. Accessing inputs 5. Harvesting 6. Marketing/selling 7. Access to capital/credit 8. Accessing inputs (fingerlings) 9. Accessing fish feeds 10. Thieves/robbers 11. Cartels in markets. 12 Maintenance of the ponds 13. Lack/inadequate storage facilities 14. Lack/inadequate refrigeration facilities 15. Lack/inadequate refrigeration trucks 16. Poor roads and transportation. 17. Floods and droughts. 18. Unreliable labour for the ponds 19. Other _____

We have now come to the end of our session.

Do you have any questions or additional suggestions for us with respect to this interview?

Thank you very much for your time and patience. As promised, all your responses will be treated with utmost confidentiality.

7.6 List of people/organizations contacted

Individual stakeholders

NAME	LOCATION	DESIGNATION	COUNTY
Kenneth K. Luga	County Fisheries	Ass. Director of Fisheries	Kisumu
Madam Priscilla Mboya	KMFRI	Director of Fisheries	Kisumu
Spo Michael	Lake Basin Development Authority	Fisheries Specialist	Kisumu
Bernard Oduong'o	Fresh Fish Market	Market Leader/ Fish Trader	Kisumu
Alice Ochieng'	Fresh Fish Market	Woman Leader/ Fish Trader	Kisumu
Nancy Akinyi	Fresh Fish Market	Youth Fish Trader	Kisumu
George Onyang'o	Hesao Feeds	Member	Kisumu
Edwina Auma	Hesao Feeds	Member/Fish Farmer	Kisumu
Rodrique Kundu	LAVEMP	Fisheries Specialist	Kisumu
Prof Jim Ageng'o	Kisumu County Integrated Fish Farmers' Cooperative Society Ltd	Chairman	Kisumu
Mzee Manoah Onywera Amol	Retired in Fishing and Fish Business	Elder	Kisumu
Meshack Mubisa	Kisii Fish Multiplication and Training Centre	Fisheries Specialist	Kisii
Philip Agwanda	County Fisheries Department	County Director of Fisheries	Homa Bay
Michael Ogutu Ogalo	Homa Bay Fish Market	Youth Fish Trader	Homa Bay
Teresa Auma Okumu	Homa Bay Fish Market	Woman Leader/ Fish Trader	Homa Bay
Jedida Were	Jewlet fish feeds and fingerlings Producer, Rakwaro	Business Woman	Homa Bay
Wycliffe Odhiambo	Dunga BMU	Chairman	Homa Bay
Tom Osambo	Karabach Fish Farmers Group	Manager	Homa Bay
Pastor Charles Ojal	County Fisheries Department	Worker	Homa Bay
Mzee Pual Anyango	Retired Luo Council Leader and Fisherman to date	Elder	Homa Bay
Mrs Judith Okinda	County Fisheries Department	County Director of Fisheries	Migori
Zilper Odero Ageng'a	Migori Market	Fish Trader/Woman Leader	Migori
Alice Akinyi Ochieng'	Migori Market	Youth Fish Trader	Migori
Joshua Owino	County Fisheries Department	Migori Market Fisheries Officer	Migori
Johnson Nyamari	Resigned at County Fisheries Department	Integrated Farmer, Mabera	Migori
Pius Kidero Ajowi	Suna Fish Farmers Group	Chairman	Migori
Gideon Nyatike	Nyabera Fish Ponds Group	Chairman	Kisii

Job Masabu	Fisheries Offices	Assistant Fisheries Director	Bungoma
Elizabeth Oduor	Market	Chairlady	Bungoma
Tiberias Buteyo	Kandui	Lead Farmer	Bungoma
Christine Buteyo	Kandui	Opinion Leader	Bungoma
Francis Makhakha	Munyaa Village	Chairperson Munyaa Self-Help Group	Bungoma
Stephen Njau	Sub-County Fisheries Offices	Fisheries County Director.	Vihiga
Susan Odinga	Fisheries Offices, Kakamega	Extension Officer	Kakamega
Hillary Walusese	Fisheries Offices, Kakamega	Extension Officer	Kakamega
Roderick Maliatso	Lurambi	Vice Chairperson Kakamega County Fish Farmers Cooperative Society	Kakamega
Florence Onyango	Market Centre	Sales Lady	Kakamega
Riziki Mohammed	Market Centre	Sales Lady	Kakamega
Stanely Imbusi	Shinyalu	Chairperson Kakamega Aquaculture Association	Kakamega
Phanice Mandu	Mumias-East	Farmer	Kakamega
Ann Owour	Emuhaya	Farmer, Business lady	Vihiga
Edwin Kanale	Luanda	Chairperson, Ebusundi Youth Group	Vihiga
Japheth Amutete	Luanda	Ebulonga Fish Farmers Association	Vihiga
Susan Atieno	Jambo Fish Farm	Manager	Kakamega
Japheth Bollo	Siaya	County Director	Siaya
Cavin Ogutu	Bondo	Manager, Dominion Farm	Siaya
Benjamin Ruto	Fisheries Offices	Senior Fisheries Officer	Busia
Alex Abwao		Chairperson	Busia
Fred Okello	Ugunja	Assistant Fisheries Officer	Busia
Nyabera Fish Pond Group	Gucha South		Kisii
Suna Fish Farmers Group	Suna East		Migori
Gichiiki/Mukinike Fish Farming Group	Kiambu		
Central Aquatic Self Help Group	Central Machakos		Machakos
Mavoko Fish Farmers Self Help Group	Mavoko		Machakos

Josiah Manda	Mavoko Fish Farming Group	Cluster Leader	Machakos
Robert Mwangi	Kiambu	Community Leader	Kiambu
John Kuria	County Government of Kiambu	MCA	Kiambu
Lillian Kisee	Machakos Fisheries Department	County Fisheries Assistant	Machakos
Alphonse Kalisa	Mavoko Secondary School	Agriculture Teacher	Machakos
Joseph Macharia	Kiambu Sub-County Fisheries Department	Fisheries Officer	Kiambu
Paul Koigi	Kiambu Institute of Technology	Assistant HOD-Aquaculture Department	Kiambu
Mr. Isaack Wanee	Sagana	Sagana National Fish Culture	Murang'a
Beth Wagude	Kenya Fish Processors and Exporters Association	Chief Executive Officer	Nairobi
Grace Kenya	Mavoko	Farmer	Machakos
Lena Muthoni	Lenalia Industries	Owner	Nairobi
Njuguna Mugo	Pwani Feeds	Production Manager	Thika
Susan Kabue	Pwani Feeds	Marketing Manager	Thika
Hellen Ngina	Eden Agro-Chemicals	Agro dealer	Machakos
Lillian Kisee	Eden Agro-Chemicals	Facilitator at Eden Agro-chemical	Machakos
Esther Muthoni	Kiambu Market	Hotel Owner	Kiambu
Elizabeth	Nairobi Ridgeways	Director Betilexa Aqua and Integrated Farm	Nairobi
Jane Mbugua	Jasa Fish Farm	Owner	Kiambu
Antony Mwangi	Makindi Fish Farm	Aquaculture Manager	Kiambu
Munyaa Self Help Group			Bungoma

Farmer Groups

County	Group	Attributes		Membership		
		Year Formed	Registration status	Men	Women	Total
Bungoma	Bungoma Farmers Group	2013		10	0	10
Machakos	Central Aquatic Farmers Self Help Group	2010	Yes	14	10	24
Vihiga	Ebusundi Youth Group	2013		6	2	8
Machakos	Gichiiki Mukunike Fish Farmers Self Help Group	2010	Yes	11	19	30
Machakos	Mavoko Fish Farmers Self Help Group (+7 Institutions)	2010	Yes	31	17	55
Siaya	Mwang' Self Help Group	2013		8	3	11
Kisii	Nyabera Fish Pond Group	2013	No	9	3	12
Migori	Suna Fish Farmers Group	2013	Yes	9	10	19
Bungoma	Munyaa Self Help Group	2013	Yes	0	5	5

7.9 Bibliography

1. A, Asabere-Ameyaw. African Union Gender Policy Rev 2 (Feb 2009).
2. AfDB Website (2012). Defined as living under \$ 1.25 per day. "Poverty is on the retreat in Africa"; Nations Economic Commission for Africa Website (as cited in the AGRA Strategy Refresh document: Agriculture Landscape. 2012).
3. Africa Women's Entrepreneurship Program. U.S Department of State- Bureau of African Affairs. <http://exchanges.state.gov/non-us/program/africa-womens-entreprenuership-program-awep>.
4. African Development Bank (2010). Agricultural Sector Strategy 2010-2014. Agriculture and Agro-industry Department and operational resources and policies department. Abidjan: African Development Bank.
5. African Union Gender Policy (2009) Rev2. Retrieved from <http://www.africaunion.org/root/au/auc/departments/ge/african%20union%20gender%20policy.doc>;
6. Allison, M, Glinski, et al. Cartier Charitable Foundation (2015). Women and Social Enterprises: How Gender integration can boost entrepreneurial solutions to poverty. ICRW.
7. Anstett, A. (2014). Investing in fair Trade Cotton Open Markets for Uganda Farmers. Innovate Development. Retrieve from <http://innovatedevelopment.org/2014/04/28/investing-in-fare-trade-cotton-open-markets-for-uganda-farmers>
8. Baden, S. (1998). 'Gender Issues in Agricultural Liberalization': Bridge (Development-Gender) Report. Brighton: Institute of Development Studies (IDS).
9. Beintema N, and Marcantino, F. (2009). Women's participation in agricultural research and higher education: Key trends in sub-Saharan Africa. Agricultural Science & Technology Indicators, International Food Policy Research Institute and CGIAR Gender & Diversity Program. <http://www.asti.cgiar.org/pdf/ASTIAWARD-brief.pdf>
10. Ben Belton (MSU), Aung Hein, Kyan Htoo, L. Seng Kham (MDRI-CESD) Ulrike Nischan (IFPRI), Thomas Reardon (MSU), Duncan Boughton (MSU) 2016: The Structure and Performance of the Aquaculture Value Chain in Myanmar: Michigan State University.
11. Beoku-Betts, J. (2005). African women and career advancement in academic scientific careers: Journal of Technology Transfer.
12. Bill and Melinda Foundation (2012). Women in Agriculture. Retrieved from <http://www.gatesfoundation.org/infographics/Pages/women-in-agriculture-info.aspx>.
13. Blackden, C.M. & Wodon, Q. (2006). Gender, Time Use and Poverty in Sub-Saharan Africa. World Bank Working Paper No. 73. Washington D.C. The World Bank Group. Retrieved from http://sitesources.wprldbank.org/INTAFRREGTOPGENDER/Resources/gender_time_use_pov.pdf
14. Cathy, R.F. (2011). Gender-Aware Value Chain Development. UN Women. Accra.
15. Conference for women in Africa (2014). Investing in African Women, Opening the space for Agribusiness, Organized by NEPAD.

