Understanding the Role of Fish Farmer Organizations as Intermediaries for Aquacultural Development in Uganda

by

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Abstract

Donor interest in the development of Sub-Saharan African aquaculture has shifted from the promotion of subsistence aquaculture to the support of small- to medium-scale commercial aquaculture enterprises with the hope of increasing Sub-Saharan Africa's fish production. Fish farmer associations or producer organizations are viewed as a means for developing a commercial aquaculture sector in this region, though the empirical basis for the creation and perpetuation of these types of organizations remains elusive. This research presents four qualitative case studies profiling existing fish producer organizations of commercial fish farmers in Uganda. Two organizations operate are beginning to operate cage culture aquaculture systems, one is a fingerling producer, and the members of a fourth farm fish in ponds. We conclude that the umbrella organizations to which local fish farmer organizations vertically align themselves have important implications for the success of the local fish farmer organizations and their member farmers. Aquaculture-specific umbrella organizations contribute to the success of local member organizations and growth of a productive aquaculture sector more than umbrella organizations which address general issues like poverty or environmental conservation. Additionally, the governments and NGOs at work in Uganda inefficiently promote aquaculture through distorted incentive systems that financially and politically reward fish farmers for activities besides fish production. Organizations that actually grew and marketed fish avoid distorted incentive systems, accepting government assistance only

when it directly improves their fish farm operations. Other farmer groups seemed to wait for direct subsidization and would not move forward on the merits of the fish enterprise alone. In the four cases examined, training fish farmers, providing quality information, cost sharing, and advocating for the aquaculture sector, not donor seeking, are the top priorities in productive fish farmer organizations.

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List of Abbreviations

ADB	African Development Bank
AT Uganda	Appropriate Technologies Uganda
CBO	Community-Based Organization
CIA	Central Intelligence Agency of the United States of America
ECO	Environmental Conservation Organization
FAO	The Food and Agriculture Organization of the United Nations
FCR	Feed Conversion Ratio
FFS	Farmer Field School
HIV/AIDS	Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome
IDP	Internally Displaced Persons
KARDC	Aquaculture Research and Development Centre, Kajjansi
LVFO	Lake Victoria Fisheries Organization
LRA	Lord's Resistance Army
NAADS	National Agricultural Advisory Services
NaFIRRI	National Fisheries Resources Research Institute
NGO	Non-Governmental Organization
NUSAF	Northern Uganda Social Action Fund

PO	Producer Organization
SACCO	Savings and Credit Cooperative
SON Fish Farm	Source of the Nile Fish Farm Ltd.
UCA	Uganda Cooperative Alliance
Ugachick	Ugachick Poultry Breeders Limited
USAID	United States Agency for International Development
USAID/LEAD	United States Agency for International Development Livelihoods and Enterprises for Agricultural Development
WFP	United Nations World Food Programme

I. Introduction

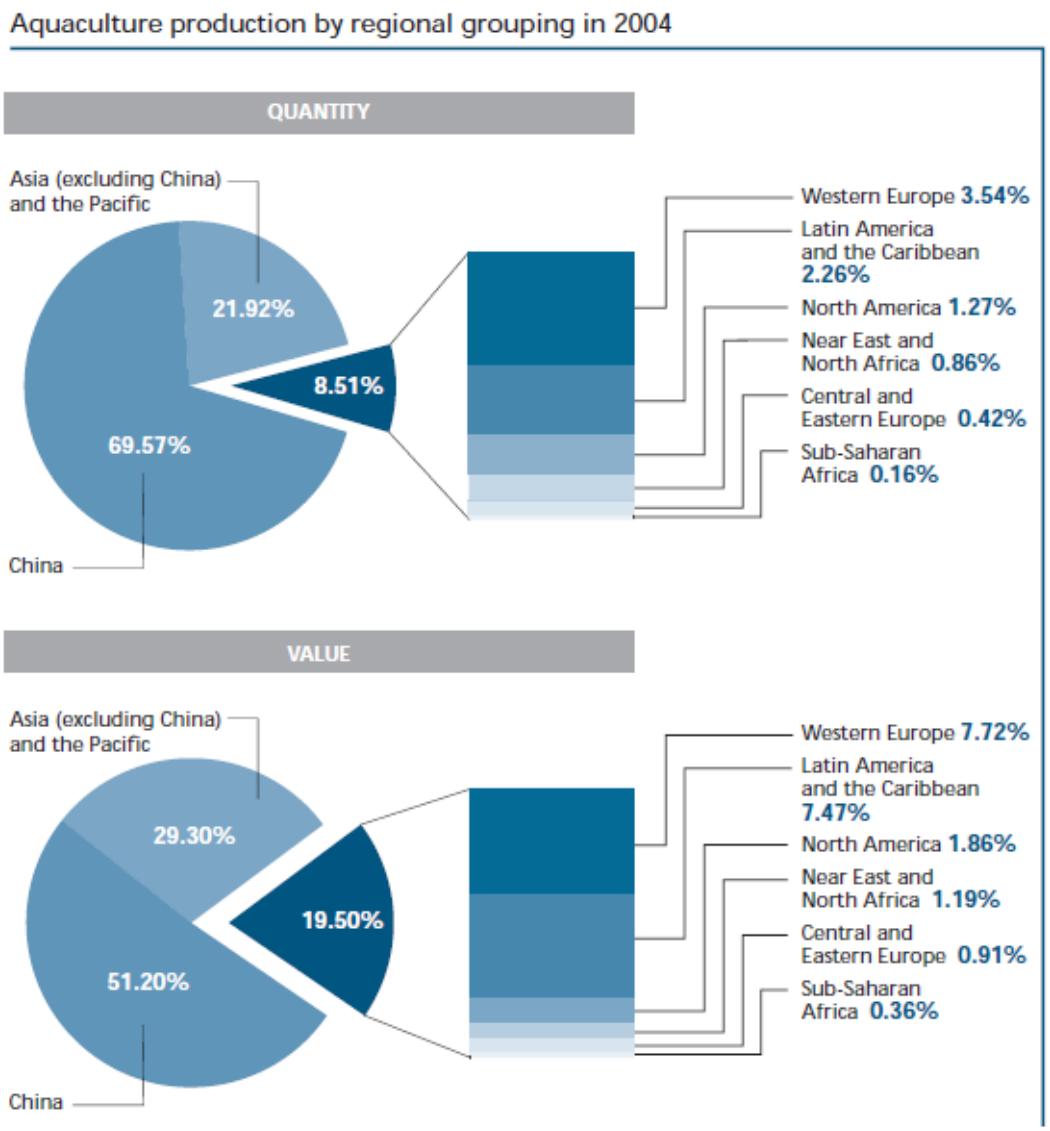
Aquaculture

Aquaculture is "the farming of aquatic organisms in inland and coastal areas, involving intervention in the rearing process to enhance production and the individual or corporate ownership of the stock being cultivated" (Crespi 2008). In contrast to aquaculture, capture fisheries involve catching naturally occurring fish populations from an uncontrolled environment.

Globally, aquaculture is a burgeoning animal-sourced food production activity, with growth rates averaging 8.8 per cent per year since 1970, compared to only 1.2 percent for capture fisheries and 2.8 percent for terrestrial meat production for the same period. Global fish capture production in 2004 reached 95 million metric tons with aquaculture production reported at 59.4 million metric tons for the same year (de Seligny 2006). The growth of this agricultural sector is due to a confluence of factors, including improvements to aquaculture practices, such as better hatcheries, feed, fish health, and other technical advances (Shell 1993). Besides technical improvements, the following factors have all contributed to a concerted effort to achieve success in aquaculture production: the decline of many major fish capture sites coupled with increased concern for environmental degradation of these natural aquatic ecosystems, an exponentially increasing world population, a growing world economy, and therefore, an increased demand for high-quality food protein sources, as well as a global food system tending more toward control and specificity of food products (de Seligny 2006, Shell 1993).

Aquaculture production is not evenly disbursed across global regions; some continents are high producers of aquaculture products and others produce comparatively low yields. Production corresponds with the span of aquaculture history on each continent. The cultivation of aquatic animals can be traced back to China, where aquaculture practice began in approximately 1100 B.C (Shell 1993). Fish farming began in Europe in the Middle Ages; North Americans began using European methods in 1853; and fish farming was introduced in the 1900s to both Africa and Latin America (Shell 1993).

Illustration 1: Aquaculture production by regional grouping in 2004



Source: FAO State of the World's Fisheries 2006. Note the lowest-ranking position of Sub-Saharan Africa.

Aquaculture development in Sub-Saharan Africa

The term "development" implies that a positive change is occurring. Common definitions of development include themes of improving quality of life, bringing out capabilities, bringing to a more effective state, and increasing resource allocation and utilization efficiency (Shell 1993). By combining these themes and applying them to aquaculture it can be said that

the goal of aquaculture development is "Bringing out the capabilities and possibilities of culturing aquatic organisms, or bringing their culture into a more advanced or effective state as a means of improving directly or indirectly the quality of peoples' lives" (Shell 1993). In Sub-Saharan Africa, widespread success has yet to be realized, despite a conducive biophysical environment, financial and technical inputs into the effort and the "near pious fervor" with which proponents have lobbied for its support (Brummett 2008, Moehl 2006). Although other aquatic organisms are cultured, Africa and Uganda primarily produces various species of tilapia and African catfish (*Clarias gariepinus*) (Mwanja 2005).

The importance of producer organizations to aquaculture development

Overall, aquaculture development commentary supports the idea that producer organization development is a key factor in establishing a viable aquaculture sector (de Selingy 2006, Moehl 2006, Hecht 2005). In aquaculture development strategies, a target goal is often to establish and strengthen farmer associations (Hecht 2005). "Greater aquaculture sustainability will be achieved through the strengthening of farmer associations and by self-regulation in the aquaculture industry" (de Selingy 2006).

Some beneficial roles which producer organization can play include influencing policy and regulations, providing technical services, facilitating market access, aiding in aquaculture research programs, providing extension services, developing and encouraging adherence to codes of conduct or better management practices, extending credit to member farmers, and facilitating knowledge-sharing (Hecht 2005, de Selingy 2006, Mosher 1966). Worldwide, examples exist of producer organizations making strides to set standards for better management practices and improve self regulation (de Selingy 2006).

Several categories of fish farmer associations currently exist in Sub-Saharan Africa. From the largest and most prominent to the smallest and most locally-based, these categories, along with their purposes, are: (1) regional and national associations, which promote aquaculture at the national or regional level, interacting with governments on a national sector basis, and utilizing international connections; (2) industrial and/or commercial associations, which promote the commercial sector; (3) small-scale marketing associations, which improve farmer revenue through scheduled harvests and eliminating middle men; (4) emerging commercial farmers associations, which improve economies of scale, marketing, and links to lead agencies; (5) informal or community fish farmer associations, which operate at the community level to provide services to farmers, which may include credit, cost sharing, and knowledge sharing (Hecht 2005). Though these categories of associations differ widely in scale and purpose, across all categories, these associations function as lobby groups to governments and as technical and market information exchanges. Because we investigate the types of local organizations which contribute to member farmer production, this research focuses on the last two categories, emerging commercial farmers associations and informal or community fish farmer associations.

Despite the long lists of roles for fish farmer associations to perform, no framework or set of guidelines exists for how effective fish farmer organizations can be created (Moehl 2006). In fact, many fish farmer associations are described as ineffective or short-lived, and links between donor funding and association creation are common, as promises of gifts often accompany injunctions to form farmer associations; in these cases, associations commonly disintegrate after incentives disappear (Hecht 2005, Moehl 2006, Harrison 1996). There are few surviving examples of thriving fish farmer organizations to hold up as examples (Moehl 2006).

