Aquaculture: A Tool for Sustainable Development in Uganda.

A Case study of Kigoowa Catholic Women's Development Association in Kampala District.

By Kellen Aganyira

Masters thesis in Development Studies,

Specializing in Geography

Submitted to the Department of Geography,

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Spring 2005, Trondheim-Norway.

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Abstract

Global aquaculture production has grown rapidly and is now among the fastest growing food production sectors in many countries. Introduced over the past 50 years or so, aquaculture in Africa has gone through different levels of growth. The desirability of aquaculture has been due to unreliable and unsustainable use of natural waters for capture fisheries. Due to the country's concern, the government of Uganda has promoted aquaculture before for nutritional values. However, current policy initiatives that call for collective actions are geared towards commercial aquaculture development.

This work focuses on several aspects of aquaculture development in Uganda viz; past, present and future, potential, reared fish species, benefits, constraints and these are reflected in the policy and institutional arrangements with in the sector. This work has been undertaken with the aim of providing in detail the possible ways and means for sustainable utilization of aquaculture outcomes. Emphasis has been on how members of Kigoowa Catholic Women's Development Association (KCWDA) have been empowered through group formation and aquaculture activities.

This work also analyses the dynamic gender relations that exist in resource ownership, access and use in Uganda and the implications thereof to aquaculture growth and expansion. Included are the possible options vulnerable people especially women undertake to sustain their livelihoods and those of their families and the community as a whole.

The information in this work is discussed in line with the Sustainable Livelihoods Framework. It therefore aims at providing an additional reference text on the subject and in the context of aquaculture. Details about certain concepts, policies and principles, nature of the sector and supportive literature on various issues are discussed.

Acknowledgement

Let me take this opportunity to express my heartfelt gratitude to all those that supported me from the start of this thesis until the last minute. Surely, with out your contributions, this research would be a nightmare. So I say thank you to;

My supervisor, Associate Professor Haakon Lein for his advice and thoughtful contributions towards the accomplishment of this thesis. I must admit that with his guidance, writing this work was made much easier.

The Department of Geography and particularly the Master's Course Coordinator Professor Ragnhild Lund and the Student Assistant Markus Steen for their timely advice and encouragement.

The members of Kigoowa Catholic Women's Development Association. In a special way I thank the women of Kigoowa for accepting me into their group meetings and for providing all the necessary information needed for this research. Special thanks to the project coordinator, Rev. Fr Joseph Lubega.

The Officials in both private and government departments in Uganda. To the staff of UFFCA, I am grateful for allowing one of your colleagues Mr. Patrick Omaka to work with me during my fieldwork and all the information you rendered. I also acknowledge the support got from the Department of Fisheries Resources-Entebbe and the Aquaculture Research Institute at Kajjansi. Thank you for the reports you provided.

My fellow course mates who were supportive as we struggled together. I particularly wish to acknowledge Sanyu, Peninnah, Deccy and Ephraim for reading through my work and advising accordingly. To my family members, friends and relatives both in Uganda and in Norway thank you for the moral support.

Finally, the Quota Programme Scheme under the Norwegian State Education Loan Fund for the scholarship awarded for my Masters course. I say *"Jag takknemlig"*.

Dedication

I dedicate this thesis to my loving parents; Mrs. V.L.T Byesigirwoha and the late Mr. F.X Byesigirwoha. .

Declaration

I hereby declare that this is my original work and has not been produced else where for the award of a Masters in Development Studies, specializing in Geography. Where other people's ideas have been used, they have duly been acknowledged. .

List of Abbreviations

CBO	Community Based Organization
DFID	Department of International Development, UK
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FARMESA	Farm-level applied Research Methods for East and Southern Africa
FDI	Foreign Direct Investment
FIRI	Fisheries Research Institute
GDP	Gross Domestic Product
GEF	Global Environment Facility
GoU	Government of Uganda
IFAD	International Fund for Agricultural Development
KARDC	Kajjansi Aquaculture Research and Development Center
KCWDA	Kigoowa Catholic Women's Development Association
LVFRP	Lake Victoria Fisheries Research Project
MAAIF	Ministry of Agriculture Animal Industry and Fisheries
MFPED	Ministry of Finance Planning and Economic Development
MGLSD	Ministry of Gender, Labor and Social Development
NAADS	National Agriculture Advisory Services
NARO	National Agricultural Research Organization
n.d	not dated reports
NEAP	National Environmental Action Plan
NEMA	National Environment Management Authority
NFP	National Fisheries Policy
NGO	Non-governmental Organization
NRM	National Resistance Movement
PEAP	Poverty Eradication Action Plan
PMA	Plan for Modernization of Agriculture
PPA1	Participatory Poverty Assessment 1
SAP	Structural Adjustment Programmes
SLA	Sustainable Livelihoods Approach
UFFCA	Uganda Fisheries and Fish Conservation Association
UNDP	United Nations Development Programme
UBOS	Uganda Bureau of Statistics
USAID	United States Agency for International Development

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CHAPTER ONE: INTRODUCTION

1.1 Introduction

Aquaculture is the science, art and business of farming or cultivating fish under controlled conditions. For statistical reasons, FAO defines aquaculture as "the farming of aquatic organisms, including fish, crustaceans, molluscs and aquatic plants" in Halwart et al (2000). Aquaculture has been referred to as "alternative agriculture" but this does not suggest that it is a new activity. The farming and husbandry of fresh water and marine organisms has been practiced for centuries. Oyster culture in ancient Rome and Carp reared in ponds in China during the 5th century B.C have been documented, Dan (2001). There has been an increase in the production of world fisheries, but wild stocks of aquatic organisms are still limited. Ecological theory suggests that we have already reached a maximum sustainable yield for many aquatic wild populations. The survival of wild fish populations is today threatened by over fishing or is caught in ways that are environmentally undesirable. Therefore, in order to meet the demand for dietary protein in the world, aquaculture makes a significant impact. Methods to farm organisms have been developed and, since the technologies are sustainable, farmed products can supplement the decreasing wild supply.

Aquaculture has the potential of producing large quantities of lower-cost, protein rich food and this has been done in many parts of the orient, but else where, applied scientific, technological and managerial skills need to be improved if aquaculture is to assume importance. Coche (1998) further stresses that aquaculture can potentially contribute to the livelihoods of the rural poor because it generates food of high value, especially for the vulnerable groups such as pregnant and lactating women, infants and pre-school children. Aquaculture therefore is the most important source of growth in fish supply for human consumption, McGoodwin (1990) in Bailey et al (1996)

Aquaculture is not only a source of food but is important for recreation (sport fishing); foreign exchange when cultivated on a large scale and the propagation of ornamental fish

constitutes an important industry in some parts of the world. Therefore the future looks bright for any one considering aquaculture as a new enterprise.

According to Dan (2001), the World Resources for 2000-2001 indicates that 25% of the world's fish stocks are over harvested and another 44% are "at the edge of what can be maintained". FAO further points out that the overall decline was offset by continued increase in aquaculture production, which topped 30 million metric tons, representing almost a three-fold increase in the past ten years (1988-1998). The same report suggests that the average world consumption of fish will increase from 16kg per person per year to approximately 19-20kg by 2030. Considering population growth, this would mean increasing total food use of fish to 150-160 million metric tons. Estimates have been that nearly 40% of all fish culture in the world has been exported. In 1996, almost 200 countries exported part of their production.

Aquaculture is growing at a much faster rate in developing countries than in developed countries. The FAO states that from 1990-1996, developing countries grew in aquaculture production at an average of 16.7%; where as advanced economies grew at an average of only 2.9%. Aquaculture is a relatively new and underdeveloped farming practice compared to agriculture and animal husbandry, even in many parts of Asia. Its positive social and environmental attributes make it an attractive entry point to improve the livelihoods of the poor in rural development programmes, Edwards (2000). For aquaculture to make greater contributions to rural development, policy implications like targeting the poor and associating them at least initially with public sector support are very important although aquaculture has to function on a self-financing basis with in the private sector.

In Africa, fish culture was first introduced over 50 years ago and today Nigeria is the leading producer followed by Madagascar and Zambia respectively. According to Coche (1998), the activity is estimated to be 95% small scale, with fish ponds integrated into the mosaic of agricultural activities. This is because currently most fishery enhancement activities in Africa are generally private initiatives, either at village level or at farm level. However fish consumption has been decreasing as supply decreases relative to a growing population: from 9kg per person in 1990 to 6kg per person as per year 2001 (Machena

and Moehl 2001). Resource limitations also mean that marine stocks can not be relied upon to meet the nutritional needs of an expanding human population for high-quality and affordable animal protein, in Bailey et al (1996).

The potential of aquaculture to meet nutritional needs and provide employment and income opportunities for producers has attracted significant attention from researchers and policy makers in both industrialized and non-industrialized nations (Ibid). Ruddle (1996) asserts that government's role in aquaculture development lies in issues of fish farming policy, funding, extension and provision of physical structure and equipment.

The attributes of Sub-Saharan Africa include underutilized water and land resources, available inexpensive labor, high demand for fish and a climate that favors a year round growing period. In some countries the integration of fish farming with agriculture has produced high yields through reciprocating systems including gardening, livestock and fish ponds. The focal point in such farming is the pond, which is essential to the other activities for water supply. Wastes from gardening serve compost to the ponds. It is documented by Goppers and Miller (1989) that, where pigs are raised in association with fish ponds, production exceeds 10 tons per hectare per year. However, the optimal use of these resources has frequently been curtailed by poor infrastructure and lack of production inputs. The potential for expansion is nevertheless considerable, but requires several enabling factors that include; a positive perception of aquaculture, sound policies at the national level, strong public institutions, availability of input nutrients, favorable investment policies to attract increased private sector participation and access to credit for commercial scale enterprises (Machena and Moehl 2001).

Careful planning is necessary to guide future aquaculture development and ensure that available resources are well used. Small scale aquaculture needs to be developed such that it fits as an agricultural component of a broader farming system and not as a secluded technology where communities will see it as a separate or added risk venture.
Socio-economic research approaches to aquaculture need to be given high priority and focus on techniques that allow the full participation of communities in the identification, analysis and evaluation of projects.

There's need to facilitate the participation of NGO's since they play a major role in empowerment of different groups of people like women, while the private sector has a key role in the production of fingerlings, feeds and purposes of monitoring , evaluating performance of the sector as well as marketing and providing extension support. The often- repeated Chinese saying *"Give a man fish and you have fed him for a day, teach him to breed and catch fish and you have fed him for a life time"* is relevant for this study because fish farming has a significant role in one's livelihood.

1.2 Statement of the Problem

Uganda like other developing countries depends on agriculture for food and foreign exchange with coffee as the major export earner. The country has, however for the last four years has suffered from a major slump in the world coffee prices thus there is a need to widen, strengthen and diversify her export base. Recognizing the need to develop an export strategy, the GoU (Government of Uganda) in September 2001 issued a report "Government interventions to promote production, processing and marketing of selected strategic export" MFPED (2001) and attention was directed to a range of government's interventions of which fishing was identified in addition to other six agriculture related sub-sectors.

In 1996, fresh water fisheries generated close to U.S $50million in exports to the major markets of EU, Australia and South East Asia. Currently fisheries contribute almost 20% of Uganda's total export earnings. Although the trend in demand for Uganda's fish has been increasing, over exploitation and contamination of fisheries resources limit export potential and expansion. Further more, population pressure from agriculture and industry are having an impact on water resources thus need to have an alternative- aquaculture[1]. Fish farming has excellent potential in Uganda although there's presently lack of research and experience thus a justification for my study.

Fisheries industry is one of the thriving sectors in Uganda with a national average consumption of 10kg of fish per person per year. However, there's a continual problem of over fishing in lakes and rivers. Uganda's fishing industry employs about 300,000 people

[1] Aquaculture (or Fish farming) as used in this report refers to the rearing of fish in a pond under controlled conditions with clear ownership. From The Fish (Aquaculture) Rules, 2003 by Government of Uganda.

with 1.2 million people directly dependent on the industry as their main source of income. According to the 'Economic Policy Research Bulletin' published by Makerere University, 80% of Ugandans suffer from "some form of malnutrition" and this is partly due to low fish protein dietary in-take, Matsamura (2004)[2]. Another survey released by the Uganda Bureau of Statistics (UBOS), states that 39% of children-less than six years of age are stunted.

About 90% of Uganda's population depends on agriculture. Fish catch is estimated at only 250,000 metric tones annually and this is not enough for the population that grows at a 3.4% per annum (ibid). In 1991, the country's population was 16 million people; this had increased to 24.7 million people in 2002. A recent report by Nakaweesi (2005) estimated that the population will be 32 million in ten years time and is expected to hit 100 million people by the year 2050 if the current high fertility rate is not reduced says Amanda Ellis, a World Bank consultant in Uganda. To feed this kind of population, something needs to be done with the current fish production; either import fish or increase its productivity locally (Matsamura 2004). On the other hand, aquaculture production contributes only a modest portion of the national fish supply (6%), however in the northern parts of the country production levels go up to 13% (NARO and MAAIF, 2000).

MAAIF (2004) estimated Uganda's growth in aquaculture at over 200% as the private sector and the middle class is on high market demand for food fish domestically, regionally and internationally. MAAIF further estimated that aquaculture industry will grow from an estimated 2,000 tones annual production to 100,000 tones in the next ten years. The industry is then expected to stabilize and guarantee development and employment as a profitable science based enterprise to utilize marginal lands in the country and offer capital intensive fish farming systems in urban areas that is market driven.

The government's fishing policy is therefore to help properly manage fish harvesting, reduce post harvest loses and develop fish farming. The Plan for Modernization of

[2] http://www.ipsnews.net/interna.asp?idnews=23333 15.10.2004

Agriculture (PMA) developed a key pillar of Poverty Eradication Action Plan (PEAP) with aims of eradicating poverty by improving natural resource base livelihoods of the rural poor in a sustainable manner (MFPED 2001). Fish culture is one of the alternative activities to be integrated in rural activities.

1.3 Objectives of the Study

The general aim of this study was to assess the socio-economic roles of fish farming in the livelihoods of women in Kigoowa village.
More specifically, the study set out:

- To identify potential for fish farming in Uganda.
- To explore the challenges faced by fish farmers in Uganda and particularly women fish farmers of Kigoowa.
- To assess government's policies and plans for the sub-sector in relation to farmers.

The study therefore set out to answer the following research questions:

(i) What motivates people to start or join fish farming?
(ii) In what ways have women benefited from Kigoowa Catholic Women's Development Association (KCWDA) and fish farming activities?
(iii) What do fish farmers and non-fish farmers consider to be set backs in the aquaculture sub-sector?
(iv) Are the present policies efficient in promoting aquaculture activities? And what do they say about women?
(v) What role does the government and the private sector (specifically NGO's) play towards the development fish farming?
(vi) What do women consider to be important issues if their fish farming activities are to be sustainable?

1.4 Scope and Review of the Study

The study was conducted amongst a women's Community Based Organization and throughout this whole thesis, it is referred to as Kigoowa Catholic Women's Development Association (KCWDA). Like many other women's groups in Uganda,

KCWDA has the mandate of empowering women and subsequently other marginalized people in the locality. It was established on the ground of a religious affiliation (Catholic) although it is not limited to only women that belong to this religion. The offices and meeting point is at the premises of Kigoowa Catholic Parish in Ntinda, Kampala. And much of the support in terms of resources or assets is extended by the church and this has several implications as explained in the next chapters.

The study is based on qualitative research approaches. Interviews, group discussions and observations were necessary in understanding how activities in the informal sector (for instance fish farming) sustain women's livelihoods and the general benefits accruing from the group activities. Initial access into the group members was not quite easy but through the pilot study that was done with the help of a research assistant, entry became much easier. Informal meetings with the project coordinator and women members were very crucial in answering many of the research questions.

Visits to the neighboring Wakiso district were very helpful. Government officials both at Kajjansi Aquaculture Research and Development Center (KARDC) and the Department of Fisheries Resources in Entebbe were helpful in availing secondary data. In fact most of the information discussed in chapters four and five is based on the analysis of policy papers and reports that were accessed during field work.

1.5 Organization of the Study

Chapter One presents the general introduction on aquaculture, statement of the problem, objectives of the study and research questions.

Chapter Two highlights the theoretical and conceptual framework for the study. Modernization, alternative development theories as well as the perspectives of women and development are discussed in this section as they relate to design of policy and development strategies in Uganda. The Sustainable Livelihoods Approach (SLA) is discussed as an analytical model thereafter.

Chapter Three is about the research methodology. It systematically explains how primary and secondary data was collected, analyzed and presented. The chapter also gives a description of Kampala district, where the study area is found.

Chapter Four discusses the general information about Uganda that is; a broader view of the study area. Geographical and socio-economic characteristics of Uganda as well as gender and resource use issues are presented to provide a background for discussing the empirical data in the later chapters.

Chapter Five discusses the aquaculture sector in the country. It starts by highlighting its performance both in the colonial and post colonial periods. Information about its potential, external support and constraints are discussed thereof. Then the chapter finally explores the role of stakeholders in aquaculture development.

Chapter Six identifies and discusses implications of government policies and especially those that relate to fish farming. Uganda's Plan for modernization of Agriculture (PMA), the Fisheries and Aquaculture Polices and rules as well as the Gender policy are highlighted as they relate to the major national policy of Poverty Eradication Action Plan (PEAP).

Chapter Seven forms the main discussion of the study and much of the information presented here is from primary data sources. The chapter basically discusses KCWDA and aquaculture as one of the secondary activities women engage in alongside their everyday activities. The role of fish farming and the CBO in women's livelihoods are explored. Constraints to the group activities are discussed in the chapter.

Finally Chapter Eight forms the summary of the study in form of conclusive remarks and recommendations from farmers, officials and my own.

CHAPTER TWO: THEORETICAL FRAMEWORK AND CONCEPTS

2.1 Introduction

It is well known that every research is based on the assumption that explanation is not dependent on immediate data and so I present the theoretical basis and analytical framework of my study in this chapter. I start by presenting development theories of modernization and alternative development and the concept of sustainable development. The general views on how feminist geography and perspectives of women and development have emerged and changed over time are explored. The Women in Development (WID), Women and Development (WAD) and Gender and Development (GAD) as well as the concept of women's empowerment are presented in this chapter to help understand how women of KCWDA in Uganda are incorporated into the development process. The Sustainable Livelihoods Approach (SLA) is presented as the last part of this chapter and its framework has been used in operationalizing my study findings.

2.2 Development Theories

2.2.1 Modernization and Development

Modernization as a way of development can be traced from the first half of the 20th century in the history of western-industrialized countries. Modernization became in reality an economic development theory. It was taken generally that for third world countries to develop; they had to follow the same stages as European Countries went through some decades ago. The theory emphasized that poor countries of the world were poor because they were dependant on agriculture, used traditional means of production, lacked technological innovations and generally had an illiterate society.

Development is by the modernization theorists characterized as a movement from a state of backwardness with subsistence economy, to a modern, industrial society with higher income and productivity rates. This school of thought however ignores the concrete and

complex processes of change and struggle in real social formations. According to Lee (2000), modernization is an environmentally and socially destructive ideology, which retains a power to shape trajectories of economic development within which sustainability is problematic.

In Uganda, the national poverty reduction policy and strategy is based on modernization ideology. It emphasizes the concept of transforming the economy from being poor where most people are locked into traditional subsistence production into a modern economy where agents in all sectors are able to participate actively in economic growth. According to modernization theory, those who work in the informal sector are largely people with low levels of education and even lack formal education skills. They produce at a small scale and their contribution to the country's economy is negligible if it is there at all. Determining the level of development basing on per capita income thus excludes such people from the development process and this is typical of the majority of Ugandan women.

Despite the exclusion characteristic of modernization path to development, many of the development strategies in Uganda are based on modernization ideologies. The use of modernization ideas therefore has been necessary in this study especially in assessing whether it caters for all or excludes some people in the development process and this is discussed further in chapter six.

2.2.2 Alternative Development

This paradigm[3] rejects economic growth as an end in itself, and instead emphasizes welfare and human development with increased choices (Martinussen 1999). It emerged in the 1970's as a critique to mainstream economic model of modernization that failed to address the problem of massive poverty and environmental sustainability. It was inspired by the works of John Friedman who saw the previous attempts to development as 'failure' and alternative development as 'hope'. As a new approach, alternative

[3] A paradigm refers to a coherent and mutually supportive pattern of concepts, values, methods, and actions amenable, or claiming to be amenable, to wide application. Adapted from Robert Chambers, (1997) Whose Reality Counts? Putting the Last First; London, UK

development hoped to improve the living conditions of the poor especially in rural areas and at the same time be compatible with emerging environmental concerns.

The main idea about alternative development was not to replace mainstream development path of modernization through the state but rather to transform them so that the disempowered poor are included in political and economic processes and have their rights as citizens and human beings acknowledged. It therefore became a bottom-up approach with the major concern on people and not only on production and profits. Alternative development focuses on the fulfillment of practical and strategic interests through collective mobilization-*the empowerment approach*. This has increasingly been used to mean increasing people's capacities so that they become self-sustaining, independent and able to make decisions that affect their lives. The theory points out that its only through people-centered and bottom-up approaches to development through which people are empowered; socially, economically as well as psychologically.

Through the *'basic needs approach'* of alternative development theory, fish farming is very important as an alternative source of food (proteins), source of income for Ugandan farmers thus able to meet other basic needs like clothing, housing and education. It is important to note that the use of 'Alternative Development' theory in this study helps to understand how ideologies of empowerment or simply 'acquisition of power' have been attained in the study area.

2.2.3 The Concept of Sustainable Development

The term was first used in early 1980's in the World Conservation Strategy but became popular after the publication; '*Our Common Future'* by the World Commission on Environment and Development (WCED) in 1987. According to Fowke and Prasad (1996) in Johnston et al (2000; 812), about eighty (80) definitions of 'sustainable development' can be identified. They point out that the most widely used is that of WCED (1987, 8 and 43): "development that meets the needs of the present with out compromising the ability of future generations to meet their own needs". By this time, international debates had been characterized more and more by considerations about the impact of growth and socio-economic change upon the physical environment. From this definition, the emphasis on '*needs'* is closely related to problems of poverty especially in the Third

World. It is emphasized that fulfilling of human needs and aspirations is the most important goal for all development efforts throughout the world (Martinussen1999). On the other hand, sustainability seen from the SL approach, is not merely about meeting basic needs or subsistence living but views this as rather the first step[4].

Globally, the concept of sustainability has been the major focus in the formulation of development objectives as well as in connection with the design of strategies, which increasingly take into account environmental concerns. In simple terms, sustainability may be taken to mean that, a specific activity can continue or a resource be available for at least the medium, and it is not associated with or dependant upon rapidly depleting inputs (Roberts and Muir in Reinertsen and Haaland, 1995; Helmore and Singh, 2001). Sustainability can mean different things to different people (Redclift 1990, Tickell 1992), though most would agree that it involves three elements of futurity, equity and the environment (Pearce, 1993) It is important to note that the term has acquired different connotations with in particular fields; for instance in institutional projects particularly in economically deprived areas, the term sustainable development is used to define whether projects are likely to continue once external support has been withdrawn. It relates with project effectiveness, financial viability, technical capacity and social acceptability.