16. Cutura, .J. Voices of Women Entrepreneurs in Kenya: IFC Gender Entrepreneurship Markets & Foreign Investments Advisory Service a joint service of the International Finance Corporation & The World Bank, (2007).
17. Dobbs, R. et al. (2012). The world at work: jobs, pay and skills for 3.5 billion people. McKinsey Global Institute: McKinsey & Company. Retrieved from http://www.mckinsey.com/insights/employment_and_growth/the_world_at_work
18. ENERGIA (2006). From the millennium Development Goals: Towards a gender Sensitive Energy Policy research and Practice. Empirical Evidence and Case Studies. Synthesis Report for Department for International Development (DFID) KaR research project R8346. Gender as a key variable in Energy Interventions. ENERGIA/DfiD Collaborative Research Group on Gender and Energy. Retrieved from <http://energia.org/wp-content/uploads/2015/06/49-From-the-millennium-development-goals-towards-a-gender-sensitive-energy-policy-research-and-practice.pdf>
19. Ernst & Young, (2009). Inter-American Development Bank Report. Groundbreakers www.ey.com/groundbreakers
20. Ernst and Young (2011). Women of Africa. Retrieved from [http://www.ey.com/publication/vwLUAssets/Women_of_Africa/\\$FILE/Women%20of%20Africa%20final.pdf](http://www.ey.com/publication/vwLUAssets/Women_of_Africa/$FILE/Women%20of%20Africa%20final.pdf).
21. Ernst and Young (2011). Women of Africa. Retrieved from [http://www.ey.Publication/vwLUAssets/Women_of_Africa\\$FILE/Women%20of%20Africa%20final.pdf](http://www.ey.Publication/vwLUAssets/Women_of_Africa$FILE/Women%20of%20Africa%20final.pdf).
22. FAO (2011). The State of Food and Agriculture: Women in Agriculture, Closing the gender gap for development. Rome, FAO.
23. FAO (2011). The State of food in Agriculture 2010-2011. Women in Agriculture Closing the gender gap for development, Rome, Italy: FAO.
24. FAO (2014): Value chain dynamics and the small scale sector. Policy recommendations for the small scale fisheries and aquaculture trade. FAO fisheries and aquaculture technical paper 581. Rome. Italy
25. FAO, IFAD (2009). Gender in agriculture sourcebook. Washington, D.C.The World Bank.
26. FAO, RIGA-team and Anríquez (2010). Calculations using nationally representative household surveys.
27. FAO, WFP and IFAD. (2012). The State of Food Insecurity in the World: Economic growth is necessary but not sufficient to accelerate reduction of hunger and malnutrition. Rome, FAO.
28. FARA (2006). Agricultural Productivity (as cited in the AGRA Strategy Refresh document: AGRA in the Context of 2006 Agriculture Landscape. 2012).
29. Farmers' Forum (2012). IFAD HQ. Special Session of the Farmers' Forum on Youth in Agriculture. Retrieved from <http://www.ifad.org/farmer/2012/youth/report.pdf>.
30. Gender Aware Approaches in Agricultural Programmes– Mozambique Country Report (2010). A special study of the National Agricultural Development Programme (ProAgri II).UTV working paper.
31. Global Gender Gap Report (2011). Study on measuring the Global Gender gap.
32. Goldman Sachs Global Market Institute (2010). Womenomics 3.0. The time is now, Goldman Sachs Global Economics, Commodities and Strategy Research.

33. Government of Kenya (2003): Economic Recovery Strategy Paper for Wealth Creation and Employment Creation. Government Printer.
34. Government of Kenya. Vision 2013. Government Printer.
35. Horsley, S. and M. Anderson. (2005). Hanging by a Thread: Women and Cotton Industry in Southern Africa. Retrieved From <http://transportandsociety.com/africapages/womenandcottonchains.pdf>
36. <http://www.vitalvoices.org/sites/default/uploads/Groundbreakers.pdf>: Groundbreakers: Using the strength of women to rebuild the world economy (2009). Ernst & Young report on how women's economic empowerment and leadership can impact the global economy.
37. IFAD (2012). The Role of Intergenerational Health Externalities and Women's Occupational Constraints: Gender equality and women's empowerment: Rome.
38. IFPRI (2009). Global Hunger Index Calls Attention to Gender Inequality: Need to Empower and Educate Women & Girls.
39. Iga, H. K. (2002). Bicycles, Boda-Boda and Women Travel Needs. In P. Fernando & G. Porter (Eds.) Balancing the Load: Women, Gender and Transport. London: Zen Books, in association with the International Forum for Rural Development.
40. International Finance Corporation (2013). IFC CASA Initiative in South Sudan. World Bank Group. Juba.
41. Jiggins, Janice, R. K. Samanta, and Janice E. Olawoye. 1997. "Improving Women Farmers' Access to Extension Services. <http://www.fao.org/docrep/w5830e/w5830e0b.htm>
42. Joachim, Von, Braun, Detlev, Puetz and Patrick, Webb. IFPRI Research report Volume 75 (1989). Irrigation Technology and Commercialization of Rice in the Gambia: Effects on Income and Nutrition.
43. Jonathan M Munguti, Jeong D Kim and Eric O Ogelo (2014). An overview of Kenyan Aquaculture: Current status, challenges and opportunities for future development. Fish Aquat sci 17 (1) 1-11.
44. Kanza, E. (2016). Why Africa's future depends on its Women Entrepreneurs <http://www.weforum.org/agenda/2016/04/why-africas-future-dpends-on-its-women-entrepreneurs>
45. Kofi Annan Business School. Participation of women in agriculture value chains: A case study of Zambian farmers. Hoge School /Utrecht.
46. KPMG IDAS. Analysis of the level of the success and Failures of Applicants in AAW-Focus on women and non-East African Countries.
47. L Meyers, L Jones - **ACDI/VOCA, 2012**. Gender Analysis, Assessment and Audit: Manual and Toolkit.
48. Lucy, Ferguson. Promoting gender equality and women's empowerment (2011).
49. LZB, Ndanga et al (2013): Economically feasible options for increased female participation in Kenyan aquaculture value chain. <http://agris.fao.org/agris-search/search.do?recordID=US201400123916>
50. Margaret, Alston. UNWOMEN (2014). Gender mainstreaming in development programming. UN Women.
51. MarguErite Berger, Virginia DeLancey and Amy Mellenchamp 1984. Bridging the gender gap in agricultural extension. ICRW, W.DC

52. Mehra, R. and Rojas M.H. (2009). Food security and agriculture in a global marketplace: A significant shift. Washington, DC: ICRW. pp. 37.
53. Mehra, R., Rao G. (2009). Gender Mainstreaming: Making It Happen in Buvinic et al. (Eds.): Equality for Women: Where Do We Stand on Millennium Development Goal 3. IBRD/World Bank, Washington, D.C.
54. Ministry of Foreign Affairs of Denmark. (2014). Case study from Uganda. Gulu Fashion. Technical Proposal 201405. Retrieved from http://www.ntrepublikationer.dk/um/14_danida_btb_programme_2006_2011/index.html
55. Mizrahi, S. and Fraser-Moleketi, G. (2015). Empowering African Women: An Agenda for Action. Abidjan. African Development Bank.
56. Quisumbing, A and L, Pandofelli (2010). Promising Approaches to address the needs of the poor female farmers: Resources, constraints and interventions. World Development, Volume 38, 4: 581-592.
57. Quisumbing, A. (1994). Improving women's agricultural productivity as farmers and workers. World Bank Education and Social Policy Department Discussion Paper 37. The World Bank. Washington, DC.
58. Rathgeber, E. (2002). Female and male CGIAR scientists in comparative perspective. Working paper # 37. CGIAR Gender & Diversity Program.
59. Raymond Wangai (2016): Investing in Fish Farming. Go places Living magazine pp 26-27.
60. Roberts, P.W. & Peters S. (2014). The Impact of Entrepreneurship Database Program: 2013 End year summary. Social Enterprise @ Goizueta. Retrieved from http://gizueta.emory.edu/faculty/socialenterprise/documents/2013_End_Summary_Final_Final.pdf
61. Ruiz, M.E. Striving for business success: Voices of Liberian women Entrepreneurs. World Bank Institute.
62. Sachs G. (2009). The Power of the Purse. Gender Equality and Middleclass Spending. Goldman Sachs Global Market Institute.
63. Saito, K. (1992). Raising the Productivity of Women Farmers in Africa: The case of Zambia. Population and Human Resources Department, Women in Development Division. Washington D.C. World Bank.
64. Sally, Baden. (1998). Gender Issues in Agricultural Liberalization. Topic paper prepared for Directorate General for Development (DGV111) of the European Commission. Retrieved from <http://www.ids.ac.uk/bridge/Reports/re41c.pdf>.
65. Silverstein, M.J. & Syre, K. (2009). The Female Economy. Boston. Harvard Business School Publishing.
66. Solemn Declaration on Gender Equality in Africa -SDGEA (July 2004).A Union-Assembly/AU/Decl, 2004.
67. Swanson B. and Rajalahti, R. (2010). Strengthening Agricultural Extension and Advisory Systems: Procedures for Assessing, Transforming and Evaluating Extension Systems Agricultural and Rural Development Discussion Paper. The World Bank.
68. Tamele, M. (2010). Participation of women in Agriculture value chains: Case study of Zambian farmers. Koffi Annan Business School. Hogeschool/Utrecht
69. Tamele, T. (2010). Making finance work for Africa: A policy brief on agricultural finance in Africa.