However, the international development community's desire to develop fish farmer organizations remains strong. Moehl (2006) states, "While the keys to success for aquaculture associations remain elusive, there is general and widespread agreement that producers must band together. In general, successful farmers tend to be individualistic and it is clear from past experience that any such group must find value added in working (as a part of an association)." Fish farmers with the motivation to emerge as commercial fish farmers may find the services of an association of greater value than farmers who are content with their integrated aquaculture operations; the differences in these two production approaches are described below. Emerging commercial fish farmers, who have the desire to learn new techniques and improve production, are a target group for successful producer organization development (Hecht 2005).

History of integrated aquaculture; transition to commercial aquaculture

Over the last fifty years the central strategy employed by the FAO, The World Bank, and national governments for achieving these goals was "pro-poor," integrated aquaculture, or aquaculture as a subsistence activity on diversified farms (Moehl 2006). Integrated aquaculture, which is characterized by a synergy with other types of agriculture (both crop and animal production), uses nutrient-cycling principles and requires few off-farm inputs (Brummett et al. 2008).

Aquaculture in Sub-Saharan Africa received international visibility due to the 2005 "Fish for All" summit hosted by New Partnership for African Development (NEPAD) and for the coming decades, it can be expected that aquaculture will become a priority for development in this region (de Seligny 2006). Additionally, indicators point to private investment and long-term strategies will shape the direction of this developing aquaculture sector (de Siligny 2006). "Private-sector efficiency will be facilitated by the establishment of an enabling public-sector

environment combined with a strategy to pursue development within the limits of available resources" (de Siligny 2006). Limited resources and lack of infrastructure are issues which the international community will target in order strengthen the foundation of Sub-Saharan African aquaculture (de Siligny 2006). Conditions required to develop a thriving aquaculture sector include availability of fish seed, feed, access to quality technical information, affordable long-term investment capital, access to land and water resources, and a favorable governance climate (de Siligny 2006).

Illustration 2: Uganda's location on the African continent

Source: https://www.cia.gov/library/publications/the-world-factbook/maps/ug_largelocator_template.html

Commercialization of aquaculture in Uganda

The subsistence aquaculture focus is being re-evaluated and the commercialization of agriculture as a whole is the present focus of the Food and Agriculture Organization of the United Nations (FAO) in Sub-Saharan Africa and the Ugandan government's national policy as well. Currently, there are an estimated 12,000 Ugandan farmers involved in aquaculture, who

can be differentiated as subsistence farmers, progressive small scale aquaculture farmers, and emerging commercial fish farmers (Mwanja 2005). The category of emerging commercial fish farmers has been created by a team of actors, including the Ugandan government, United States Agency for International Development (USAID), and the FAO, who are working to catalyze the transformation of these select farmers from small-scale to commercial fish farm operators. The premise is that this category is made up of fish farmers who operate mainly for profit and who are the driving force behind aquaculture infrastructure development, including the production of quality fish fingerlings or "seed" and formulated feed. The abiding characteristics of these profit-oriented farmers are yet to be noted, as there are currently only 200 such farmers and this category has only arisen in recent years, coinciding with the Ugandan government's strategic interventions for the promotion of fish exports (Mwanja 2005). However, without investigation into the human dimensions of why subsistence level aquaculture promotion efforts failed to realize production goals, these current commercialization efforts may experience the same fate.

One of the characteristics of past aquaculture development programs in Sub-Saharan Africa was the assumption that available land and water resources held great potential in themselves, with social and institutional contexts of aquaculture operations receiving little attention (Pollnac 1982). While unable to retroactively rectify past mistakes, we aim to play a role in filling this knowledge gap that may influence future approaches to aquaculture development in Uganda and other sub-Saharan countries, specifically as they relate to the strategies employed to promote and support fish farmer associations.

The Sub-Saharan country of Uganda has been an area of focus for aquaculture development agencies. Several factors contribute to this focus: Uganda's favorable political climate, its location on Lake Victoria, which is a site of intensive commercial fishing and thus

the desire to "replace" Lake Victoria-sourced fish with farmed fish, (Geheb 2003), the water and land resources available for use in aquaculture, (though access to these biophysical resources cannot be taken for granted) (Brummett et al. 2008) and because the poorest citizens of this country frequently face malnutrition (Geheb 2008). Combined, these factors translate into a high regional need for fish.

In addition to political stability, the four most important components that facilitate aquaculture development in Sub-Saharan Africa are available and affordable formulated feeds, quality fingerlings, strong research and extension, and the development of appropriate markets (Hecht 2005). Uganda has made recent strides in achieving these components: Formulated sinking and floating fish feeds are currently produced in-country by Ugachick, a Ugandan poultry producer and breeder; several quality fingerling producers are located around the country; much effort has gone into training research and extension personnel; and market assessments have returned positive results. Nevertheless, many fish farmers find harvest inconsistency to be a barrier to developing reliable markets for their aquaculture products (Moehl 2006). Thus Uganda is poised to increase aquaculture production.

Optimistic estimates of Uganda's aquaculture production are reported to be 15,000 metric tons of fish sourced from 20,000 ponds with an average surface area of 500 meters squared (Mwanja 2005). Annual production per hectare ranges from between 1,500 kg for subsistence farmers to 15,000 kg for emerging commercial farmers (Mwanja 2005). The two top cultivated fish species, collectively making up 90 percent of aquaculture products in Uganda, are north African catfish (*Clarias gariepinus*) and Nile tilapia (*Oreochromis niloticus*) (Mwanja 2005). Pond culture is the most common production system, though cage culture operations are new ventures in many natural water bodies in Uganda (Mwanja 2005) In Sub-Saharan Africa, aquaculture

contributes only 2 percent of the region's food fish supply, and per-capita annual fish consumption is decreasing (de Seligny 2006). Production has not kept pace with population growth.

The problem with commercial fishing on Lake Victoria

Lake Victoria, Africa's largest lake, lies within the borders of Kenya, Uganda, and Tanzania. Unregulated over fishing on the lake has contributed to decreased catches, which are down by 48 percent since catches peaked between 1990 and 1995 (Geheb 2003). This decline in the Lake Victoria fishery has important consequences for the region's poor: Fish is often the lowest-cost animal protein source and the gap in food fish supply has a disproportionate impact on the poor. Fish consumption is decreasing in Sub-Saharan Africa, from a high of 9.9 kg per capita in 1982 to an estimate of 7.6 kg in 2002 (de Seligny 2006). Long-term remediation may reestablish Lake Victoria as a natural resource providing for the livelihoods of Ugandan, Kenyan, and Tanzanian citizens, but the lake is currently unable to keep pace with the growing food and economic needs of these communities.

As previous catch rates from Lake Victoria prove unsustainable, other sources of quality food fish are needed to meet the protein demands of a rising East African population. As part of a solution, individuals at the Lake Victoria Fisheries Organization (LVFO) have approved the use of an aquaculture strategy known as cage culture, where fish are contained in floating cages and reared to a marketable size.

Failures in previous cage culture attempts in Africa have been common, especially with donor or government driven projects (Hambrey 2004). These failures resulted from the inherent risk involved in cage culture. The activity which requires nurture, commitment, and a good understanding of local conditions, including biophysical, social, and market conditions

(Hambrey 2004). Uganda is well-suited to develop a thriving aquaculture sector of both cage and pond culture, but aquaculture success can only be achieved through understanding and adapting to the complex conditions that influence success or failure.

There are important environmental concerns with cage culture on Lake Victoria, including the issues of and policy controls for pollution and the need for high quality feed, which must be explored and understood by actors involved in promoting cage culture. Environmental concerns about cage culture should be considered within the context of a water body's overall environmental conditions (Halwart and Moehl 2004). Recommendations include developing a set of best management practices (BMPs) to optimize production efficiency, especially with regard to the amount of feed and waste loads, and organizing a permitting system with corresponding regulatory systems (Halwart and Moehl 2004). Improving feed formulation and feeding practices can significantly reduce waste loads and reduce economic costs to fish farmers (Halwart and Moehl 2004).

The problem

As a part of a larger USAID-funded AquaFish-CRSP project dealing with facilitating the development of an aquaculture sector in Uganda, my research addresses the role of aquaculture producer organizations in supporting fish farmers. The guiding research question is: What characteristics of fish farmer organizations facilitate or hinder the development of productive, commercially-minded fish farmers in the Ugandan context?

Currently, development professionals involved in promoting aquaculture do not know how producer organization mechanisms operate to affect the sustained practice of aquaculture. In order to address this knowledge gap, we conducted interviews with four currently operating fish producer organizations in Uganda, and from these interviews and other information

developed four case studies. After analyzing and comparing these case studies, we articulate ways in which development professionals can work through fish producer organizations to sustain member farmers' involvement in fish farming.

Methods for creating, promoting, and supporting fish farmer organizations must be framed with the end-result of long-term economic and social viability. A sustainable path seems to move the fish farming sector in Uganda from a highly donor-driven and –subsidized activity toward a thriving local food production sector.

Research objectives

In order to achieve the dual goals of understanding and evaluating Uganda's aquaculture contextual factors and assessing potential improvements or reevaluations of aquaculture producer organization development, the study has identifies seven specific research objectives:

1. Understand the organizational structure of each of four producer organizations, including its leaders, goals, services provided to members, members' expectations of leaders, successes members have experienced through participating in these producer organizations, and problems members have encountered in farming with a producer organization.

2. Investigate the sources of motivation that encourage farmers to join and participate in these four aquaculture producer organizations as well as encourage their continued involvement in both fish farming and in organizational activities.

3. Understand the processes through which these four fish farmer producer organizations facilitate member farmers' increases in production of fish and transition from small-scale to emerging commercial producers.

4. Develop principles that can be used by relevant government agencies, Non-Governmental Organizations (NGOs) and development agencies to improve the ways they work

to support aquaculture producer organizations to enhance farmers' sustained activity, profitability, and commercialization of their aquaculture enterprises.

The results of the first and second research objectives are detailed in the results chapter and the third and fourth objectives are addressed in the conclusions chapter.

II. Conceptual framework

Approaches to agriculture development

The goal of international development is to affect good change (Chambers 2007). Most discussions of development processes hold that agriculture growth is essential for general economic growth (Mosher 1966). However, much debate revolves on the appropriate method for stimulating agriculture growth through increased production (Hayami and Ruttan 1985:43). Hayami and Ruttan propose five models which explain agricultural development and growth. Following is a discussion of primary approaches to agriculture development (i.e., means of increasing agriculture productivity) and how these models have been applied to aquaculture in Sub-Saharan Africa, if applicable.

Resource exploitation model

Throughout history, the most common method of increasing agriculture production has been putting more land into production (Hayami and Ruttan 1985:42, Ruttan 1998:155). Currently, there are few areas in the world where this model will represent an efficient source of agriculture sector growth (Ruttan 1998:155).

Intensively-managed aquaculture is a competitive enterprise in many locations in terms of yield per unit of land in production. Also, expanding agriculture production into natural water bodies through aquaculture puts more surface area into production.

Conservation model

The conservation model, which evolved from the advances in crop and livestock husbandry in the English agricultural revolution, emphasizes the development of complex land- and labor- intensive production systems (Ruttan 1998:156). These systems involve the

production and use of organic manures, and physical capital including drainage and irrigation systems, in order to use land and water resources more efficiently (Ruttan 1998:157). This model provides the basis for much of the productivity growth in most poor countries (Ruttan 1998:157).

The principles of improving physical capital and land-intensive methods are clearly evidenced in artisanal, diversified fish farming operations. Artisanal fish ponds diversify and intensify land use as well as make use of nutrient-cycling, drainage systems, and organic manure fertilizers (Molnar 1985).

Diffusion model

The basis of this model is the observation that differences exist in agricultural productivity among farmers who live in different regions (Ruttan 1998:158). In the diffusion model, the assumed deficiency of low-productive regions lies in farmers' technical knowledge or reliance on less productive crops (Ruttan 1998:158). The goal, in this method, is that with the diffusion of knowledge, technologies, and productive crops, the differences in productivity of farmers and regions will narrow (Yugiro and Ruttan 1985:57). The diffusion model has been the foundation for much of the research and extension efforts in developing-world aquaculture, where lack of technical knowledge and poor extension services are seen as barriers to fish farm productivity (Brummett et al. 2008).