Sustainability is important because it implies that progress in poverty reduction is lasting, rather than fleeting because there is accumulation of broad capital base that provides the basis for improved livelihoods, especially for poor people. With regard to this study, the term sustainability is used to determine whether the long term objectives of women in Kigoowa are achievable through the aquaculture project. Broadly speaking, sustainability is a key indicator of success or failure in development projects. Thierry Lemaresquier of UNDP's Social Development and Poverty Elimination Division (SDPE) had this to say; "projects that are based on empowerment and improvement of livelihoods of the poor stand a much better chance of surviving once the initial funding and effort has run out of gas" (Helmore and Singh 2001, 5)

[4] Sustainability in this report is used to refer to the ability of KCWDA to maintain and expand their benefits not only to non-members but also to the future generation.

2.3 Feminist Theories

2.3.1 Feminist Geographies

These are geographies that draw on feminist politics and theories to explore how gender relations and geographies are mutually structured and transformed (Johnston et al 2000, 259). This tradition emerged during mid 1970's and was inspired by women's movements of 1960's. Feminist geographies developed both as a result of critical discourses of women's oppression in society and the fact that geography was a notoriously male-dominated field.

An important aspect for feminist geographers has been to make women visible, by developing a geography of women. In relation to this, Johnston et al (2000) point out that, women's experiences and perceptions often differ from those of men; and women have restricted access to a range of opportunities, from paid employment to services. This can be traced from the first wave of feminism which signifies the era of liberal feminists. This strand of feminists focuses on individuals, documenting how women's roles as care givers and house wives in conjunction with the existing structures limit women's access to paid employment and other resources. Liberal feminists point out that women's oppression is fostered by gender roles which favor men over women and therefore desire to free women from oppressive patriarchal gender roles[5]. Liberal feminists are responsible for an important act of legislation that has greatly increased the status of women, including reforms in welfare, education and health but has been criticized for not only ignoring race and class issues but also over concentrating on legislation aspect in fighting patriarchy.

Socialist feminism on the other hand, focuses on broader context of social relations in the community and includes aspects of race; ethnicity and other differences and beliefs that there is a direct link between class structure and oppression of women. They reject the idea that biology predetermines one's gender. This strand explains that social roles are not inherent and women's status must change in both public and private spheres. Socialist feminists believe that the way to challenge patriarchal oppression is to put an

[5] http://www.feministissues.com/liberal_feminism.html 29.09.2004

end to class and gender. For this to happen, there must be a coalition between men and women who should see each other as equal in all spheres of life[6]. .

Ecofeminism is yet another strand in feminist geographies. This is an umbrella term for a wide variety of approaches to environmental analysis that integrate feminist and environmental perspectives (Johnston et al 2000). Ecofeminists believe that patriarchy and male domination is harmful to women, as well as the environment. There is a link between male's desire to dominate unruly women and wilderness and this strand believes that this desire can destroy both women and the earth. It stresses that women have a central role in preserving nature because they are more close to nature as everyday care-takers while men do not have this deep connection hence the terms 'Mother Nature' or 'Mother Earth'. Women need to use their insight to reveal how humans can live in harmony with each other and with nature.

Since the late 1980's, many feminist geographers have moved away from an exclusive focus on gender and class systems and these have come to be known as 'feminist geographers of difference'. Feminist geographers are increasingly attentive to the differences in the construction of gender relations, ages, religions, sexualities and nationalities and to exploitative relations among women who are positioned in varying ways along these multiple axes of difference. Today, a small but growing number of masculine studies (Sparke 1994; Philips 1997 in Johnston et al, 2000) begin to deliver on the promise of gender relational approach, by directing the focus away from women to a larger network of hetero-patriarchal relations.

2.3.2 Perspectives of Women and the Development Process

Since 1970's, studies in the field of women, gender and development have been based on the general frameworks outlined and described by Eva Rathgeber (1990). She identifies Women in Development (WID), Women and Development (WAD) and Gender and Development (GAD) as the three distinct theoretical perspectives in relation to feminist and development research.

[6] http://www.colostate.edu/Depts/speech/rccs/theory84.htm 24.09.2004

Women in Development (WID)

The women in Development approach is based on liberal feminism which generally treats women as a universal group and assumes that gender equality will be attained when women are educated, employed and empowered. The origin of Women in Development (WID) concept is being debated. Much about WID started taking shape during the international women's movement: the UN decade for women (1976-1985).

The discovery of Ester Boserup's publication 'Women's role in economic development' in early 1970's played a major role especially during the UN decade for women. She pointed out that modernization in agrarian societies resulted in a gendered division of labor which relegated women to carrying out subsistence tasks thus were not integrated in the development process and therefore marginalized. WID approach advocated for inclusion of women through policy changes and developing strategies that minimize disadvantages of women in the productive sector. Welfare, equity, anti-poverty, efficiency and empowerment[7] were the major approaches in Women and Development.

The approach has however been criticized for being non-confrontational. It does not question the source of women's subordination and oppression and why women had not benefited from development. Nevertheless WID approach is still used mainly by international agencies including the World Bank and the UN.

Women and Development (WAD)

WAD emerged in the second half of 1970's as a critique to modernization and Women in Development (WID). It is based on Marxist feminists who point out that gender hierarchy was intensified with the spread of capitalism. It is argued that production for direct use, which is a hallmark of more communal societies, is being replaced by production for exchange which is taken over by men and came to be viewed as a "public" function while areas of reproduction and consumption described as the "private" domain was associated with women.

[7] Empowerment refers to a psychological advancement in feelings of self-worth, self-confidence, and self-actualization as well as gaining official or legal power. (From Helmore K and Singh N, (2001) Sustainable Livelihoods, Building on the Wealth of the Poor. Kumarian Press, Inc. USA

Jaquette 1982 (in Visvanathan et al 2002, 18) notes that Marxist and liberal feminists share the view that structures of production determine women's inferior positions in society. He further stresses the importance of recognition within Marxist theory that women's unpaid domestic work and reproductive services are crucial for capitalist employers. Although this perspective in gender studies focuses on relations between women and the development process, it has been criticized for not questioning the relations between gender roles.

Gender and Development (GAD)

GAD emerged in the 1980's and represents a confluence of diverse feminist perspectives. This strand has been dominated by socialist feminists who have incorporated lessons learned from WID failures and WAD limitations. According to Young (1992), GAD focuses not just on women but also on social relations between men and women, in their work places as well as in other settings.

GAD takes a holistic approach and treats development as a complex process influenced by political and socio-economic forces. Young emphasizes that the state should play a critical role in providing programmes to support the work of social reproduction. The social construction and cultural contexts in GAD provide a rich information base for understanding male-female relations and interactions (Ostegaard, 1992).

Various NGO's that focus on gender relations have and are still designing projects in areas of agriculture, environment land use and community participation. Through such projects; GAD as a model sharpens and extends our knowledge of women's issues in settings such as farms, households and communities.

From the feminist perspectives, women are seen as an oppressed gender due to patriarchal male position. In this study, to understand how Kigoowa women fish farmers as a group negotiate their positions in the development process, different views of women, gender and development were discussed as above. For instance ideas from WID are presented in this study because of its emphasis on empowerment and anti-poverty approaches. It important to explore how strategies like fish farming and group formation

have been crucial in enhancing the status of Kigoowa women and sustaining their livelihoods. GAD on the other hand is relevant for this study because it helps to understand relations between men and women in Kigoowa fish farming project as well as the government's role as relates to this activity.

2.3.3 Women and Empowerment

Kabeer (in Razavi, 1999) points out that empowerment is being inescapably bound up with disempowerment and about the process by which those who have been denied the ability to make choices acquire such an ability. Of recent, issues of empowerment and autonomy have entered poverty debates through various channels. The capability[8] frame work for instance embraces both basic functioning's like longevity as well as more complex capabilities of freedom to which intrinsic value is attached (Sen 1985b). Functioning's here are used to mean achievements of a person, what he or she can be or do. Where as functioning's constitute well being, capability is a freedom type notion meant to assess the real opportunities faced by the person (Sen 1985a; 51). Certain strands of policy discourse have identified female empowerment as an effective means for reducing poverty since women constitute a large percentage of the poor.

Women living in developing countries shoulder the heaviest burdens of poverty as a result of gender discrimination and social inequality. Despite these challenges, women frequently serve as a catalyst for creating positive social change. Today, NGO projects are designed to enable women become agents of change, empowering them to transform their own lives and create lasting and meaningful change of themselves, their families and their communities. ILO (2003) points out that empowerment through group formation and other delivery techniques in micro finance are necessary in developing a sense of responsibility, strengthening social capital and empowering the poor especially women. In relation to this study, it is necessary to gain an insight into the benefits women have got as a result a coming together for a common goal-poverty reduction.

[8] Capability refers to the characteristics of being capable; the ability to do something. Adapted from Robert Chambers, (1997)

2.4 The Analytical Frame Work

The analysis and presentation of this work is based upon the core principles of Sustainable Livelihoods Approach (SLA). Sustainable livelihoods guiding principles are a guide to the main concerns of sustainable livelihoods[9]. The Sustainable Livelihoods Approach provides a diversified, holistic and realistic framework for assessing the direct and indirect effects of livelihood strategies on peoples living conditions. This analytical approach frames the focus of this study in two ways;

(i) Assessing how the outcomes of fish farming as an alternative activity can bring about sustainable livelihoods of the farmers and

(ii) Evaluating the role of a group project (CBO) in reducing poverty among the women members of Kigoowa.

2.4.1 Why Sustainable Livelihoods Approach?

'Sustainable livelihoods' is a cross-thematic approach that was identified in early 1990's to eradicate poverty; on the basis of the energies and talents of the poor people (Helmore et al, 2001) thus encouraging activities that are pro-poor. Poor people are taken to be actors that is; capable to identify and address their livelihood priorities while outsiders listen and respond. The latter need to support and enhance existing livelihood strategies and copying mechanisms of the poor. The approach is built on ideas such as adaptive strategies, participation and empowerment, governance and policy. For instance, it is very important to understand livelihood strategies and vulnerability of the poor as a starting point in livelihood analysis. Activities need to be conducted in partnership with both the public and the private sectors thus making SL approach holistic in nature, encouraging local people to draw up integrated, multi-sectoral development strategies in order to restore and maintain the health of all aspects of the local social ecosystem. Much as the approach recognizes multiple actors, it also puts into account the multiple livelihood strategies that people adopt to secure livelihoods.

Sustainable livelihoods approach is neither a bottom-up nor a top-down but stresses that all levels should work together (holistic) as mentioned above. It aims to promote

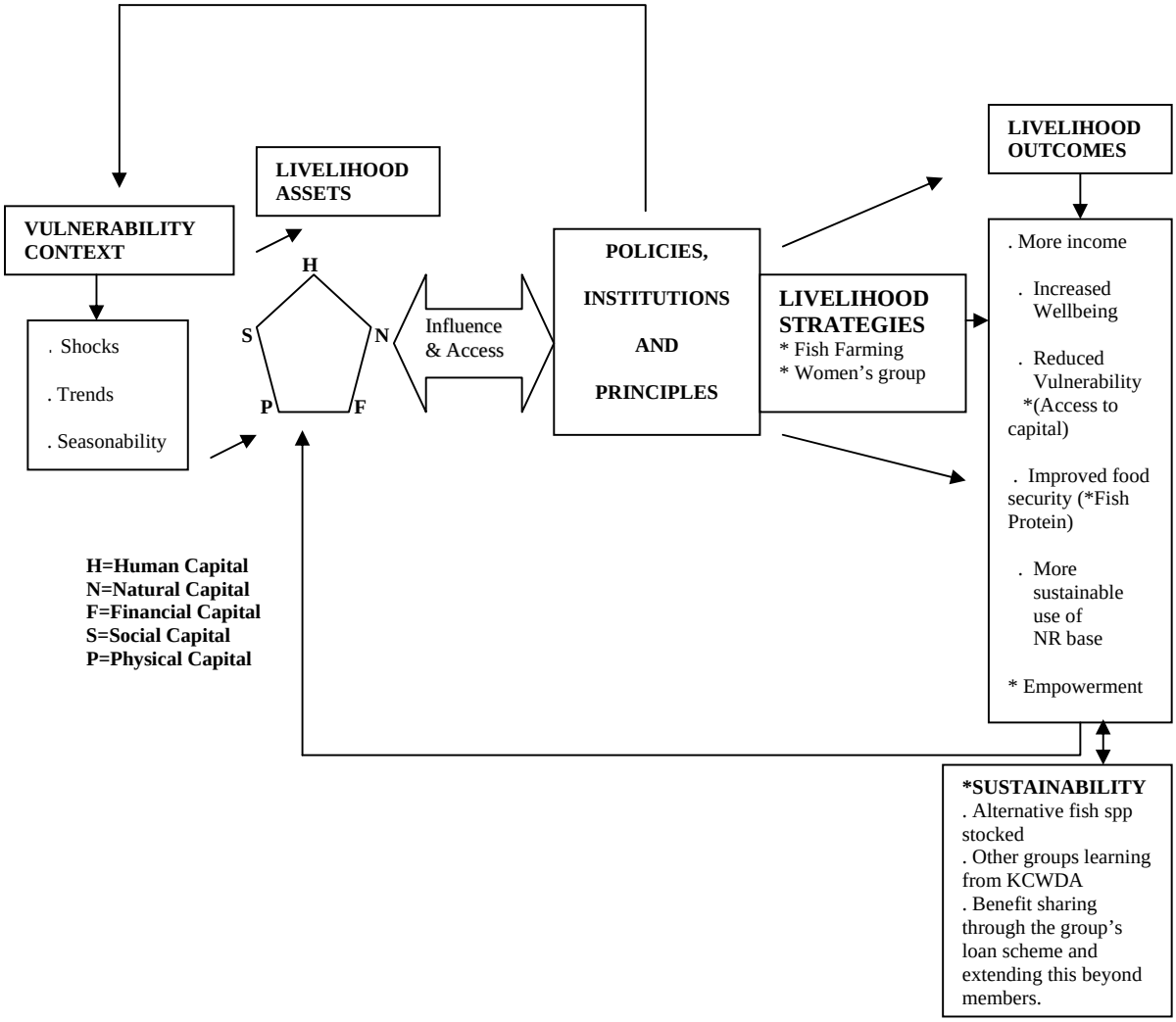
[9] http://www.fao.org/documents/show_cdr.asp?ur_file=/x7749e/x7749e06.htm 2.01.2005

development that is sustainable not just ecologically, but also institutionally, socially and economically and to produce positive livelihood outcomes (Ashley and Carney 1999).

A *livelihood* comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks maintain or enhance its capabilities and assets, while not undermining the natural resource base (Chambers and Conway et el, 1992 in Scoones, 1998). Sustainable poverty reduction can only be achieved only if external support works with people in a way that is congruent with their current livelihood strategies, social environments and ability to adopt- what Helmore and Singh (2001) refer to as "building on the wealth of the poor". DFID and FAO (2000) argue in the same line that it is important to build on people's perceived strength and opportunities rather than focus on their problems and needs.

The approach tries to understand how wider policies, institutions and processes (PIP) affect local livelihoods. Here, policy is defined as a 'course of action designed to achieve goals or targets'. Public policy is made by government to achieve particular national outcomes, while private organizations or communities may also form their own policy to achieve defined goals (DFID, 2000). Institutions on the other hand are; rules, norms and values that shape a society's behavior while Processes in SLA refer to processes of change in institutions and organizations (Ibid). The use of micro-macro links in SLA helps in examining the influence of macro-level policy and institutions on livelihood options and highlights the need for policy to be informed by insights from the local level and by priorities of the poor. It potentially could also lead to better team working thus effective poverty elimination.

SUSTAINABLE LIVELIHOODS; A FRAMEWORK FOR ASSESSING THE ROLE OF AQUACULTURE IN IMPROVING LIVELIHOODS OF WOMEN AT KIGOOWA.



*Modified to suit aquaculture as a livelihood strategy with in a gender perspective.

Adapted from DFID and FAO (2000)

This framework presents a holistic and integrated view of the processes by which women farmers of Kigoowa in Kampala district have achieved sustainable outcomes from group activities such as fish farming.

The SL framework is used here as an analytical tool for understanding livelihood systems and strategies and their interaction with policies and institutions. Represented as a

methodological framework, SLA is considered to be a useful tool for livelihood analysis. It does not attempt to provide an exact representation of reality, but it however endeavors to provide a way of thinking about the livelihoods of poor people that stimulates debate and reflection, there by improving the performance in poverty reduction. Sustainable Livelihoods Approach is the basic framework for which my study findings are operationalized reflecting the local social, cultural and economic and power structures in the study area. The findings in the next chapters are presented based on the SL model as presented above and explained below.

Adato et al (2002) point out that this framework is intended to be dynamic, recognizing changes both due to external fluctuations and the result of people's own actions. The starting point is the *vulnerability context* with in which poor people operate. In this study, women's vulnerability is better understood by analyzing their ownership of and access to resources on which they draw their livelihoods. In Kigoowa and Uganda generally, women operate under difficult circumstances since few of them own and access resources like land and capital easily as discussed in chapter four.

Attention is next given to *assets* that people draw upon for their livelihoods. The SL approach is concerned with the analysis of the "wealth" of the poor and not their poverty and needs (Helmore and Singh, 2001). Women in their vulnerability context, they have various kinds of assets or poverty reducing factors which Helmore and Singh call the "Poor's wealth", including physical (e.g. ponds, fingerlings, buildings, machinery, crops/livestock); human (e.g. skills, knowledge, capacity and adaptive strategies, creativity); social (e.g. governance structures, decision-making power, community institutions, culture, participatory processes); financial (e.g. access to credit services); and natural assets (e.g. land, water, air, forestry/vegetation). Different people clearly have different access to different livelihood resources and this depends on institutional arrangements, organizational issues, power and politics. For this study, all the above capital assets are important but major emphasis is drawn to physical, financial and social capital as reflected in the later chapters.

Social capital refers to the social resources that include networks, social claims, social relations, affiliations and associations upon which people draw when pursuing different livelihood strategies that require coordinated actions (Scoones, 1998).

Assets interact with *policies, institutions and processes* to shape the choice of poor people's livelihood strategies. Understanding institutional processes allows the identification of restrictions or barriers and opportunities (or gateways) to sustain livelihoods (Ibid). The use of assets gains meaning and value through the prevailing social, institutional and organizational environment. This environment also influences the *livelihood strategies*- ways of combining and using assets - that are open to people in pursuit of beneficial livelihood outcomes that meet their own livelihood objectives. Policies, institutions and processes may be in favor of or against women's empowerment in this study both directly and indirectly. This is understood by analyzing the role of government, private sector and civil society in supporting women's aquaculture activities. For instance, helping to enhance the existing livelihoods by the government through extension workers is the key to igniting a self-propelled engine of sustainable, human-centered development.

The intervention of all stakeholders in turn, shapes the *livelihood outcomes*, which are often the type of impacts that development is interested in. Today, the poor and especially women are largely self-employed, with an entire range of activities, assets and entitlements that allow them to survive. However, such outcomes are not necessarily the end point; as they feed back into the future assets and so reduce the vulnerability of women in society. *Sustainability* of the whole process is important if poverty reduction is to be lasting. Different types of shock or stress may result in different responses, including avoidance, repartitioning, resistance or tolerance mechanisms (Payne and Lipton, 1994; 15 in Scoones, 1998). For instance Kigoowa women farmers were able to respond positively to their failure in the first harvest of fish stock (Tilapia) by changing to a different species (Clarias) on stocking the new ponds.

Helmore and Singh (2001) stress that, since the roles of men and women are imbued with different meanings and societies, and these meanings are reinforced by traditions that socialize people around their respective gender roles-making lives of men and women different; sustainable livelihoods framework therefore needs not to ignore the gender

perspective. They further argue that it is essential to acknowledge openly and take into account the distinctive roles of men and women and the special obstacles they face, as well as the different situations of men and women and the frequent unequal sharing of resources with in each household. Cultural norms influence and gender division of roles as well as the level of men's and women's access and ownership of resources such as land and fish ponds which are used as collateral for securing loans. This gender roles differentiation often puts women in a vulnerable state.

The framework therefore requires that researchers think holistically, not just about certain assets such as credit or land; but also the potential interaction of various assets and the complementariness between assets and their sequencing. For instance, membership in a social group may be necessary for access to training in new skills and technology (human capital) or land (natural capital); which is necessary for access to credit (financial capital) which in turn is needed to purchase the inputs needed to take advantage of new technology. For instance, the Ugandan government through its "Entandikwa scheme"[10] encourages farmers to form groups if they are to gain access to this credit scheme.

2.5 Conclusion

The chapter provides the theoretical framework on which the study is based. Theories and concepts are mainly drawn from gender and development studies and they include WID, GAD, and WAD, empowerment, modernization, alternative development and sustainable development among others. They relate to this study in different ways and are a justification to the findings I present in the next chapters. On the other hand, the Sustainable livelihoods framework presented in this chapter is a model and an analytical framework on which the study findings are interpreted and discussed.

[10] Entandikwa scheme is a revolving fund system that was introduced by the NRM government to help people especially those in the informal sector to gain access to credit services.

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

Research is not an event but a process that is concerned with collection, analysis and interpretation of data to answer specific questions. This chapter therefore presents the basis for choice of methodological approach, choice of the study area, description of initial contacts in the study area and what qualitative research is all about in social research. Primary and secondary data collection methods, sampling procedure, data analysis, validity and reliability of data and limitations to the study are discussed under this chapter.

3.2 Choice of a Methodological Approach

Research means learning about a phenomenon. Before going to the field, researchers usually have 'images' of what they are yet to study. The choice of a research method in any study influences the way the researcher collects data since specific research methods also imply different skills, assumptions and research practices. The choice of a method also largely depends upon the purpose for which the study is conducted. There are no strict rules on how to conduct research but choice of a method will depend not only on the questions to be answered but also resources for instance time and money available to the researcher, accessibility and acceptance into the group being studied. With all such issues in mind, qualitative research was thought to be the appropriate approach to this study.

Limb and Dwyer (2001), argue that how you frame your research questions influences the qualitative methods you chose to employ. The study sought to understand fish farmers' attitudes and perceptions about their project activities in relation to benefits, challenges, problems and prospects many of which could not be quantified. Qualitative approach was chosen because it is characterized by an in-depth, intensive approach that seeks a subjective understanding of social reality rather than statistical descriptions or generalizable predictions thus based on the concept 'knowledge is situated'.

3.3 Qualitative Research Approach

Qualitative research implies that the data is in form of words as opposed to numbers and are usually reduced to themes or categories and assessed subjectively (Rudestam and Newton 1992). Qualitative research does not aim to be statistically representative and so, unlike quantitative studies; it is the depth of and richness of the researcher's encounters rather than the number of people who participate in the study that matter.

According to Limb and Dwyer (2001), qualitative approaches to research explore the feelings, understandings and knowledge of others through interviews, discussions or participant observation as in this research where an aspect of fish farmers' perceptions and feelings about how aquaculture has changed their livelihoods could not be quantified. Eyles and Smith (1988) in Overa (1992) suggest that the task of a researcher is to uncover the nature of the social world through an understanding of how people act and give meaning to their own lives. This is achieved through an interpretative geography that is qualitative and inductive in nature. Limb and Dwyer (2001:4) further emphasize that much of our experience and 'world' requires methods which allow acquisition of 'insider knowledge' through interaction, observation and informal interviewing and therefore collected data for this particular study was based on such methods.