70. The criteria were presented to the IC and recommendations used during the review of the round AAW concept notes meeting held in Harare Zimbabwe
71. The Global Gender Gap Report (2014) by World Economic Forum. Retrieved from http://www3.weforum.org/docs/GGGR14/GGGR_completeReport_2014.pdf
72. The state of food and agriculture (2010-11). Women in Agriculture: Closing the gender gap for development. Rome. FAO.
73. The World Bank Group (2015). Poverty Overview. Retrieved from <http://www.worldbank.org/en/topic/poverty/overview>
74. Tripathi, Ruchi, et al. "What Works for Women: Proven approaches for empowering women smallholders and achieving food security." *Oxfam Policy and Practice: Agriculture, Food and Land* 12.1 (2012): 113-140.
75. UNICEF (2015). Eliminate open defecation. Retrieved from <http://unicef.in/Whatwedo/11/Eliminate-Open-Defecation>
76. UNICEF and WHO (2015). 25 years of progress on Sanitation and Drinking water: 2015 update on MDG assessment. Geneva. Switzerland. Retrieved from http://www.unicef.org/publication/files/progress_on_Sanitation_and_Drinking_Water_Update2015.pdf
77. United National Economic and Social Council (1997). Coordination of the policies and activities of the specialized agencies and other bodies of the United Nations system: Coordination Segment. Chapter IV: Excerpt from A/52/3. United Nations.
78. UNWOMEN. (2014). Gender equality and Sustainable Development. World survey on the role of Women in Development. New York. United Nations. Retrieved from http://www.unwomen.org/-/media?headquarters/attachments/sections_library/publications/2014/unwomen_surveyreport_advance_16oct.pdf
79. USAID 2010: Guide to gender integration and analysis. USAID.
80. USAID. (2012). USAID Policy on Gender Equality and Female Empowerment. Washington D.C: USAID. Retrieved from http://www.usaid.gov/sites/default/files/documents/1865/GenderEqualityPolicy_0.pdf
81. Uteng, T.P. (2011). Gender and Mobility in Developing World. World Development Report 2012: Gender equality and Development, Background Paper. The World Bank Group. Retrieved from <http://siteresources.worldbank.org/INTWDR2012/Resources/7778105-1299699968583/7786210-1322671773271/uteng.pdf>
82. Women in Agriculture (2012). If we invest in them, we can feed the world. Seattle. BMGF. Accessed on November 17, 2012 at <http://www.gatesfoundation.org/infographics/Pares/women-in-agriculture-info.aspx>
83. Women in Agriculture (2012): If we invest in them, we can feed the world. Seattle. BMGF (n. D).
84. Women's work: Women and Agriculture, Closing the Gender Gap for Development (2010-2011). Food and Agriculture Organization (FAO). Retrieved from www.fao.org/docrep/013/i2050e/i2050e00.htm
85. World Bank (1994). Raising the productivity of women farmers in sub-Saharan Africa: World Bank Discussion Papers: Africa Technical Department Series No. 230. Washington DC. World Bank.

86. World Bank (2007). Mapping Poverty, Water and Agriculture in Sub-Saharan Africa; Framework for African. World Bank.
87. World Bank (2012). World Development Report: Gender Equality and Development. Washington, DC. World Bank.
88. World Bank Group (2008). Gender equality is smart economics. The World Bank
89. World Bank, FAO and IFAD (2009). Gender and Food Security: Module 1 in Gender in Agriculture Sourcebook: Agriculture and Rural Development. World Bank: Washington, DC. pp.16.
90. World Bank, MoGD (2007). Liberia gender needs assessment: Towards women's economic empowerment. World Bank.
91. World Development Report (2008). Agriculture for Development. Washington Dc. World Bank.
92. World development report (2008). Agriculture for development. World Bank. Washington, D.C.
93. World Economic Forum (2011). Closing the Gender Gap Report.
94. World Economic Forum, (2014). Insight Report – The global Gender Gap.

8.0 INDUCTION TRAINING ON GENDER AND AQUACULTURE

8.1 Agenda for Gender Induction training in Kisumu

Inception Workshop on Gender and Fisheries For FARM AFRICA Staff Nov 17 – 18 2016 – DRC Designed and Presented BY ETC East Africa	
DAY 1	
Breakfast tea: 8.30am – 8.55 am	
8.55 am – 10.00 am	Session 1 – Opening and workshop overview <i>Welcome and Introductions – KMAP</i> Opening Presentations: <ul style="list-style-type: none"> - <i>Gender and aquaculture development in Africa</i> - <i>Supporting women’s entrepreneurship for aquaculture and rural development – (Someone from WEF/Financial Co/One acre fund?)</i> - <i>Role of gender in Africa’s Fisheries revolution –</i>
Tea break: 10.00am - 10.30am	
10.30 am – 11.30 am	Session 2 - Key findings from the field study <ul style="list-style-type: none"> - Main findings - The needs assessment: staff
11.30 am – 12.30 pm	Session 3 - Gender in aquaculture: Perception and reality <ul style="list-style-type: none"> - Resolving meanings and definitions of gender - GAP World Bank video “Gender Equality as Smart Economics” - Small groups activity: “Gender is a complex matter”
Lunch break: 12.30 – 1.30	
1.30 pm - 4.00 pm	Session 4 - Why focus on gender in aquaculture? <ul style="list-style-type: none"> - Presentation: Conceptual underpinnings of gender and fisheries - Small groups activity: the cost of gender blind programming - Presentation: Gender programming approaches
Tea break: 4.00pm – 4.30pm	
4.30 pm - 5.00 pm	Session 5 – Wrap up, synthesis and reflections <ul style="list-style-type: none"> - What did we do? - What did we learn in the workshop? - How will we apply in their work? - What are we taking away?
5.00 pm - 5.15 pm	End of day one evaluation

DAY 2	
Breakfast tea 8.30am – 9.00am	
9.00 am – 10.00 am	Session 6 – Evidence on gender in agriculture (fisheries) <ul style="list-style-type: none"> - FAO video and structured discussion Presentation: Women Farmers: An opportunity overlooked?
10.00 am -11.00 am	Session 7 - The ABCs of gender in aquaculture <ul style="list-style-type: none"> - Presentation on gender analysis - Small groups activity on gender analysis - Presentation on gender responsive M&E Small groups activity on M&E – Selecting indicators
Tea break: 11.00 - 11.30am	
11.30 am – 1.00 pm	Session 8 - Gender in KMAP: Gender review <ul style="list-style-type: none"> - Presentation – Integrating gender into KMAP: Chapter 5 - Plenary on proposed options
Lunch break: 1pm-2pm	
2.00 pm - 4.00 pm	Session 9 – Integrating gender in KMAP <ul style="list-style-type: none"> - Reading through the proposal - Small groups activity: Gender review KMAP proposal/Implementation plan. (Tea served in session)
4.00 pm - 4.30 pm	Session 9 (cont'd) – Integrating gender in KMAP <ul style="list-style-type: none"> - Reporting back: Plenary presentations on gender review of KMAP - Group exercise: Myth or fact
4.30 pm - 5.15 pm	Session 10 - Wrap up, synthesis and reflections <ul style="list-style-type: none"> - What did we do? - What did we learn in the workshop? - How will we apply in their work? - What are we taking away? - What will we do next?
5.15 pm -5.30 pm	End of Day 2 Evaluation
5.30 pm – 6.00 pm	Session 11 – Closing session

8.2 Training slides for the gender induction training



Microsoft

PowerPoint - KMAP



Microsoft

PowerPoint - SESSIC



Microsoft

PowerPoint - Sessio



Microsoft

PowerPoint - SESSIC



Microsoft

PowerPoint - Sessio



Microsoft

PowerPoint - Sessio



Microsoft

PowerPoint - Sessio



Microsoft

PowerPoint - Sessio

8.3 Glossary of common gender terminology

Gender Glossary

The list of gender glossary is not exhaustive. New terminologies are being added all the time. The list below includes the more commonly used terminologies. Please seek more literature to be up to date with emerging dynamics in gender terminology.

Access to resources is ability and opportunity of an individual to use a resource. For example, ability to have land for cultivation or to have a street house for retail shops.

Control of resources is process available to an individual to decide who can use the given resource, how to use the given resource and when to stop the use. For example, to sell land, one must have a right to it, and have decision making rights and authority to sell. Another example relates to constructing a fish pond, one must have rights to make decisions on when, where and how big the pond can be. This means one has some control over it.

Empowerment is the process of increased opportunity and ability of women and men to control their life. Empowerment of women or men includes increasing their power to make decisions, to have their voices heard, to put things on the agenda, to negotiate and to challenge past customs.

Gender analysis is a process to assess the differential impact of policies, programs, projects and legislation on men and women. Gender analysis recognizes that the realities of men's and women's lives are different, and that equal opportunity does not necessarily mean equal results.

Gender and Development (GAD) is an approach that was developed in the 1980s to overcome perceived weaknesses of the Women in Development (WID) approach. Rather than focusing exclusively on women, this approach is concerned with relations between women and men, particularly inequality in power sharing and decision making. GAD tries to address profound causes of gender inequality through integrating gender

Gender empowerment measure (GEM) is a comprehensive index measuring gender inequality in three basic dimension of empowerment – economic participation and decision-making, political participation and decision-making and power over economic resources.

Gender equality means that women and men enjoy the same status within a society. It does not mean that women and men are the same, but rather that their similarities and differences are recognized and equally valued. Gender equality means that women and men experience equal conditions for realizing their full human rights, and have equal opportunity to contribute to and benefit from political, economic, social and cultural development of their country. **Gender equality** does not mean equal number of women and men, nor does it mean “for women only”. Gender equality requires that women, men, girls and boys, have equal opportunities to exercise their rights in terms of security and resources, and expression of opinion. Empowering women will ensure that men and women are equal partners in development

Gender equity is the process of being fair to both women and men. To ensure fairness, measures must often be available to compensate for historical and social disadvantages that prevent women and men from otherwise operating on a level playing field. Equity can be understood as the means, where equality is the end. Equity leads to equality.

Gender gap is a concrete example of political, economic, social and cultural difference or inequality between men and women or between boy and girl. For example, there are probably few women engineers than men because there were few girls high schools offering science subjects compared to men. Naturally, fewer girls will enroll for engineering courses.

Gender mainstreaming refers to the process or a strategy to work towards the goal of gender equality that was developed in 1990s. Unlike WID, gender mainstreaming focuses on changing the “gender norms of the mainstream”- the values, behaviors, practices, ideas and conventions that dictate the way the majority of people, organizations, communities and society functions. Gender mainstreaming involves (i) making men’s and women’s concerns and experiences an integral part of the design, implementation, monitoring and evaluation of policies and programs in all sectors of society; (ii) changing policies and instructions so that they actively promote gender equality; (iii) rethinking socio-cultural values and development goals in the long-term.

Gender prejudice reflects characteristics that are foisted on women and men but fail to recount actual individual ability. For example, housework is women’s work, not men’s. Gender prejudice often limits an individual in doing what he or she is able to do.

Gender refers to the socially determined differences between men and women, such as roles, attitudes, behavior, and values. Gender characteristics are assigned to men and women during their childhood and are expected to be followed. For example, in some societies, women are considered dependent on men; in other societies, women are decision-makers, or men and women equally make decisions. Gender characteristics vary across cultures and over time; they thus are amenable to change.

Gender responsiveness entails consistent and systematic attention to the differences (and similarities) between men and women in society with a view to addressing institutional constraints to gender equality.

Gender roles are behaviors that are expected from men and women. Gender roles are learned and vary across cultures and over time; they are thus amenable to change.

Gender stereotypes are popularly held ideas/views about men and women. For example, ideas that women are tender, men are strong. Gender stereotypes are learned and vary across cultures and over time; they are thus amenable to change.