High-payoff input model

The low returns on development strategies based on the conservation and diffusion models led to the development of a new model in the 1960s, the high-payoff input model (Ruttan 1998:159). This strategy is based on the assumption that increases in production will result from investments that make modern, high-payoff inputs available to farmers in poor countries (Ruttan

1998:159). The enthusiastic response to this method is due largely to the number of studies reporting high rates of return to public investment in agricultural research and the successful efforts to develop high-yielding grain varieties suitable for the tropical climates of many poor countries, collectively termed the Green Revolution (Ruttan 1998:159).

In aquaculture, several examples of this high-payoff input model are at work. The most obvious is the development of formulated fish feed (Rutaisire 2007). One of the primary differences between a small-scale artisanal fish farmer and a small- to medium-scale commercial farmer is the use of purchased, formulated fish feed (Rutaisire 2007). Another example from aquaculture in Sub-Saharan Africa is the investment in researching and developing improved fish species and technologies such as sex-reversal in tilapia (Rutaisire 2007).

Induced innovation model

The high-payoff input model is an incomplete theory of agricultural development, as the economic mechanisms by which education and research are supported are not incorporated into the model (Ruttan 1998:160). Ruttan and Hayami (1998) developed the induced innovation model to account for these omissions, one where technical change is endogenous to the development process, rather than as an exogenous factor that operates independently of other development processes. Under this model, the policies pertaining to the allocation of resources to technical and institutional innovation must be consistent with the resources the country possesses in order to continue on a path of efficient growth (Ruttan and Hayami 1998:163). In Sub-Saharan Africa, several countries have developed policies and programs conducive to the development of a thriving aquaculture sector, including Angola, Cameroon, Zambia, Madagascar, and Malawi, and others are in the process of doing so (Hecht 2005).

Rationale for developing and implementing aquaculture projects

The underlying goals of aquaculture development projects often are assumed to be the production of a high protein food source as one of a bundle of strategies designed to improve food access for the poor, as well as provide an income source for small, limited resource farmers (Brummett et al. 2008, Grivetti 1982). It is sometimes overlooked that full realization of each of these goals is impossible; all of a ponds' harvest can either be sold or consumed, so one objective must be emphasized (Moehl 2006). Further, aquaculture development projects intended to provide food are designed and implemented very differently than aquaculture development projects designed to improve income and supply fish to markets (Peterson 1982). The current aquaculture development trends are focusing on the development of commercial aquaculture sectors, and as such are projects designed to improve income and fish supply to markets (de Seligny 2006).

The goals of an aquaculture development project are the criteria for evaluating success. Grivetti (1982) outlines four different perspectives for examining aquaculture development goals. First, a host government may regard aquaculture as one means for local development. For example, the host country governments' goals for the project may be to provide training for local technicians, as a means to purchase foreign equipment or to improve roads and communication networks. From this perspective, if a project improves local infrastructure or resources, it is a success, regardless of whether or not any aquaculture products are raised, harvested and sold.

Second, aquaculture can be viewed as a program to produce food for local consumption or for export to earn foreign currency. Here, program success is measured by sales of aquaculture products to those able to afford them.

Third, an aquaculture project goal may be to produce a high protein product in order to address the nutritional protein needs of a specific region or nation. In this case, success is dependent on the aquaculture products being produced and made available to the target population.

Fourth, aquaculture projects can be included within a comprehensive nutritional program designed to meet the requirements of a region or nation. Success of this type of project can be measured by the production and citizens' utilization of products with nutritional content matching the project's goals.

Artisanal, integrated, diversified aquaculture

Improving the livelihoods, nutrition, and opportunities of the rural poor is a popular goal of development efforts, including fish farming. These efforts target the rural poor farmer, who makes up 70 percent of the African population. These individuals make their livelihoods on small-scale, mixed enterprise farms, producing first for home consumption and second for sale (Brumett et al. 2008:375). The prevailing approach to aquaculture development in Sub-Saharan aquaculture between the 1970s through the 1990s targeted the rural poor farmer. The FAO, the Peace Corps, and USAID largely centered their efforts on small-scale, limited-input, integrated fish farming for improved household fish consumption and income (Brummett et al. 2008:375, Moehl 2006:v). Currently, 90 percent of African fish farmers fall into this small-scale or artisanal category (Brummett et al. 2008:380).

Gains from small-scale, integrated fish farming systems are not captured in official statistics. Nevertheless, they impact rural food security by increasing small farm production levels (Brummett et al. 2008:375). However, small-scale, integrated fish farming operations do not realize profits due to the small quantities and low production intensity, that is, the weight of

fish produced per unit area (Brummett et al. 2008:375). Several factors work against the continued promotion of subsistence-level fish farms, including the expense of training and extension and the low expectations for economic growth from this diversified farming production style (Brummett 2008:383).

Small- to medium-scale commercial aquaculture enterprises

The 21st century focus the FAO for aquaculture development is on small- and medium-scale enterprises. Recent efforts view aquaculture as a private-sector led business that is technically sound, economically profitable, socially acceptable, and environmentally sustainable, with the state playing a role as a facilitator and monitor (Brummett et al. 2008, de Seligny 2006). This focus on commercialization of aquaculture need not exclude small holders; the distinction is more a reflection of motivation, goals, and business and management practices than scale (Brummett et al. 2008:375, Moehl 2006). In comparison to artisanal, integrated fish farmers, small- to medium-scale commercial farmers build more ponds, use specialized technology, employ laborers, purchase fingerlings, use commercial feeds, and employ nonlocal business strategies, including transporting fish to markets where wealthier customers pay cash for fish (Brummett et al. 2008:380). Producers and wealthy consumers benefit from the commercialization of aquaculture.

Perspectives on fish farming development

A wide range of human factors influence the success or failure of a fish farming venture in Sub-Saharan Africa. Technical competency is a key requirement for successful farming, and teaching fish farmers the right methods has been a major focus of aquaculture development efforts (Brummett et al. 2008). However, a large body of evidence suggests that farmers' and governments' commitment to fish farming (as evidenced by time and resource investment) is a

much better predictor of success than technical competence, which can be taught and learned (Molnar 1985:67). A crucial failure contributing to African aquaculture's low performance levels is the mismatch between the priorities of donors, governments, and farmers (Brummett 2008:383). The following discussion highlights some of the components of these essential elements of fish farmer priorities and commitment to aquaculture.

Sources of motivation; evidence of commitment

One important sociological topic in the development of an aquaculture sector is farmers' motivation for beginning fish farming as well as their commitment to continued involvement in the enterprise. One perspective on the advancement of fish culture maintains that adoption is not firmly evidenced until a farmer has completed at least three cycles of production from ponds.

First, it is important to understand that fish farming in Sub-Saharan Africa has been widely promoted. Improved access to information has increased aquaculture's publicity and the farming practice often receives media attention, both in print and over the airwaves, spreading media-byte sized success stories (Moehl 2006:33). Overall, governments' motivations for promoting fish farming are good, as governments respond to declines in natural fisheries and the protein needs of growing populations, and government officials see operational examples of productive aquaculture enterprises in the region that they wish to emulate (Moehl 2006). However, the practice of government officials promoting aquaculture by investing in politicians' or their supporters' hobby farms is not an effective way of creating profitable, sustainable, well-managed fish farms. When politicians receive first access to all public assistance, little resources may remain for common farmers.

Political leaders, though they are often among the first to express interest in beginning fish farming, are often not motivated by profit or food but instead by prestige or even amusement

(Moehl 2006:15). In fact, the politicians' adoption of fish farming sometimes serves to de-motivate the common people, who see politicians as members of an elite class whose activities could not be easily replicated by ordinary farmers (Moehl 2006:15).

Common farmers, often the target of aquaculture development projects, are motivated to begin fish farming by a spectrum of incentives, including resource acquisition (gifts of tools, feed, or fingerlings) in exchange for the farmers' building fish ponds (Moehl 2006:13). Several writers identify other desires: to share fish with needy neighbors (Moehl 2006:15), to improve their life situation, both financially and in terms of household food security (Moehl 2006:15, Harrison 1996:272), to be associated with a "culture of development" (Harrison 1996:272), to claim ownership of land (Harrison 1996:274), and to have valuable possessions for financial emergencies or for future use (Harrison 1996:272). Several of these sources of motivation are conducive to the development of profitable fish farming enterprises, others are not. Investigation into each source of motivation is worthwhile.

The giving of gifts to individuals or groups in order to encourage their adoption of fish farming has proven unsuccessful at establishing self-sufficient farmers and is strongly discouraged (Moehl 2006:16, 18, 31). Often, the gifts are seen as the primary reason for involvement in a fish farming project and not as tools to be used to jump-start a long-term farm enterprise (Moehl 2006:31).

Commonly cited motivations for beginning fish farming, as well as fish farming project goals, include improving household food security and farmers' financial incomes. Successful fish farmers cite these as goals; they want to earn an income, decrease their household food expenses, and maximize the profit from their ponds (Moehl 2006:14, Harrison 1996:273).

The desire of being associated with a culture of development is reflective of the fact that most African communities have been recipients of colonial, government, or donor aid over the last half-century. These previous improvement efforts have an effect on how current projects, development professionals, and incoming money are perceived by the recipient community and its members. "These influences may often mean that the adoption of fish farming is about much more than producing fish" (Harrison 1996:275).

The history of development intervention is sometimes evidenced through demands for capital. "At an obvious level, the legacy of development is felt through consistent (and indignant) requests for assistance, loans, fingerlings, and inputs … they are particularly disenchanted by threats that such inputs may no longer be forthcoming" (Harrison 1996:276). Loans often are not viewed as money which must be repaid as many farmers and local extension agents see foreign projects as giving, rather than receiving money (Harrison 1996:276, Moehl 2006:16).

Another reason farmers build fish ponds is not principally to grow fish, but to claim land for the farmers' current and future use. In many areas of Sub-Saharan Africa, people have use rights rather than ownership of land, and such rights are secured in several ways: through the act of clearing an area, building a more permanent structure such as a fish pond on the land, through historical precedent (i.e., a father or mother had previously cleared it) and through the permission of the local leader (Harrison 1996:275). Sometimes, a farmer digs a pond to claim the land for use other than growing fish. For example, one farmer began construction of eight fish ponds without completing any of them. "When asked about this, he explained that the ponds served as a means of securing an area of potentially fertile land near the river. He hoped that the ponds would someday produce fish, but was happy that they would also give him control of the land

which would be later used for a vegetable garden" (Harrison 1996:275). When fish ponds are used to secure land, fish production is, at best, incidental (Harrison 1996:275). In an active and precise farming system like aquaculture, "incidental" fish production is least likely to contribute to the development of a commercial aquaculture enterprise.

The goal of having fish "on hand," ready when an honored guest arrives and deserves a special meal, or a financial crisis strikes, such as a death in the family, is an important motivation for engaging in fish farming (Harrison 1996). In this case, the fish are regarded as a "bank in the water;" as a store of wealth, the perceived value of the fish in the pond may be greater than the farmers' immediate utility as a source of food or income (Harrison 1996:274). In this strategy, money from fish culture may be used to pay school fees or to purchase medicine in an emergency. While this is an appropriate strategy if operating ponds for subsistence goals, it is inappropriate on a commercial level when fish are being fed commercial feeds, as each kilo of feed represents profit which the fish are essentially "eating." In a commercial fish farming system, if fish are not harvested at the right time, the expense of maintaining the fish will decrease the profit margin of a harvest. Similarly, a pond itself may be viewed as an asset, one that may be used in the future when human and material resources are different, as in the case where a young man continued to dig ponds before he had seen any return on the first one. "He complained that because he had no livestock or vegetable garden, he was unable to feed the fish properly. Nevertheless, he explained that it is better to dig now, while he is strong: 'the food for the fish will come later, but it may not be so easy to dig a pond later'" (Harrison 1996:274).