Case Study Research

The term 'case study' has multiple meanings. It can be used to describe a unit of analysis e.g. a case study of a particular organization or to describe a research method and so this study is based on these two meanings.

Yin (2002) defines the scope of a case study as 'an empirical inquiry that investigates a contemporary phenomenon with in its real-life context, especially when the boundaries between phenomenon and context are not clearly evident'. Cleary case study method is particularly well situated to this research project since the subject of this study is fish farming in Kigoowa. A case study also means an intensive study of specific individual or specific contexts (Trochim 2000).To gain an understanding on aquaculture development in Uganda as an alternative to the traditional agricultural activities of crop growing and

animal rearing, Kigoowa Catholic Women's Development Association (KCWDA) was chosen as a case study. Typically, a case study researcher uses interviews and documentary materials as the major data sources.

3.4 Choice of the Study Area

Prior to the actual field work in Uganda, preliminary readings about aquaculture were very helpful. I read much about global fish farming and its current status in different parts of the world, however special attention was on its development in Uganda and how it is being encouraged under the Plan for Modernization of Agriculture (PMA) in fighting poverty. Although books were consulted, internet was the major source of information at that time e.g. http://www.myuganda.co.ug

During preparations for this study, I came up with two case studies, Bunamwaya and Kigoowa fish farming groups in Wakiso and Kampala districts respectively. The choice for the two groups of farmers was for comparison purposes since both groups had varying social characteristics. These were identified from the internet.

However during my pilot study, I discovered that Bunamwaya group was engaged in other small scale activities and at that time the group was proposing to integrate fish farming in the already existing activities of poultry, piggery, and the road-side fruit market. Considering the limited time for data collection, I decided to narrow down my choice of study area by working with only Kigoowa Catholic Women's Development Association (KCWDA) in Ntinda, Kampala as my only case study.

The central location of Kigoowa project was also a basis for this choice (see figure 1 below). The project is located in Ntinda, a suburb of Kampala city and Kampala is one of the pilot districts where the Plan for Modernization of Agriculture (PMA) has taken shape in the Poverty Eradication Action Plan (PEAP). Easy access to the site location was also very vital for my choice of study area. And being a women's project, I was prompted to take it up because I wanted to find out ways in which the women members have been empowered through aquaculture activities and gain more knowledge about gender relations in a women's association.

I was given further recommendation about the project by the local NGO, Uganda Fisheries and Fish Conservation Association (UFFCA) that had worked with the project at its initial stages.

3.4.1 Kampala District and the Study Area

The study was conducted with Kigoowa Catholic Women Development Association (KCWDA) in Nakawa division, Kampala district. Kampala is one of the smallest districts and the capital city of Uganda with about 1,208,544 (UBOS, 2002) people. It is the largest city located near Lake Victoria and is located at $0^0 18' 56$ north and $32^0 33' 56$ east of the Greenwich.

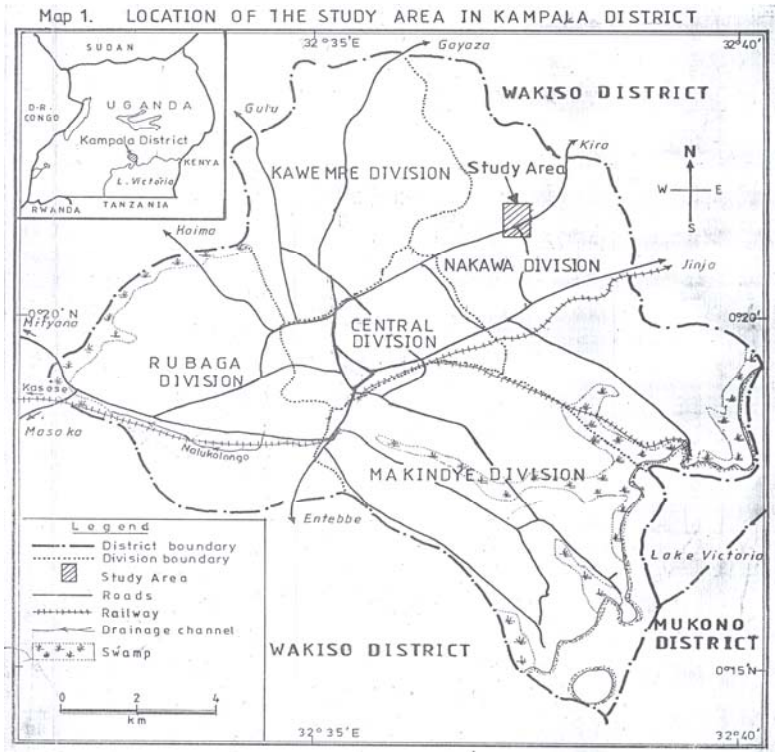
Kampala grew around a port constructed by Frederick Lugard in 1890 for the British East African Company. In 1962 when Uganda got her independence form the British, Kampala replaced Entebbe as the national capital. However, much of the city was destroyed after the 1979 overthrow of Idi Amin's dictatorship and the subsequent civil war. Kampala city is today the commercial and administrative capital of Uganda. It lies on a plateau, spread over more than twenty rolling hills. .

It is a city of exciting contrasts, ranging from the modern, colonial and Indian buildings in the centre, to the scenic, ever-green hills and wetlands in outlying areas, to the mighty Lake Victoria to the south. Lake Victoria which is itself the world's second largest fresh water lake is the source of the longest river in the world, river Nile. With an altitude of 1180m above sea level, Kampala has a pleasant weather, with average annual rainfall of 1,441mm and 22.1^0C as the mean annual temperature (UBOS, 2002). .

Kampala District is divided into 5 divisions (as shown in figure 1 below), 99 parishes and 811 sub-parishes. It covers an area of 189 Km^2 and is almost entirely surrounded by Mukono and Wakiso Districts. Kampala District is mainly industrial, but its suburbs produce agricultural products such as potatoes, cassava, beans and green vegetables. Poultry and animal husbandry form part of the city's small-scale cottage industries.

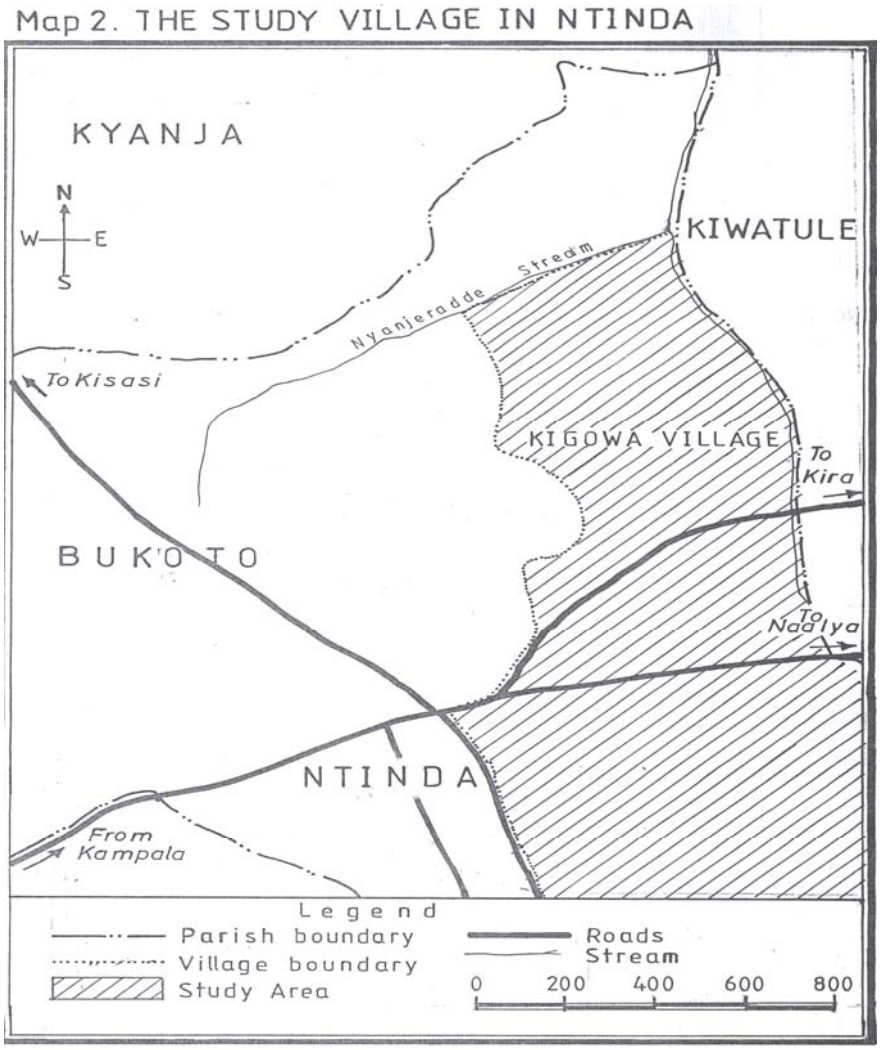
Kampala is one of the major districts in Uganda where urban agriculture has been expanding rapidly given the ever increasing number of people due to rural-urban migration and urban growth. The growth and development of Kampala city has however not provided employment to many of the citizens and more so to women. The informal sector has therefore been crucial in sustaining the livelihoods of many urban dwellers.

The study was specifically conducted from Nakawa Division in Ntinda-Kigoowa area (see figure 2). Ntinda is a suburb located in the North East of Kampala city. The women's Fish farming project is located at Kigoowa Catholic Parish while the ponds are found in a valley that contains Nyanjeradde stream. At Kigoowa, women meet regularly to discuss group activities. However, visits to the neighboring district of Wakiso were crucial during fieldwork. This is because government officials were all contacted at their places of work at Department of Fisheries Resources-Entebbe and Kajjansi Research and Aquaculture Development Center respectively. Kasenyi landing site where fishermen were contacted is also found in Wakiso district.



Drawn by Magaawa

Figure 1: A map of Kampala Showing the Study Area.



Drawn by Magaawa

Figure 2: A map of Ntinda Showing the Study Area

3.5 Sampling Techniques

Arriving at appropriate samples and sample size largely depends upon variability in the population you are studying, for instance samples could be based on a nested or a hierarchical structure and in this particular study, and sampling was mainly based on hierarchy in the project.

Purposive sampling was used to come up with fish farmers that were interviewed. This method does not pick samples at random and therefore to avoid researcher's bias at this

stage, I chose farmers that held responsibilities (Key Informants) in the project. I considered these to be more knowledgeable about aquaculture activities because of their leadership and responsibility roles and indeed they were utilized maximally during interviews.

The snow ball sampling technique was used to as an alternative in some cases where judgmental sampling was not applicable. Key informants were requested to refer me to other respondents that were able to answer my research questions. This helped me generate variety of information since women with different backgrounds (in education, family, employment, income and culture) were interviewed.

Given the in-depth interviews conducted and the limited time at my disposal, a total of twenty four (24) respondents were interviewed. With in KCWDA, 15 respondents were interviewed where 13 were women members while two (men) were technical personnel that is; the project coordinator and the pond technician respectively.
From the fishing community at Kasenyi landing site, a total of 5 fishermen were interviewed as well as 2 officials from government departments (KARDC and Department of Fisheries Resources). 2 officials from an NGO (Uganda Fisheries and Fish Conservation Association) were interviewed.

3.6 Data Sources

Many studies base their reports on two major data sources; namely primary and secondary and this study is no exception. This thesis is based on data collected during field visits to the project site where formal and informal interviews with the help of an interview guide, direct observations and a focus group discussion were used. Interviews with key informants from the public and private institutions as well as fishermen on Lake Victoria were very important in data generation. Access to published and non-published documents was important in analyzing issues such as government policies and programmes towards aquaculture development in general.

3.6.1 Primary Sources

Primary sources are those data which are unpublished and which the researcher has gathered from the people or organizations directly. Primary data collection involves the researcher being close to source of information or the research subject because special information can be got through understanding the interviewee's experiences and perceptions through his or her body language or body expression. Accuracy of primary data is not only determined by the researcher's listening and recording skills but also the way he or she presents the research questions. Unlike secondary data, primary data errors can easily be identified and rectified by the researcher before hand although primary data collection tends to be slow, laborious and expensive.

(a) In-depth Interviews

Interviews are about exchange of views between two persons who have a conversation about a topic of common interest (Kvale, 1996). In-depth interviews with key informants in the aquaculture project were conducted with an intention of obtaining special information about the benefits accruing to the project members and the general public. This method allows the researcher to study subjective meanings and motives, along side the more objectifiable attributes and aspirations that can be tapped by structured questionnaires. Questionnaires are a means of explaining and understanding the kinds of relationships, which can only be described by more extensive quantitative approaches (Johnston et al 2000).

Since in-depth interviews are very much detailed and require more time and concentration, respondents were interviewed according to their convenience many of whom were found at the project site more especially on Sundays, homes and their work places. This kind of environment enabled them to be more responsive to questioning, as they felt comfortable talking about any issue that would arise. Four in-depth interviews were conducted with the projects' key informants and an interview guide (see appendix 1) with open-ended questions was used. The goal of using open-ended questions was to have the interviewees reconstruct their experience and perception in aquaculture activities thus this interaction was more less like narratives or conversations about their lives in relation to aquaculture. Interviewing is a basic mode of inquiry and so the role of the

researcher is to talk less and listen most (Seidman, 1991) as was the case during this study. Data was recorded by taking notes including people's expressions.

Interviews are not only preferred because of their ability to give an understanding of how people perceive and think about what they do, but they generate a lot of information very quickly, enable the researcher to cover a wide variety of topics, clarify issues as they arise and following up unanticipated themes.

However the method is largely determined by interpersonal and listening skills of the interviewer and the interviewees may not be willing to share experiences especially what they consider to be sensitive information and therefore may give information that does not reflect what they actually do.

Another problem with this method is that it is susceptible to the researcher's bias where inaccurate or distorted perception and interpretation or preconceived ideas or conceptions on the part of the interviewer (Mikkelsen, 1995).

Seidman (1991) points out that interviewing takes up a great deal of time and sometimes money. The researcher therefore has to conceptualize the project, establish access and make contact with participants for interviews, transcribe data and then work with the material and share what she or he has learned. He further describes interviewing to be labor intensive because it requires the researcher to establish access to, and make contact with, potential participants whom she or he has never met. However, with good time-frame plan, I tried to avoid such limitations.

(b) Focus Group Discussions (FGD's)

This is conducted on a group of individuals to help explore how meaning and experiences are negotiated and contested between group members. This method of interviewing has become popular as a fairly inexpensive and effective way to get reactions of a small group to a focused issue (Baker, 1999).

Group discussions are advantageous over individual interviews because they generate more data especially on what individuals consider to be sensitive or personal information. In group discussions, members feel more secure to talk about such issues. The method is also useful when the researcher wants to draw together background information about an issue. Beyond impressions, FGD's can be used to explore an area of interest for instance problems in the project. In this study, a focus group discussion was held with project members and it lasted about 1 hour and 20 minutes since women had so much to say and had dedicated their time basing on the prior appointments I made with them. From this discussion, almost all topics under the study were tackled and many research questions answered.

The case study being a women's group with common objectives, it was necessary to use a FGD to help expose how they pursue and maintain their interests. FGD's are not intended to reach consensus, make decisions or agree on specific actions, it is an excellent choice for gaining impressions, reactions and evaluations from the targeted respondents and this was the case with the group I met. However, the discussion is subject to risks of interviewer bias, also leaders tend to monopolize discussions thus influencing the direction of other respondents' response patterns (Mikkelsen 1995). This was true for this study because during a group discussion, women that held responsibilities in project (elite) were dominating the discussion.

(c) Direct Observation

Despite linguistic and cultural differences, researchers recognize grief, joy sadness, anger and other emotions from the gestures and talks to respondents (Gubrium 1994). Observation enables the researcher to gain a broader perspective on views of the community members and relationships with in it. During this study, observations were made all the time; during interactions with members and during transect walks to and from the pond site as well as in some homes that I visited. Observed phenomena were recorded in a note book and were further used during analysis.

Observation is very important because it produces rich detail and description (especially non-verbal) information about people in the context of their every day lives. Observations

were not only made from people's expressions but physical structures like the ponds, their location and the surrounding environment were observed. Some observations that needed clarification were brought up during the group discussion.

3.6.2 Secondary Sources

Secondary sources refer to any materials (books, articles, reports e.t.c) which have previously been published. Such materials contain data that has been collected by other researchers and is available for use by others. This method of data collection is time saving and less expensive. Information such as statistics that are not easily generated through interviews can be got. It is important here to note that most of the figures quoted in this report were generated from secondary data sources.

This study involved the review of literature especially government reports, policy documents like 'The National Fisheries Policy (NFP)', the 'Plan for Modernization of Agriculture' (PMA), the 'National Gender Policy' the 'Medium Term Plan 2001-2005' and more. General books on aquaculture in Africa and Uganda specifically were consulted. Brochures, leaflets, posters, project records were important secondary data sources. The internet was very credible in secondary data collection although such data may not be current and its reliability is sometimes questionable.

3.7 Validity and Reliability of Data

In research, validity refers to how representative the data collection is for the research questions. The link between methodology and epistemology reveals a lot about the validity of data and therefore its quality. Qualitative research is more valid when the reader is perceiving information in the context of the researcher's approach and methods used. Consistency by the researcher therefore makes his or her work more valid. This basically being a qualitative research, I used appropriate methods in data collection as mentioned earlier.

In quantitative studies, scientific validity is restricted to measurements thus rendering qualitative research invalid since it doesn't result in numbers. Today however, validity has taken a wider meaning and is being associated more closely with truth-value, the

correspondence between research and the real world rather than being limited to measurement.

On the other hand, reliability refers to the degree to which the findings are independent of accidental circumstances of the research (Kirk and Miller, 1986:20 in Mikkelsen, 1995) and this implies the degree of accuracy or precision in the measurement made by the research instrument. In quantitative research approaches, data is taken to be reliable when similar results are got when research is repeated; this however is not the case for qualitative research since it is not possible to control factors that affect reliability of data (Kumar 1999). Respondent's mood, the nature of interaction, wording of questions and the physical setting affect reliability of data. While interacting with respondents, I discovered that some were exaggerating their experience of aquaculture activities, while others were hiding some information especially that concerned with failure of the project. Because there's no single truth, all their responses were taken seriously for this work.

In research, it is very important for one to acknowledge that every single method used in data collection has its own shortcomings. To reduce this effect, it is necessary that the study is not dependent upon a single method. During this study, different methods were used on different respondents to get specific information; for instance individual interviews alone would have denied me information that is considered sensitive and thus the use of a FGD and observation solved the problem. I therefore applied a specific technique to get specific information.

3.8 Limitations to the Study

Due to limited field work time (two months), appropriate qualitative methods were not employed during data collection. Participant observation that would have explored deep into women's experiences, attitudes and perceptions about aquaculture was replaced by direct observation that was situational thus could have missed out on certain aspects of the project activities. Nevertheless, this short time was utilized maximally.

As pointed out earlier, I set out to study two cases; Bunamwaya and Kigoowa fish farming groups but during my pilot study, I found out that it was not possible to work

with Bunamwaya since the project had not yet incorporated fish farming into its other activities. Therefore it was not possible to get data for comparison purposes like I had thought.

General access to information was not so easy. Interviews with some key respondents were sometimes demoralizing. Many of whom I made appointments either turned them down with reasons of being too busy or kept postponing them thus making it costly on my side. Accessing secondary data was as well not simple. Enough documents existed at the Aquaculture Unit in the Department of Fisheries Resources and Kajjansi Aquaculture Research and Development Center but the time given to me in the Library was not enough yet it was not always possible to borrow the documents.

Apart from the group's constitution, I was not able to access other records from the fish farmers. This was due to lack of a common agreement between members whether I should have access to their records such as books of account. For this matter, I was not able to determine how much the group had invested and earned from their first fish harvest however disappointing it was.

Like Nash (1988) states in Bailey et al, (1996, 4); aquaculture statistics are unreliable and in many cases unavailable; thus the data should often be treated as rough estimates. Therefore this study is not accountable to the aquaculture figures presented since almost all statistical data was got through secondary sources. There was also a problem of contradicting figures in several documents that I accessed both from the field and internet. And to solve this, a comparison of data was thoroughly made during analysis.

3.9 Data Processing and Write up

Although a clear distinction between data gathering and data analysis is commonly made in quantitative research, such a distinction is problematic for many qualitative researchers because some analysis is done as data is being collected.

Data processing is the process of bringing order, structure and meaning to the mass of data collected. In qualitative research, data collection and analysis go hand in hand. For this matter, active participation by the researcher during data collection is very crucial. According to Rubin (1995), data is arranged in ways that help the researcher formulate themes, refine concepts and link them together to create a clear description of a topic in the final stages of analysis and during the course of analysis, I bore in mind the tentative themes that I conceived at the beginning of the study and these were derived from the research questions. For purposes of making relations, condensation of meaning to have a shorter outcome is as important as categorizing information into specific themes during data processing (Kvale 1996) and this is reflected in my findings chapter.

For this study, data was analyzed based on 'conversations' that were recorded during interviews. With this analysis, it is assumed that the meanings are shaped in the context of the exchange and so the researcher immerses himself or herself to the situation to reveal the background of practices (Wynn 1979). Transcripts and text analyses were used to interpret data. Transcriptions of data were done during data collection and this made my work easier at the time of write up. Wolcott (1990) points out that; qualitative researchers make the mistake of leaving the write up until the end when they have got 'the story figured out'. He further asserts that, in qualitative research it's necessary that researchers write all the time because 'writing is thinking'; this actually helps the researcher to think straight and to figure out what the story should be. The motto of every qualitative researcher should therefore be to start writing as soon as possible.

3.10 Conclusion

The above chapter highlights in detail the process of this research. In this study, qualitative research methods were used and general information about Kampala-the study area as well as reasons for this choice are discussed. Note that analysis was done by combining both theoretical and analytical approaches; while theories presented in the previous chapter are used as a justification of this research and a supplement to the SLA which is the analytical framework. It is important to remember that the findings presented in this thesis are specific to this study based on the research approach employed.

CHAPTER FOUR: COUNTRY PROFILE; A BACKGROUND TO THE STUDY

4.1 Introduction

This chapter presents the general information about Uganda. It starts with information on the country's geography, then the level of development by pointing out the salient features of its economy, the poverty situation, the agriculture sector, gender and resource use and subsequently women's role in poverty reduction. The information presented in this chapter provides a basis for the presentation and discussion of my findings in the later chapters.

4.2 Geography

Uganda lies astride the equator between latitudes $4^{0}0^{1}$North and $1^{0}30^{1}$South and longitudes $35^{0}0^{1}$East of Greenwich. The country is landlocked and is bordered by Kenya in the east, Tanzania in the south, Rwanda in the South-western, Democratic Republic of Congo (DRC) in the west and Sudan in the north. Uganda is a well watered country with close to 17% or 51,000km^2 of its area dedicated to swamp or open water. Most of the country lies in the 'Interlacustrine Region' (between the lakes) of Africa[11] with the lowest altitude at 620m above sea level at Albert Nile and the highest at 5,110m above sea level on Mount Rwenzori (UBOS, 2002)

Uganda is richly endowed with a scenic and diversified natural environment including mountains, lakes, rivers, forests, arable land and a climate ideal for cultivation. The natural resources contribute directly to the socio-economic well being of Ugandans. The climate of the country can not be categorized into any single climatic zone, although it has been generally categorized as 'Modified Tropical Climate'. Its central location on the East African plateau is a major determining factor in the local climate.