Gender-related development index (GDI) is a comprehensive index measuring average achievement in the three basic dimensions of human development – a long and healthy life, knowledge and a decent standard of living – adjusted to account for inequalities between men and women. In policy making process in all sectors at all levels, focusing on implementation of necessary steps to ensure that all members of the society equally enjoy the fruits of development.

Labor division by gender is assignment of different tasks and responsibilities to women and men. Gender-based assignment of tasks is learned and pervaded by all members of a given community or society.

Lack of gender awareness is the shortage of information and knowledge about gender issues and their impacts on experiences and development results of men and women, boys and girls.

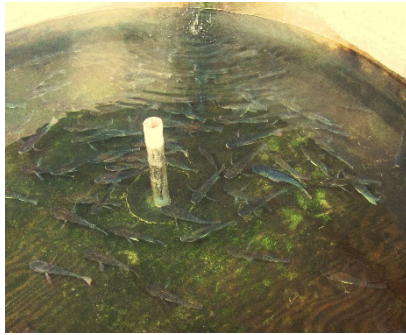
Sex identifies the biological, genetically determined differences between women and men and is not amenable to change. Only a very small proportion of the differences in roles assigned to men and women can be attributed to biological or physical differences based on sex. For example, insemination is a male sexual role, pregnancy and childbirth are female.

Status of women (or men) is the term used to compare socio-economic conditions of women (or men) with corresponding conditions of men (or women). For example, women have lower status than men in political life that is seen in lower rates of women at decision making levels.

Women in Development (WID) is an approach that emerged in 1970s, with the goal of integrating women more fully into the development process. It includes strategies such as women-only income generation projects, training and credit for women. In this approach, women are passive beneficiaries of development; women's concerns are considered separately from the whole development issues.

8.4 General literature on gender and agriculture/aquaculture

See folder on BIBLIOGRAPHY



**GENDER IMPACT STUDY
OF
THE KENYA MARKET-LED AQUACULTURE PROGRAM (KMAP)
Annex 2: Proposed Gender Action Plan**

**NOVEMBER 2016
NAIROBI**

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1.0 Introduction

This Annex specifically provides information on the proposed Gender Action Plan (GAP) following the Gender Impact Study for the Kenya Market-Led Aquaculture Program (KMAP). Aquaculture is a sub-sector of fisheries that is showing significant growth in the country, no doubt following the Economic Stimulus Program of the Kenya Government in 2007/8. Both men and women are actively engaged in the enterprise. However, for a majority of the farmers, aquaculture remains an enterprise with great potential and promise, only a few well established farms have consistently benefited. Being a fairly new sub-sector, aquaculture does not suffer from traditional and cultural practices that inhibit the participation of women. The study on gender impact in aquaculture carried out in 11 counties of Kenya (Bungoma, Busia, Homa Bay, Kakamega, Kiambu, Kisii, Kisumu, Machakos, Migori, Siaya and Vihiga) found no cultural or traditional barriers to women's participation in aquaculture. More than 95% of survey and FGD/KII respondents (male or female) reported that fish ponds are owned as assets of the household (owned by both men and women), even though men largely carry the owner's tag.

Women are actively engaged in all key nodes of the aquaculture value chain, from hatching fingerlings to processing and marketing. However, women's participation is not at the same level as that of men. While fish ponds are 'household assets', female respondents had in general fewer and smaller fish ponds compared to their male counterparts. Differences were also observed in pond management, where men were more involved in pond construction, feeding and harvesting compared to women. In general, male respondents reported using a greater feed diversity than women. Men made most of the critical pond management decisions including where to site ponds, size of ponds, where to source fingerlings, quantity to source, what and when to feed the fish as well as when to harvest. Though men made most of the decisions, findings from the survey and FGD/KII clearly show that women were involved in the decision making process.

In support of their engagement in aquaculture, many farmers (both men and women), but mostly women have formed or joined common interest self-help groups that promote aquaculture. In these groups, members learn and share ideas and information from each other. The groups also act as attraction points for other stakeholders interested in getting entry points to and engaging with farmers. Some groups have evolved to become cooperatives. However, the study found that women played peripheral roles in the running and management of the groups.

Benefits from engaging in any enterprise is critical towards self-fulfilment and satisfaction with one's participation. This study found that women were involved in decision making on the use of revenues, that almost 50% of women take control of revenue decisions, and that more than 95% of the respondents were happy with how the revenues were shared. However, more women respondents would prefer a 50:50 sharing of aquaculture revenue. In addition, most women would like to be fully involved in revenue sharing decisions.

Household survey data revealed that though there were no traditional or cultural barriers to their active engagement in aquaculture, women's involvement in most nodes of the value chain (apart from processing and selling/marketing) was much lower than expected. There are three main reasons for this: first, aquaculture is a capital heavy enterprise, especially when one begins because of the need to maintain the fish (feeding, cleaning ponds) for at least six months. Most women do not have the kind of resources to continuously invest in the ponds for this long; secondly, very few farmers (men or women) have reported morale boosting incomes.

In most counties, farmers own 1-2 ponds of less than 600 m², and more than 50% of them have never harvested. Women tend to shy away from what they consider as high-risk enterprises that do not have assured returns for the household; third, most of the women respondents do not have adequate information, knowledge and skills in aquaculture. Very few of them accessed formal training in aquaculture, while most have received 'instructions on aquaculture' from their husbands.

As presently practiced, aquaculture within the counties visited is largely a subsistence or hobby activity despite the clear intention and desire by farmers for it to be a profitable commercial enterprise (except for the few commercial fish farms). Husbandry, especially feeding of fish is poor, productivity and returns are low, negligible or negative. However, farmers engaged in producing fingerlings reported making good money. In addition, women engaged in processing and marketing/selling of fish were happy with their returns, although they sold small quantities of fish daily (less than 1,000 pieces). So there is great room to improve management and productivity, and therefore commercialization by both men and women.

Women farmers face several constraints and challenges in aquaculture including: inadequate access to quality fingerlings and fish feeds, inadequate capital to invest in commercial aquaculture, low levels of skills and knowledge in the enterprise and poor access to technical and market information.

From the foregoing, it is surmised that women's involvement, participation and benefits from the current aquaculture activities is at best low, with significant room for improvement. Because in the villages' aquaculture is regarded as a family/household enterprise, any plans to enhance the participation of women in the sub-sector must take care not to disenfranchise men. The development options must be designed to recognise the role of men while targeting women. Harmony at the household level, through intra-household communication and cooperation, though a slow process, is the most viable path to enhancing women's participation in commercial aquaculture. Of course there are women who are either single or widowed, whose participation does not need the cooperation of men.

The study is proposing the following options as viable pathways of promoting the participation of women in commercial aquaculture for KMAP to consider:

- Review the criteria for the selection of aquaculture farmers into the project, specifically to allow active women farmers who have less than 3 ponds (or less than 900 m²) to be participants in the project.

- Invest in targeted sensitization and awareness creation in areas with high potential for aquaculture – generally those with adequate water sources and land, focusing on what the sub-sector is and the potential benefits, especially with the involvement of women. Access to fingerlings and quality fish feeds were identified as priority constraints, yet most farmers, especially women indicated they have inadequate capital to invest in the subsector. KMAP can facilitate linkages/work with established fish farms, firms and millers to enhance access to these inputs. Specifically, KMAP can pilot the One Acre Fund Model, where contracted farmers can access the inputs on credit through their groups and pay back monthly during the production cycle. In addition, KMAP can also pilot a Fish Farm Inputs Savings and Loans model (modelled on AGMARK/ICRW farm inputs savings and loans models) to encourage farmers to save for the fish inputs. A third avenue is for KMAP to establish linkages with existing government run funds – Women Enterprise Fund and the Youth Development Enterprise Funds to provide women farmers with loans that will support their aquaculture ventures. It is unlikely that the largely risk averse farmers will seek for commercial loans to invest in aquaculture.
- KMAP should facilitate access to quality capacity building targeted at women farmers. This should include targeted practical training sessions that are gender responsive (e.g. venue, location, time, language of delivery, mode of delivery, staff with gender knowledge, visualization materials) with monitoring support, access to appropriate cutting edge information e.g. through mobile phones and participation in information exchange and sharing platforms like demonstration farms, shows and exhibitions. This may be an expensive activity because KMAP needs to have its staff trained with basic gender knowledge, local staff as community own resource persons (here is an opportunity to hire some active women aquaculture farmers), and a robust monitoring system that can respond to emerging needs of the farmers. For demonstrations, it is recommended that KMAP eschews the practice of conducting such in well-established (already commercial and profitable firms), but should instead select small-medium performing and preferably women owned and managed farms. As much as possible, KMAP should engage a few women extension staff to work alongside male officers, even if it means hiring on short contracts, officers from the fisheries department.
- As part of supporting commercialization of aquaculture, KMAP will need to strengthen linkages with county officers from the fisheries sector, as well as other key stakeholders. Already, some counties like Kakamega have shown their readiness to invest in and support aquaculture in the county. This can be an excellent opportunity for mutually beneficial engagement.

2.0 Options for gender integration in KMAP

2.1 Gender gaps identified in the aquaculture value chain

The study found many gaps in aquaculture value chain as presented in Chapter 3. While there are gender gaps, it must be emphasized that in most households with fishponds, women are involved, participate and benefit from aquaculture. However, the degree of involvement, participation and benefits are generally low and vary between households as well as counties. Key gender gaps identified are summarized below:

Women's technical know-how, skills and experience in aquaculture is much lower compared to men. More men than women have attended training sessions and been exposed. Very few women have been trained; most get their knowledge and skills from their husbands and fellow farmers. However, men are not known to be good at sharing and passing information. Women do not have adequate skills in managing the ponds, fish feeding, processing and preservation. Where they have skills, they lack facilities. Women tend to receive much lower levels of technical support from extension workers compared to men. Most extension workers tend to seek for household heads (usually men), to share information with.

General information on aquaculture tend to reach men compared to women; so women are generally at a disadvantage on current issues, advances and opportunities in the sub-sector. Men tend to control radios and access lots of information from the market place and their networks compared to women.

For women to effectively participate in commercial aquaculture, they will require to have adequate knowledge and skills in the subject matter. This study has shown that many women farmers need access to more technical information. FGDs and KIIs clearly show that most women farmers accessed aquaculture information from their spouses, groups or fellow farmers. Few attend formal aquaculture training. The main barriers to women's access to information and technology (training) in aquaculture are largely related to:

- i) When ESP introduced aquaculture, men were the targets for the project and trainings;
- ii) Women were largely cautious on adapting an enterprise they were not certain would bring in the incomes proponents of aquaculture had promised;
- iii) There was and still is, a general shortage of aquaculture field extension officers;
- iv) Because of their reproductive (at least 50% of female respondents are between 19 and 35 years) and productive roles at home, women shy away from residential training.
- v) Women indicated that they were more comfortable being trained through practical sessions, and would like to have women trainers as well, not men only;
- vi) There has hardly been any meaningful aquaculture training after the end of the ESP;
- vii) While many of the female respondents have at least primary level of education, most training sessions are conducted in English, and quite a few of them shy from attending trainings they do not understand. Indeed, at least five women requested that they be trained in languages they can understand and relate to;
- viii) One-off trainings are inadequate – the preference for most women is continuous support and education, which ensures that they grasp all the necessary skills;

- ix) Quite a number of women expect that after trainings, they will be given inputs – fingerlings and feeds. If these are not provided, they lose motivation to go for more training sessions – as they say – “what is the need if I can’t get the inputs they train us on”?