Farmer expectations for fish farming enterprises

In order to understand farmers' evaluation of their aquaculture enterprises it is important to know their motivations and expectations for beginning fish farming, as well as how these

expectations were transferred or exaggerated. One farmer expectation that has grown from historical precedent is that of expecting to receive money or gifts of construction materials, credit, nets, seed, or feed (Moehl 2006:16). On the part of the development agents giving the gifts, these materials and inputs were intended to stimulate interest in aquaculture, but that desired effect was not realized. Farmers formed fish farming groups to receive the benefits, but once the gifts were obtained, the groups quickly dispersed (Moehl 2006:16).

Sometimes, individual farmers were given plentiful gifts along with training in order to make them exemplary farmers, sometimes called "model farmers," "farmer leaders," or "master farmers." This is a distorted incentive system; the designation of "master farmer" is not conferred on a person who has, over time, built up a model fish farm based on his or her own initiative, dedication, and technological aptitude. Rather, some bestow the status on a person by the inflow of substantial assistance and funds into his or her farm. The anticipated effect of the "master farmer" example, the increased interest on the part of ordinary farmers, is rarely realized. The "master farmer" group, who are often politically connected, is perceived as a privileged group whom ordinary farmers, without the seemingly limitless resources, are unable to model (Mangheni:2007:3).

Another important fish farmer expectation, especially among beginning farmers, is that of size of fish at harvest and harvest value. Usually, the farmer's expectation of the size of his or her harvest is not based on the previous experiences of neighboring fish farmers, but on numbers quoted by the promoters of fish farming. Two types of people attempt to spark interest in fish farming by quoting high fish production and profit numbers: development technicians and politicians.

Some government aquaculture staff and development technicians, even in contexts where on-farm inputs are used, quote production numbers from high input aquaculture systems (Moehl 2006:13). For example, farmers are taught that "good" farmers should be able to harvest tilapia with an average size of 300-400 grams, even though in mixed-sex tilapia systems where on-farm inputs were used, fish of this size are rarely produced, even with good or much better-than-average pond management (Moehl 2006:16). Also, fish farmers internalized the message that "bigger is better;" that they should grow and harvest the largest fish possible, even though it has been demonstrated that in many scenarios, the most profitable production strategy is to grow larger quantities of the smallest size fish accepted on the market (Moehl 2006:16). Perhaps more complicit in inflating fish farmers' yield expectations are those who promote fish farming without understanding what the endeavor involves.

Politicians, watching their countries' fisheries decline as their populations grow, as well as noticing the international development community's focus on fish culture, see the benefit of a productive aquaculture sector (Moehl 2006:32). Unfortunately, these leaders, with a limited concept of what fish farming involves, often exaggerate the benefits and minimize the requirements of effort and attention, to the detriment of aquaculture development (Moehl 2006:28).

Role of fish farmer associations

The focus on developing successful fish farmer associations is based on the principle that effective development requires organization, as organizations link people, actions, and resources (Johnston and Clark 1982). Individuals working together to access knowledge, material, protection, and other resources that lie beyond their individual grasps may find a farmer organization a powerful tool that links farmers horizontally, that is, to each other, in units of

collective action, as well as vertically, tying poor people to larger socioeconomic and governmental structures (Johnston and Clark 1982:156, 165). Producer associations are one means for aggregates of farmers to "pull down" government services (Hecht 2005).

Farmer associations have been touted as key to a successful aquaculture development matrix though unfortunately few stellar examples of associations exist as models to emulate; the pathways to achieve strong, sustainable groups have yet to be proven (Brummett 2008:383, Moehl 2006:15,16). This problem plagues development efforts outside fish farming: "The sad fact is that analysts, planners, and politicians simply *do not know* what kind of local organization is actually in the poor's interest" (Johnston and Clark 1982:169). However, even without a time-tested successful model for building fish farmer associations, several principles emerge from previous experience and research.

Basis for group formation

Rationale of group formation often determines the success of the fish farmer group members; groups formed due to the influence of outsiders, be they development agents or government agencies, yield less productive and profitable fish harvests (Harrison 1996:276). Effective participation cannot be commanded by policymakers, but it must be encouraged (Johnston and Clark 1982:173). The improved image of aquaculture in Africa has led to the establishment of fish farmer groups that may be "a quick response to a perceived problem which is not fully understood and/or a quick fix to enhance eligibility for external support" (Moehl 2006:45). Responses to the aforementioned expectations from aquaculture (specifically, gifts and large harvests) contribute to the hasty formation of fish farming groups and associations. If gifts and technical training are received immediately after the group is formed farmers often see

little incentive for continued involvement in the group or the farming activity after the gifts cease (Molnar 1985:72).

Besides the basis for a group's formation, several relationship-based characteristics of successful fish farmer organizations emerge. Fish farmer organizations are most useful on the small- to medium-scale commercial level, where collective bargaining and information sharing are a necessity (Moehl 2006). Individual fish farmers and the groups that they comprise are more successful if they are located in areas of high biophysical potential for aquaculture (Mohl 2006). Also, successful groups benefit their members by maintaining affiliations with suppliers of quality inputs. In this way, groups allow their members to access the best feed and fingerling producers and reduce each farmer's costs through negotiating for bulk prices and sharing transportation costs. Most importantly, to facilitate the productive success of each member, the group focus must be on increasing members' fish production through sharing accurate fish farming information, accessing inputs, and marketing harvests to bring fish farmers the best prices (Moehl 2006). Successful groups also de-emphasize hierarchy and bureaucracy and have effective protocol in place to handle interpersonal conflicts that will inevitably arise (Moehl 2006).

In terms of mitigating conflicts and the detrimental effects of hierarchy, farmers' groups are usually more coordinated and successful when the members are more homogenous in occupation, income, and ethnicity (Molnar 1985:68). Local fish farmer organizations need to be linked to national or regional producer networks in order to lobby as a strong, collective voice (Moehl 2006:vi). In addition to lobbying for greater policy support of aquaculture, vertically-integrated farmer associations have the ability to raise issues with research scientists and administrators, leading to increased demand-driven research and development of technologies

(Ruttan and Hayami 1998:169). These practical relationships can be understood as social capital.

Social capital in fish farmer associations

Social capital consists of valued relationships between people (Ritzer 2008:533), and this concept has important implications for economic development theory and policy (Woolcock and Narayan 2000). Social capital formation is important to economic development because "fostering networks of positive relations among organizations gives them better access to resources and to a socially defined context that informs decision-making within organizations and structures relations among them (Chaskin et al. 2001)." In the primary field of economic development, the networks view of social capital is the one applied here to fish farmer organizations. The networks view of social capital stresses the importance of horizontal relationships between peers at the local level, sometimes called bonding social capital, and vertical relationships, within and among community groups, firms, governments, and resource-holders, labeled bridging social capital (Wookcock and Narayan 2000). In the fish farmer organization context, examples of bonding social capital include the relationships between member farmers, where mutual on-farm assistance may provide benefits to all farmers in a group, and knowledge transfer between member farmers. Examples of bridging social capital include the relationships between local fish farmer organizations and extension agents, feed and seed distributors, consultants, research stations, government agencies, and other fish farmer organizations.

Leaders' implications for success

A destructive form of social capital, labeled perverse social capital, has enabled the leaders of some fish farmer organizations to undermine the long-term feasibility of their

organizations (Woolcock and Narayan 2000). As in any community-based organization, group leaders hold incredible potential to bolster or degrade the productive potential of the group as a whole. One problem identified in African aquaculture is the presence of many leaders, or "too many chiefs and not enough practical 'fish handlers'" (Moehl 2006:45). A possibly related phenomenon is the interpersonal rivalries within fish farmer associations that inevitably cause the group to suffer (Moehl 2006:16).

The involvement of politicians or other elite members of a community can also impact the long-term feasibility of fish farmer organizations, as local elites are linked to the poor through dependency relationships (Johnston and Clark 1982:167). Though elite sponsorship of a fish farming project or association may initially garner support for the project, long term reliance on a single individual for leadership can reinforce dependency patterns, and may push latent conflicts to the foreground when the individual is no longer present (Molnar 1985:69). "Loss of a strong leader may leave the group struggling to develop coordination mechanisms not previously activated when one individual's authority had guided most decisions in the past" (Molnar 1985:69).

In more subversive cases, local elites may oppose collective adoption of fish farming or attempt to capture resources meant for the group, both with the goal of maintaining their social and economic position (Molnar 1985:69, Johnston and Clark 1982:167). Even in cases where local leadership supported new opportunities in fish farming the vested interest of elites may undercut the equal distribution of benefits (Molnar 1985:71). In light of these previous experiences and observations, thoughtful development workers often attempt to work to build organizations with members from relatively unstratified social contexts or those that have effective mechanisms for holding leaders accountable (Johnston and Clark 1982:168).

Challenges of umbrella organizations

Non-governmental umbrella organizations are organizations whose members are themselves non-governmental organizations (NGOs) (Gumz 2008). Umbrella organizations use a variety of structures, from loose affiliations to clearly defined corporate hierarchies. Due to this flexible form, successful umbrella organizations require strong internal guidance and clear identities to make strategic choices (Young 2001). An organization's identity is what is central, distinctive, and enduring about an organization (Young 2001). Organizations which are affiliated with umbrella organizations can face identity-related problems, including a subsidiary organization being charged with roles they do not want or needing to work with different constituencies with different expectations (Gumz 2008).

Role of aquaculture extension

Due to a unique set of challenges, aquaculture extension must be approached with unconventional extension strategies; "aquaculture is a specialization that is not easily diffused by generalist extension services" (Moehl 2006:20). The large spatial distribution of fish farmers makes national-level specialized extension services financially and logistically unrealistic (Moehl 2006:20). Regardless of the extension approach, the timeline for adoption of fish farming is comparatively long, with frequent extension support lasting several years, slowly tapering off to "check-up" extension visits (Moehl 2006:21). There is likely no extension solution applicable to the vast geographic region of the African continent (Moehl 2006:46).

Like effective and sustainable models for building and supporting fish farmer associations, there are similarly few models for sustainable and cost effective aquaculture extension in Sub-Saharan Africa (Moehl 2006:16). However, an approach using qualified, highly focused extension personnel targeting clusters of fish farmers in high potential zones

appears more viable than previously attempted methods (Moehl 2006:23). Important to consider are the possible negative implications of this approach, which include the inevitability of leaving out some people who would otherwise have been productive fish farmers, as well as the potential for political influence to determine the areas or communities of focus, preferentially giving one group access to resources denied to others. However, the fact remains that providing aquaculture extension to fish farmers widely dispersed across geographical regions is cost prohibitive.

Capacity of aquaculture technicians

An important dimension of effective extension is the professional capacity of fisheries and aquaculture extension agents, especially the personnel in direct daily contact with fish farmers. Typically, field technicians are graduates of two-year technical training schools, and serve in entry level positions (FAO 2004:8). Agents who demonstrate exemplary skills are quickly moved to positions in research and later administration, leaving newer staff with less experience and those whose poor performance did not merit promotion to perform the crucial role of interacting with farmers (FAO 2004:8). This revolving door of extension agents is clearly detrimental to fish farmers as well as the extension-supported fish farmer associations, as professional relationships based on trust and previous experience are undermined (Johnston and Clark 1982:164). The potential losses due to bad advice are greater for commercial fish farmers, who invest not only human resources but financial capital into developing their farms.