[11] http://www.government.go.ug/static/geog.htm 31.8.2004

The population as per 2002 was estimated at 24.6 million people and at a growth a rate of 3.4% per annum (Uganda 2002 Population and Housing Census)[12] Those below poverty line were estimated to be 35% of the total population by 2001 and labor force by occupation was; agriculture 82%, industry 5%, services 13% (1999 estimates) (Ibid). The country has a total of 56 districts and this study was conducted in Kampala-the most central district and the capital city.

4.3 Economy

Through the Post-Amin period, Uganda has introduced reforms aimed at restoring and maintaining macroeconomic stability by undertaking structural reforms to improve economic, social and institutional infrastructure. This has been done through investment in education (Universal Primary Education-UPE), health, civil society, government institutions and attitudinal and behavioral values. Because of this, Uganda has recorded an impressive economic performance over the last decade with an average rate of annual growth in GDP recorded at 6.9%. Inflation fell from 16.1% in the past 16 years to an average of about 5.2%. Although growth rate has been sustained at an average over 5% per annum over the last decade, it is still below the target 7% per annum that is projected to achieve a reduction in income poverty to 10% by the year 2015 (Okidi and Mugambe, 2002).

In relation to the above, World Development Indicators for the year 2000 indicated that Uganda's GDP per capita grew faster than many countries in the world but the rate at which it was growing would take at least 13 years for Uganda's per capita income to grow from US$310 to reach the current Sub-Saharan average of US$510 (as per year 2000), which will, by then, also have increased. The report concludes that; to eradicate poverty by the year 2017, Uganda requires a faster rate of GDP growth and a substantial reduction in the population growth.

To increase and sustain a high GDP growth rate, the country's policy has been focused on attracting Foreign Direct Investment (FDI), increasing the competitiveness of Uganda's export sector, promoting domestic sector viability and moving out of subsistence

[12] http://www.dsw-online.de/english/stage/s_ug_country.html 30.3.2003

agriculture into modern commercial animal and crop husbandry. Despite the fact that Uganda has recorded sustained rapid growth over the past decade, development indicators show that it remains below most Sub-Saharan African countries in terms of economic and social well being.

Uganda's low level of development is not only exhibited by low GDP per capita, but also by many other social indicators, such as low life expectancy, high infant child mortality rates, and low school enrollment rates.

4.4 Poverty and Social Development

Poverty being a complex phenomenon has been defined differently by different people. According to Uganda's poverty reduction policy and strategy report[13], poverty is fundamentally to do with lack of well being (Dasgupta, 1993). Lack of well being implies some combination of inability to act and enforced misery, implying severely curtailed human capabilities (Sen, 1993: 1997) ibid. In Uganda, the concept of poverty has been defined in different ways. In 1997, at the launch of first Poverty Eradication Action Programme (PEAP) the Government of Uganda (GoU) defined poverty as lack of access to basic necessities of life (food, shelter, clothing, education and health). However when the first Participatory Poverty Assessment (PPA1) was conducted in 1998, poverty was defined by poor people in Uganda as more than just lack of incomes; but also lack of *means* to satisfy basic, social needs, as well as a feeling of powerlessness to break out of this cycle and insecurity of a person and *property* (MAAIF and MFPED, 2000). In Uganda, poverty has been studied at different levels as thus; chronic poverty or the hard core poor (the forever poor and the usually poor), the transient poor(the "churning" poor-those that move in and out of poverty): those that are occasionally poor and those that have never been poor(the wealthy).

The principle dimensions of poverty in Uganda include; location, gender, livelihood and seasonality. Although commonalities exist, poverty differs in its nature, extent and trends between regions. Poverty is generally a rural phenomenon as 48% of the rural population is below poverty line compared to 16% of the urban dwellers. Further poverty has

[13] http://www.un.org/esa/socdev/ageing/workshops/tz/Uganda.pdf 11.10.2004

declined by 43% in urban areas and only by 18% in rural areas of Uganda since 1992. Also regional imbalance between the north and the rest of the country has persisted at a deteriorating rate as evidenced by the result that it was only in the north where the estimated per capita consumption declined between 1997 and 2000 (Okidi and Mugambe, 2002)

It is important also to point out the possibility that women have not benefited as much as men from the decreases in absolute poverty as noted in the recent years. According to the Plan for Modernization of Agriculture (PMA) report by MAAIF and MFPED (2000), women still do not have as many opportunities for social and economic development in Ugandan society, particularly in rural areas. Like poverty, the division of labor in agriculture is itself complex; it varies with seasonality and ethnic group. Where as women may take part in decision making, they have little control over the resources or the income realized from sales. More so, food production is the domain of women where as men in general concentrate on livestock and cash crops; which have higher potential for income generation.

According to the PEAP framework, poverty eradication is a fundamental objective of Uganda's development strategy; in which the government has resolved to reduce the proportion of the population living in absolute poverty (hard core poverty) from the level of 44% (1997) to below 10% by the year 2017. In the current drive to eradicate poverty in Uganda by the year 2017, the Government of Uganda (GoU) emphasizes *basic needs* and provision of services in its definition of poverty which can be as lack of access to basic necessities of life such as food, shelter, clothing and other needs like education and health. However in its broad policy frame work of poverty eradication, the government does not suggest ways in which to support the diverse ways through which the poor currently attempt to secure their livelihoods, usually by a mix of farm and off-farm activities (MGLSD and MFPED, 2003).

Referring to the capability approach in tackling poverty, what poor people need is the enhancement of their capability to realize their aspirations and achieve certain specific goals that are derivatives of a broad set of aspirations (Okidi and Mugambe, 2002). Empowerment through intervention programmes such as public education, credit

provision, and health support to the poor can increase the returns to the assets that the poor may commit to strategies for improving their livelihoods. Fish farming can play a significant role in achieving the targets laid out in the government's Poverty Eradication Action Plan. In particular fish farming is an economic activity with a high rate of return and very limited risk through which resource-poor households can actively enhance their productive life (NARO and MAAIF, 2000).

4.5 Agriculture and Development

Agriculture is one of the major important sectors of the economy, involving 90% of Ugandan population, with women providing up to 80% of agriculture labor force and accounting for 90% of food production (Bikaako and Ssenkumba in Muthoni et al, 2003; 21). Coffee is the major export crop and accounts for the bulk of export revenues. In the year 2002, agriculture production contributed up to 31.4% to the country's GDP and this totaled US$ 5.9 billion. Industry and services made up 22.7% and 45.9% of GDP respectively[14].

Agricultural activities are mainly concentrated in the southern parts of the country where weather patterns provide for two growing seasons. Almost half of the agricultural production (19% of GDP) is traded or bartered for subsistence consumption outside the market system. In Uganda, most agriculture is performed on farms of less than 2 ha, using family labor and non-mechanized methods. Subsistence production still accounts for about two-fifth of agricultural output; and one-fifth of total economic output.

FAO 1998 (in NEMA 2001) stated that, despite the dominance of Uganda's agricultural sector in GDP and employment and its growth in absolute terms, it actually receded substantially during the 1980's. Following the breakdown in the economy in the 1970's and early 1980's, agriculture was practically the sole productive activity for Ugandans and was critically important for the country's survival. The sector was also seriously damaged in late 1996 and early 1997 by drought conditions and again in late 1997 and early 1998 by extremely heavy rainfall and consequently flooding. This led to severe food shortages that were declared in 21 districts of the then 39 districts in the country.

[14] http://www.myuganda.co.ug/economy 26.9.2004

The decline in food production and lower growth in agricultural production overall in 1997/98 both contributed to slower over all growth (ibid).

In urban areas of Kampala and other smaller towns, a farming tradition, coupled with uncertain food supply from the rural areas, leads to urban agricultural production. Various estimates indicate that between 30-50% of families in Kampala engage in some form of agriculture. Only about one-third of the land available for cultivation was in use by 1998 and almost none was irrigated.

About 90% of rural population is comprised of subsistence farmers or fishers. They lack modern farming methods like machines or even animal traction; have problems that relate to pre and post harvest infestations, inadequate storage facilities and poor transport systems. In relation to this, under utilization of cultivable land has been a key weakness in Uganda's efforts to reduce poverty in rural areas. The government's policy for poverty reduction through agriculture has been outlined in its broad framework of Plan for Modernization of Agriculture (PMA). The rationale behind this is to do away with subsistence agriculture and develop more and better commercial agriculture that would help eradicate poverty[15].

4.5.1 Fisheries Resources

Uganda is endowed with plentiful fresh water resources comprising natural lake, rivers, valley dams and swamps covering about 17% of the total area. According to the National Fisheries Policy (MAAIF, 2004), Uganda recorded 1.4 million dollars worth of fish exports in 1990 and this figure rose to 87.5 million dollars in 2002 making fish the largest non-coffee export earner. Much of this growth was believed to have resulted from the impact of investment in processing facilities, reduction in illicit cross boarder trade and export opportunities[16]. Apart from foreign exchange earnings, the fisheries sector in Uganda provides a vital source of food, employment, recreation, trade and socio-economic well being for the people. The Sector is dominated by private fishermen, traders and exporters. The largest and most resource-rich waters are; Lake Victoria, Lake

[15] http://www.agriculture.go.ug/ministry.htm 12.10.2004

[16] http://www.ugrevenue.com/pdfs/FinalDraftBTTB04AC-EDPR.pdf 22.02.2005

Kyoga, Lake Albert, Lake Edward and Lake George. There are 11 registered fish exporters in the country mainly to European markets. The Department of Fisheries Resources under the Ministry of Agriculture Animal Industry and Fisheries (MAAIF) is responsible for sustainable management of fisheries resources.

The FAO has estimated that Uganda's fisheries currently produce about 13% of Africa's annual inland fisheries catch, with the major commercial species being Nile perch, Tilapia and *Rastrineobloa argentea* locally known as "Mukene". The National Fisheries Policy (NFP) prepared by MAAIF estimates that Uganda has the capacity to produce about 300,000 metric tones of fish annually on a sustainable basis and in fact the maximum annual catch was 245,000 metric tones in 1990, and according to the same report, the catches have been declining since with 220,000 metric tones recorded in 1999.

For all species, it is becoming increasingly apparent, based on recorded tonnage and the size and maturity of the fish landed, that stocks are declining, and that the rate of harvest is unsustainable (KARDC, n.d-Lake Victoria Fisheries Research Project). Reasons for this decline range from increased pollution load and siltation to management and enforcement of regulations related to catch. However, Uganda has the potential to counter this decline, including the active promotion of fish farming or aquaculture.

In line with the above, a Senior Research Officer at KARDC stated that, "*the stage is being set for a revolution in aquaculture and that many believe it will compare to the gains of the green revolution and will reap social and economic benefits to the people of Uganda"*. Unlike in capture fisheries, fish farmers have the greater opportunity to fit supply to demand because they can time harvest to take advantage of price increases caused by seasonal variations in supply and demand (Bailey et al, 1996).

4.6 Civil Society, Private Sector and Empowerment

Uganda has an increasingly active civil society and a more interactive partnership has been developed between the government and civil society in the effort to eradicate poverty. The Poverty Eradication Action Plan (PEAP) gives the private sector and the civil society a clear and undisputed shared responsibility for implementation of the of the

plan. It defines the government's role as that of the facilitator for economic growth, provider of social services and as a counter balance to the government. However, it is necessary to find ways that can further increase the involvement of the civil society and the private sector in the development process. Improving relations and establishing a common understanding between the public and the private institutions are considered important for realizing the full development potential.

Empowerment of all women all over the world has been a constant thrust in policies and programmes in the last five decades. In Uganda since 1986, there has been an opening for women. The current National Resistance Movement (NRM) government introduced a 10 point recovery programme and measures to increase the participation of all citizens in democratic decision making, including marginalized groups of women and the disabled (Muthoni et al 2003, 268). This affirmative action is aimed at women's emancipation and enacting gender sensitive policies.

Through the decentralization policy, women have been provided with ample opportunities to participate in local leadership. The local government act of 1997 provides a 30% reservation of the local council seats for women (Ibid). This is to ensure that women achieve participation in decision making right from the grass root level. Generally, the state has put in place efforts to elevate women's status through deliberate measures such as ensuring women's access to education through affirmative action by giving an additional 1.5 points to female students seeking to enter university, guaranteeing one-third of the positions of all local government structures to women and ensuring women's representation in parliament through affirmative action. (Ibid)

4.7 Gender and Resource Use

4.7.1 Land Tenure and Access to Credit

Like most post-colonial African states, Uganda is characterized by legal dualism- the existence of an imported "western" legal framework and customary legal systems specifically pertaining to land and property rights, marriage and succession. It is inevitable that these two legal systems result into conflicts in resource use.

Regardless of the type of land tenure system (customary, mailo[17], lease and other systems), there is gender imbalance in control over and ownership of land in Uganda. In Uganda, it is common that there is a family plot of land, controlled by the head of the household, on which members of the family contribute their labor as a priority. Generally, women's access to land is dependent on their male relations, (as daughters, sisters, wives, mothers or daughter in-laws) who own and or control land (Bikaako and Ssenkumba in Muthoni et al, 2003; 247).Usually smaller plots of land are allocated to them by their husbands on which they grow produce for home consumption and the little surplus for sale. Women are also responsible for most of the poultry and small ruminants normally kept by the family. They also assist in cutting and carrying forage for zero-grazing. The men generally take the responsibility of selling the produce (IFAD, FAO and FARMESA, 1998).

Uganda is characterized by inequalities in access to land, both with in local communities and from one locality to another. There exist inequalities between men and women, with the latter unable to own land in many parts of the country. Mugyenyi (1998) writes that only 5% of land is owned by women as a result of cultural practices that restrict women's inheritance and property ownership. Women's access and use of land worsens when husbands die (MFPED and PEAP, 2001; 104 as quoted in MGLSD and MFPED, 2003), they totally disinherit or lose the little control over the land resources.

Women of nearly all ethnic groups in Uganda can not inherit productive assets like cattle, fishing tools, land and so on, due to traditional norms and customs. This worsens the dependency of women on men in accessing such resources and this justifies men's patriarchal status in society. Research shows that grabbing of land and other assets from the widow by the relatives of the husband is common in many parts of the country thus putting women in a state of exclusion. In addition to women's low level of participation

[17] Under the Buganda Agreement of 1900, land in square mile blocks (termed *mailo*) was allocated to various political notables. About 9000 sq.mls were given to political officials, including a small amount to the king, churches and some non-Africans. *Mailo* land has been acquired by others through inheritance and sale. http://www.iied.org/docs/drylands/dry_ip83.pdf

in household and community decision making, they become the most marginalized when it comes to resource use.

In Africa, women's lack of access to land rights, and the fact that most of their work is not remunerated, gives them very limited access to cash or credit services. This is because many credit institutions in Africa and specifically Uganda ask for land rights (land titles) as collaterals. Limited access to land by women is a poor indicator of improved women's livelihood opportunities and this is true for the aquaculture sub-sector.

In some instances, husbands will not allow wives to cultivate or do work outside the house. In addition, even when she does earn some income, the husband might demand it for his own use. In many cases, women's right to participate in decision making over produce; the income derived from it and use of that income is not absolute; as such decisions are made in consultation with their husbands (Bikaako and Ssenkumba in Muthoni et al, 2003; 21).

Gender inequality in land tenure security causes poverty, directly and indirectly. Directly, land is a basic need, and women's lack of access to income from crops increases the likelihood of intra- household poverty. This is in line with Sen's argument on women and land tenure arrangements, where he points out that; household assets in the hands of men may fail to enhance the wellbeing of women. Indirectly, land is a critical asset that can be used as collateral or sold to finance other investments or manage a crisis. This is especially critical for widows who lose their land rights especially young widows affected by the HIV/AIDS pandemic, separated and divorced women whose access to land may become problematic and for some of their children, who do not inherit land.
The persistence of gender disparities hamper agricultural productivity, economic efficiency and growth but better public policies can make a difference in closing the gender gap in resource access through public sector investment in advisory services among others.

Generally, the state has created deliberate effort to make women visible by giving them voices in public decision making as earlier pointed out. Since coming to power in 1986,

the NRM government has created openings for women in public decision making. Because of the vulnerability of women in society, women councils in Uganda have been used as tools for raising women's productive capacity. These councils have concentrated on increasing income generating opportunities for women (Bikaako and Ssenkumba in Muthoni et al 2003; 269). Women's groups have initiated credit and saving schemes for their members. Also both government and especially non-governmental organizations have supported the poor to improve their livelihoods through micro-finance programmes. There are many successful local credit programmes in Uganda, which provide evidence that women in particular, can benefit and are reliable re-payers of loans (MGLSD and MFPED, 2003)

4.8 Conclusion

Uganda's level of development is still low and largely depends upon the agricultural sector. At all levels, it is evident that women are under privileged and so the majority constrain themselves so as to sustain their livelihoods. As a way of improving the situation, the government through its national goal of poverty eradication, has put women at the fore front by directly supporting them in the education system and in local leadership for effective decision making. Women too are not passive recipients of development. Through Community Based Organizations, women have come together for a common goal; sustaining their livelihoods and those of the people around them. Women's groups flourishing in the country today have come up with various livelihood strategies and fish farming is one of the many. The information presented here is useful in the study because it provides background information about Uganda as it is necessary in studying aquaculture development in the country.

CHAPTER FIVE: AQUACULTURE DEVELOPMENT IN UGANDA

5.1 Introduction

This chapter presents the status of aquaculture sub-sector in Uganda. It starts by giving the general information on what fish farming is all about, and then discusses the country's performance and management of fish farming activities for the past, present and the future. The chapter further explores potential that exists in Uganda as well as gender dimensions embedded in this activity.

5.2 The Process of Farming Fish

The process of raising fish involves elements similar to animal husbandry and even crop farming. Fish like livestock has to be fed and taken care of. Like other farmers, the fish farmer is concerned with the growth and timing of the harvest while capture fisheries only entails harvesting (Bailey et al, 1996).

Fish farming involves stocking, feeding and harvesting of fish from the farm. Fish can be grown in ponds, cages and concrete tanks, flooded river fields and enclosures in water bodies. Most Ugandan farmers grow fish in earthen ponds for either food or income or both. According to the Senior Research Officer at KARDC, pond fish farming goes through the stages of pond construction, fertilizing, stocking, feeding, harvesting and selling. All this takes in a period of 5-12 months. After a complete harvest of fish from the pond, the pond is drained, mud removed, dried for a month and fertilized again before refilling and restocking.

5.3 Aquaculture- Past, Present and Future

Fish farming in Uganda is a non-traditional activity that was introduced during the colonial period. It begun at Kajjansi in 1953 with the establishment of an experimental station that was responsible for conducting research in aquaculture, training of extension workers, farmers, as well as production and supply of fish fry (fingerlings) to farmers. By 1967, about 11,000 ponds covering 410 ha with estimated annual production of 800-900 tones had been established throughout the country (UFFCA, n.d).

The governments, both colonial and post colonial were concerned with people's livelihoods (welfare and nutrition) and so the focus on aquaculture development in its early years turned to improving household nutrition and food security among the rural communities. *"Nutrition and NOT Economics was the driving force"* says a Senior Research Officer at KARDC. It was promoted as a rural enterprise, yet people lacked indigenous knowledge of fish farming. Farmers were not taught how to raise fish and extension service delivery was limited since the government never took it as a priority. The government was the sole provider of fish fry and with the 1970's political turmoil in the country, Kajjansi, which was the only production center, could not sustain fish fry supply. Other facilities including ponds collapsed due to either political instability or lack of skills to do fish farming. Today however, focus on aquaculture is being shifted from subsistence to commercial fish farming with the hope of earning foreign exchange. This however leaves a question on whether the primary goal of welfare and nutrition has been achieved.

The fish ponds in the country are mainly concentrated around areas remote from the major lakes. For instance, the western region which is far from the major lakes such as Lake Victoria and Lake Kyoga, has 46% of the ponds, the northern region with mainly the Nile river has 24.4%, the eastern region much of whose part surrounds lake Kyoga has 17.4% and the central region surrounding the massive lake Victoria has only 12.2% of the ponds (KARDC, n.d)

5.4 Aquaculture Management in Uganda

The status of aquaculture management is currently in a state of transition. Aquaculture sub-sector in Uganda is described as that of low-input, low-output yet fish is by far the most important source of animal protein (NARO and MAAIF, 2000). The culture has been severely hampered in the past due to problems of inadequate budgetary provision and administration with in the department of fisheries resources, and consequently weak training and support for extension service providers.

Limited production of seed fry for distribution to small-scale farmers and poor pond management practices have been identified as major constraints in the past. The Fisheries

Research Institute and National Agriculture Research Organization (FIRI and NARO) took over the Aquaculture Research Station at Kajjansi in the early 1990's and has been conducting research on stocking rates, fish feeds and fish pathology. The station continues to be the major supplier of fish fry to private farmers. In response to government extension campaigns, it is claimed that during the last decade there has been an increase in the number of new ponds and the highest records were between 1990 and 1997[18].

Political interest and will, supply of free seed to low income farmers, and increased technical training and guidance have resulted in re-invigoration of the sub-sector. Currently, it is claimed that there are some 20,000 ponds in Uganda and that the average pond size has tripled from 200m^2 to 600m^2. Of recent commercial fish farmers have emerged with relatively big sized ponds of about 3,000m^2 (UFFCA, n.d). Production has been estimated by MAAIF (2004) at 2000 tones per annum compared to 220,000 tones from capture fisheries. However it is important to remember that aquaculture figures in Uganda are mere estimates due to poor record keeping and management.

Aquaculture is an agricultural enterprise that can easily be integrated into the current farming systems practiced by over 80% of the small scale farming households and the private farmer-to-farmer fish fry supply will greatly improve their house hold nutrition and additional income from sales of table fish and fry. However, the problem with aquaculture development in Uganda is that, it has not been promoted as a farming activity but instead under fisheries.

Ugandan aquaculture has exclusively taken place in earthen ponds. Majority, over 90% of the ponds are small holder subsistence scale ponds of about 100-500m^2. Only recently, some few affluent individuals have started small scale commercial aquaculture with about 4-10 ponds ranging in size from 1000-10,000 m^2 and these are mainly to be found in the central region where institutional arrangements favor farmers. (KARDC, n.d). It is also

[18] http://www.fao.org/fi/fcp/en/UGA/body.htm 12.10.2004

pointed out that, of recent only one investor has tried out cage culture on Lake Victoria and this project is in its initial stages.

Over the past decades, the governments both colonial and post-colonial have promoted fish farming in various ways, mainly concentrating on the construction of ponds. Adoption of fish farming by farmers has been uneven throughout the country, partly reflecting particular government or NGO efforts, and partly testifying to the unequal technical and economic potential of fish culture in the country. In addition, some minor lakes, especially the small crater lakes of south western Uganda have been stocked to provide fish to the surrounding communities (See figure 3). It is also claimed by some government officials that numerous dams and valley tanks have been stocked but reliable information about their productivity levels is not available.

The government's PMA[19] recognizes the roles of different stakeholders in the agricultural sector. Government institutions, the private sector; NGO's, CBO's and individuals, are all working towards a common goal-poverty reduction. Therefore it is necessary that coordination between all stake holders in the sector be strengthened for better results. Uganda can no longer rely solely on the public delivery of services and therefore an expansion in the private involvement in the provision of agricultural services is envisaged (NARO 2001).