With agriculture as a devolved function to the counties, none of the counties had an adequate budget to undertake training of aquaculture farmers – most of the trainings are carried out by NGOs. Again, the NGOs target practicing aquaculture farmers, with most people attending being men.

Enhancing the knowledge and skills of women in aquaculture will entail quite some work with focus on communication in languages women can comprehend, timing that is suitable for women (taking into account their other roles and responsibilities), continuous support to encourage them, practical sessions so that they can learn by doing, availing women trainers that they can relate with in some aspects of their farming, among others.

Most of the land on which ponds are constructed are owned and controlled by men. While women have access to use, they have very limited decision-making powers on key aquaculture practices. However, it must also be stressed that the study team did not find any evidence of men restricting their wives’ access to land. Rather, the spirit of discussion at the household level was pretty high even if, men made final decisions on land use. Again, the amount of land currently reserved for aquaculture is small, while profitable commercial aquaculture would ideally require one to have at least four ponds to ensure all year production. For this reason, encouraging farmers to lease land suitable for aquaculture farming (especially in western Kenya), and intensifying productivity of the small pieces of land they own through appropriate production techniques may bear fruits. In addition, the farmers should be encouraged to continue with their mixed farm models, where they have several enterprises on one farm, but they should focus on increasing productivity.

Women were at a great disadvantage of accessing aquaculture inputs like quality fingerlings and fish feeds. Most women did not know the sources of quality fingerlings, (on average, the best sources of known quality fingerlings like the big hatcheries are located quite far from most farmers), while quality fish feeds were regarded as expensive and largely unavailable. Few agro dealer shops stocked fish feeds. Most women have limited sources of income and spend quite a bit of their time handling both productive and reproductive chores, they hardly get time to go in search of quality fingerlings and fish feeds. Moreover, the distribution network of fingerlings and fish feeds is still nascent, patchy, weak and poor. Men do have a little more time and more money than women do, and can often get time to access the inputs.

The amount of time that is spent on general pond management is generally low once the ponds are established. However, for commercial production, the ponds need maximum attention. Women often have lots of tasks at home and may not adequate time for this. However, women indicated that they were able to optimally allocate time to various activities, and would invest more time to aquaculture if its returns were high and motivating enough.

Capital: aquaculture is a capital-intensive activity, especially if it is commercially oriented. Women tend to have very little capital to invest in capital-intensive ventures. Furthermore, women are more cautious about the investments they make.

In addition to having very little capital to invest for such long periods of time (5-7 months), women do not have adequate access to affordable loans. While the Women Enterprise Fund and the Youth Development Enterprise Funds offer opportunities for affordable loans, accessing the loans remains a challenge. The latter is restricted to people below 35 years. Furthermore, one must belong to a group to access the loans – which makes it tricky for individual interested farmers. Commercial loans from banks are available, but the cost of these loans are largely beyond most women farmers. Moreover, some banks still request for collateral (e.g. land, buildings, shares etc.) that majority of prospective women farmers do not own or have access to.

In the past, many aquaculture projects targeted anyone with a pond. For commercial production, there is need to have at least 600 m² of fishponds. To enable women to effectively participate, options are to intensify production from the few small ponds that women (actually most households) have access to or introduce technologies that have high productivity on small pond sizes.

While the study found general cooperation between men and women in aquaculture at the household level, women need to get a little more support from their husbands and other men to succeed in the business. Women requested to have much more support – physical, financial, technical and moral support from their husbands to effectively commercialize their production

Demand for fish is quite high (AFIPEK 2016); the mean supplies are much lower than the mean demand. In addition, most of the fish traders are women. However, accessing the markets can be tricky for women. While women can sell fish more easily than men can, selling a full harvest from a pond requires good planning and access to markets that are profitable. Quite often, women end up selling fish in markets that pay poorly.

Sharing of incomes from ponds was largely skewed in favor of men. Efforts must be directed to enhance more equitable decision making and sharing of revenue from aquaculture.

A staff needs assessment on gender revealed that the project staff require some skills and support to fully integrate gender in the project, as well as respond to emergent gender dynamics. Therefore, an induction workshop on gender and aquaculture is proposed.

3.0 Opportunities for women involvement and participation in aquaculture value chain

3.1 Summary of opportunities

Opportunities exist for women to be involved, participate in and benefit from each and every major node of the aquaculture value chain. What women need is to be empowered through exposure, encouragement and support. Table 16 gives a summary of opportunities that women can take to participate in the value chain.

Table 1: Opportunities for women to engage in various nodes of aquaculture value chain

Value chain Node	Opportunity for women involvement	Comment
Pre-production (research, feed manufacture, hatching, agro dealerships)	Women can be involved in all activities in this stage either as employees or as owners of businesses. Realistically, opportunities exist in hatcheries (small village based hatcheries, agro dealerships)	Women's opportunities in pre-production are largely dependent on structural issues including education and exposure. Access to capital or credit may catalyse their profitable involvement
Production	Entails establishment and management of ponds. Opportunities exist for women to own pond design and construction companies, fishponds and managers of the ponds.	Women can participate as employees or owners. Need for capacity building, exposure, access to land and credit/capital.
Product handling and processing	Starts from harvesting, processing and storage. Women can manage the harvesting process, and actually participate in harvesting (if ponds are designed appropriately), are adept at processing the produce. Huge opportunity for women	Women will need harvesting skills (art and science), some capital to own or manage the processes.
Sales and marketing	Fieldwork shows this to be one of the nodes where women face little competition from men.	

3.2 Supporting infrastructure to promote active and beneficial participation of women in aquaculture

Section 1.1 and 2.1 have identified gender gaps and opportunities for women to participate in the aquaculture value chain. There is need for some basic infrastructure and support (Figure 1). Women farmers would require start up grants, reliable sources of quality fish feeds, accessible quality fingerlings, reliable information and technology, extension support, and sources of affordable capital to thrive in aquaculture.

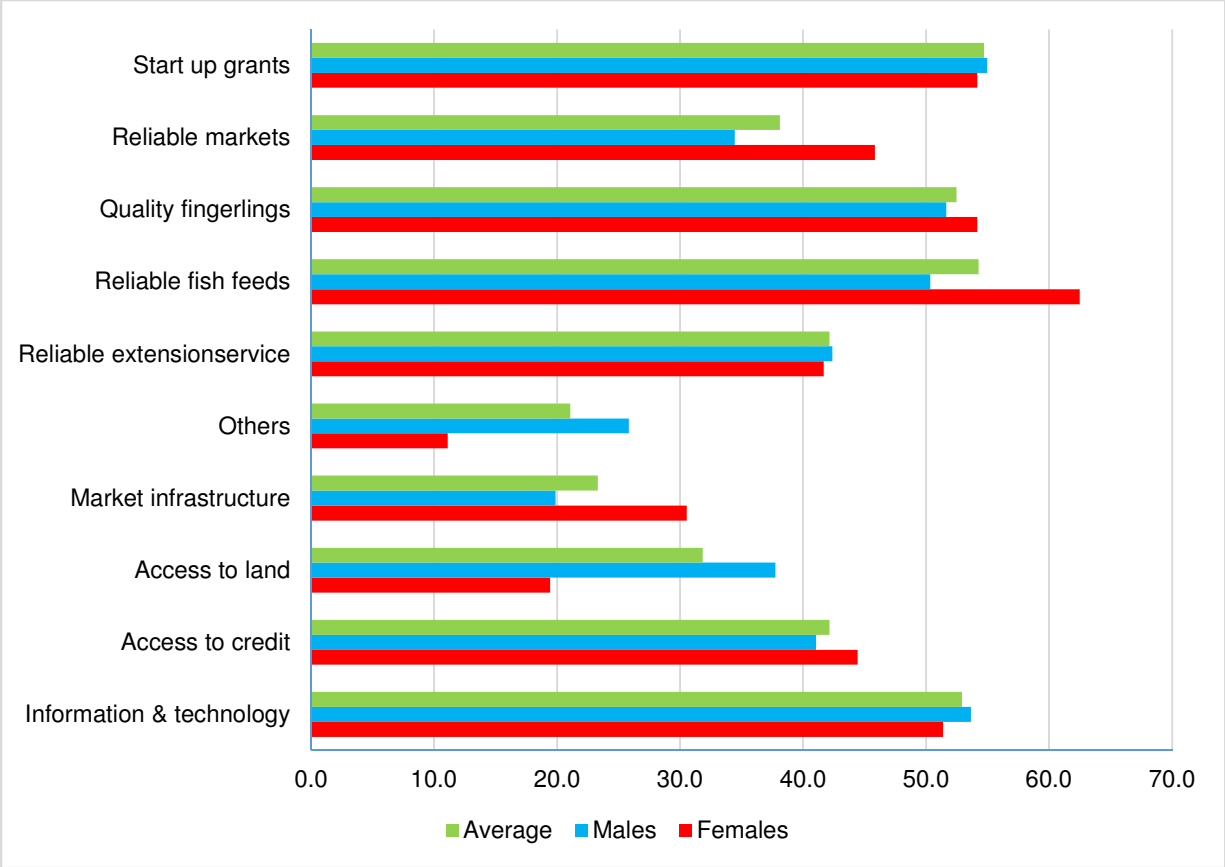


Figure 1: Important elements necessary for profitable engagement in aquaculture by women

4.0 Key gender action plans for KMAP project

4.1 General observations

Analysis of gender issues and dynamics from the contextual operating environment to the aquaculture value chain point to four main issues to be addressed for women to effectively participate in commercial aquaculture. It is emphasized yet again that:

1. Women are already involved and participate in almost all the nodes of the aquaculture value chain though in varying degrees of operations, scale, intensity and success. Women's involvement and participation is much lower than men's in almost all nodes, and has quite some room for improvement.
2. The study did not find any traditional/cultural barriers that would inhibit the participation of women in aquaculture value chain.
3. While aquaculture was introduced to be an income generating and food/nutrition activity, the profitability of the enterprise is open to question in more than 80% of the households. Most fish farmers can be classified as subsistence fish farmers – with very low profit margins if at all.
4. Women reported some benefits from aquaculture, including increased incomes and food. There are very few farmers who have made profits from aquaculture, and this is a great opportunity to promote commercialization or a business oriented venture. Most of the small holder farmers face various challenges, women farmers face disproportionately more challenges than men at all the nodes of the value chain.