Farmer-to-farmer outreach

Farmer-to-farmer outreach is a popular agriculture development strategy that involves farmers serving extension functions for other farmers (Moehl 2006). The logic supporting this approach is that development agricultural officers or government extension can train a limited number of farmers, but there is a multiplier effect of that extension investment when those few

farmers train other farmers. Farmer-to-farmer outreach in Uganda and other parts of sub-Saharan Africa takes several forms. One way this type of outreach happens in the African aquaculture sector is when private fingerling producers provide outreach to their farmer customers, working under the assumption that the better the fingerling producers promote good aquaculture practices, the greater the farmers' yield, and the more fingerlings the farmers would purchase (Moehl 2006:25).

In this approach, the fingerling producer providing the outreach has a vested economic interest in other fish farmers' success. In Uganda, this information transfer happens almost exclusively when the customers pick up their fingerlings, as the fingerling producers do not visit farmers' ponds (Moehl 2006:25). This system for farmer education only works if the farmer buys fingerlings from reputable and knowledgeable aquaculture producers, as opposed to charlatans who catch wild fish and attempt to sell them as fingerlings or from middle-men (Moehl 2006:25).

A similar and productive farmer-to farmer knowledge transfer situation is when one farmer sells fish feed to neighboring farmers and therefore benefits economically from sharing information about good pond management, marketing, etc. (Moehl 2006:16). In both cases, the farmer providing the extension services has a vested interest in the success of the recipient farmers' fish farming enterprises.

Often, however, farmer-to-farmer outreach strategies have been implemented that did not include this essential element of vested interest. One such approach is that of grooming "model farmers" or "farmer leaders" who were to serve as models for production technologies and in some cases, were designed to advise a group of local farmers or members of a farmer association, providing extension services, sometimes for financial compensation, sometimes not

(Moehl 2006:16). In some cases, after the "master farmer" or "farmer leader" had benefitted from the training and technical bolstering of their own farms, the farmer leaders were then unwilling to share information with others, or in other cases, the farmer leaders were perceived by other farmers as a privileged group, and often a politically connected one, that ordinary farmers lacked the resources or connections to emulate (Mangheni, 2007:3).

Another hindrance to effective long-term farmer-to-farmer outreach is a competitive market environment. "Furthermore, if aquaculture did take off in the locale, the leader soon realized he was helping the competition and found little justification to continue" (Moehl 2006:16). If ordinary farmers are competing with politicians, who prioritized their own farms, the ordinary farmers in a fish farming development program may drop out (Moehl 2006:11). From each of these negative examples the reality is clear: For successful farmer-to-farmer extension both farmers must benefit from the relationship.

Farmer field schools

Farmer field schools are one process used in Sub-Saharan Africa for transferring knowledge from researchers to farmers while providing complementary support mechanisms (Moehl 2006:22). The farmer field school (FFS) is an approach to group-based learning that combines goals of technology transfer and empowerment of farmer-learners based on the concept that adult farmers learn best through in-the-field observation and experimentation (van den Berg 2004). Though it shares several common goals of extension efforts, the FFS approach is differentiated from traditional extension by the goals employed by each: in extension, the goal is to deliver a technology, and effects are measured by the level of farmer adoption. In contrast, the goal of the FFS approach is to educate people, enhancing their ability to make context-dependent, informed decisions, and to adapt their management styles in response to diverse local

conditions (van den Berg 2004:8). Implementing FFS approaches is a complex, adaptive process, and developing impact assessments is an equally challenging task, especially gauging long-term impact (van den Berg 2004:8).

Privatization of extension

The three main groups of extension providers in developing countries are public, private, and nongovernmental organizations (NGOs), each with specific strengths (Swanson and Samy 2002). The strong points of governments are often dealing with natural resource and farm management, while the strength of private firms lies in the technology and information they possess, and NGOs are often most invested in social capital and poverty alleviation programs, specifically, organizing small-scale, minority, and women farmers to access technology and resources (Swanson and Samy 2002).

The privatization of agriculture extension services is an area of growing interest in developing countries, including both private extension programs and private/public partnerships (Moehl 2006:49). Contracting extension services with private individuals or firms is one option governments have for restructuring their extension operations (Moehl 2006:47). Many fish farmers use private extension as information sources with a wide range of results. In many African contexts, there is a prevalence of "fake experts" in aquaculture, pseudo-professionals who peddle misinformation and poor quality fingerlings to their clients (Moehl 2006:49, 25). Successful associations guard against the detrimental influence of charlatans by vetting the professionals they engage with and creating lists of knowledgeable, fair, and respected aquaculture service providers.

Conclusion

From the previous examination of the context fish farmer organizations function within in Uganda, we developed several guiding questions for assessing four existing producer organizations as case studies. The answers to these guiding questions frame the analysis of cases in chapter four and our conclusions about productive fish farmer organization development described in chapter five.

Guiding questions for case study assessment

1. What are the characteristics of a producer organization which contributes to the members' sustained practice of aquaculture?
2. What services do effective producer organizations provide member farmers?
3. What are the priorities of each producer organization?
4. What are member farmers' expectations of producer organizations?
5. Why did these producer organizations initially form?
6. What are the goals of each producer organization?
7. What challenges arise in producer organizations and how are they addressed?
8. How do member farmers and producer organization leaders gauge the success of their fish farm operations?
9. What are the shared characteristics of producer organizations that sustain member involvement?

III. Methods

Research design: Multiple case studies

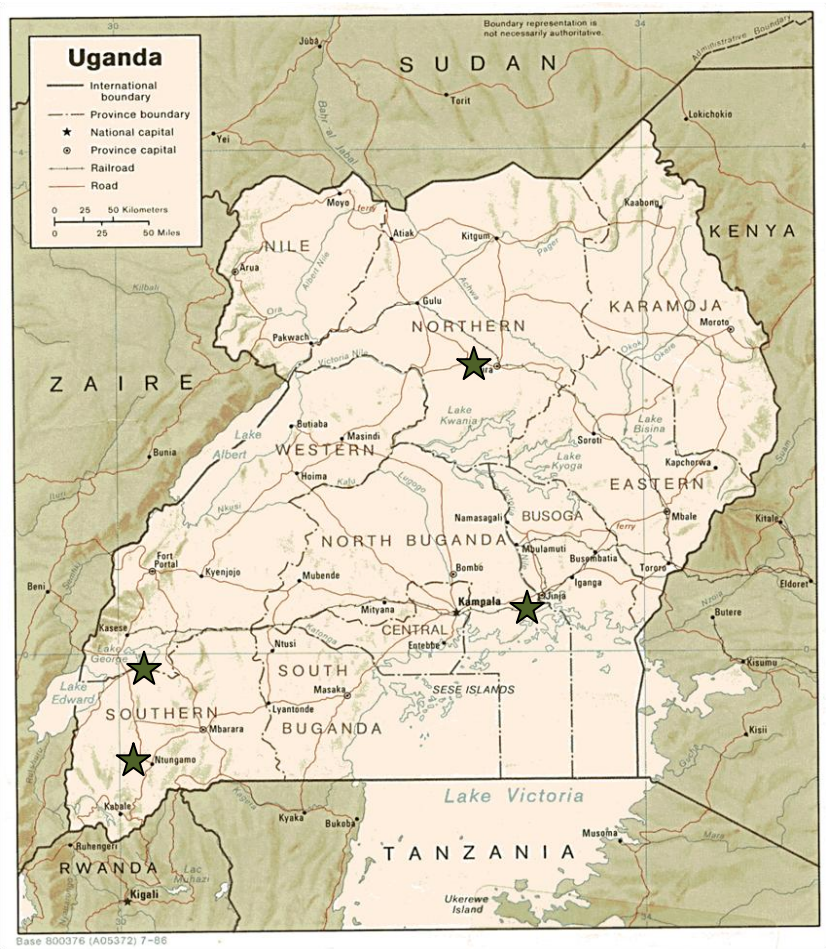
Descriptive case study research was conducted on four fish farmer organizations in diverse areas of Uganda. We collected data for case study analysis during a five-week stay in Uganda during January and February 2010. Yin defines a case study as an "… empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (2008:13). Multiple case study analysis is a research method which looks carefully at persons and operations at several locations in order to understand a complex situation (Stake 2006). It is an appropriate research method to answer the research questions articulated in chapter one, as they are "how" and "why"-based questions (Yin 2008:7). Evidence from multiple case studies is likely to be stronger than that of single case studies (Yin 2008:19).

The present multiple case study analysis follows the illustrative and cumulative case study designs, as the researcher seeks to first illustrate, or describe, in-depth examples about a program or project, and then seeks to bring together findings from several case studies to answer evaluation questions (Morra and Friedlander 2005). Illustrative case study designs have a small number of cases and exhibit the diversity present in important variations (Morra and Friedlander 2005). Though case studies can be based on qualitative and quantitative evidence (Yin 2008:15), the researcher relies solely on qualitative research methods for data collection, including semi-structured interviews with individuals and focus group interviews.

Sample identification and participant recruitment

From the population of all small-scale fish farmer organizations in Uganda, the researcher determined that the sample included three or four organizations of fish farmers who live in the three major geographic regions of Uganda: Northern, Central, and Western Uganda. Each case study would consist of multiple participants, representing the formal leaders as well as the members of each producer organization. The four cases (or fish farmer organizations) are thematically titled: "The Unaccountable Leaders;" "The Helping Hands;" "The Family Affair;" and "The Cooperative Society."

Illustration 3. Map of Uganda with producer organization location noted



Source: http://www.africa.upenn.edu/CIA_Maps/Uganda_19889.gif

Fishery officers Gertrude Atukunda and John Walakira identified the following three fish farmer organizations: "The Unaccountable Leaders," "The Helping Hands," and "The Family Affair," as participants in the broader AquaFish CRSP research program and for this case study research. Conversations with Gertrude Atukunda and John Walakira assert that these organizations are representative of the different types of aquaculture organizations in Uganda. These organizations were chosen based on Gertrude and John's previous contact with these three organizations which resulted from professional connections the organizations had made with the Aquaculture Research and Development Centre, Kajjansi (KARDC), a branch of The National Fisheries Resources Research Institute (NaFIRRI), where Gertrude Atukunda and John Walakira work as Research Officers. Recruiting focus group research participants from organizations where potential participants seek services is one method for recruiting research participants (Hennink 2007:102). All three organizations have USAID project relations. We planned to conduct focus group interviews with a sample of members from each aquaculture group. However, in the cases of "The Unaccountable Leaders" and "The Helping Hands," this was not possible, as the producer organization leaders were not cooperative in arranging focus group meetings. In these situations data consists of semi-structured interviews with the producer organization's leaders.

We identified "The Cooperative Society," an organization without USAID project relations or previous contact with Gertrude Atukunda, John Walakira, and ARDC. Contact with this organization came through a fish farmer organizer we met at the Walimi Fish Farmers Cooperative Society (WAFICOS) Fish Farmer Symposium and Trade Show. "The Cooperative Society," as a case, provides an element of diversity and basis for comparison, as the first three groups are representative of the type of fish farmer organizations that maintain contact with

ARDC, and "The Cooperative Society" does not. Events, meetings, and conferences are also useful venues for recruiting focus group research participants (Hennink 2007:101). The contact is the organizer and chairman of the Uganda Fish Farmers Cooperative Alliance. "The Cooperative Society" is one of the groups organized under the Uganda Fish Farmers Cooperative Alliance umbrella.

Data collection

Qualitative data was collected through the use of semi-structured interviews with individuals and focus group research. Semi-structured interviewing is a qualitative research method that involves the interviewer asking a number of open-ended questions on the topic of interest. In this method, the interviewer and the respondent are allowed freedom to digress to other related information based on the responses that arise over the course of the interview (Berg 2009:107). Qualitative interview methods, both individual and focus group interviews, fit the research problem because the research questions are descriptive and process-oriented, which makes quantitative methods less appropriate for obtaining answers that can be used in meaningful ways (Yin 2008).