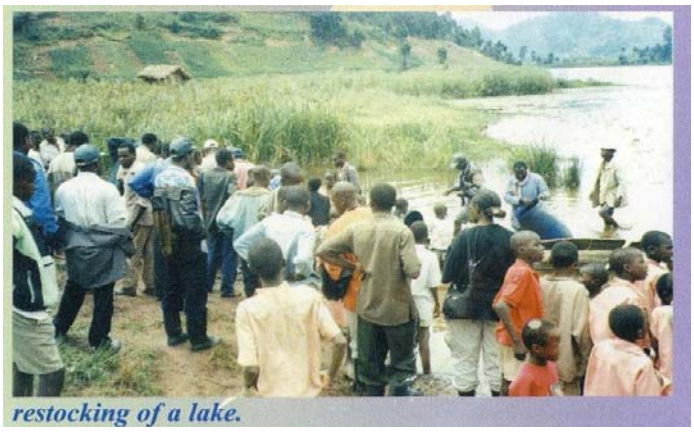


Photo by MAAIF and DFID

Figure 3: A lake in south western Uganda Being Restocked.

[19] Plan for Modernization of Agriculture (PMA) is part of the country's long term Poverty Eradication Action Plan (PEAP) that is aimed at transforming subsistence agriculture to commercial agriculture. (NARO, 2001)

5.4.1 General Conditions for Establishing a Pond

Fish farming does well in some areas and not in others. According to the Senior Research Officer at KARDC, good areas for fish farming in Uganda have;

- The right kind of climate for certain fish types, for example African Cat fish (Emmale) grows well in warmer areas of 25^0C and above, while mirror carp is best grown in cooler areas of about 22^0C and above. These species can be grown separately (monoculture) or together (polyculture).
- Reliable sources of water such as stream, springs and rivers for filling and re-filling the pond. Reliability and amount of water limit the size and number of ponds.
- A site that is gentle sloping to allow for the filling and complete draining of the pond, with soils that can hold water. Steep slopes make pond construction costs very high while flat areas make it difficult to drain the pond and it is prone to flooding.
- A pond of at least $300m^2$, which is about 1.5m deep
- Source of fish fry (breeding centers)
- Materials for fertilizing the pond and feeding the fish
- Less fresh fish in the local markets or highly priced lake fish and
- A good fish eating culture.

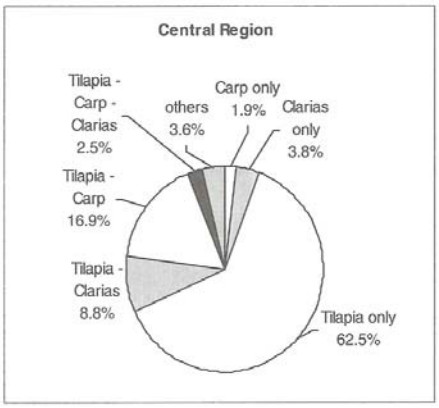
5.5 Potential Resources for Aquaculture Development in Uganda

The potential for aquaculture in Uganda is high although the sub-sector production is still low, mainly at subsistence level and is still considered as a rural enterprise. Potential is vast for both small scale (subsistence) and commercial farmers.

Uganda is endowed with various water sources that are generally well distributed in all regions of the country. Water sources range from lakes, rivers to streams, springs and swamps many of which do not experience seasonality problems and so water level is maintained in the fish ponds through out the year. Water supply is an important physical characteristic of a fish pond that affects pond management and production. The majority of the ponds in Uganda (70%) rely on ground water as their main source. Surface water is significant mainly in the eastern and western parts of the country, while rain water is of

some importance in the northern parts of the country (MAAIF, 2000). In central Uganda, streams are the major source of water and Kigoowa fish Ponds depend on a stream (Nyanjeradde stream) that flows through the swamp where the ponds are located (see figure 2).

The country is not only endowed with water resources but also a variety of fish species. Over 350 fish species are known to exist in Uganda. However the major species reared in ponds include Tilapia, Clarias and Carp as shown in the figure below.



Source: NARO and MAAIF, 2000

Figure 4: Common Stocked Fish Species in Central Uganda

From figure 4 above, it is evident that Tilapia is the most reared specie in central Uganda. This is due to reasons like acceptability by farmers, ease of marketing, ease of culturing; breeding and feeding as well as less environmental concerns (Ogutu-Ohwayo 2000). With reference to this study, it was revealed by women that farm trial on Tilapia did not yield positive results at the start and so Clarias had to be opted for. The aquaculture technician when asked why this happened, he explained thus; *"Thorough research on site conditions and fish species that grow best at the site was not done appropriately and so ponds were first stocked with tilapia which did not grow well due to low temperatures"*.

Recent stock assessments conducted by Lake Victoria Fisheries Research Project (LVFRP) indicate that Lake Victoria alone has at least 200 fish species, 127 of which are cichlids, mostly of the haplochromine stock. Since the introduction of the Nile perch in the 1950s by the colonial government, the lake's multispecies composition has reduced to

a dominance of three species: the Nile perch (*Lates niloticus*), the tilapia, (*Orechromis niloticus*) and, to a much lesser extent, the sardine type (*Rastrineobola argentea*). It is estimated that the stock of Nile Perch, the major export species, is at 650,000 metric tones in the whole of Lake Victoria. Other species numbers including the various tilapiines and the pelagic fish species like *Rastrineobloa argentea* locally known as "Mukene" are only roughly estimated to be 750,000 metric tones, pending more appropriate sampling techniques.

Most of the available species have not been substantially exploited. The *Haplochromine cichlids,* which account for about 300 species have only recently gained commercial value as ornamental fish. Uganda has capacity to produce about 300,000 metric tones of fish a year on sustainable basis but the maximum annual catch recorded so far was 245,000 metric tones in 1990. There is still great potential to improve fish yields, through both improved lake exploitation and aquaculture (MAAIF 2004).

According to NARO, about 5 fish species have proved to do well under culture conditions. Species of Tilapia; that is *Oreochromis niloticus* (Nile tilapia) and *Tilapia zillii,* Clarias (African catfish) species of *Clarias carsonii* 'Ensozi' and *Clarias gariepinus* 'Emmale' and the Common Carp (*Cyprinus carpio)* which was introduced from Asia in 1957. All are major fish species found in many of the Ugandan ponds. Other cultured fish species include, Mirror Carp, Rainbow tout (for ornamental culture) and the Nile perch whose culture has been tried of recent. There are also opportunities for farming species of Nile crocodile, the Cray fish and bull-frogs which have high export value (NARO and MAAIF 2000).

Development of stock fish is another unexploited opportunity in Uganda. Today, there are few centers in the country that produce seeds. The number of fish farmers seems to be growing at a faster rate than the seed producers thus an opening for individuals to start seed production centers. To sustain fish fry production, the government is soon accepting farmers to buy fingerlings from any private producers and thus break the government's monopoly in fingerling supply which has for long been a constraint among fish farmers (Maseruka, 2004)

In Uganda's Plan for Modernization of Agriculture (PMA), it is claimed that fish farming can potentially contribute to the increased incomes of both rural and urban individuals whose livelihoods largely depends on agricultural activities. PMA is currently addressing constraints that halted aquaculture development in the past. It advocates for commercialization of agriculture to increase production for income generation and food security thus calls for use of modern farming systems. As with many other technologies, those most likely and most able to become productive fish farmers are not necessarily the most needy. Nevertheless small scale fish farming can be, and is often a valuable diversification for a wide range of farmers and so can reduce vulnerability and improve the productivity of other crops (Harrison et al 1994).

Land is another important resource for aquaculture development. According to the Country Report by EU, it was confirmed that Uganda has 17 million hectares of agricultural land though only about 5 million hectares were under use. Land therefore is not a limiting factor to individuals wishing to undertake any kind of agriculture investment. However the government needs to look into the land rights in consideration of gender issues if such an activity is to benefit the majority. Fish farming is a long term activity that requires sustained use of some resources like land.

Uganda with its suitable soil, a number of water reservoirs and wetlands as well as a fish eating community, thus has a potential to increase fish production through fish farming. To demonstrate this potential, Uganda falls almost on the same altitude with Thailand. In Thailand, one farmer was found to produce over 3,600 tones of fish per year, which is more than the current fish production from aquaculture in Uganda of about 2000 tones per year (MAAIF and DFID n.d).

In relation to the Sustainable Livelihoods framework elaborated in chapter two, the above potential for aquaculture development describes resources or capital assets that Ugandans can put to use to expand their aquaculture activities. However, it is vital to understand ways through which different people access and use such resources as explained in the next section.

5.6 Aquaculture- A Livelihood Strategy for Women

Small scale fish farming at household level is a relatively recent component of mixed farming systems of Uganda. In its socio-economic aspects, it is embedded into the prevailing gender relations, family structures and household management patterns. Women's positions and entitlements[20] in aquaculture are therefore not fundamentally different from other areas of household economic activity. According to a survey carried out by NARO and MAAIF (2000), it was revealed that many of the ponds in the country belong to individual households. On the other hand, some women and youth groups have started fish ponds as part of their portfolio of activities in fighting poverty and KCWDA in Kampala district is one of such groups.

Understanding gender division of labor in the household creates a deeper insight into knowing women's position in aquaculture. As discussed earlier, the unfair culture in Uganda tends to deny women and youth access to property, like land and capital of their own. Consequently the men own land, the ponds and the proceeds thereof. *"Most agriculture activities done at subsistence level are taken to be women's activities. This is because; there is no substantial cash involved. Men mainly dominate cash generating activities. This follows a tradition that women are not supposed to do certain activities especially those that involve hard labor and those outside homes"* explained the Programme Officer, Gender Department at UFFCA. However, other findings from this study and other studies like NARO and MAAIF (2000), it is evident that most of the activities in aquaculture in Uganda are done by men (see figure 5).

With regard to gender relations in resource ownership, access and use, the situation is so complex that individual women through effective groups which are not exclusively for women but include a few men seems to be the best way to go. From the start of the last decade, many women's groups have been started most of which acting as self-help projects in strengthening women's position in the society. For some of their activities, they may rent land from private owners but occasionally are granted government and

[20] Entitlements refers to the support of family or clan members, rights enshrined in national constitutions and international treaties as well as technical assistance from extension workers (Helmore et al 2001)

church land for their operations. Even then, lack of full control over public and church land limits their sustained group activities.

A feature of women's groups in Uganda and a difference compared with other groups in Africa is that, they usually include a few men in their projects. This is generally a positive step because men become involved in the groups' activities, know what is going on and can communicate its causes to other men in the community (FAO, IFAD and FARMESA, 1998). In addition, this opens the door to credit services for the group since men may be persuaded to put up their land as collateral in obtaining the loan. This special feature was identified with the study group where the men are included at different levels even when it is clear that Kigoowa fish farming group is a women's project. Livelihood strategies that are gender insensitive are likely to fail but for them to be sustainable, gender relations need to be considered. Female groups working without inclusion of their male counterparts will not achieve much since males dominate many important sectors and major government departments in most developing countries. Therefore the way forward is an inclusion process where men and women work together for a common cause as GAD emphasizes; gender and not women should be the focus of development.

Today, many Ugandan women have been over powered by the burden left to them by the HIV/AIDS epidemic. The disease has claimed thousands of youthful people leaving behind young children and their grand parents who now face the burden of taking care of these orphans. The old women spend all the money looking after the AIDS patients and the orphans yet they are unemployed. This worsens their vulnerable situation since it is not easy to provide some basic needs to the family members. In Northern Uganda, the situation is worse. The region has been under insurgency for the past 19 year and so rebel activities have claimed many men and women.

"I came to live with my son in the city hoping that life was better, but after his death, I now have to look after his 3 children who are in school. I pay some of their fees, buy clothes for them and buy food yet I don't have any source of income. When I think of going back to Lira, I fear the war and I'm not even sure that my son's land still belongs to him", narrated a 63 year old – widow farmer at Kigoowa.

5.7 Constraints and the Vulnerability Context of Aquaculture in Uganda

Harrison et al (1994) mention that many problems of African aquaculture development are not significantly different from those of other introduced technologies. The farming of fish that started more than 50 years ago in Uganda has not been of much significance to the livelihoods of many Ugandans. Factors varying from socio-economic to institutional constraints can better explain the low level of aquaculture take-off in the country.

Limited access to resources such as land and other inputs for fish farming are the major constraints. Past studies show that about $^{2}/_{3}$ of the ponds in the country are not stocked because farmers have limited access to fish fry, water supply problems and limited capital to maintain the ponds. The general assumption that fish farmers are men has implications for extension services. To many extensionists, women fish farmers are invisible. Women who manage ponds for their husbands are always by-passed in training. The same is true for many aspects of agriculture although the specific constraint may be different.

Good advice and extension play a key role in the development of sustained pond management, but the inconsistency and irregularity of this advice often appears to do more harm than good. From interviews with officials from the government departments and private individuals, it was found out that extension services in the country are more focused on capture fisheries and the agriculture sector in general and not aquaculture. This is partly due to limited familiarity with fish farming which often makes policies confounded with capture fisheries and administrative structures that inhibit the effectiveness of extension programmes. There is also limited professional training and as such aquaculture extensionists only receive short training in aquaculture and none in extension services.

It is however important to note that; if fish farming is introduced as a branch of fishing and not farming, it may result into negative management practices and thus unsustainable

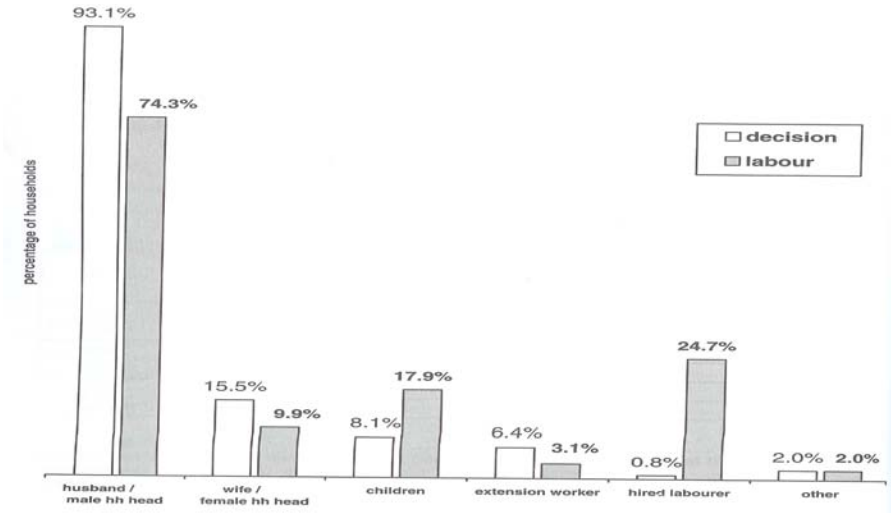
(Harrison et al 1994). "*NAADS*[21] *activities in extending services to farmers are still poor in the country. In fact the whole fisheries sector is not well addressed under NAADS, and so there is much that the government needs to do if fish farming is to benefit from such services"* commented the Senior Research Officer at the Aquaculture Unit, Department of Fisheries Resources during an interview.

There is a problem of lack of motivation amongst extension workers and this limits their service delivery. Lack of vehicles limits their services to a small area and more to that, their services are never monitored. In some parts of the country, the civil unrest prohibits any kind of extension service due to fear for their lives. Motivation is generally low and because of poor working conditions, lack of transport, low salaries and negligible consultation from superiors, good and bad extension becomes largely the product of individual personalities as pointed out by an extension official at UFFCA.

Socio-cultural aspects of fish farming including mechanism of control and decision making also play a role in the under development of fish farming. According to the baseline survey conducted by NARO and MAAIF (2000), findings indicate that decision making on issues to do with fish ponds, is a responsibility of men (figure 5). Issues of pond construction, pond management, harvesting of fish and post harvest utilization of fish pond are all decisions to be determined by men. Such institutional arrangements have negative implications to women's livelihoods. However, this situation only holds where there is individual family fish farming and not in group farming. Figure 5 below shows how decision making in households of fish farmers is distributed by percentage.

The relative isolation of fish farming promotion from agricultural development activities tends to compound the phenomenon. Aquaculture has for the most part remained a separate "sector", tenuously- and uncomfortably –attached to fisheries departments or ministries. Aquaculture research and development has for too long remained the province of biological and technical specialists. The social, cultural, and political contexts in which aquaculture is promoted have too often remained largely invisible and shrouded under the technical language of project planning (Harrison et al, 1994).

[21] NAADS (National Agricultural Advisory Services) is a government body that provides advisory services in areas of agriculture to both public and private institutions and farmers.



Source: NARO and MAAIF (2000)

Figure 5: Decision Makers and Laborers in Fish Farming

Cultural beliefs may also limit the expansion of aquaculture in some parts of the country where fish is taken to be a taboo. The cattle keepers and especially some Bahima of western Uganda do not eat fish because they believe fish has negative implications on the milk productivity of their cattle. Such superstitions do not encourage the growth and expansion of fish farming. Also, fish farming is said to be associated with progressive (successful) farmers thus reducing the morale of poor farmers since they hesitate to start the activity arguing that it requires a lot of capital at the start as some fishermen at Kasenyi put it when asked why they were not involved in fish farming.

5.8 Conclusion

Based on the findings presented in this chapter, it is evident that aquaculture has not been consistent in its growth due to socio-economic and political factors. Management in the aquaculture sector has been more acquainted to fisheries than agriculture and this has had negative implications especially with extension service delivery. Although potential for aquaculture is vast in the country, constraints emanating from limited access to resources like land and capital reduce the morale of potential farmers. Nevertheless, women as a way of sustaining their livelihoods have formed groups so as to work together for a common cause as discussed in chapter seven.

CHAPTER SIX: POLICIES, INSTITUTIONS AND PROCESSES. IMPLICATIONS FOR AQUACULTURE DEVELOPMENT IN UGANDA

"Policy and governance are the key elements required to promote the economic efficiency, ecological integrity and social equity that make up sustainable livelihoods" (International Working Group on SL, 1997 in Helmore et al, 2001).

6.1 Introduction

This section identifies and analyses policies, rules, laws and cultural practices that may encourage or discourage fish farmers' activities. These mainly relate to the government's policy strategies that aim at transforming the country's agricultural sector from subsistence to a modern one. However the strategies adopted by the private sector and civil society are equally influential as presented in this chapter.

6.2 Policy Overview

Policy strategies in Uganda relate to the development of small scale fish farming for subsistence production and recently commercial fish farming. The overall national development objective is to *"eradicate poverty, ensure food security and ensure employment and income"*. Under the fisheries sub-sector, the goal is to ensure increased and sustainable fish production (Ogutu-Ohwayo, 2000). However, at national level, policy makers face a dilemma; either to try to develop activities and approaches that reach the resource-poor or to focus on technology development which may be more commercial in the long term and which are unlikely to be closely related to food security at least in the short term.

As mentioned above, many of the policies that relate to aquaculture and fisheries in Uganda are generally long term and so do not take into consideration the immediate needs of the poor people for whom development is meant. This is also an indication that such policies are made with limited or no consultation with the local people. Conflict of interest between long-term sustainable resource use and the immediate needs of the poor and the ambitious thus exists. Although there may be some form of consultation, local

people hardly participate in decision making since objectives for development are in such a case donor objectives and not objectives of the people. On the other hand, limited literacy and skills amongst the poor makes it difficult for the other institutions to clearly coordinate with the people.

Uganda's strategies to development are based on modernization ideologies; that is a shift from subsistence to commercial production. For instance, Uganda's development vision is one of; *"modernizing development sectors by the year 2025" (*MAAIF, 2004). Vision 2025 embodies strategic actions, which guide government policies over the next years. With in this vision, some strategic frameworks have been built and they relate to development and management of fisheries, and agriculture sectors for sustainable development thus encompassing aquaculture.

With in the fisheries sector, the country's vision is, *"an ensured sustainable exploitation and culture of the fishery resources at the highest possible levels, thereby maintaining fish availability for both present and future generations without degrading the environment"*. The strategic actions of vision 2025 and national development objectives are embedded in the current broad policy frameworks of; SAP's, the National Environmental Action Plan (NEAP), the Poverty Reduction Action Plan (PEAP) and the Plan for Modernization of Agriculture (PMA).

From the above frameworks, the fisheries sector has a realistic long term vision of –a flourishing fisheries and aquaculture sector in which over 250,000 tones of fish are harvested annually from populations of wild fish stocks living in healthy ecosystems and modern aquaculture technologies. These frameworks aim at;

-Participatory fisheries management institutions that build on community and stakeholder structures leading to the generation of adequate incomes to alleviate and prevent poverty. This being a people- centered participatory approach; the goal is not only attainable but also sustainable. This concurs with what B.T Costantinos, team leader of UNDP's Sustainable Livelihoods programme in Malawi had to say; *"promoting sustainable livelihoods involves determining what people already know"* (Helmore et al 2001, 9) thus building on what local people already have (their strength and/or wealth). The issue of

community participation in fisheries management in Uganda however remains questionable.

-A fully developed and productive aquaculture system for all water bodies in agro-ecological zones and integrated into agro-farming systems. When this is to be attained remains a question to be answered.

6.3 Guiding Principles in the Fisheries Sector

(i) **Poverty Eradication**

It is well stipulated in the national fisheries policy that the fisheries sector can contribute to poverty alleviation, modernization and national prosperity if well developed and managed. More specifically, the farming of fish and crustaceans contributes to food security, household poverty reduction and for export market. The challenge however is to encourage farmers and the private individuals to invest in aquaculture; a non-traditional farming activity.

(ii) **Gender and Equality**

This points out that active participation of women and youth in fisheries activities is the way forward if the sector is to be sustained. It suggests that there is need to have equitable representation in decision making; shared responsibilities and benefit sharing by all groups thus help reduce the vulnerability of women and youth. Emphasis on women is based on the fact that they are usually the central engine of development in a community and they easily implement the action plans because they are already active as the bread winners, even in most male headed households. Therefore involving women is necessary because they form a big part of the poor in a community Helmore et al (2001).

(ii) **Sustainable Development**

The policy seeks to ensure that the management and development of fisheries sector takes into account the concepts of both intergeneration equity and intra-generation equity (MAAIF, 2004). For this to be successful, general fisheries and aquaculture activities need to have such characteristics of; economic efficiency, social equity, ecological integrity and resilient in nature.

6.4 The Aquaculture Policy

Policy statement (9; 37) in the National Fisheries Policy Report (MAAIF, 2004) treats aquaculture separate from capture fisheries. It states that *"aquaculture fish production will be increased so as to reduce the gap between fish supply and the increasing demand for food fish"*. According to this policy, aquaculture being more akin to agriculture than traditional capture fisheries makes it easily integrated into household farming systems with potentially real impact on the protein intake of the rural poor. It is argued that as the sector stabilizes, development is guaranteed through employment as a profitable science based enterprise to utilize marginal lands in the country and offer capital intensive fish farming systems in urban areas that are market driven.

Also, private individuals in form of merging middle class are expected to be the main engine for growth and vertical integration along the market and that chain is expected to stimulate small scale production in out-grower schemes. The public sector is expected to guarantee environmental and socially desirable industry that is economically viable and spurns out good quality products. Much as this sounds a good idea, it is evident that much of such suggestions have not yet been implemented due to poor economic resources in the country as well as limited commitment on the part of some stakeholders and especially government employees.