To catalyse meaningful participation of women in a commercially oriented aquaculture venture, it is imperative that the bottlenecks women face must be addressed. In addition, one must bare in mind that most fish ponds are owned by households. Therefore, any strategy and activities to promote meaningful participation of women in a market-oriented production system cannot afford to disenfranchise men who own and control most of the production resources. Furthermore, while strategies and activities to promote women's participation and benefits from the aquaculture value chain can be put on paper, actual implementation on the ground will require that staff have some knowledge and skills on gender in aquaculture.

To promote commercial aquaculture, especially among women farmers, focus should be placed on:

- Women need to have pre-requisite technical ability to operate their fish farms. This includes knowledge, especially on the productive nodes of the value chain. Attention should be put on quality of fingerlings used, management of fingerlings, quality and quantity of feeding, pond management including record keeping and appropriate harvesting and handling techniques. Several approaches can be used to improve women's technical know-how and ability in aquaculture; targeted training, women to women training, exposure visits, women led demonstration ponds, provision of technical information, support from local area fish experts, use of ICT to avail information etc.
- Improved access to aquaculture inputs – especially quality fingerlings and feeds, as well as pond management equipment.

- Improved intra-household communication and cooperation (ICC¹), especially between husband and wife for more equitable decision making and sharing of revenues. If men are adequately sensitized to be supportive, and all indications are that most of them are willing to be supportive, women can be a tremendous success in commercial aquaculture.
- Support to structured marketing – this can be achieved through farmer groups and cooperatives, involvement of county governments and fish traders. If possible, facilitation of production/sales contracts between farmers and traders be tried out on a pilot basis.
- Access to capital – through grants or loans is necessary given the relatively heavy investments needed in aquaculture. While commercial loans are largely beyond most farmers, and government funds are difficult to access, the following are proposed:
- Using the One-Acre-Fund model: where interested farmers are signed up, trained and given conditions under which they can access necessary pond inputs over the production cycle on credit. The farmers start monthly repayments for inputs received until they clear the loans. This approach helps farmers reduce the burden of seeking for initial heavy investments because they receive loans for inputs when needed, while repayments are smoothed out over the production period.
- Promote a fish farm inputs savings and loans; fish farmers are encouraged to join small groups (majority of them are in these groups), where they are taught how to save and loan each other with the ultimate aim of having adequate capital to invest in production.
- Because fish take 5-7 months to be ready, one may target to save the entire amount or only the amounts needed for each phase during the production cycle. The International Centre for Research on Women (ICRW) and AGMARK have piloted this approach with great success in western Kenya.
- Some County governments are keen on aquaculture e.g. Kakamega. The project can explore means of partnering with them and pooling resources to establish and manage a fund that women farmers can access and repay. However, this will be wrought with political dynamics that may prove a challenge to implement.
- Continuous technical and monitoring support. While some counties have very active fisheries officers, they are few, ill-equipped and poorly facilitated to give optimal services. A way out is to recruit and build the capacity of community based own resource persons to provide this service. The project can facilitate the village based resource persons and pay them a small stipend. Such persons should be those with own ponds, with gender equality given priority during recruitment.
- Some KMAP staff must have basic knowledge and skills in gender integration, especially for aquaculture. In addition, there must be a gender focal point at KMAP to support the field staff. If need be, KMAP can seek for continuous gender technical support during the implementation period.

¹ ICRW successfully piloted the ICC model in Siaya and Vihiga counties with immediate and significant results. KMAP can apply a similar model.

4.2 Induction training on gender and aquaculture

KMAP staff participated in a two-day gender and aquaculture induction training in Kisumu. The objectives of the training were:

1. Introduce KMAP staff to gender concepts and practice;
2. Share with the staff key findings from the KMPA gender study;
3. Enlighten the staff on key gender issues aquaculture farmers face, and practical options of addressing them; and
4. Based on 3 above, facilitate the staff to develop a draft actionable framework to address some of the gender issues.

The participants were introduced to gender terminologies, concepts and contemporary practice. Buttressed with theory and desk practice sessions on gender analysis, the team reviewed the gender issues contained in the report, isolated key ones within the scope of KMAP project. The team then developed action plans specific to the issues they selected (Table 2). Table 3 below provides a broad summary of possible action points to support the promotion of women in commercial aquaculture as analyzed and developed from the study.

Table 2: Gender Action Plan developed by KMAP Staff

No	Gender Issues	Options to address	Proposed KMAP action	Responsible lead
1	Men own and control most of the land, and also fish ponds. Men make final decisions on siting, size and no of fish ponds, so women are disadvantaged. Few women enrolled in KMAP project	Promote the concept of aquaculture as a joint business, co-owned and co-managed by the household; encourage women to buy or lease land and put up ponds Review criteria for admitting farmers into KMAP with objective of encouraging more women to join	Link up with rights based organizations to support concept of joint ownership or access and control over land KMAP to review and lower the criteria for recruiting women fish pond farmers - (at least 500 -600 sqm) of ponds	Team leader project coordinator
2	Both men and women are engaged but the men are more pre-dominant across all nodes of the value chain	Equally share responsibilities; train all parties in the household; encourage pond designs eg harvesting troughs, sloping edges that make it easy for women	Engage women and men through ICC Enhance opportunities of women to access technical skills and experience to engender their participation	Project Coordinator; Field officers
3	Low literacy levels	Train in local languages; offer practical and demonstrations; illustrations and pictorial trainings - focus on visualization; group the participants according to their levels of understanding; design to train men while targeting women; engage more female trainers and extensionists;	Use of local facilitators who know local languages Use of visualization techniques during training Promote practical - learning by seeing and doing	Project Coordinator; Field officers
4	While both men and women do not have adequate capital to invest in aquaculture, women are disproportionately disadvantaged in accessing capital to invest because of institutional and structural obstacles	Enhance awareness of existing affordable and accessible funds, Encourage VSL (village saving and lending); create revolving fund targeting women; credit input schemes;	Link women farmers to financial institutions Support farmers to write bankable proposals build capacity of farmers to negotiate for credit inputs from credible suppliers Refer/recommend farmers to other organizations/Gok Depts that offer affordable credit Promote progressive investments - 1 pond to 2..and re-investment of revenues in aquaculture	All
5	Women have poor access to quality inputs (fingerlings and feeds)	Strengthen linkages with inputs suppliers and distributors to enhance their reach and physical access to farmers; Facilitate/empower local agrovets to stock aquaculture inputs;	Establish and strengthen win-win linkages with inputs suppliers Link smallholder women farmers to established large scale farmers with inputs supply capacity	All

		Encourage and promote inputs suppliers to invest in extension support and demand creation activities Promote and facilitate self-regulation and monitoring amongst inputs suppliers to ensure quality of inputs	Encourage and facilitate agrodealers in aquaculture dense areas to stock aquaculture inputs Facilitate awareness of and strengthen linkages with inputs suppliers	
6	Sharing incomes from pond activities largely skewed in favor of men	Promote intra-household communications to encourage joint decision making and equitable sharing and planning the use of incomes;		
7	Women have low levels of technical know-how/skills and knowledge on aquaculture	Design innovative capacity building strategies that specifically reach/target women; Allocate a minimum proportion of training slots to women Increased number of trainings to ensure some reach women farmers Design trainings that are localized, if possible non-residential Promote more practical training sessions - ensure distance, location, venue, staffing, timing, mode of facilitation are responsive to needs of women too. Pilot and encourage FFS - model farmers to train	Design innovative hands-on practical training/capacity building sessions that are gender responsive, if possible target women; Ensure attendance criteria do not exclude women - e.g. high fees, distant training venues, many residential trainings, language of training; if possible, use small scale female farmers as demonstration ponds, encourage exchange visits to other female farmers and progressive farmers; Pilot and promote Fish Farm Schools (FFS)	
8	Women lack or have inadequate access to information: Most aquaculture extension officers are men; most mass media gadgets (radios and phones are owned and controlled by men)	Advocate for and Promote the training and hiring of more female extension officers Advocate for and promote Joint sharing of resources e.g. radios during awareness and demand creation events, as well as exhibitions and relevant public fora Advocate for and promote the dissemination of information through mobile phones - sms or twitter	Design an innovative gender responsive communication strategy Target women with IEC materials Promote use of ICT - mobile telephony information e.g. sms, twitter	
9	Decision making is largely under control of men	Promote the concept of intra-household communication and cooperation to encourage participation of men and women in decision making at household level. Create awareness and train women on technical aspects so as to contribute more in decision making;	Seek partnerships to promote ICC	

Table 3: Broad summary of key gender issues, proposed options and proposed activities to actualize the options

Gender Issues/Gap	Proposal	Activities
<p>Women do not have control over land to construct ponds; they have inadequate access to the land.</p>	<p>Sensitization of men and women on benefits of aquaculture to the household and the value of women’s contribution to aquaculture and benefits they would draw. Support the actualization of women land and property rights, and the provisions of the Matrimonial Property Act, 2013 (Cap4).</p>	<ul style="list-style-type: none"> • Encourage intra-household communication and cooperation between men and women for the good of the household on resource (land sharing) and best uses. • Create awareness amongst men and women on land user rights, and the potential of cooperation and partnership to the entire household. • Encourage women to buy, borrow or lease land to construct ponds.
<p>Pond management involves heavy labor for women especially, construction, harvesting and filling in water (from distant water sources).</p>	<p>Promotion of gender responsive approaches and technologies e.g. water pumps and appropriate pond designs. Use of hired labor to construct ponds and harvest fish</p>	<ul style="list-style-type: none"> • Encourage men (spouses and male household members) to support women on taking up certain activities, which can be a physical challenge to women like pond construction. • Promote user friendly technologies to ease the workload e.g. pumps. • Encourage groups to help each other carry out certain pond activities. • Use appropriate designs that reduce drudgery and labor – e.g. appropriate dam designs for ease of harvesting.
<p>Fewer women have access to market and market information</p>	<p>Enhance access to markets and market information.</p>	<ul style="list-style-type: none"> • Support women farmers to organize their harvesting to synchronize supplies and avoid oversupply to markets • Promote culture of contract farming that ensures a market for the farmers • Use of ICT to avail market information to women farmers e.g. on mobile phones (sms, twitter) • Link and collaborate with County governments to improve market infrastructure • Facilitate big producers to support small holders in marketing (agency farming, CSR). • Build capacity of women to price their produce according to agreed/acceptable standards e.g. weighing. • Facilitate the strengthening of farmer groups/cooperatives and support their organizational and institutional capacity to undertake sales and marketing on behalf of the members. • Facilitate farmer groups to access market information through various means (digital or paper based). • Strengthen linkages with county governments and partners to improve market infrastructure (storage, ice making, processing etc.)