Constructing interview questions

Information gleaned from a review of the literature of social issues in aquaculture in Sub-Saharan Africa was used to construct interview questions. In particular Foddy (1994) and Berg (2009) provided helpful guidance in writing interview questions. Because the study is cross cultural, it was important to identify culturally appropriate questioning strategies (Hennink 2007:71). The interview questions were collaboratively articulated with the host country research team, John Walakira and Gertrude Atukunda, Ugandan nationals with several years of professional experience conducting interviews with fish farmers.

Focus group interviews

The focus group discussion, though not new as a sociological research method, has gained popularity in recent decades as a tool to inform policy and practice (Hennink 2007:1). Increasingly, focus group research is being employed in international research contexts, especially in the developing world (Hennink 2007:2). There are several purposes of using focus group discussions as data collection methods. "The essential purpose of focus group research is to identify a range of different views around the research topic, and to gain an understanding of the issues from the perspective of the participants themselves. Focus group research is intended to collect more wide-ranging information in a single session than would result from one-to-one interviews" (Hennink 2007:4).

There are several appropriate uses of focus group research that apply to this research context. Relevant uses include obtaining general background information about a topic, diagnosing the potential for problems with a new program or service, generating impressions of products, programs, services, and institutions, and learning how participants talk about the research topic (Berg 2009:158-159). Since the focus of the research questions is on fish producer organizations it was productive to hear their collective responses in a focus group setting.

The purpose of focus group interviews is to engage a group of six to eight members who share knowledge on a topic of the researcher's interest (Berg 2009:158). Several advantages of focus group interviews coincide well with the aims of this study. For example, focus group interviews are effective at generating important insights into topics that were not previously well understood (Berg 2009:165). Other benefits of focus groups include the ability to gather a large amount of information from many people in a short period of time, understanding how members

of a group arrive at their conclusions about a topic, and providing information as to how the group members interact (Berg 2009:165). Another advantage to the focus group interview structure is that issues may arise spontaneously and participants are given the opportunity to highlight information they believe to be important (Hennink 2007:17).

Goals of focus group interviews

As they are listed in chapter one, the specific goal of the focus group interviews with fish farmers is to accomplish the following project objectives:

1. Understand the organization of each producer organization, including its leadership structure, goals, services provided to members, expectations of leaders, successes members have experienced through participating in these producer organizations, and problems members have encountered in farming with a producer organization.

2. Investigate the sources of motivation that encouraged farmers to join and participate in aquaculture producer organizations as well as encourage their continued involvement in both fish farming and in organization activities.

3. Understand the processes through which fish farmer producer organizations facilitate member farmers' increases in production of fish and transition from small-scale producer to emerging commercial producers.

The length of time required for focus group interviews conducted for this study ranged from 45 minutes to 90 minutes.

Limitations of focus group interviews

The limitations of focus group methodology that pertain to conducting the interviews include the fact that some participants may dominate the discussion, participants may agree, yielding little discussion, influences of social pressure may limit the information shared, and the

situation is less confidential than other interview methods (Hennink 2007:7). In terms of data and analysis, limitations are that responses are not independent, making data analysis complex and time consuming (Hennink 2007:7). Additionally, due to the qualitative nature of data gathered from focus groups, the findings cannot be easily generalized to a broader population (Hennink 2007:11).

Unlike typical focus group interviews, the field-based focus group interviews conducted for this study consisted of groups of people who know each other and work together in a fish producer organization. Usually, focus group interviews are structured so that the respondents are unrelated (Berg 2009:158). This is an important characteristic to note because of the potential impact on respondents' openness; the researcher is here for a day but the group's working relationship will potentially continue for years.

Because the focus groups were composed of individuals who know each other and work together as a fish farmer producer organization, the researchers were not able to achieve one aspect of focus group research, the construction of an environment in which participants feel open to speak freely: "A key ingredient to successful focus group discussions is the development of a permissive, non-threatening environment within the group, whereby participants feel comfortable to share their views and experiences without the fear of judgment or ridicule from others" (Hennink 2007:6).

Semi-structured individual interviews

We also conducted semi-structured interviews with individuals involved in promoting aquaculture, including extension personnel, ministers of government, and aquaculture development professionals. We conducted several of these interviews with people in attendance at an aquaculture trade show that coincided with our visit. Interviews with aquaculture trade

show attendees occurred before interviews with producer organization members and leaders. The aquaculture trade show, held in the capital city of Kampala, provided us with insight into the trends in aquaculture in Sub-Saharan Africa as well as facilitated our meeting a spectrum of people involved in aquaculture. The range of people we interviewed included aquaculture technical specialists, Makerere and Gulu University faculty involved in aquaculture, extension specialists, feed sales representatives, and potential fish farmers. The questions and duration of the interview were tailored to the research participant. These interviews provide broader data on the topic of aquaculture in Uganda and insight into the social, economic, and cultural conditions surrounding the fish culture enterprise.

Data analysis: Multi-case study analysis using grounded theory methods

These four groups are treated as cases in a multi-case study analysis using grounded theory methods. Multi-case study analysis is a qualitative research method (Stake 2006) that is useful for allowing social researchers to report studies that balance similar issues across multiple cases while demonstrating the unique characteristics and contexts of each case. This method also allows a study to be more appropriately generalized than individual case studies (Stake 2006, Morra and Friedlander 2005). Grounded theory methods consist of "systematic yet flexible guidelines for collecting and analyzing qualitative data to construct theories emergent from the data themselves" (Charmaz 2006). The goal of research using grounded theory methods is to develop theories from research interwoven with data and making inductive discoveries from data and interactively using these discoveries in analysis (Charmaz 2006).

The first step in analyzing the data is coding the data for themes. Qualitative coding is the process of defining what the data is about (Charmaz 2006). "Coding means naming segments of data with a label that simultaneously categorizes, summarizes, and accounts for each

piece of data" (Charmaz 2006:43). According to grounded theory methodology, coding data occurs in two steps, initial and focused coding (Charmaz 2006:46). Initial coding, progressing through data line by line, actively names data while allowing the researcher to discover what lies inside the data by breaking up the data into component parts, looking for tacit assumptions, crystallizing the significance of the points, and comparing data with data (Charmaz 2006:50). Moving through the data line by line helps the researcher see the familiar in new light and check preconceptions about the topic (Charmaz 2006). Focused coding, the second phase in coding, is more directed, selective, and conceptual than initial line by line coding, as focused coding means condensing and refining data by using the most significant and/or frequent earlier codes (Charmaz 2006:57).

Memo writing is the second step whereby focused codes are raised to conceptual categories that explicate ideas, events, and processes from the data (Charmaz 2006). This writing process allows the researcher to further make sense of the data and notice gaps in the data that need to be filled. Memos are made up of narrative statements that define a category, explicate the processes of the category, specify the conditions under which the category arises, and changes, describes the category's consequences, and shows how this category relates to others (Charmaz 2006:92).

From the preliminary codes, focused codes, and memos, the researcher constructs generalizations that emerge from the data. These tentative theoretical statements provide insight and answers to the original research questions, while also identifying new questions for future study. In order to move from the process of data analysis to theory development, the researcher uses the positivist definition of theory, which is "a statement of relationships between abstract concepts that cover a wide range of empirical observations" (Charmaz 2006:125). The

interpretive definition of theory emphasizes understanding and relationships rather than explanation, which is consistent with the research goals of this study (Charmaz 2006).

IV. Results

This chapter presents case studies of four different producer organizations in four districts in Uganda. First, broader similarities of the four producer organizations are considered, followed by an in-depth, case-by-case examination of their differences in terms of geographic context, collective goals, leadership and political structures, and funding sources, especially as these factors influence the ability of members of producer organizations to emerge as commercial fish farmers.

Case study results

The four cases are referred to as "The Unaccountable Leaders," "The Helping Hands," "The Family Affair," and "The Cooperative Society." In order to facilitate comparisons and analyses of factors which make producer organizations successful at improving their member farmers' fish production, the cases have been ordered from producer organizations with the least fish-productive members to producer organizations whose members produce the most fish.

Across cases, several similarities emerge. Each producer organization operates in an area of high potential for aquaculture in Uganda. Producer organizations are place-based, with members from a defined geographical region. Each operates in an umbrella group structure. That is, each producer organization has other producer organizations "under" it or has an organizational structure "over" it. Also, no full-time fish farmers emerged from the groups examined; all group members and leaders stated that they are involved in other agricultural producer groups, with many individuals involved in three or more agricultural producer groups. For only one producer organization, "The Family Affair", is fish farming the primary economic

enterprise for executive members, and even this producer organization is involved in other agricultural activities.

Case study one: "The Unaccountable Leaders"

In western Uganda, bordering Queen Elizabeth National Park is a group of individuals who operate cages on the deep inland waters known as Uganda's crater lakes. These fish farmers are under a regional environmental conservation umbrella group. Registered at the district level, this group works to conserve as well as utilize the rich natural resources of their region. Since the organization began in 2002, this umbrella organization's activities have included conserving forest resources, beekeeping, cattle and goat rearing, soil conservation through constructing trenches in banana plantations, energy saving stoves, and community education concerning environmental issues. In addition to the fish producer organization work, members are involved in cattle, goat, and chicken production. The environmental conservation umbrella group has 69 members and nine people in leadership positions, including a chairperson, vice chairperson, treasurer, secretary, project coordinator, and committee members.

Unfortunately, we were only able to interview two leaders, the chairperson and the project coordinator of this producer organization. We repeatedly communicated to the project coordinator that we wished to speak to the members of the organization who were previously involved in the two completed fish production cycles, but it became clear midway through the interview that the project coordinator had no intention of calling his group members to participate in interviews and visits with us, suggesting interpersonal problems which will be discussed further.

History of involvement in fish farming

The environmental conservation organization became involved in fish farming with cages through the project coordinator in 2008. After he saw the successes of Source of the Nile (SON) Fish Farm in Jinja and spoke with the head of fisheries at the Kajjansi Aquaculture Research and Development Center, he returned to the environmental conservation organization (ECO) and convinced the chairman of the viability of cage culture on the crater lakes of their region. As part of a five-year countrywide aquaculture development project, a subset of the ECO received some training, and project staff conducted water quality tests for 13 lakes, which demonstrated eight viable for fish farming based on indicators including dissolved oxygen and hydrogen sulfide levels. One lake was selected as an experiment and five cages were placed on the lake.

Of 70 people who came to learn about fish farming (some of whom maintain their own fish farming ponds), ten were selected to manage the cages on the selected lake. This operation was designated as a model farm. The group maintained the tilapia fish in the cages through two production cycles. But, due to a lack of feeds, the cages are currently empty. The project coordinator stressed that those responsible for managing the cages are still in charge with defined duties, though currently inactive.

In the opinion of the project coordinator, the first harvest was a success, though two of the five cages had problems just before harvest, which left them unable to be harvested. One cage's top had not been latched correctly, so the fish swam out. Another's net was torn, possibly by otters, which live in the lake, or another predator. The other three cages were harvested and given to the people participating in the project in order to demonstrate the success of the venture as well as to establish that farmed fish tastes like wild-caught fish. Many people were skeptical of the result of the new fish production system.

The second harvest was also a success, though only two cages were in use. After harvest, the fish were salted and sun-dried, a low-cost preservation and value-addition method, and sold to traders from the Democratic Republic of the Congo. The project coordinator said, "We only had two cages because we had no feeds and the cages were getting old, and the feeds we were using were expired. Feeds are very expensive." The cages have since been repaired.

Since no financial records were kept, it is impossible to assess the profitability of these first two production cycles. The project coordinator did mention the personal expense he incurred, saying, "Investment in fish farming is very expensive. I had to sell my wife's car to implement the project."