As mentioned earlier, aquaculture in Uganda has been developed under the Fisheries department and this has had significant implications. The institutional position of aquaculture in fisheries and not farming has dominated Uganda's aquaculture development policies and yet for aquaculture to be beneficial it needs to be treated as a farming activity and not part of fisheries. There exists very few fishery extension workers in the country and these are limited to areas that are more productive in terms of fish (capture fisheries) production. Although agricultural extension workers are more, they equally have less information about aquaculture like the former and according to an official at UFFCA;

"…….this is so due to the aquaculture training history in Uganda's institutions of learning. It is only of recent that Makerere University introduced a course in aquaculture

training. Therefore aquaculture extension services in the country remain limited and undeveloped".

The policy emphasizes that aquaculture uses modern farming technologies so as to ensure sustainability and future success. This is because development of many farming activities in Uganda today are based on PMA framework which promotes the so called modern farming methods by emphasizing a shift from producing for home consumption to producing in large quantities for sale (subsistence to commercial). Modernizing agriculture, it is argued, will lead to more formal and informal sector work opportunities for the poor in Uganda (MGLSD and MFPED, 2003). And aquaculture being a non-traditional activity, there is no way it can escape modern methods of cultivation. According to the Senior Research Officer in the Department of Fisheries Resources, the PMA policy has negative implications on aquaculture since the latter is not popular among Ugandan farmers, *"farmers may not purchase advisory services for fish farming because they lack adequate knowledge and experience and so they opt for other forms of farming where they are assured of high yields other than fish farming"*

The aquaculture policy is specifically aimed at achieving;

- Increased quality and quantity of aquaculture-based fish production.
- Increased production of a diversified range of fish products including finfish and crustaceans.
- Promoting certain targeted fisheries for live ornamental fish production and
- An enhanced fish production in minor lakes and reservoirs.

6.5 Policy strategies by Various Stakeholders

The Fisheries Sector Strategic Plan (FSSP) provides a guiding framework for a process of fisheries sector development involving government, private sector, and civil society in the management of Uganda's fisheries resources. To achieve the objectives mentioned above, all stakeholders need to work together (holistic) towards sustainability. In this case, the role of the central government is to;

(i)Develop the capacity for private fry producers

(ii) Expand production of traditional aquaculture species such as *Oreachromis niloticus* (Nile-tilapia), Clarias and the *Cyprinus carpio (*Carp).

(iii) Encourage research into fish breeding for high yielding, disease resistant, temperature and low/high altitude tolerant varieties to suit diverse geographical and climatic conditions in Uganda.

(iv) Encourage, guide and promote small scale semi-intensive polyculture for rural farmers; large scale semi-intensive monosex for progressive farmers or middle class; and intensive fish farming for Foreign Direct Investors in joint venture with local entrepreneurs.

(v) Promote diversification and the development of new technologies to reduce production costs and exploit new areas or opportunities for aquaculture production

(vi) Encouragement of communities in restocking and management of stocks water reservoirs and minor lakes; and

(vii) Ensure effective participation of NGO's and CBO's in the promotion of rural based aquaculture development programmes.

It is worth noting that the most important prerequisite for creating sustainable livelihoods and for achieving sustainable development is good and accessible government. While the local government[22] ensures that local level aquaculture plan is in place, that farmers receive technical advice, encourages and empowers farmers through formation of fish farming groups and associations, but this is still constrained by the necessary resources in fulfilling its obligations.

On the other hand, the policy stresses that the role of civil society is to support training of farmers in aquaculture practices, provide advice, basic inputs and financial support for aquaculture operations to the rural poor; organize farmers into fish farmers associations and groups and support and promote exposure of farmers to new technologies and practices in aquaculture.

[22] Local government system (districts and village levels) was introduced in Uganda through the decentralization programme under the current government so as to bring people closer to decision making.

NARO[23] is one of the government's institutions responsible for implementing the aquaculture policies and according to Ogutu-Ohwayo (2000), NARO set up guiding strategies for doing this. For instance, fish species that were to be promoted under aquaculture were ranked according to acceptability, ease in culturing, ease in marketing, and availability of technologies for breeding, feeding and environmental concerns. NARO therefore prioritized aquaculture species in order of importance as shown in the table 1 below.

Table 1: Uganda's Common Reared Fish Species in their Order of Importance.

Order of Importance	**Specie's Name**	**Local Name**
1	*Tilapia* (Nile Tilapia)	Ngege
2	*Clarias genepinus* (African Cat fish)	Emmale
3	*Oreochromis esculentus*	……..
4	*Bagrus docmac*	Semutundu
5	*Barbus spp*	Kisinja
6	*Labeo*	Ningu
7	*Alestes*	Ngara
8	Mirror carp	……

Adapted from Ogutu-Ohwayo (2000)

6.5.1 Institutional Support to Sustainable Aquaculture Development

"The relationship between outside promoters of aquaculture development (e.g. government agencies, NGO's, private investors) and community organizations is another area where social science research can provide useful insight" (Bailey et al, 1996).

[23] NARO (National Agricultural Research Organization) is a government institution that is concerned with research and development into the agriculture sector.

At the national level, external assistance to aquaculture development has usually taken the form of project aid which has often aimed to rehabilitate or build infrastructure for instance state farms or hatcheries. DFID was by the year 2000 assisting in implementing the national programme in poverty reduction through promotion of small scale aquaculture, while Global Environment Facility (GEF) and World Bank through the Lake Victoria Environmental Management Project (LVEMP) are currently assisting in the development of technologies for promoting culture of endangered and previously important commercial species of Lake Victoria (Ogutu-Ohwayo, 2000).

Some projects assist to build the capacity of public institutions for generating technologies and others provide support directly to farmers or indirectly through NGO/CBO and the extension services. UFFCA is one of the local NGO's that has played a major role in supporting activities of fish farmers and especially those in central Uganda. The major problem however, has been poor collaboration between different institutions.

6.5.2 National Support to Aquaculture Development

In countries where top government officials have not articulated a national aquaculture development policy, aquaculture programmes have rarely succeeded (FAO 1987, 80). In Uganda, the national support to aquaculture has been influenced by a range of factors including the political and the economic environment, physical resources, and in particular the need to respond to external support requirements. Fish farming is perceived as foreign technology which can be learnt through contact with the promoters. In this respect, it is similar to other "new" crops which are partially dependent on outside advice and assistance.

Government's role in aquaculture development is to provide support to (under the Local Government Act 1997) local governments, communities and the private sector which have the mandate to ensure controlled access to sustainable resource base and for developing the socio-economic potential of the sector. This is because local capacity alone may not be sufficient to safeguard the livelihoods of people depending on fisheries resources. Local governments ensure that farmers receive technical guidance and

advisory services on aquaculture practices as well as encouraging and empowering them through formation of fish farming groups and associations as mentioned earlier.

6.5.3 The Role of NGO's

The evidence concerning non-governmental assistance to aquaculture is more limited because there are very few NGO's that are concerned about aquaculture activities. Assistance from external NGO's has frequently been linked to church-based groups. However the comparative advantage of NGO's is thought to lie in their closer relationships with local people and more flexible organizational structure (Fowler 1988). In most Sub-Saharan African countries, NGO's work with government departments and so are affected by comparative constraints concerning access to resources, socio-cultural aspects including mechanisms of control and decision making (Harrison et al 1994, 13)

NGO work in Uganda can be described as engendered. Much as many institutional frameworks tend to favor males against their female counterparts, NGO's in the quest for development goals have targeted income generating projects carried out by women's groups rather than individual house holds. In relation to this, NGO's argue that this is done because women are key agents in safeguarding nutritional benefits from aquaculture and alternative fish supply. The obvious targets of NGO's to community based organizations are empowerment, community planning and poverty reduction strategies.

Under the Uganda's fisheries policy, NGO's have the mandate of;
(i) Acting as intermediaries and or conduit for financial support e.g. micro-credit loans to the communities.
(ii) Advocacy to ensure that the concerns of the unprivileged are incorporated into the development process.

However the NGO strength lies in their long term commitment, their perceived transparency, their access to communities and their independence. Inspite of their ability to facilitate the implementation of fisheries policies, activities of NGO's are often limited by their lack of capacity and specific skills relating to fisheries in general and aquaculture specifically (MAAIF, 2004).

Both local and international NGO's like UFFCA (Uganda Fisheries and Fish Conservation Association), Nsambya Catholic Secretariat, African Development Bank, LVEMP, FAO and USAID/Uganda were pointed out to be active in providing development assistance in agriculture related activities in Uganda. Much as the Senior Officer at KARDC credited the roles of such NGO's he stressed that most assistance especially by donor agencies is at national level and sometimes does not easily reach the local farmers. Women farmers at Kigoowa commended the good work by UFFCA in extending skills and technical support to the group project. However, this being a local NGO, it is limited by resources as discussed in the next chapter.

6.5.4 The Fish (Aquaculture) Rules, 2003.

Under section 43(g) of the Fish Act) Cap 228

According to the rules stipulated by the Ministry of Agriculture Animal Industry and Fisheries (MAAIF), section 6 points out that the management of an intensive or semi-intensive production type of establishment need to be approved by the Chief Fisheries Officer before any activity is done on the establishment. The Officer is responsible for issuing the guidelines and code of practice of aquaculture to potential farmers from time to time. An establishment, which meets the requirements in the codes of practice of aquaculture, may be issued with an Aquaculture Establishment Certificate as the first requirement. And any establishment that carries out activities other than those it's registered for commits an offence.

The same rule stipulates that no person, institution or establishment shall carry out aquaculture without adequate measures to guarantee for confinement of the fish to prevent escape from the establishment. The Chief Fisheries Officer is responsible for regular monitoring and inspection of aquaculture establishments

Aquaculture Certificates

No person or establishment is allowed to produce and distribute or sell fish seed to fish farmers without a Fish Seed Production Certificate issued by an Aquaculture Inspector. He may refuse to issue or may withdraw a fish production certificate if the production of fish seed, the hatchery or breeding facilities and brood stock are not in accordance with

the Guidelines and Code of practices of aquaculture as established by the Chief Fisheries Officer.

It is important to note that, for any person or group of people intending to carry out any aquaculture related activities, they are required to pay a fee for either certificates or permits. The fee varies between 1000/= (Ug. Shs) to 100,000/= (Ug. Shs) depending on the activity engaged in (see appendix II). This rule has a negative implication to the poor farmers who in most cases are not be able to pay for all such charges.

Transfer of Fish

In the Fish (Aquaculture) Rules 2003, it is clear that no person shall export or import live fish for purposes of aquaculture without a permit issued by the Chief Fisheries Officer. The fish species that may be exported or imported are those specified in eighth schedule of the rules (see appendix III) And any person or establishment intending to transfer fish with in Uganda for aquaculture purposes shall apply to the Chief Fisheries Officer for a permit and a payment has to be effected. The officer may refuse to give permission for transfer of any fish (especially imported species) if the fish to be transferred;

- Presents danger of genetic contamination of native or existing gene pools through hybridization;
- Presents danger of degradation of native species through the influx of exotic genes that are less fit either by means of hybridization or hypothetically by gene transfer;
- Presents a danger of loss of native species or change in species composition through competition, predation and habitat degradation.

Responsible Aquaculture practices

The rules make it clear that, no person or establishment shall carry out aquaculture production in such a way that;

- Degrades the environment with out mitigation;
- Introduces new species apart from those approved for that area;
- Compromises safety of food fish and

If any one goes against these requirements, commits an offence and is liable on conviction to a fine not exceeding 3000/= (Ugandan shillings) or imprisonment not exceeding three months or both.

Aquaculture Inputs

A person or establishment intending to engage in production for sale and distribution or importation of inputs including fish seeds, aquaculture fertilizers, hormones, antibiotics and others for aquaculture use, shall be required to certify their products with a competent agency. All new material inputs intended for aquaculture production shall conform to the National Bio-safety Guidelines as set by the Uganda National Council of Science and Technology and shall not be released into aquatic systems, without a permit from the Chief Fisheries Officer. A permit will not be issued if inputs are considered to be of high risk to the ecosystem and such materials will be confiscated and destroyed there after.

Aquaculture Record Keeping

It is also a requirement that any person or group of people involved in aquaculture activities keep records of whatever goes on in the establishment and at the end of each year; such records need to be submitted to the Chief Fisheries Officer. No person shall falsify or unlawfully alter, destroy, erase or obliterate any declaration, certificate or other document made or issued under these rules.

Generally, the introduction of a licensing system by the government is instrumental in ensuring local quality of aquaculture practices although such rules may de-motivate potential fish farmers. The conditions attached to this activity according to the above rules are un barerable to many poor people including individual women intending to diversify their livelihood to aquaculture. In any case, local peoples' ideas and views are not reflected in the aquaculture rules thus an indication that they are being imposed on them.

6.6 The National Gender Policy

Uganda's National Gender Policy was formulated in 1997 under the auspices of Ministry of Gender, Labor and Social Development (MGLSD) (NARO, 2001). The overall goal of Uganda's Gender Policy is *"to mainstream[24] gender concerns in the national development process in order to improve the social, legal/civic, political, economic and cultural conditions of the people in Uganda and in particular WOMEN"*.

The policy places emphasis on the need for different sectors and institutions to address gender issues relevant to their own specific situations. In this case, the PEAP as well as the PMA in compliance with the overall policy frame work for gender mainstreaming, recognize that persistence gender disparities hamper agricultural productivity, economic efficiency and growth and that public policy can make a difference in closing the gap through public sector investments in advisory services among others. NARO in its strategy of mainstreaming gender issues in the agricultural sector, calls for participation of both men and women at all levels in areas of technology development and capacity building including training. Gender mainstreaming in NARO is a prerequisite for the realization of the objectives of PMA. But the problem is that; the provision of agricultural services is male dominated and yet no efforts have been made to train men to work with women and be aware of the strategic and practical gender needs of women in agriculture.

Unequal gender relations within the household are reproduced in institutions at meso-level – in private institutions, in local authorities, in the central government ministries and so on. Gender biases are expressed in another, more subtle, way at the macro level. Macro level policies are presented as if they are "gender neutral". They are not, in fact, neutral since they are implemented in contexts – meso and micro – characterized by gender inequalities. Policies that are not sensitive to gender inequalities and their linkages to poverty risk negative impacts on institutions, on households and on the individuals within households. For instance the national gender policy itself is biased because it emphasizes women and not both men and women.

[24] Gender mainstreaming refers to a strategy which ensures that gender analysis is used to incorporate women's and men's needs, constraints and potentials into all development policies and strategies and into all stages of planning, implementation and evaluation of development interventions (MGLSD and MFPED, 2003)

Although the principle of gender mainstreaming has been emphasized in various sectors, its application has been limited and thus resulting in adhoc treatment of gender issues under some pillars and themes. In many other policies, there is no reference to Uganda's National Gender Policy, and therefore the roles and responsibilities of different stakeholders for ensuring that gender equality is linked to poverty eradication are narrowly defined.

Some policy documents use the concept of gender mainstreaming, but do not define it. However the common practice is to state the principle "gender sensitivity" for example, and then apply it in a very selective and patchy way. The result is lack of mainstreaming – with gender issues appearing in one or only a few sections of a policy or strategy, and entirely absent else where.

The way in which PMA discusses discrimination against women with regard to control of land and sharing of benefits from sale of produce with in the household is an example. After outlining these serious constraints, there is no further clarification of how they will be tackled, other than the typical blanket provision that all interventions will be "gender-focused and gender responsive".

6.7 Women or Gender Relations?

Some sectoral policies target women, rather than setting a goal or objective that focuses on making unequal gender relations more equal. For example the national gender policy as pointed out earlier, identifies the essential role of women as a guiding policy principle.

Even policies that use gender terminology, such as the Plan for Modernization of Agriculture, one gets the impression that gender really boils down to including women or targeting women. How to address the serious constraints to women's increased participation, which derives from unequal gender relations and patriarchal structures, is not considered. From this study, I got an impression that although women strive to uplift their status in society, they do not do this in isolation but recognize the role men play towards their empowerment thus their reason of including them in some of their activities.

On whole, the government has implemented various strategies aimed at elevating women's status through deliberate measures such as ensuring women's access to education through affirmative action by giving an additional 1.5 points to female students seeking to enter university, guaranteeing 1/3 of the positions of all local government structures to women and ensuring women's representation in parliament as away of enhancing women's voices has empowered some women in various ways. However, men in Uganda still believe that gender equality is meant to over turn their traditional value and somewhat may not support such efforts by the government.

6.8 Conclusion

It is evident that much as the stakeholders in fish farming have realistic objectives and strategies, achieving their target is not a guarantee. From my analysis of documents and interviews, stakeholders and especially the government is seen to be promoting fish farming in different ways by extending support at meso and micro-levels. On the other hand, the level at which the policies are implemented requires further research. Also, the aquaculture rules discussed above indicate that aquaculture undertakings in the country follow some standards and many of these emphasize sustainability. As seen from the above discussion, the rules somewhat seem to be unrealistic to the poor people. They seem to target progressive farmers and not ordinally Ugandan subsistence farmers who may not only understand the rules but also can not afford the financial costs attached to fish farming. It is also evident that subsistence farmer's views are not reflected in such policies and rules and so their implementation is bound to face some challenges.

CHAPTER SEVEN: KIGOOWA CATHOLIC WOMEN'S DEVELOPMENT ASSOCIATION (KCWDA); ORGANIZING TO OVERCOME POVERTY.

7.1 Introduction

My aim in this chapter is to take a close look at how women have negotiated their positions in the informal sector with emphasis on Kigoowa Catholic Women's Development Association (KCWDA) and their fish farming activities. Also, issues of gender and resource use are assessed in relation to the women's project of fish farming among others. External influence in women's activities is discussed with special reference to a local NGO as well as constraints women face as they engage in various activities of the informal sector activities for their livelihoods.

7.2 Presenting the Project; (KCWDA)

The Kigoowa Catholic Women's Development Association (KCWDA) is basically a women's organization that was officially registered as a Community Based Organization in January 2002. The Organization is private, non-profit making, non-partisan and is open to all women in the locality. The project is situated at Kigoowa Catholic Parish-Ntinda in Nakawa Division, north east of Kampala city.

While the major goal of this organization is poverty alleviation, other women's specific concerns include;

(i) Increased supply of fish to the community so as to improve nutrition,

(ii) Integrating fish farming with other project activities of poultry, piggery, rabbit keeping and zero-grazing[25],

(iii) Developing and intensifying advocacy and social mobilization on the development of rural fish farming activities at all levels and

[25] Zero-grazing as used in this work refers to a system of grazing cows from a closed system and whose movement is limited.

iv) Educate and be exemplary to other women by improving their standard of living through proper planning, savings, diversification, and access to the existing schemes among other objectives.

Currently, the group has about 48 members. The group is governed by a committee headed by the chairperson, the vice-chairperson, secretary, treasurer and 5 committee members who are all elected democratically and hold office for a maximum of 2 years. These meet once in a month while ordinary meetings with all group members are held more often to discuss the performance of the project. During my field work, I found out that the women meet every Sunday; after prayers because this is the time when many of the members are free from their other daily undertakings.

The common language used in the organization is Luganda, a native language of central Uganda where the capital is located. This central location of the project gives it good opportunities in terms of access to technical and government support, as well as market for their products in both Kampala and Entebbe.

Source: Fieldwork

Figure 6: Some KCWDA Members in a Meeting after Sunday Prayers

The groups' source of income for running the project includes; subscription and renewal membership fees that are annual (5000 Ugandan shillings for each), donations for instance from Nsambya Catholic Secretariat, fundraisings and profits from the sale of the

group's products; including fish, chicken, piggery and zero-grazing products. Through the groups' treasurer, all the money is kept on the organization's bank account and this makes accountability and access to loans easier for women.

7.3 Presenting the Group Members (Background Characteristics)

7.3.1 Age

Most of the respondents from KCWDA can be described as adults with in the age bracket of 35 and 45. Out of the 15 fish farmer respondents (2 men and 13 women), 8 of them fell in the age category above.

These farmers being adults is an indication that the activity is mainly taken up by elderly women the majority of whom are employed in the informal sector[26]. The women below 30 years were few compared to the old, indicating that these were most probably occupied by other activities in the formal sector. Another reason that could explain why the elder women take part in group activities is the fact that, these are already established in the area that is married with children to cater for, and are therefore willing to organize for a common goal; for instance coming together for project activities. The youth on the other hand, would not sustain such a project because they are still more mobile at their age and so limited commitment to such local or group projects.

From the gender point of view, KCWDA is a women's project though it does not exclude men completely. Men are both directly and indirectly involved in the project activities. For instance the Project coordinator (also the Parish Priest) plays an advisory role, while other men include the technical personnel (also appearing in figure 6 above) and one responsible for day-to-day pond activities. In addition to the women fish farmers, the project coordinator and the technical personnel were also interviewed because they are directly involved in the project activities. As earlier mentioned in the last chapter, Uganda gives a good example where many women projects successfully include men in one way

[26] The 'informal sector' essentially covers the unorganized spectrum of economic activities (survival activities or copying strategies) in commerce, agriculture, construction, manufacturing, transportation and services, and now absorbs as much as 60% of the labour force in urban areas of developing countries. - *ILO*

or the other. The inclusion of men increases women's access to basic resources that are important in sustaining their project work and thus their special copying strategy in accessing important resources for their livelihoods.

7.3.2 Marital Status

The majority of the women respondents were married, while others were widows and never married before (including single mothers). Among the more active group members were the widows and single mothers. Also married women with high education level showed high level of commitment. The reason for the high level of participation by widows and single mothers is their role in their households. As heads of families, they work hard to provide food, shelter (rent), clothing and school fees for the children and in some instances send back remittances to their families back in rural areas. Beyond this group, other studies (Harrison et al, (1994; 18); NARO and MAAIF, (2000; 10) show that the majority of fish farmers else where tend to be men, better off and more socially and politically active than others in the community. Such men are believed to be part of the culture of "development" through contacts with other projects and agencies as well as easy access to advice and extension services.

7.3.3 Level of Education

There is always a general assumption that one's level of education determines whether he or she is employed in the formal sector or not. This is evidenced by the high number of men that are employed in the formal sector of developing countries. Generally, in developing countries, men have better education levels compared to their female counterparts. It is important to note that in most African countries, gender and education have a direct relationship, that is to say a boy child has higher chances of getting better education than the girl child and this is embedded in the complex cultural beliefs. However, these days the situation is being over turned.

It has been argued that in general, men are better educated than women as they invest more time and energy gaining skills and credentials than women. This makes it easier for them to enter the labor market where they earn more than their female counterparts who are unwaged domestic labor as they run homes and bring up children (McDowell, 1999; 128-9). According to the baseline survey conducted by NARO and MAAIF (2000), fish

farming in Uganda is often associated with the "progressive" or formally educated farmers who find it easier to adopt a new practice. Although this may be true for rural areas of Uganda, the situation may be quite different in urban areas. In Kigoowa project, the women (the elite) that had good jobs in the formal sector were active members of the fish farming group. They did participate for other reasons other than having low level of education and unemployment.

The majority of the women at Kigoowa attained formal education (beyond secondary school level). Many stopped at secondary school level (43%), others (36%) had certificates, diplomas and a degree from tertiary institutions while a few (21%) of the women respondents had no formal education and this is partially reflected in table 2 below.

It is worth noting that the organization has members with varying education backgrounds; ranging from non-formal education to higher education levels. This is because women needed a common voice; thus organizing to undertake various activities that are considered to be women's work no matter what level of education. During their meetings at Kigoowa, its not only farm activities that are discussed but sharing their social life experience is very essential in the women's day to day lives.