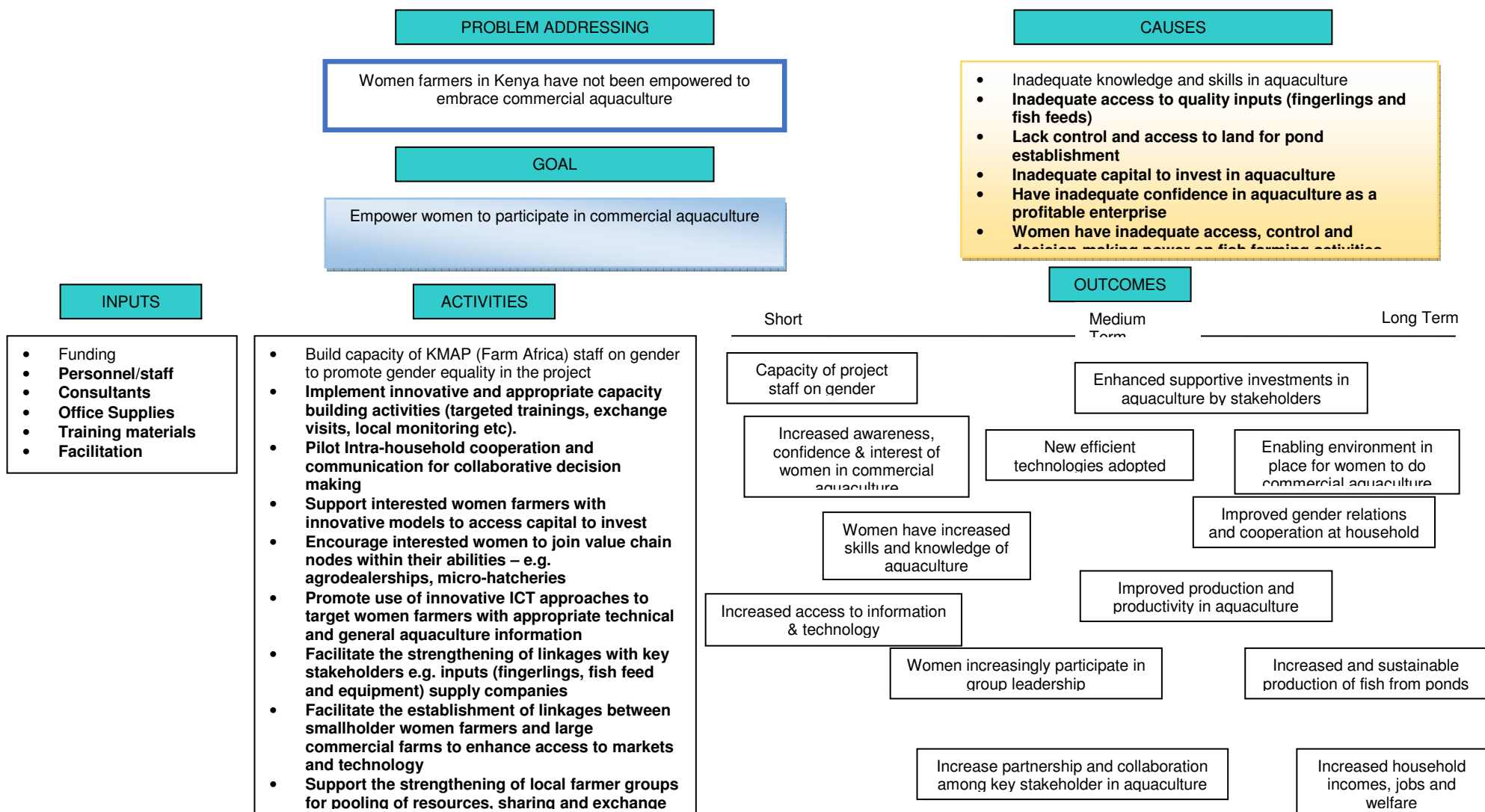
Gender Issues/Gap	Proposal	Activities
<p>Women have inadequate knowledge and skills on aquaculture. Women hardly attend training sessions on aquaculture.</p>	<p>Build the skills and technical know-how of women aquaculture farmers.</p>	<ul style="list-style-type: none"> • Design and implement appropriate technical trainings in aquaculture that women can participate in. (Ensure time, venue, duration, language are appropriate). • Encourage/promote farmer-to-farmer trainings for women aquaculturalists. • Make use of women owned aquaculture farms as demo farms for women to learn from other women. • When need be, make use of women trainers as part of the facilitation teams during training sessions. • As much as possible, use practical training approaches – for women to learn as they do. • Establish community based own resource persons (men and women) to provide on-going technical and monitoring support to the farmers, especially women. • Facilitate the inclusion of women to participate in (aquaculture) shows/exhibitions. • Allocate/reserve quotas (30-50%) for women to participate in conferences, trainings, seminars, education tours. • Facilitate women to access information, knowledge and technologies through their groups and use of ICT (e.g. mobile phones (twitter, sms, WhatsApp)). • Use well trained trainers to work with women farmers – avoid conflicting information and approaches. • Farm Africa staffs should be trained on gender to gain basic gender knowledge before conducting trainings with farmers. • Sensitize men on the need to allow their spouses time to attend and participate in trainings.
<p>Women do not have adequate access to quality pond inputs (feeds, fingerlings and equipment) due to long distances, unavailability of the inputs or high costs of the inputs</p>	<p>Formulate practical strategies to enhance access to the inputs by women.</p>	<ul style="list-style-type: none"> • Pilot the One-Acre Fund loan model • Pilot the Fish Farm Inputs Savings and loan models • Linkage with commercial farmers to support smallholder out grower farms on contracts • Encourage agrodealers to stock aquaculture inputs and equipment, train them on these inputs • Support strengthening of fish farmer groups to jointly access farm inputs • Encourage women (in their groups) to access Government run funds e.g. WEF, YEF etc. • Link up with County Governments to support farmers access inputs
<p>Many women have low confidence in</p>	<p>Empower women through exposure, capacity building and</p>	<ul style="list-style-type: none"> • Expose the doubtful women farmers to successful counterparts through exchange visits.

Gender Issues/Gap	Proposal	Activities
aquaculture (they assume it is an activity for men)	supporting their aquaculture businesses	<ul style="list-style-type: none"> • Conduct appropriate training (knowledge and skills) as indicated earlier. • Facilitate women to access inputs and markets • Identify role model farmers to mentor and support willing female farmers. • Facilitate the establishment of reward schemes to motivate women farmers. • If taken on board, community own resources persons can play a great role in monitoring and supporting women farmers in their journey of fish farming. • Facilitate women to women sharing of knowledge and experiences (groups meet and share/exchange). • Avail video shows of successful women aquaculturalists • Encourage women to take part in different nodes of the aquaculture value chain where they are most comfortable (e.g. sales and marketing).
Women have inadequate access, control and decision-making power on fish farming activities, especially incomes.	Promote intra-household communication and cooperation on their income generating activities.	<ul style="list-style-type: none"> • Hold sessions and conversations with farming households and impress upon them the actual benefits of cooperation and sharing –resources and benefits. • Work with successful households as role models to encourage the culture of communication and cooperation within households. • Encourage men to support their spouses in the farming business – by sharing access and control over decision-making and benefits. • Encourage record keeping on the farm activities, including expenditure, production and incomes to promote openness and accountability. • In groups and cooperatives, encourage co-registration of men and women as members.
Women have limited access to credit to invest in aquaculture (availability, tough credit conditions, inadequate collateral)	Facilitate gender responsive innovative financial products.	<ul style="list-style-type: none"> • Work with partners to develop women friendly credit products. • Facilitate women to have access to information on available credit products so that they can choose from a rich menu. • Include lessons/topics on access to credit during training sessions. • Explore possibility of using One-Acre fund credit model. • Explore possibility of promoting Farm Inputs Savings and Loans Model. • Explore use of cooperatives to give farmer friendly loans. • Encourage women to access funds from Women Enterprise Fund (WEF), Youth Enterprise Fund, and Devolved government loans/funds. • Establish and strengthen linkages with other stakeholders providing appropriate (affordable and accessible) innovative finance.
Low participation of women in fish farming groups.	Sensitize fish farmers to join farming groups.	<ul style="list-style-type: none"> • Work with local agents e.g. community own resource persons and Ministry Agriculture (fisheries staff) to encourage increased membership and participation of women in fish farm organizations (groups and cooperatives.) • Work with stakeholders to ensure actualization of 2/3 rule in fish farm organizations (e.g. women to get more involved in management positions, not

Gender Issues/Gap	Proposal	Activities
		<ul style="list-style-type: none"> treasurer only). Support capacity building of women officials in fish farm organizations.
<p>Low staff capacity on understanding of gender equality and related dynamics in aquaculture.</p>	<p>Enhance the capacities of staff and farmers on gender equality.</p>	<ul style="list-style-type: none"> Staff working in project to be trained on gender to gain basic knowledge on gender equality in aquaculture. Work towards addressing the gender issues identified, and which will emerge during project implementation. When need be, encourage the recruitment of women as part of the field staff for the project.
<p>Women lack awareness on how to become fish farmers</p>	<p>Empower them through appropriate information, knowledge and skills.</p>	<ul style="list-style-type: none"> Develop mass media programs that target the promotion of women to be fish farmers. Encourage potential female fish farmers to attend and participate in training. Encourage potential female fish farmers to visit and learn from successful fish farmers and relevant Ministry of Agriculture (fisheries department) officers. Team up with other partners whose objective is to support through grants, and refer interested farmers to them for start-up support. Review KMAP farmer selection criteria to take up female fish farmers with 2 ponds (600m²). Encourage such women participate in other nodes of the aquaculture value chain as start, before venturing into fish farming.

5.0 Gender responsive monitoring and evaluation for KMAP

5.1 Logic model



6.0 Gender responsive indicators

Text Box 4 gives a short definition of gender responsive indicators. These indicators improve planning and programming.

Text Box 4: Definition of gender responsive indicators

A gender responsive (gender sensitive or gender indicator) measures changes relating to gender equality over time and can be quantitative or qualitative (in which case one can use an index). These indicators can be based on sex disaggregated data, which can be measured separately for men and women

The indicators proposed for KMAP project have been selected to focus on the possible outcomes of the proposed gender action plans.