Goals

The chairman and project coordinator articulate long-term goals based on an ideal management plan where two families manage one cage and increasing the number of cages in use until they reach fifty cages on the selected lake, which has a biological carrying capacity of 200 cages. The ultimate aim is to expand production to all eight lakes deemed appropriate for fish culture. In addition to high fish production, the leaders have a vision for operating a learning center about fish and cage culture. These long-term goals can be met by reinvesting profits after creating a group marketing strategy. Resources necessary for production are currently the problem as members cannot afford the investment. The chairman said, "People are willing to participate, but pooling resources is not affordable for the members, though a few members can." The chairman cited other possible sources of funding, a list which includes church groups, Uganda's National Agriculture Advisory Service (NAADS), and politicians.

Deficiencies delaying production

Lack of feed and some cage equipment (e.g. floaters and nets) are currently preventing the group from producing fish on the lake. Both leaders repeatedly cited high feed costs as impediments to production. They are hoping that the Ugachick formulated feed will be less expensive than the imported feeds they have been purchasing.

Problems

The honesty of the two leaders of the ECO began to be called into question during the discussion of the group's first harvest. It remains unclear why the fish from two of the five cages in the second production cycle disappeared. When asked if theft rather than an animal predator or unlatched lid could have led to the empty cages, the project coordinator said, "They don't steal from the cages because there is 24/7 monitoring." Theoretically, a full-time guard would have seen problems with an unlatched lid and an animal. Additionally, it became clear that the project coordinator never asked the members involved in fish culture to come to participate in interviews. Gertrude Atukunda conjectured that the project coordinator's actions reflect the members' distrust of him as a leader. Also, as the government research station plans to provide financial assistance to the fish farmers of this organization, the project coordinator sought to prevent his members from meeting the actual source of the funding, perpetuating the allusion that the project coordinator himself is the supply line of assistance. The project coordinator spearheaded the fish farming efforts and is an aspiring politician, though currently not holding office.

There is little evidence of meaningful interaction between the fish farming members of this ECO and its leaders. The general meeting scheduled to take place once a year did not occur last year or this year. Executive meetings attended by those in leadership positions occur as

necessary. Technical meetings, which include the people involved in a specific project such as fish farming, took place once a week during production. During these technical meetings such things as feed issues, the age and size of the fish, and problems that have arisen are discussed. Transparency with this core group of people involved in the fish farming is a challenge, especially as other members see the profits and become jealous. The inequality of benefit distribution is a source of members' jealousy. The project coordinator, who facilitated the donations of feed and equipment as well as invested some of his own money, explains the distribution of benefits. He says, "People who have put in big investments must have the lion's share."

It also seems that the leaders are intentionally unaccountable to the members. When asked if members pay dues, the chairman said, "They are doing voluntary work hoping to get a share of the proceeds. We have people who are ready to pay money to be members but we are not signing them up because we cannot take their money when there are no feeds because they will be asking 'What is happening with our money?' We have a very big number [who are interested] but we cannot accommodate [more members]." Thus, the members take no financial risk to purchase the necessary feeds and reap no reward. The project coordinator has a vested interest in limiting the risk that his members take: To have a failed harvest into which members invested their own resources would harm the project coordinator's reputation and potentially decrease his political support in future elections.

Case study two: "The Helping Hands"

The umbrella regional poverty alleviation organization has a fish farmer association of 88 members. The group's formation was stimulated by the chairman's enthusiasm for fish farming.

Additionally, the chairman expressed that he organized the group to meet member's needs and to access funding for projects. Some members own and maintain fish ponds, and others assist with a group pond. Several other charitable organizations have fish pond projects associated with the regional poverty alleviation organization. The fish farming members of "The Helping Hands" organization are preparing for a transition of emphasis from individually- and group-managed fish ponds to group management of a fish cage culture operation on Lake Victoria. The focus of our interviews was the structure of effort towards the potential transition to cage culture. Most of the interviewees were leaders of "The Helping Hands."

The fish farmer group typically holds meetings four times a year but gathers more frequently when preparing for a workshop or another unusual event. Meetings are called by the chairman and communicated to members via radio announcements and telephone calls, which leaders assigned to communicate to specific areas facilitate. Currently, the fish farmer subset of "The Helping Hands" is not managing fish production collectively, but the chairman says they are ready to begin as soon as funds are available for that purpose. The chairman says, "As a management structure we have people in place but they are not functional (currently functioning). So the people are ready for when we have the money." Leaders are appointed by the chairman and their responsibilities are based on the individual leaders' expertise. "Whoever has the ability of doing something does it voluntarily for the benefit of the group," states the chairman. This commitment to community service is shared among the group, though to some degree each executive member stands to benefit financially or politically through their involvement in the group's poverty alleviation projects.

Transitioning from pond culture to cage culture on Lake Victoria

Understanding the rationale behind this fish farming group's transition from pond culture to cage culture provides context for understanding group dynamics and processes employed to achieve the goal of poverty alleviation. The chairman and leaders are enthusiastic about cage culture because it is unique and a new type of farming. Additionally, the chairman and leaders of the organization listed several problems encountered with their previous pond culture projects, which cage culture will potentially eliminate. Problems include the expense of pond construction, seasonal droughts, and a lack of equipment used to monitor pond water temperature and oxygen levels. In contrast, they perceive cage culture to be very manageable because there is no need to construct ponds, maintaining water levels is not an issue, and cages can be harvested on a rotation which provides steady profits instead of the windfalls associated with harvesting a large pond at once.

The community service aspect of the group's activities surfaces in the chairman's comment, "Fish farming in cages is an option for people who live in town and do not have access to land." In addition to providing economic opportunities for members, another community-development goal of the group is the education of fisher folk who live and work where the cages will be placed. The chairman says, "We will have a chance to properly sensitize (educate) the fisher folk to properly utilize the lake." The involvement of fisher folk in the project will prevent theft from the cages. "Because they feel ownership they will not steal the fish," says the chairman, though experience may prove otherwise.

Structure and evidence of political connections

Under the umbrella of "The Helping Hands," and hence under its chairman, is a regional fish farmers organization that encompasses groups from four districts in eastern Uganda. The

chairman unified them, saying, “These groups weren’t capacitated (empowered) because they were singular (working in isolation).” This integration followed a large fish farmer meeting with over 300 attendees organized by the chairman. At the meeting, the President’s assistant announced that the chairman would be the one to distribute information and assistance to the fish farmers in this region.

Two aspects of this fish farmer meeting reflect the chairman’s political pull: the presence of the president of Uganda’s assistant and his pronouncement that the chairman of “The Helping Hands” will channel assistance to area fish farmers. Other examples of further illustrate the chairman’s political power.

The goal of cage culture on Lake Victoria is to be a demonstration or model farm, a political status, and an achievement for which the chairman will potentially be credited and financially rewarded. In addition, the local government provided the group funds to acquire the necessary permits for operating cages on the lake. The minister of fisheries wrote on “The Helping Hands’” behalf to the executive director of NAADS. Each achievement reflects the chairman’s access to influential politicians, the essence of political power.

There are at least two perspectives on the political affiliation of the chairman and his fish farming aspirations. In a short-term view, political connections can lead to resources otherwise very difficult to procure, including permits, funding, and support for aquaculture activities. On the other hand, considering goals of sustainability, politicians’ goals are often incongruous with the goals of the development of commercial fish farmers.

Community ponds and cages first, individual ownership resulting

The management approach that “The Helping Hands” organization uses for fish farmer development is rooted in its origins as a collectivity. The chairman says, “After all, it is up to

everyone to look after the structure. Management is organized by the group and owned by the group." The group manages community fish ponds and hopes to operate cages with the expectation that profits from these operations will be used to purchase additional cages and inputs for individuals to own their own cages. The chairman says, "At the beginning we feel like we should work as a team. As we grow and begin realizing profits we should support individuals in owning cages. They will be then capable of owning and managing their own cages."

Charity-based fish farming

The goal of "The Helping Hands" umbrella group is poverty alleviation and economic development. It appears that the activities and goals of the group are more charity-based than business-oriented. When the chairman was asked why he and his members wanted to be fish farmers, he said, "It is the farming that can help people of different abilities. Fish farming gives a chance to vulnerable groups including women who can't go fishing by boat on the lake but can fish farm. It is an opportunity for the disabled, orphans, and the elderly. Also, fish farming can be done in teamwork. After all, it is up to everyone to look after the structure."

When asked what would evidence the success of his cage culture operations on Lake Victoria, the chairman said, "Being that cage culture is new, we expect that people will realize that it is good. We want to show a demonstration project. In the process of time, people, after learning from us, will apply knowledge on an individual level. They will arrange for their own permits. Success will be proved by individuals owning their own permits and cages." At no point did the chairman mention profits as a goal or of evidence of success. Also, fish farming is discussed as a project, not as a business or an enterprise. This organization does not yet have a definite business plan, though they anticipate creating one.

The chairman's answers suggests that developing commercial fish farming enterprises is not a goal, but that his members are vulnerable people who want to add a fish farming project to their already long list of development projects. This attitude is reflected in the group members' unwillingness to invest their own financial resources. The chairman says, "There have been no good examples of cage culture in lakes. So the members don't want to invest their money."

The piecemeal approach to aiding vulnerable people seems to manifest itself in members of "The Helping Hands" who are involved in multiple operations to varying degrees, gaining some benefit from each. It is an example of development thinker Robert Chambers' (1997) explanation that, for the poorest of the poor, livelihoods are "local, complex, diverse, dynamic, uncontrollable, or unpredictable." Being a specialized, capital and input intensive, risky, long-term enterprise, commercial cage culture does not fit productively into this type of livelihood strategy.

Status hierarchy in "The Helping Hands"

Chambers' (1997) discussion of "uppers" and "lowers" provides helpful terminology for describing and understanding the relationships of two types of members of "The Helping Hands." "Uppers are people who in a context are dominant or superior to lowers. A person can be an upper in one context and a lower in another" (Chambers 1997 xvi). Conversely, "Lowers are people who in a context are subordinate or inferior. A person can be a lower in one context and an upper in another" (Chambers 1997 xv). There appears to be a strong dichotomy between "upper" and "lower" members of "The Helping Hands". Having the opportunity to spend time with members of both types, evidence of the interactions and expectations of the two groups emerge.

There are members involved in "The Helping Hands" who can be termed "uppers;" they have more education (sometimes holding advanced degrees), their own fish farming operations, or have the resources to become fish farmers (including land, water, ponds, and money). We visited several of their fish farms, including one owned by a physician. These elite members see fish farming as an income-generating enterprise which they manage while hiring someone to provide the day-to-day management of ponds. They also see themselves as aiding members who are "lowers" in gaining income from fish culture. For these "uppers," involvement in "The Helping Hands" organization introduced them to fish farming and provides access to training and some inputs for their fish farming enterprises as well as an opportunity to assist "lowers" in their community.

Several of these "uppers" see a fish farming operation as part of an income-generating farm to which they will retire. One woman, also a physician, stated, "I will do pond culture when I retire. This will be good because I can employ people at home." Her statement demonstrates the dual goals of personal income generation and providing economic options for local "lowers." It also illustrates a conception of fish farming as a sideline activity or a hobby for the wealthy (Moehl 2006).

"Uppers" in "The Helping Hands" are responsible for the management of the fish farms which the "lowers" operate on a day-to-day basis. In this way, "uppers" use their resources to aid "lowers" in the project work and potentially bring the "lowers" out of poverty. The avenues "uppers" use to aid "lowers" is in the procurement of funds for the group's projects, the translation of technical information from English into Lusoga, the local language, and helping "lowers" procure and repay group-sourced credit. The chairman spoke to these relationships when responding to a question about the literacy levels of the members involved in fish farming,

saying, “There are those (“uppers”) who are capable to help others, to explain in the language that they (“lowers”) understand. We are putting the literate at the forefront. A few should manage it (“uppers”). They do this on behalf of others (“lowers”).”