7.3.4 Occupation

Women of Kigoowa project were all involved in other forms of work on daily basis and aquaculture was found to be a secondary activity. Although many of them were still working in the informal sector; for instance running family retail shops, selling in the market, operating small restaurants and others as hair dressers in the nearby Ntinda trading Center, some women with better education levels had good jobs in the formal sector (see table 2). Two women that were housewives were also found to be participating in other self-help projects like piggery, zero grazing and had small plots of cassava, yams and banana plantation. Some members pointed out that apart from participating in the project for food (proteins) prospects; they participated in the project as an alternative source of income which they currently access through credit from the group.

Table 2: Occupation of Women at KCWDA

Primary Occupation	Number of Respondents	Percentage
House wife	2	15.4
Informal activities(Trading) like; retail shops, operating restaurants, hair dressing, selling in the market etc.	8	61.5
Civil service	3	23.1
Total	**13**	**100**

Source: Fieldwork

It is worth to note that although women at Kigoowa operate fish ponds, they do not do this directly but instead employ other people to do the actual work; from pond construction to harvesting. This is because these women are fully working on other businesses as pointed out earlier and this may have implications on extension service delivery. At the time this study was conducted, Kigoowa women's group operated two fish ponds that were both stocked with Clarias fish species, had a smaller pond close to the major ponds which they use for fertilizing. They were also constructing a security house at the pond site to provide safety measure from potential predators including man.

7.4 Reasons for Starting Aquaculture; an Overview of Women's Livelihood Assets.

Although most women in Uganda are seen to be operating under vulnerable situations both in formal and informal sectors as seen earlier, there exists motivations in form of capital assets, entitlements and activities that enable them diversify and sustain their livelihoods. The discussion below reflects some of the social, human, physical, natural and financial capital that motivated women fish farmers of KCWDA.

Aquaculture is a non-traditional activity in Uganda but many people from different parts of the country have taken it up. It is claimed that those who start it are already

agriculturalists and so find it easier to integrate it into their everyday farm activities. During this study, it was found out that farmers started or joined aquaculture activities under different circumstances.

Women's views on the initial idea of fish farming varied from being motivated by other group members that initiated the idea, to being inspired by the success of farmers else where in the country. The women in Kigoowa project have different social-cultural backgrounds, and so have different experiences to learn from. Fellow farmers provide first hand information on pond activities before potential farmers get assistance from extension workers. The women mentioned that they were inspired by individual farmers that had succeeded in deriving their livelihood from fish ponds in other parts of the country. Fish farming is a profession that must be learned, and this process is greatly enhanced if there is a fish farming milieu in the area for exchange of experience. Gerhardsen and Bringsvor (1981), point out that the existence of other fish farms in an area, greatly contributes to the success of any one farm.

Government extension officers through field visits and seminars provide technical information to potential fish farmers. Some respondents confirmed that they were motivated by the extension workers but since they did not have suitable land and other resources for aquaculture, they found it much better to be part of Kigoowa. At the start of the project, the role of extension service was to train women issues of pond construction, fertilization and pond stocking and general sensitization of women about the role of aquaculture in their livelihoods.

NGO's and specifically UFFCA were crucial in encouraging the activities of women at Kigoowa. The NGO provides technical assistance especially when it is not easy to get in contact with the government extension workers. Availability of fingerlings (fish fry) at the nearby Kajjansi research station made it possible for the women to get access to cheap and high quality fish fries. Therefore, project location (urban area) played a major role at the start of the project since inputs like seeds and advice were easily obtained by the women. It was easy for the group to integrate fish farming in other activities they had established before. The project also includes poultry, piggery and cultivation activities.

Since members were already organized, it was easy to introduce the new activity and many of them welcomed the idea since they needed to learn about it.

The church (Kigoowa Catholic Parish) was the most important motivation to women's participation in aquaculture. The church did not only avail suitable land to the women but also provided some of the initial capital. In Uganda, women under different religion denominations organize in groups, (like Mothers Union for Anglicans and Women's Guild for the Catholics) and work as one family. With the current poverty reduction initiatives, such groups have been a stepping stone in implementing some development policies and programmes and a case in point is the government's 'Entandikwa Scheme' (Revolving Funds) that targets organized groups of people.

7.5 Role of UFFCA to the Kigoowa Project

UFFCA (Uganda Fisheries and Fish Conservation Association) has been one of the organizations responsible for increased enthusiasm and interest in small scale fish farming activities in the country. The NGO has about 1829 registered fish farmer members, some of whom own more than one pond and thus an estimate of about 2,333 ponds country wide are registered by UFFCA.

Formed in 1994, UFFCA is a private, voluntary fishery oriented NGO whose role is to promote conservation of fish resources for sustainable livelihoods of those that depend on fish by addressing issues concerning the protection and conservation of the fisheries resource, environmental degradation of water bodies and catchment areas and community development. The association has its offices located near Ntinda with an aquaculture unit headed by an aquaculture specialist.

According to UFFCA's Deputy Executive Director, their role is that of an intermediary community organization and especially towards complementing government's efforts in achieving sustainable national development in Uganda. The organization is concerned with the plight of nearly one and so million indigenous Ugandans who directly and indirectly derive their livelihoods from fisheries (both capture and cultured fisheries). The

main beneficiaries of the UFFCA programmes include; fishermen/women/youth, fish farmers, fish mongers, boat builders, fisheries and environmental professional.

Through NGO's like UFFCA, fishing communities, fish farmers and other members have got a voice through which to influence government polices, advocate, lobby and net-working with international organizations with similar objectives. In relation to this, an official at UFFCA had this to say when asked about their role in supporting fish farming activities;

"Together with other NGO's, we call upon the government to change some of the laws that have for long ignored the voices of the majority to pro-poor laws which put poor people at the center of development (people centered development approach)……and talking of fish farming, we have individuals with special training in fish farming whom we send to individual and group farmers for technical advice".

She further exemplified this by citing the Beach Management Unit Statute of the fish law that calls for co-management. This requires every gazetted landing site in Uganda to have a Beach Management Unit responsible for administering activities at their landing site. Here the role of UFCCA is to come in and monitor whether the law is being properly implemented by the government and then gives feed back.

Although such an activity is to benefit most those based in capture fisheries, the major activities of UFFCA that relate to awareness campaigns to encourage the rural communities and other interested investors to cultivate or farm in ponds as one of the ways to alleviate pressure on natural fishing grounds and act as a conservation measure for some endangered species of fish like Clarias. Women pointed out that prior to starting their fish farming activities, technical information was provided from UFFCA extension worker who is still contacted for further advice. UFFCA therefore is seen to bridge the gap left by the government's extension workers.

Strategies to achieving these objectives are largely community based through participatory planning, capacity building and training as well as out-reach programmes.

The organization has so far been instrumental in promoting livelihoods of those involved in fish farming in the following ways;

- Calling upon fish farmers to organize in groups for better results
- Train farmers in sustainable fish farming appropriate technologies and integrated fish farming practice
- Collects and disseminates information to farmers and this includes fry location, distribution, cost etc
- Has initiated internal exchange programmes and facilitated farmer-to-farmer linkages.
- Collaborates with other development agencies for instance promoters of small scale fish farming project funded by DFID and LVEMP.

Amidst all these visions, the association is constrained by limited training and financial materials, limited transport to reach out to farmers and inadequate supply of seed fry. For this reason it is necessary that all stakeholders in the fisheries sub-sector work together to iron out existing constraints that may be in one area or the other. As it is well known that NGO's come closer to people, poor peoples' livelihoods are easily maintained if the government and other donor agencies provide support to local farmers through the NGO activities.

7.6 Outcomes of Women's Livelihood Strategies

> "*Give a man fish, you have fed him for a day. Teach him to grow fish, you have fed him for a life time"* a common Chinese saying.

Although aquaculture has not yet been fully integrated in the traditional agricultural activities of Uganda, those that have tried it have not remained the same. The benefits of aquaculture are varied between individuals, household members and the community at large. This section aims at giving an understanding on how fish farming activities have benefited those taking part in the sub-sector and drawing examples from previous studies and the study on Kigoowa women fish farmers. The benefits are either direct or indirect (tangible or intangible) cutting through all aspects of people's lives; that is social, economical, psychological and nutritionally as discussed below.

7.6.2 Benefits to Individual Household Members

(a) Animal Protein (Food)

In many parts of the world, fish provides a high proportion of all animal protein and the only source affordable to the poor (Bailey et al, 1996). Fish farming if done in the right way yields good harvests which are a source of cheap animal protein. Fish farming provides cheap protein source for both rural and urban populace as animal protein is becoming more expensive and beyond the reach of the ordinary Ugandan. This is partly because fish demand in the markets has increased yet supply from fisheries (fishermen, fish mongers and others) has not increased. Fish produced in ponds has proved to be of high quality, good hygiene and is readily available when one needs it thus increased food security. Fish ponds have also an important function as sources of fish for special occasions and for honoring visitors. A fish farmer at Kigoowa put it this way;

"Many people in this village are low income earners and therefore do not afford the expensive fish in the market, but with supply of fish from a nearby pond, we are able to get the fish protein we would have missed"

(b) Generation of income

In Uganda, almost all fish farming activities are small scale, usually producing for subsistence use although surplus can be sold for cash. Aquaculture is an ideal source of income especially for those that depend on agricultural activities for income. A sale from pond fish is useful in various ways. Many of the farmers re-invest it in pond and other farming activities; others use it to provide basic needs like buying other food types that are lacking, clothing and paying children's school fees (as demonstrated in figure 7 below). The situation is the same for Kigoowa women, money raised from aquaculture and other activities goes to the group's bank account for members to borrow and use in expanding their other livelihood activities. Quoting the project coordinator;

"……money from pond activities is not shared directly but it goes to the project's account and women are able to get loans of low interest rate, in fact it contributes to the revolving funds run by the group".

This is in line with the government's policy of 'Entandikwa Scheme' where money is availed to individuals that are organized in groups to overcome poverty. Because the country's economic status and high corruption levels, this scheme has not benefited all.

As a way of reducing poverty, people have started village banks and these have been crucial in availing money to people for their livelihoods. Much as fish farming can potentially contribute to the further diversification of rural income sources in Uganda, it has at this time had a very limited impact on the incomes of few households (NARO and MAAIF, 2000).

(c) Employment

Aquaculture provides employment to individuals. Generally, this has benefited especially the women that are usually not absorbed in the formal sector. Employment in aquaculture is however not full time and so may not require much labour but during pond construction, more casual labour is required. Harrison et al, (1994); NARO and MAAIF, (2000) emphasize that during pond construction, there is use of labour beyond family labour and they claim that since this requires more physical energy, it has been done by men while women on the other hand, do the feeding of fish. At Kigoowa, the majority of the women are working some where else (formal and informal sectors) and so are not directly involved in everyday pond activities but instead employed some one else to do the work. And in this way, this group has been instrumental in sustaining people's livelihoods especially those that get income directly.

(d) Other Benefits

Integration of fish farming in crops and animal husbandry allows each element in a rural farm set up to benefit from each other thus reducing productions costs of the farmer. This practice helps in maximizing the optimal utilization of available resources to the benefit of farmers on a cost effective basis. On-farm and locally produced materials like green leaves, maize bran, have been used in aquaculture as feeds while cow dung and chicken manure have been used to fertilize the ponds in Uganda. Therefore, aquaculture puts to use agricultural bi-products that would other wise be of less importance.

On long term aspect, aquaculture caters for fish species that are threatened with extinction in the natural habitats. It is widely known that, fishing in lakes especially Victoria is likely to be unsustainable considering the current irregularities of pollution and over-fishing. Fish species have been reducing in number and size and today Clarias

species are considered endangered in many water bodies of Uganda. Aquaculture therefore plays an important environmental role as it helps in conserving the threatened fish species thus catering for the future generation. UFFCA and other NGO's have been encouraging communities to invest in pond activities not only as a way of reducing poverty but also conserving important fish species.

The land which is not fit for crop production has been put to use by farmers introducing ponds and thus maximizing land utility. Such areas include wetlands that are prone to flooding during the rainy season. Pond construction therefore traps the water that would not flow or infiltrate through the ground but rather cause floods. It should be noted however that this benefits individuals that own land.

Source: MAAIF and DFID

Figure 7: Role of Fish Farming in People's Livelihoods

In short, as regards fish farming as a means of livelihood, almost all women farmers had fish farming as a secondary source of livelihood with no special individuals depending on it as their only source of livelihood. This was explained by the fact that women took up aquaculture activities two years ago and anticipate to get long term benefits in future.

7.6.3 The Role of KCWDA in the Livelihoods of Women Members

Social Benefits

Formation of groups empowers people by enabling even the poorest segments of the population to participate in economic progress; they create job opportunities for those who have skills but little or no capital; and they provide protection by organizing mutual help in communities.

Groups further create a platform for local development initiatives by bringing together a range of community institutions to foster opportunities for descent work and social inclusion. Members learn from each other, innovate together and by increasing control over livelihoods, restore dignity that the experience poverty destroys (ILO, 2002). Social networks are very important in diffusion of aquaculture that is farmers learn from each other and share knowledge with local new comers. Inquiring about the advantages of fish farming over capture fisheries, one fisherman at Kasenyi landing site had this to say;

"……what I know is that fish farmers and especially those that are organized into groups have a high level of cooperation than us. Here, nobody encourages the other but instead it is more of a competition- who benefits most. This has surely led to problems of over fishing in the lake as well as social conflicts".

This is in line with what Bailey et al (1996) argue. They stress that among fish farmers, sharing information is biding rather than disintegrative and thus dramatically strengthening cooperative behavior.

Participation and empowerment have increasingly been recognized as vital to poverty reduction. Community organizations among others play a central role in creating an environment in which increasing opportunities for decent work (work for money) lead to social inclusion and improved livelihoods. In Uganda, several women and youth CBO's have flourished since the start of the last decade. Women have established and strengthened savings and loans through self help projects and this is true for KCWDA where a practice of revolving funds is on-going. The shared experience of working together means that, for many people, the focal point is building institutions for sustainable development in the work place be it home, field, street, office, and so on.

When women were asked during a group discussion how they share the benefits, one of them explained thus;

"We may not all get a chance of sharing the physical products like fish, eggs, and manure equally and to avoid misunderstandings that may arise out of that, we agreed that we benefit fairly equally through having an opportunity for each of us to borrow the money from the sale of the group products and use it in our private day-to-day activities and so far this is working well and it makes accountability more easier".

Formation of women's groups at grass root level inspires other communities or other community members to start their own projects. Benefits from aquaculture are enormous and so farmers in Uganda are inspired by neighbors, friends who have befitted from it. This confirms what the Senior Aquaculture Research Officer at KARDC said during our conversation; "*successful fish farmers with experience have been good source of advice to new farmers".*

In many developing countries, formation of women's groups at the local level has enhanced women's social status in the community. Together, group members explore the socialization common to their particular society and perhaps uncover common themes and messages. Profound interconnections occur when the community experiences awareness and insight into the value of its own adaptive strategies and community "knowledge". Helmore et al (2001) stress that after participating in such groups, people tend to become stronger, more self-confident, and proud of a new found identity and empowered. Some of these characteristics were exemplified by some women members of KCWDA. On one hand, such women's groups provide an opportunity to overcome the constraints women face as individuals and on the other hand, they may be dominated by the elite and are often beset with problems over control of funds. In relation to this, I observed that during our group discussion, women that had positions (leaders) in the group dominated the discussions mainly because their counterparts would look up to them for response regarding the issue being discussed.

According a report by MGLSD and MFPED (2003), women have been empowered in different ways. It states that "many women's groups in Uganda afford opportunity to their members to develop self-confidence, to learn skills and to use what they have learned to

improve their own well-being and the well-being of members of their households". During my interviews with some women members, they revealed that with time and more experience, they would be able to transfer the skills they have got from fish farming and other activities to the rest of the community members that are currently not part of the women's group.

Women do not form a homogeneous category and are not equally disadvantaged by shortages of time, limited access to household or outside labour or low view of their own capabilities and so the benefits from fish farming, whether food or income do not necessarily benefit all group members equally. This is a complex phenomenon because power and knowledge determine the influence of each individual member. For instance, from this study it was interesting to find that women members of KCWDA varied from low class (poor) to those of high class (middle income and rich) and because of this, the voices of the former have been heard through the latter. However, it is well known that such dynamic women's groups usually have the elite dominating over the low class women.

7.7 Constraints to Women's Activities at Kigoowa

In Kigoowa, the aquaculture production levels are still low that any impact on the general households' food security is so far negligible. It was revealed by women members that nearby markets are still their major source of fish and not the pond but hoped the situation would change with the growth and expansion of the pond project. When asked why benefits from fish farming were taking a long time, many of them mentioned that it is because of some natural factors which they have no control of. Quoting one of the women members, she explained thus;

"……we had anticipated that by this time access to fish for food by members would be achieved but it so happened that the initial fish we stocked in the ponds (tilapia) did not grow well. In fact it became stunted and the harvest was very poor. When we consulted an aquaculture expert, he told us that this was not the right conditions (temperature and soils) for tilapia to grow and so Clarias species were recommended and with this type of fish, a good harvest is expected in the next three months". From the vulnerability context point of view, fish farming at Kigoowa is subject to unexpected environmental failures

(shocks) and so the women have reacted to this by stocking Clarias that is adapted to the environmental conditions. This is a clear indication that the project is so far sustained if women were able to recover from such a shock.

At community level, the project faces problems from other competing resource uses. Conflicts with other resource uses like brick making were identified. As pointed out earlier, the land where fish is reared belongs to church and so it is not guaranteed to fish production alone but also other economic activities. Brick making and pond management are activities that require water throughout the year. Together with my research assistant, we observed a pipe that leads water to the pond blocked with a polythene bag and it was evident that brick makers were blocking the stream to trap more water for their own use.

Lack of power and decision making by women over the resources (land) where they do their farming activities affects their productivity levels. From a wider context, women's vulnerability arises from their unequal social status, from their subordination to men, and from the unequal power relations which accord women less access to and control over assets and resources than men and less right to participate in decision making. Sociologists argue that fish farming is not simply a technical process, but one that involves social relations which differ between regions. It is therefore necessary to include socio-cultural aspects when planning for aquaculture development at any level.

There exist social constraints. Fish ponds are vulnerable to poachers. Theft from fish ponds is mentioned as a factor retarding the development of fish farming in Sub-Saharan Africa (Harrison et al 1994). At Kigoowa, ponds are exposed to thieves because they are located far from households of group members and so their control is almost impossible. Presence of a public path and brick makers makes the pond resources more vulnerable. Women being suspicious of this are putting up a small structure for the security personnel thus will control the problem before hand.

Source: Fieldwork

Figure 8: Pond at Kigoowa with Brick Making Activities in the Background

Inadequate knowledge on how to control fish stunting was pointed out by the group members. Tilapia is the major fish specie that is farmed in many parts of the country. At Kigoowa, this specie resulted into poor harvests and so women opted for a better alternative-Clarias after consulting the aquaculture specialists.

Non-farmers that were interviewed acknowledged that potential for fish farming exists in the country (swamps, water, and market) but pointed out that they were not involved because the activity is costly, they lack prior knowledge, skills and advice; and that farmers who have done it before have not benefited much. Throughout Africa, lack of capital is a serious constraint to potential fish farmers (Ade Alao 1981, Drewes1987, Mashapa and Matobo 1988, Msiska 1985, and Ruddle 1996: in Bailey et al, 1996). The presence of fish in the natural lakes which one of the respondents called '*natural lake fatigue*' constrains non-fish farmers to undertake fish farming activities, they argue that they do not see any reason why they should leave fishing in the lake that doesn't require much input and commitment like fish culture.

Other constraints to aquaculture production that respondents pointed out include;
Inadequate technology on fish fry production
Low pond productivity
Inadequate dissemination of research information

Limited application of available technologies

7.8 Conclusion

This chapter presents the empirical findings from the study most of which is based on the KCWDA. It gives an insight on how the Kigoowa women farmers have come together for poverty reduction and subsequently women's empowerment in socio-economic and psychological aspects. It also presents women's motivation and constraints in the aquaculture activities; many of which are institutional in nature. Women were found to be engaged in various activities in both the informal and formal sector for their livelihoods and doing fish farming as a secondary activity. With the benefits women are deriving from the project, it is obvious that these will spread to other community members and as such, KCWDA gives a positive example to other women's group and CBO'S. In all, organizing into groups and working together is so far the best option for the poor to improve their wellbeing.

CHAPTER EIGHT: CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions

The purpose of this study was to assess the socio-economic roles of fish farming in people's livelihoods with special reference to Kigoowa Catholic Women's Development Association (KCWDA) in Kampala district. The specific objectives were; to identify potential for fish farming in Uganda, to explore the constraints to aquaculture development in Uganda and particularly to women fish farmers in Kigoowa and to identify and assess government's policies and plans for the sub-sector in relation to farmers. To answer these objectives, I used the views of women fish farmers, government officials and non-fish farmers from a local NGO (UFFCA) and individuals from Kasenyi landing site on Lake Victoria. To gain a wider understanding of the status of fish farming in Uganda, secondary data sources were of great help in this study. These supplemented some views that given by the respondents.

From this study, it was found out that Uganda's population is growing at a fast rate of 3.4% per annum. This and the growing export market have increased the demand for fish for both local consumption and export. On the other hand, fish in the natural water bodies is declining due to the fishing pressure caused by the growing fish market and demand of fish for consumption by the Ugandan increasing population. This requires that efforts to increase fish production be made and sources like fish farming be promoted to sustain fish production.

Aquaculture as a non-traditional activity in Uganda has for the past 50 years been developed and expanded like any other foreign technology. Fish farming is mainly done for subsistence in earthen ponds, mainly to provide protein and income to individual households. This study has tried to discuss the benefits women as a group derive from fish farming as an alternative to animal and crop production and discussed a special copying strategy (of including men) women adopt in order to access important assets like land and capital. The study has also tried to assess the implications of government, NGO's and local communities on aquaculture growth and expansion. Thus explains why

a holistic approach is necessary for fish farming activities if they are to be more beneficial and sustainable to the targeted beneficiaries.

As mentioned in the theory chapter, fish farming in Uganda has been developed based on ideologies of modernization. In line with the government's policy frame work of PMA, it is argued that for aquaculture benefits to be substantial there is a need to shift from subsistence to commercial aquaculture production. However this is questionable because the poor and especially women diversify their livelihoods options simply to survive, and re-orientation to market-oriented agricultural production is, for many not a current viable option. Moreover it is also argued that small holder farming systems are the bottlenecks for agricultural development and advocate for plantation agriculture as the ultimate solution against small holder farming system. Other scholars that see modernization as a path to development also see it to be a source of marginalization to the majority poor and argue that a people-centered approach is vital. They accept the fact that the poor know their situations best and so can identify their needs and solutions respectively and the outsiders just need to build on this as is reflected in SLA.

In relation to livelihood assets, the study revealed that women at Kigoowa have been successful in combining different types of capital to achieve their livelihood outcomes. It is important to remember that social capital and physical capital (land) have been the most important as explored in chapter seven. As discussed else where, women's activities both in the formal and informal sectors are hampered by their limited ownership and access to resources like land and capital. This study revealed that Ugandan women who want to start fish farming activities may be limited by their poor access to physical capital like land. As a result, their adaptive strategy has been to form groups and include a few men in their activities. With this, they have been able to access assets like capital in form of financial assistance and land. It is therefore very necessary to understand gender issues because on; basic needs, livelihoods and assets, women's and men's differential access to and control of land, animals and other assets, income and their rights to other basic needs have varied implications.