Table 4: Draft outcome indicators for proposed gender action plan

Proposed outcome	Indicator	Definition
Project staff have improved capacity on Gender	Increase in number and sex of staff able to integrate gender in their work	Staff who are confident they have skills and knowledge to apply gender lens in their work Staff actively applying gender knowledge in their work
Women have increased awareness, confidence and interest in commercial aquaculture	Increase in number of women actively engaged in commercial aquaculture value chain	Number of women undertaking defined activities in various nodes of aquaculture with a commercial orientation – e.g. produce or sell inputs (fingerlings or feed), managing ponds, research,
Women skills and knowledge of aquaculture improved	Increase in number and quality of improved technologies that women have adopted in aquaculture	The number of women whose skills and knowledge in various aspects of aquaculture have improved Nature and types of new skills women using in aquaculture
New efficient aquaculture technologies adopted	Change in number and type of new technologies women farmers adopt in aquaculture	Number and type of new technologies and number of women adopting them
Gender relations at home have improved	Increase in number of men and women collaborating and working together on their aquaculture	Number of men and women reporting increased consultations, communication and cooperation in decision making on aquaculture activities
Women farmers have improved access to inputs	Increase in number of women using quality aquaculture inputs. Quantity of quality fingerlings fish farmers have bought (per month disaggregated by sex) Quantity (numbers) of quality fish feed fish farmers have bought (per month	Number of women using quality fingerlings, fish feeds and equipment in their ponds

Proposed outcome	Indicator	Definition
	disaggregated by sex)	
Strengthened linkages between and among key stakeholders	Increase in contacts, collaboration and partnerships between and among stakeholders	Number of stakeholders reporting improved working relations, partnerships and collaboration between and among themselves
Stakeholders enhance investments in aquaculture	Increase in number and type of stakeholders, and number type of investments stakeholders make	The number of stakeholders reporting investments they make in the value chain that support aquaculture e.g. markets, feed manufacturers, training, technical support to small holders etc.
Enabling environment for women to invest in and practice commercial aquaculture	Nature and types of gender responsive policies formulated and implemented to support women in aquaculture	Policies enacted to support women farmers to access land, inputs, markets and share incomes from aquaculture
Improved production and productivity in aquaculture	Number of men and women reporting increased production and productivity from their ponds Increase in yields (kg/m2/ year) of fish (disaggregated by sex) Feed conversion ration of fish farm enterprises (disaggregated by sex)	Number of men and women reporting Increased yields of fish and fingerlings from their ponds over time
Increased sharing of aquaculture incomes at home	Increase in proportion of incomes that women farmers access from aquaculture	Number of women reporting improved access to a share of incomes from the ponds Number of women reporting increased participation in decision making on sharing and use of revenues with their spouses
Farmers practicing sustainable aquaculture	Increase in number of farmers (men and women) adopting sustainable aquaculture practices	Sustainability in terms of conserving the environment, especially water sources, appropriate design of ponds, harvesting techniques etc
Improved household incomes and welfare	Increase in number of households reporting increased incomes or jobs from aquaculture Quantity of fish sold per farm enterprise per year (disaggregated by sex) Value of fish sold per fish per farm enterprise per year (disaggregated by sex) Gross margin of fish farm operations (%) per fish farm enterprise (disaggregated by sex)	The number of households whose incomes have increased from aquaculture, the change in incomes, number of jobs created, amounts of monies paid, and types of expenditure used on the incomes Measures income from fish sold by sex of pond owner per year Gross margin calculations (inputs vs outputs)

Proposed outcome	Indicator	Definition
Women have improved access to aquaculture information and technologies	Number of women accessing new/relevant aquaculture information Number of women applying improved aquaculture technologies (e.g. aeration kits developed by Larive)	
Fish farmers have increased access to markets and market	Number of fish farmers able to sell all their fish produce by quantity and price for each harvest (disaggregated by sex) Number and type of market information that fish farmers (number of farmers by sex) access in a production cycle	
Improved participation in group activities and leadership by women	Increased number of women enrolled and actively participating in groups Number of women occupying meaningful leadership positions in group Perception of fish farmers (disaggregated by sex) on the performance and benefits of the group	Number of women members participating in aquaculture groups Number of women in influential leadership positions e.g. chairman, secretary or coordinators
Improved OCAT score	OCAT scores for fish farm enterprises (disaggregated by sex of owner)	

7.0 General Conclusions and Recommendations

7.1 Conclusions

Study finds that both women and men are involved in, participate in and benefit from aquaculture. However, the involvement, participation and especially benefits is not always equitable between the gender – basically because men have greater access to and control over resources and decision making. In general, most respondents consider that the ponds in their homes belong to the household, and not any specific gender.

1. However, the study also found that activities like pond construction and fish harvesting are mostly done by men (although women often participate). Women actively participate in feeding, processing and selling fish.
2. There are no traditional or cultural practices that bar women from engaging in any node or part of the aquaculture value chain. Women are free to invest in and participate in any node of the value chain. However, men own land on which ponds are situated; often, women have to seek their blessings to access land to construct ponds.
3. While women certainly have many chores both productive and reproductive, almost all women the team interacted with were firm in their ability to plan well and optimize on their time allocations for various duties, including profitable ventures like fish farming.
4. More than 90% of the respondents interviewed (quantitative and qualitative surveys) cannot be classified as commercially oriented. The operations are small in size and scope, husbandry is poor or wanting, and the yields are rather low. They can be termed as subsistence fish farmers, which is greatly at variance with the initial objective for which the fish ponds were introduced by the ESP.
5. Most of the fish ponds in operation or idle were constructed through the ESP. More than 70% of them are currently dormant. Most farmers cannot access inputs like quality fingerlings and fish feeds. The free inputs received from the GoK during ESP engrained a culture of dependence. Most farmers' mind-set is tuned to waiting for the next set of free inputs from the government.
6. The ESP project massively succeeded in catalysing interest in aquaculture, and many farmers are keen to continue with fish farming. This interest is a huge opportunity for new projects to build on. While the ESP was a gender blind project, lessons from the ESP clearly show the need for integrating gender in the programs.
7. Effective integration of gender into KMAP is contingent upon the project staff having some basics of 'how to' in gender. However, most of the staff do not have the skills and grounding in gender to effectively integrate gender in their activities.
8. The main obstacles women face to effectively engage in commercial aquaculture are inadequate access to capital (savings, grants and credit), low technical skills and experience in aquaculture, and difficulties in accessing quality fingerlings and feeds. While fish-production from ponds may seem easy on paper, it is a highly technical process that needs good science, skills, art and guile for one to succeed and make profits.

9. There are several opportunities and entry points for women to be commercially involved in aquaculture – and at all nodes of the value chain. The low-lying fruits include pond husbandry/management, processing, marketing and selling fish. Women can also participate in other nodes of the value chain, including research, extension, agrodealerships and commercial marketing.
10. Linkages between key actors and stakeholders were largely weak, and have potential to be strengthened to create synergy.
11. While both men and women belonged to fish farming groups and cooperatives, women's membership numbers and participation in leadership was low.

7.2 Recommendations

1. Integrating gender in any program requires that staff involved must have a basic understanding of gender, and the 'how to' of practical integration. The starting point is to have all the project staff undergo an inception workshop on gender in aquaculture, with practical sessions of integrating gender. In addition, interested staff should delve a little deeper in understanding gender. However, such short courses do not make one a gender expert, and it is hereby recommended that the project seeks for Technical Assistance wherever the need arises. The induction training should target all project staff, and if possible, the entire staff of Farm Africa – integrating gender successfully requires that all staff are on the same page, and that there should be a focal point on who gender issues are addressed, and who can galvanise the rest of the staff to address gender issues in the project.
2. The report has identified some entry points for effective promotion of women to participate in commercial aquaculture. To address some of the critical constraints, the following recommendations should be tried out;
 - a. Use innovative approaches to enhance the technical competence of women in aquaculture. Examples include appropriate capacity building/empowerment activities e.g. targeted training of interested women in aquaculture. Issues of time, venue, duration, language and practical sessions should be borne in mind as the trainings as carried out.
 - b. Ensure that men are not disenfranchised. The project should hold conversations with men using the intra-household cooperation and communication approach to enhance men's agreement and partnership.
 - c. Pilot micro-production technologies e.g. in raising fingerlings. Women farmers can be trained to raise fingerlings in backyard tanks – as long as they have adequate sources of water. In addition to tanks, the project can explore the use of small cage nets in specific parts of the ponds for women to produce fingerlings in an intensive system. The project can also explore and pilot other small-sized intensive and high-return technologies suitable for women.

3. Pilot innovative finance approaches to support women to access fishpond inputs. We propose the use of One-Acre-Fund Model, where women farmers are given credit (usually inputs in kind) on a needs basis, and they pay back in instalments every month during the production cycle. A second approach, which is not mutually exclusive from the first approach, is a Fish-farm inputs savings and loans model. In this model, farmers (majority already belong to women only or mixed groups) are encouraged to start saving money for purchase of inputs. They can borrow money as they save and repay it with interest. When they require inputs, they can purchase them in bulk (get economies of scale) together, and distribute to each member based on their contributions. Because fish production requires a once off input for fingerlings and a continuous supply of quality feeds, this is a practical model with great potential for aquaculture.
4. Women farmers require continuous support, monitoring and information to enhance efficiency and productivity of their enterprises. Support from the Department of Fisheries may not be adequate. We propose the following:
 - a. The project to hire community own resources persons, build their capacities and facilitate them to interact with the selected and interested women fish farmers. The project may pay them a stipend. All such resource persons should already be fish farmers. The project should also pick enterprising women as part of the team.
 - b. The project should support or facilitate the establishment of demo-plots among up-coming farmers. It is critical that demo plots should avoid farmers who are well established and operating at a very intensive scale. Priority should be given to middle level farms that are doing well, and if possible, some that are run by women should be selected.
 - c. Facilitate exchange visits to well-run established farms for local women farmers to learn and get exposed to what they should aspire for. The project should encourage interested farmers to pay full or partial costs for such exchange tours.
 - d. Encourage farmer-to-farmer learning. Project should identify promising farmers willing to share their experiences with other farmers, and encourage farmer to farmer learning.
 - e. Many farmers have mobile phones – the project should facilitate the design of an appropriate text message service or use twitter to spread important aquaculture messages to the farmers.
 - f. If need be, establish linkages and work with fisheries officers based in the field, with facilitation and motivation costs.
 - g. Use fish farm groups and cooperatives to reach many farmers for training, information, sharing information and learning, and joint activities.
5. Strengthen linkages with other stakeholders e.g. fish feed manufacturers, fingerling producers, feed and equipment stockists/distributors, technical service providers, action researchers, fish markets/traders, funding institutions (WEF, YEF), policy makers (Ministry of Agriculture) and the County Governments.
6. Support the strengthening of fish farmer groups/organizations, with specify focus on women's active and effective participation in group activities including leadership.
7. Pilot and promote an 'out-grower' fish production system, where commercial farms partner with and sub-contract smallholder farmers to produce fish on contracts. Ensure that women are part and parcel of the contract to guarantee women get paid as well.