Men's and women's differential access to resources is explained by implications of policy, processes and institutions on women's livelihood strategies. As discussed in chapter six, these either constrain or promote aquaculture activities. Policies that relate to aquaculture development in Uganda are seen to be targeting "progressive" farmers and this has negative implications to poor farmers that wish to undertake the activity. More so, policies and important decisions in the sub-sector are made without consulting the farmers yet they have an important role in problem identification and policy formulation which could solve their problems.

Also, the institutional location of aquaculture influences the legislative framework with in which aquaculture is developed. For instance, in Uganda, aquaculture administration is under the Department of Fisheries resources, an implication that it is more inclined to fisheries than livestock and crop production. This affects extension service delivery as discussed earlier. In addition, promoting aquaculture as a separate and isolated farming system by the government, gives an impression that aquaculture is technical and complicated. As such, small holder farmers miss out on the opportunity of developing linkages with other farm activities.

On knowledge and information, women and men's ability to access agricultural advisory services, to know their legal rights, and to learn about government policies is different too. Extension service delivery in Uganda is gender biased because services are offered by men who target mainly male farmers. On the other hand, it is argued that women access less services from extension workers because they can not afford the cost of buying them.

Emphasis on the variability of policy, institutions and processes and contextualizing them in different analytical levels of macro and micro is very important. For instance, gender inequality in land tenure security is rooted in macro-level issues (law and policy); in meso-level mediating institutions such as arrangements for agricultural extension and marketing of products; and ultimately in patriarchal attitudes (micro) that relegate women to a lower status in their households and communities. For instance PEAP acknowledges

the fact that Ugandan women farmers operate under vulnerable situations and so in its strategies to improve women's livelihoods, women are called upon to organize into groups for easy access to assets like finances and thus better results. Such a policy therefore has a strategy that is aimed at improving diverse livelihood strategies the poor employ for instance fish farming.

It is evident that gender equality in land access, control and ownership are prerequisites to agricultural modernization and so without commitment to improving women's ability to access and own land, including action and the co-ownership clause, the contribution of a modern agriculture sector to poverty eradication in Uganda will be seriously compromised.

This study has shown that draw backs of Uganda's fish farming have stemmed from social, cultural and economic concerns, and in particular from the lack of appreciation among policy makers and planners that fish farming is just one component of a much larger human ecological system. However, women and men react differently to threats and shocks to their livelihoods. Women tend to cope more successfully than men, by taking up diverse on and off-farm activities in addition to agriculture, even though this substantially increases their work load. Women at Kigoowa were found to be involved in various activities both as a group and as individuals. At group level, other than aquaculture, Kigoowa women were found to be rearing chicken, pigs and some crop production (agro-forestry). On individual basis, many of them are involved in informal sector activities as discussed earlier.

It is clear from the study findings that outcomes from fish farming improve most the livelihoods of those engaged in it. Outcomes from fish farming are either through an improved food supply and/or through employment and increased incomes. From this study, it is evident that women at Kigoowa have benefited from both the tangible and intangible outcomes of not only aquaculture but also from those associated with working together as a group as explored in chapter seven. More needs to be done by all stakeholders if the benefits are to be increased and sustained.

At the time of this research, Kigoowa women's group activities seemed sustainable because of such observations; women were able to cope with the unexpected environmental shock (failure of Tilapia) as discussed in chapter seven. Also, strategies that women employ in benefit sharing implied fewer chances of conflicts arising amongst members. Re-investing of financial capital in form of loans by women is a good indicator of continued group activities as it is well known that women are generally reliable creditors as they pay back their loans in time. If other individuals or groups learn from KCWDA and other similar projects, it is evident that aquaculture activities will be sustained in the country. At national level, aquaculture activities seem to be emphasized by various government policies as the major source of fish (capture fisheries) can no longer be relied upon.

8.2 Recommendations

Various suggestions for enhancing fish farming activities were advanced by fish farmers and officials from UFFCA and government representatives from KARDC and the Department of Fisheries Resources in Entebbe.

(a) Fish Farmers

(i) There is need for further awareness and sensitization to women farmers and the general public about all aspects of aquaculture.

(ii) For those that own or can access land easily, there is need to encourage individual fish farming so that women put to practice the skills and new technology acquired.

(iii) There is need for financial support especially at the start from NGO's and Government both central and local through the decentralization process.

(iv) Local government leaders should come closer to development projects in their areas. This would make access to external support easier.

(v) It is important to make the project activities known to people through the "spread effect" by sharing knowledge to non-members and extending benefits beyond group members.

(b) Government and NGO Officials

(i) There is need to create strong linkages and collaboration among research institutions and individual fish farmers as well as potential farmers by creating a strong forum for exchange of information.

(ii) Government should include NGO's and the civil society in the implementation of projects and programmes that target aquaculture development in Uganda.

(iii) Emphasis should be put in the training of civil society organizations and NGO staff so as to supplement on extension services provided to farmers.

(iv) It is necessary to encourage farmer-to-farmer linkage and exchange programmes. There is need to support cross visits of fish farmers from one district to another so that they share knowledge and experiences in fish farming and learn from each other.

(v) The government should encourage private seed (fingerling) production so as to solve the problem of limited fingerlings. This would also make it better for potential fish farmers that are located far from government production centers.

(c) My Own

(i) A holistic approach is needed in supporting improvements in women's livelihood options like fish farming. This must include recognition of, and supportive services to, the entire range of income-earning strategies, farm and off-farm, which women undertake. It must acknowledge that women and men's options and strategies often differ and require different types of support.

(ii) The policy to modernize agriculture and aquaculture in particular will be strengthened if it is contextualized in the realities of diverse livelihood patterns of the majority of female and male subsistence producers. Further actions are therefore needed to strengthen women's (and widows') land rights, and thus make it easier for them to make long term decisions concerning use of land.

(iii) Building stakeholder capacity to improve poor people's access and use of resources through application of Sustainable Livelihood Approaches is the way forward. Partnership between different actors in the sub-sector needs to be strengthened.

(iv) To gain much from fish farming, all stakeholders should promote it as an extra farming activity that any farmer is capable of integrating with other traditional cropping and livestock production systems and not as a separate and isolated 'technical' activity that is associated mainly to progressive farmers.

(v) There is need to focus on the farmer through on-farm research and demonstrations, identifying farmers with leadership potential and training them, so that they train others and encouraging further formation of farmers' associations.

(vi) Finally, aquaculture promotion in the country should be more inclined to crop and animal husbandry than to fisheries, where it currently belongs.

REFERENCES

Adato et al (2002). Assessing the Impact of Agricultural Research on Poverty using SL's Framework. International Food Policy Research Institute; Washington D.C. Discussion Paper 128, Un published web journal.

Anafi, P (2000). Working for Survival; A Study of the role of informal sector in Koforidua, Ghana. Masters Thesis, Dept of Geography NTNU.

Appleton, S (2001). *Poverty in Uganda, 1999/2000.* Preliminary Estimates from the Uganda National Household Survey, University of Nottingham

Ashley, C & Carney (1999). *Sustainable livelihoods*: Lessons from early experience. London: DFID

Bailey, C et al (1996). *Aquaculture Development.* Social *Dimensions of an Emerging Industry*. Westview Press, A division of Harper Collins Publishers.

Baker, T. L (1999). *Doing Social Research*. McGraw-Hill, Singapore

Bikaako W. and Ssenkumba J. (2003). Gender, Land and Rights: Contemporary Contestations in Law; Policy and Practice in Uganda. In Muthoni et al (2003). *Women and Land in Africa; Culture, Religion and Realizing Women's Rights.* Zed Books Ltd, London: New York, David Philip Publishers Cape Town.

Coche, A. G. (1998). *Supporting Aquaculture Development in Africa*: *Research Network on Integration of Aquaculture and Irrigation*: a report prepared for Inland water resources and Aquaculture Service of the FAO Fisheries Department/Accra CIFA occasional paper, 1014-2452; no 23

Dan, S. (2001). *Aquaculture in the world:* An introduction to the industry (May, READI) report No 5 at http://www.siu.edu/~readi/aqua/factsheets/word.pdf 10.02.2004

DFID et al (1999) *Sustainable Livelihoods Guidance Sheets*, at . http://www.livelihoods.org/info/info_guidancesheets.html 28.09.2004

DFID and FAO (2000). *Inter-agency Experiences and Lessons*: from the Forum on Operationalizing Sustainable Livelihoods Approaches . www.fao.org/docrep/x7749e/x7749e00.htm 2.01.2005

DFID (2000). *Sustainable Livelihoods Guidance Sheets* http://www.livelihoods.org 5.01.2005

Edwards, P. (2000). *'Aquaculture, Poverty Impacts and Livelihoods'*. ODI Natural Resource Perspectives no 56 at http://www.id21.org/society/2aPEI.html 10.02.2004

FAO (1987). *Thematic Evaluation of Aquaculture*. Joint study by UNDP, Norwegian Ministry of Development Corporation and FAO. Rome, Italy.

Fowler, A. (1988) *Nongovernmental Organizations in Africa*: *Achieving Competitive Advantage in Relief and Microdevelopment.* IDS Discussion Paper number 249. Brighton: Institute of Development Studies.

Gerhardsen, G.M and Bringsvor, A. (1981) *Fish Farming in Norway-Problems and Prospects*. Papers on Fisheries Economics, The Norwegian School of Economics and Business Administration, Bergen.

Goppers, K. and Miller, J (1989). *Fish Farming for Rural Development.* An Evaluation of SIDA/FAO Supported Aquaculture in Southern Africa.

Gubrium, J.F and Sankar, A (1994). *Qualitative Methods in Aging Research*. Sage Publications

Halwart, M et al (2000). *Small Ponds Make a Big Difference*. Integrating Fish with Crop and Livestock Farming.

Harrison et al (1994). *Fish Farming in Africa. What is the Catch?* Summary Report of ODA-Supported Research Project. "Aquaculture in Sub-Saharan Africa". London DFID at http://www.keysheets.org/green_4_aquaculture_2.html 18.10.2004

IFAD, et al (1998). *The Potential for Improving Production Tools Used by Women Framers in Africa.* http://www.fao.org/docrep/W8794E/w8794e02.htm#P1351_172493 – 18.08.2004

ILO (2003). *Working out of Poverty*. International Labour Force, Geneva

Johnston, R. J et al (2000). *The Dictionary of Human Geography*. 4th Edition, Blackwell Publishers Inc, Oxford London, UK

Krippendorff, K. (1980). *Content Analysis.* An Introduction to its Methodology.

Kumar, R. (1999). *Research Methodology*. *A step by Step Guide for Beginners*; Sage Publications Ltd; London

Kvale, S. (1996). *Interviews: An Introduction to Qualitative Research Interviewing*. Sage Publications, London

Lee, R (2000) in Johnston et al (2000) *The Dictionary of Human Geography*, 4th Edition, 128-518

Limb, M. and Dwyer, C. (2001). Q*ualitative methodologies for Geographers. Issues and Debates*. Oxford University Press Inc., New York

Machena, C. and Moehl, J. (2001). African Aquaculture: A regional summary with emphasis on Sub- Africa. In Subasinghe R.P et el: *Aquaculture in the Third Millennium*. Technical Proceedings of the Conference on aquaculture in the third millennium, Bangkok, Thailand, 20-25 February 2000. pp. 341-355. NACA, Bangkok and FAO, Rome.

MAAIF (2003). Development of a Fisheries Sector Strategic Plan (FSSP) 2003-2012. Aquaculture and Culture Based Fisheries Components.

MAAIF (2003). *The Fish (Aquaculture) Rules.* Statutory Instruments Supplement No. 81. Printed by UPPC, Entebbe-Government of Uganda.

MAAIF (2004). *The National Fisheries Policy.*

MAAIF and MFPED (2000). *Plan for Modernization of Agriculture* (PMA), Eradicating Poverty in Uganda "Government Strategy and Operational Framework" p.2

Martinussen, J. (1999). *Society, State and Market: A guide to competing theories of development*. University Press Ltd, DHAKA

Maseruka, J (2004). *Lack of Funds Affects Fish Farmers' Progress*. Published by the New Vision, 21st July 2004

Matsamura E.K. (2004). *Fishing Industry Gets a Facelift*. Inter Press Service News Agency at http://www.ipsnews.net/interna.asp?idnews=23333 15.10.2004

McDowell, L. (1999) *Gender, Identity and Place. Understanding Feminist Geographies*. Blackwell Publishers Ltd, Oxford, UK.

MFPED (2001). 'Government intervention to Promote Production, Processing and Marketing of Selected Strategic Export' (Rep of Uganda, 2001b).

MGLSD and MFPED (2003), *Engendering Uganda's Poverty Eradication Initiatives*. A Desk Review on Gender and Poverty.

Mikkelsen, B. (1995). *Methods for Development Work and Research. A Guide for Practitioners*, Sage Publications, New Delhi

Mugyenyi, M (1998). *"Towards Empowerment of Women" A critique of NRM Policies and Programmes.* Hogler Bernt Hansen and Michael Twaddle, Developing Uganda. Oxford James Currey Ltd, 133-144

Muthoni et al (2003). *Women and Land in Africa; Culture, Religion and Realizing Women's Rights.* Zed Books Ltd, London: New York, David Philip Publishers Cape Town.

Nakaweesi D, (2005). *Educate, Employ more Women.* Amanda Ellis, a World Bank Consultant in Uganda on Gender-Entrepreneurship Markets (GEM). Published by the New Vision, 11th February 2005

NARO and MAAIF (2000). *Aquaculture in Uganda*. Baseline Survey (1999/2000) Kajjansi Aquaculture Research and Development Center.

NARO (2001). *Mainstreaming Gender Issues in NARO*; *Responding to Research Challenges for the Plan for Modernization of Agriculture*. The Medium Term Plan for 2001-2005, 59

NEMA (2001). *State of Environment Report for Uganda 2000/2001*

Newman, C and Sudharshan, C (2000). *Gender, Poverty and Non-farm Employment in Ghana and Uganda*. Policy Research Working Paper; 2367 Washington D.C: World Bank.

Ogutu-Ohwayo (2000). NARO Medium-Term Plan (2000-2004) for Aquaculture Research and Development (FRRI), Jinja-Uganda.

Okidi, J. A and Mugambe, G. K (2002). *An Overview of Chronic Poverty and Development Policy in Uganda.* Economic Policy Research Center, CPRC Working Paper 11

Ostergaard, L. (1992). *Gender and Development*, London: Routledge

Overa, R. (1992). The role of Women in the Artisanal Fishery Sector in Ghana. Masters Thesis, University of Bergen.

Pearce (1993) *Blue Print3; Measuring Sustainable Development*. Earth Scan Publications Ltd, London P; 224

Rathgeber, E (1990) *WID, WAD and GAD. Trends in Research and Practice*, Journal of Developing Areas, Vol XXIV

Razavi, S. (1999) *Gender, Poverty and Well-Being*: Introduction

Reinertsen, H. and Haaland, H (1995). Sustainable Fish Farming. SINTEF Aquaculture, Trondheim, Norway. Published by A.A.Balkema/Rotterdam/Brookfield, in "*The Sustainable Use of Global Oceanic Resources* by Martin Holdgate- Former IUCN Director.

Rubin, H and Rubin, I. (1995). *Qualitative interviewing, the art of hearing data*. Sage Publications San Diego.

Ruddle K, (1996). Household and Community Factors Affecting Development of Small-Scale Fish Farming in Africa, in Bailey et al, (1996). *Aquaculture Development. Social Dimensions of an Emerging Industry*. Westview Press, A division of Harper Collins Publishers.

Rudestam, K and Newton, R (1992). *Surviving your Dissertation. A Comprehensive Guide to Content and Process.* Sage Publications, London Sage Publications, Beverly Hills.

Scoones, I (1998). *'Sustainable Rural Livelihoods: A Framework for Analysis'*, IDS Working Paper 72

Seidman, I. E (1991). *Interviewing as Qualitative Research. A guide for Researchers in Education and Social Sciences.* New York and London

Sen. A (1985a). *Commodities and capabilities.* Amsterdam, Elsevier Science Publishers.

Sen. A (1985b). *Wellbeing, Agency and Freedom.* The journal of Philosophy 132(4), 169-221

Trochim, W. M. K (2000). *The Qualitative Debate* at http://trochim.human.cornell.edu/kb/qualdeb.htm 24.02.2004

UBOS (2002), *Uganda in Brief* at http://www.ubos.org/kei51st.html 5.04.2005

Visvanathan, N et al (2002). *The Women, Gender and Development Reader*, David Philip. Cape Town

Wolcott, H. F (1990). *Writing Up Qualitative Research*. Sage Publications Newbury Park, California.

Wynn, E. (1979). Office Conversation as an Information Medium. Unpublished PhD Thesis, University of California, Berkeley.

Yin, R. K (2002). *Case Study Research, Design and Methods*. 3rd Edition. Newbury Park, Sage Publications

Young, K (1992). *Gender and Development Readings*, Ottawa: Canadian Council for International Cooperation.

APPENDICES

Appendix I: Interview Guides

Interview Guide for Fish Farmers at KCWDA.

A. Background Information

1. Age
2. Sex
3. Marital Status
4. Occupation
5. Level of Education

B. Motivation

7. When did you start or join fish farming?
8. What motivated to start or join?
9. Were you employed before starting fish farming activities?
10. If yes what were you doing for your livelihood?
11. Is fish farming your main source of income?
12. How much time do you spend on the project's activities?

C. Knowledge/Skills

13. How did you hear about fish farming?
14. Did you receive any kind of training for fish farming?
15. What kind of training did you get?
    - Pond construction
    - Breeding
    - Feeding
    - Stocking
    - Training of other farmers
16. Who provided this training?
17. Do you need further training? In what and why?
18. What facilities do you require for fish farming?

D. Fish Farming Outcomes

19. How have you benefited from fish farming?

- Increased income
- Employment
- Food
- Social networks
- Empowerment
- Conservation of some fish species
- Skills

20. How do you share benefits derived from the group activities?

E. Roles of Members in the Project

21. How many members are you in this association?

22. What are the requirements for one to join or leave the association?

23. How do you share responsibilities in the group? And who determines who does what?

24. Do you include men in your activities?

25. If yes, why?

26. Are there special roles done by men and or women? Which ones and why?

27. Do you (as a woman) feel controlled by men in making some decisions concerning the project?

28. What do you suggest could be done to bring about gender equality in this village?

F. Constraints

29. What major challenges do you face in your fish farming activities?

30. What have you done to overcome such challenges?

G. External Influence

31. What is the role of government in promoting your fish farming activities?

32. What policies or laws relate to fish farming and how do these affect your activities?

33. Do you get any support from private enterprises (NGO's) and what kind of support?

H. Suggestions

34. In your own opinion, what do you think could be done to sustain fish farming activities in Uganda?

Thank you for your time and response!!

Interview Guide for Government officials

(Department of Fisheries-Entebbe and Aquaculture Research and Training Institute-Kajjansi).

A. Background Information

1. Age
2. Sex
3. Marital Status
4. Occupation
5. Level of Education

B. General Information about Aquaculture

6. Can you give an account of fish farming in Uganda?
    - The past, present and future
7. What are the general requirements in starting a fish farm?
8. In the governments' policy of poverty eradication, why is fish farming emphasized?
9. What strategies are being put in place to enhance the livelihoods of those that depend on fish farming?
10. What extension services do you provide to farmers?
11. What problems do extension worker encounter in extending their services to farmers?
12. What general problems do farmers encounter in trying to develop fish farming?
13. Do women face specific challenges and why?
14. Which NGO's support the development of fish farming in Uganda and what is their role?
15. In your opinion, what should be done to further develop aquaculture in Uganda?

Thank you for your time and response!!

Interview Guide for Fishermen at Kasenyi Landing Site on Lake Victoria, Wakiso District.

A. Background Information

1. Age
2. Sex
3. Marital Status
4. Occupation
5. Level of Education

B. Capture Fisheries Vs Aquaculture

6. How long have you been a fisherman in Lake Victoria?
7. Is fishing your only source of livelihood?
8. As a fisherman, what problems do you encounter these days?
9. Are you aware of the policies and laws in the fishing sector?
10. If yes, what are they and how do they affect your activities?
11. Do you know about fish farming?
12. If yes, what do you know about it and how did you know about it?
13. In what ways do you think fish farming is advantageous over fishing in the lake?
14. What are the requirements in starting fish farming?
15. What limits you from growing fish in a pond?
16. What do you think the government and private individuals should do to get better results from fish farming?

Thank you for your time and response!!

Appendix II: Fees Charged to Aquaculture Establishments

TWELVETH SCHEDULE

Rules 11 (4), 14 (4), 16(4) (6)

THE REPUBLIC OF UGANDA

FEES CHARGED ON CERTIFICATE AND PERMITS FOR AQUACULTURE

	Fees (U.Shs)
(1) Fish seed production certificate	50,000/=
(2) Fish breeding permit	100,000/=
(3) Fish transfer permit in Uganda	10/= per kg for equal or greater than 10kg
(4) Live Fish Export Permit	20,000/=
(5) Live Fish Import Permit	20,000/=
(6) Aquaculture Establishment Approval Permit	20,000/=
(7) Application Form	1,000/=

Original: Applicant
Duplicate: District Fisheries Officer
Triplicate: Department of Fisheries Resources

Dr. W. KISAMBA MUGERWA,
Minister of Agriculture, Animal Industry and Fisheries.

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Appendix III: Exported and Imported Fish Species

EIGHTH SCHEDULE

Rule 16 (3)

A: LIST OF LIVE FISH WHICH CAN BE EXPORTED FROM UGANDA

NAME	SEX	SEX
	Male	**Female**
1. Lates niloticus (Nile perch)	Yes	No
2. Clarias gariepinus (African Catfish)	Yes	Yes
3. Oreochromis niloticus (Nile tilapia)	Yes	Yes
4. Haplochromis spp	Yes	No
5. Bagrus spp	Yes	Yes
6. Afromastacembelus spp	Yes	No
7. Malapterus electricus	Yes	Yes
8. Alestes spp	Yes	Yes
9. Protopterus aethiopicus	Yes	No
10. Syndotis spp	Yes	No
11. Barbus spp	Yes	No
12. Distichodus spp	Yes	No
13. Hydrocynus spp	Yes	No
14. Cithrinus spp	Yes	No
15. Polypterus spp	Yes	No
16. Bryocinus spp	Yes	No
17. Rastrineobola spp	Yes	Yes
18. Clarialabbes spp	Yes	No
19. Ornamental spp	Yes	No
20. Schilbe	Yes	No
21. Caridina	Yes	Yes

B: LIST OF LIVE FISH WHICH CAN BE IMPORTED INTO UGANDA

NAME	SEX	SEX
	Male	**Female**
1. Saline ornamental fish	Yes	Yes
2. Fresh water ornamental fish	Yes	Yes
3. Common carp	Yes	Yes
4. Black bass	Yes	Yes
5. Rainbow trout	Yes	Yes
6. Anguila spp	Yes	Yes
7. Prawns	Yes	Yes
8.Pangasianodon gigas	Yes	Yes