Not surprisingly, we had much more interview time with the “uppers” of the group. When conducting interviews with “lowers,” “uppers” were always present and sometimes even attempted to guide the “lowers’” responses to questions. This occurred during interviews with the “lowers” who currently manage three very small lakeside ponds and potentially will manage cages on Lake Victoria. These group members live in a markedly poor lakeside community. When I asked why they want to be fish farmers and what they hope to gain from the fish farming enterprise, I received answers such as “The training interested me,” and “It is a business enterprise which will bring me money.” An “upper,” a physician, who will be assisting in managing the cage culture operation, interrupted the “lowers” and answered the question for them: “You get a cross section of people from the local community involved. They will be able to send their children to school, address the problem of malnutrition, and sell the fish for money. They all show interest and everyone benefits. There are two purposes: to grow food and sell fish for money.” The physician attempted to broaden the “lowers” limited, though pragmatic, views of benefits from fish farming to a view reflecting community-development goals. In the process, she silenced them and reinforced her superior social position.

Patronage and paternalism in “upper”-“lower” relations

Further reinforcing the evidence of “uppers” and “lowers” embedded in this group’s dynamics is the distinct language of patronage which emerged in this case study alone. The first example is from the conversation between Gertrude Atukunda and the chairman of “The Helping Hands”. After hearing that his project would be partially funded, he said, “I am so grateful that

Madame (Gertrude Atukunda) has agreed to fund the project. I am grateful in this regard because we are becoming babies of Madame." The uses of the supremely polite title "Madame" and the mother/children metaphor reflect a patronage relationship couched in deference, appreciation, and inferiority.

Later, I observed the chairman in the opposite relationship in a strikingly similar conversation. The chairman of "The Helping Hands" and the middle-aged female chairman of the Uganda Society of the Disabled were speaking together among a group. The Uganda Society of the Disabled is a group that "The Helping Hands"' chairman has aided in establishing pond culture as an income-generating project. The chairman of the Uganda Society of the Disabled said, "I can only thank [the chairman] for his effort. He offered us training and seed stock. I thank him very much. He is a loving father and is caring for us very much." The man previously expressing becoming a "baby" of his own patron, a government fisheries employee, becomes a "father" of the group of disabled people to whom he provides assistance.

Interestingly, in these patron relationships there is no discussion of or question as to the original source of the funds. To the one at the end of the assistance chain, it does not seem to matter if the money came from U.S. taxpayers, a private endowment, or a government agency. What emerges supreme is the deference to the individual immediately passing on financial assistance, reflecting the relational nature of assistance chains (Maranz 2001).

Besides expressing appreciation, applying maternal and paternal vocabulary to relationships of patronage can be understood as a diplomatic, desirous strategy on the part of "lowers," who employ this language to access resources available through patron relationships with uppers (Chambers 1997).

Case Study three: "The Family Affair"

History

In northern Uganda near the town of Gulu, the center of longtime civil strife is a fish farmer organization which operates a hatchery, produces fingerlings, and maintains a few grow out ponds. This producer organization (PO) began in 2004, though the chairman has been farming fish on his land since 1973, beginning with a small pond and adding another large pond in 1984. The chairman is a patriarch and is known to his family and his fish producer organization as "Mzee," the Swahili word for "old and wise man."

Group formation

In 2004, Mzee responded to the local fisheries officer's suggestion to apply to the Northern Ugandan Social Action Fund (NUSAF) to access funds to expand his ponds and build a hatchery. The NUSAF assistance was specifically designated for farmer groups, not individual farmers. The original producer organization formed with 17 people, with 11 males and six females, significantly, all relatives of Mzee. Since then, the producer organization has grown to include more than 30 members, including non-relatives. In 2008, the president of Uganda visited the farm and gave money for the construction and management of grow-out ponds, where fingerlings are raised to a marketable size.

Present situation

Currently, five members own and manage their own ponds in addition to operating "The Family Affair's" farm. Twelve of the producer organization's members are Mzee's relatives. The executive members include Mzee, who has been the chairman since the group's inception in 2004, Mzee's wife, who is the treasurer, a secretary, and five committee members. The group operates several bank accounts to safeguard and segregate money received from the fish farm's

operation, donors and other enterprises. Other enterprises include operating an orphanage, beekeeping, and cattle production.

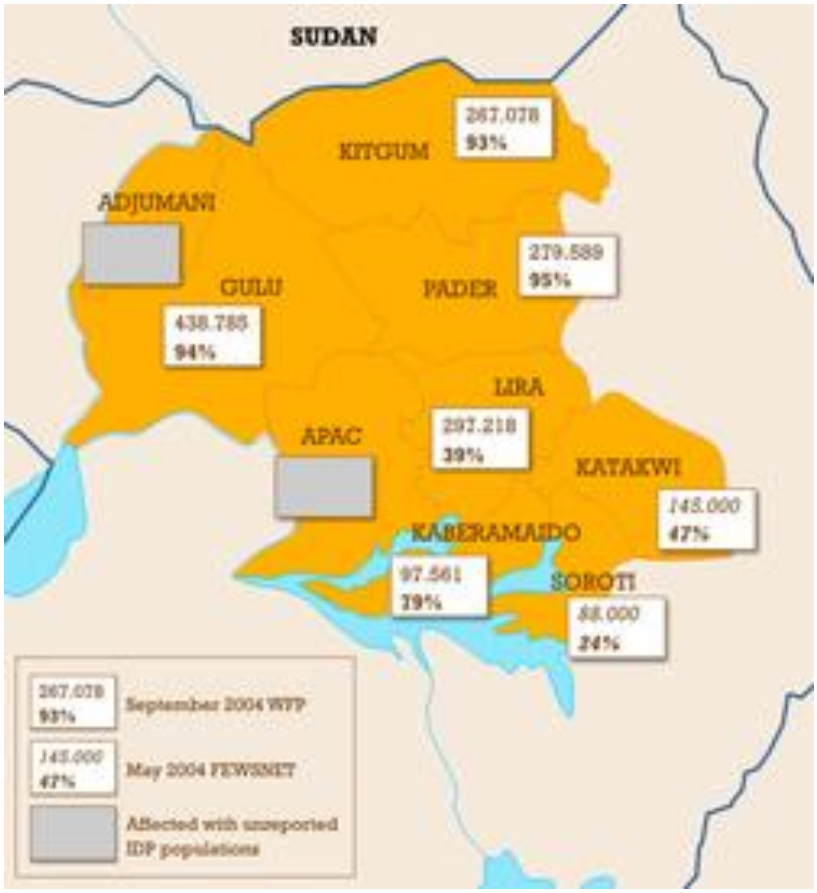
A recently-forged partnership between the United States Agency for International Development/Livelihoods and Enterprises in Agriculture Development (USAID/LEAD) and "The Family Affair" PO will focus on hatchery development and improving fingerling production. Additionally, this partnership is designed to develop twenty-two other producer organizations in the region. Developing producer organizations and providing extension services is a new direction for "The Family Affair" PO and will last from late 2009 to late 2011.

Regional context

"The Family Affair" producer organization is located in northern Uganda. This region is home of the ethno-linguistic Nilotic peoples, who also inhabit Southern Sudan, and has ethnic characteristics and a linguistic heritage distinct from the people of the other regions discussed in the three other case studies. Even outsiders can notice distinct physical features and language tones that differentiate the people of northern Uganda from the people of central, eastern, and western Uganda.

Northern Uganda is often equated with a rebel army with horrific tactics, as this region is the location of recent civil strife between the government of Uganda and the Lord's Resistance Army (LRA), a rebel military group. As a result of the conflict, in 2007 Uganda had 1.27 million internally displaced persons (IDPs) of a national population of 33.4 million (CIA World Factbook 2010). For Gulu district in September of 2004, the number of IDPs was 438,785, which was 94 percent of the district's population (WFP 2009). By 2009, peace talks between the LRA and the Ugandan government have prompted many IDPs to return to their homes, though about 700,000 people remain displaced (WFP 2009).

Illustration 4: Number and percentage of IDPs by district in northern Uganda



Source: Mark Dingemanse, posted at
http://commons.wikimedia.org/wiki/File:IDP%27s_in_Northern_Uganda.png

It is an understatement to say that the recent history of northern Uganda has resulted in a population with considerable needs. The challenge of developing commercial fish producer organizations is great. The fisheries value chain manager for the USAID/LEAD project sums it up, saying, "In the north, people have been receiving handouts for 20 years. It is a difficult pattern to break." However, the linking of prospective producers to their home land can be a positive characteristic of fish farming over enterprises that are not place-based. The secretary of "The Family Affair" PO and a LEAD employee says about the members of the new fish POs, "They are constructing their own ponds so they feel as if they own them." Ownership and land

improvement may facilitate these new fish farmers' success. Still, given the recent devastation of this entire region and the obvious physical and emotional needs of its inhabitants, our conversations about business plans, feed conversion ratios, and pond construction seemed surreal and totally irrelevant. The proposition of rebuilding a region that had little in the way of economic and infrastructure resources even before the decades-long reign of civil terror is a formidable one.

Orphan care component

"The Family Affair" PO formed in 2004 when violence in the region was raging and many children were in need. Over half of the population of Uganda is under age 15, and only 2.1 percent of Ugandans are over the age of 65 (CIA World Factbook 2010). The chairman speaks of the challenges of that time, saying, "In that time we felt some difficulties to care for the young ones." Mzee's brothers died of HIV/AIDS, leaving him to care for their orphaned children. "Many houses in the community are left with orphans." Two systems simultaneously demand that the chairman cares for his orphaned nieces and nephews: one is a system of traditional responsibility, where the duty of caring for a deceased brother's children falls to brother, and one is an incentive system where receiving donor or government funds depends on performing the role of orphan-caretaker. Mzee says, "We chose to work with orphans because these government structures of assistance require that we reach cross-cutting issues. It is the first step to get the money."

Financial returns from the fish farm's operations are invested into the orphans who receive training in marketable skills, as well as contribute to the farm's operations. "We've paid (school) fees for the orphan children. Some of them are now doctors and teachers," says the chairman's wife. It is unclear whether the fish farm revenues or development assistance received

paid the orphans' tuition. Job skills are another benefit the orphans receive. Mzee says, "One of our targets is to get some machines to employ orphans. We can build a workshop. We give them school fees and during the breaks we keep them busy making bricks and training them in that skill." Orphans are also employed to dig fish ponds, an activity that dovetails nicely with the WFP "food for work" approach. This approach requires that the community do the manual labor by digging the ponds, and the WFP supplies the inputs of seed and feeds.

Meetings and records

"The Family Affair's" executive committee meets monthly. The chairman says, "In these meetings we plan, distribute roles, plan for training of other farmers, see what work is done, and see difficulties in the communities within the two districts (Amuru and Gulu). During these meetings the executive committee makes decisions allocating their funds, giving money to the most urgent need, whether that is school fees, fish ponds, feeds, or another need." The entire group of over 30 meets two times per year. Several files are kept by the executive committee and the farm manager, including money received from donors and fish farming operations, fry sales, feeds, and a record of each meeting's events. The chairman comments on the records kept for pond management, saying, "For the feeds file, for example, we record amount of feeds bought, their cost, the source, and quantity daily given to the fish."

Producer organization development and partnership with USAID/LEAD

Beginning in late 2009, "The Family Affair" producer organization (PO) began providing outreach and training to 22 fish producing organizations throughout the two districts of Gulu and Amuru. "The Family Affair's" staff and USAID/LEAD (United States Agency for International Development/Uganda Livelihoods and Enterprises for Agricultural Development) staff, including some individuals employed by both organizations, provided the outreach and training.

Each PO has approximately 30 members for a total of around 600 farmers. The relationships with these 22 POs were borne out of a partnership with USAID/LEAD project in Uganda because developing commercially-oriented fish farmer POs is a component of the LEAD project's strategy.

The USAID/LEAD project strategy is to partner with "The Family Affair" PO over two years to strengthen commercially-minded POs thorough training and input supply. "The Family Affair" PO is in the beginning stages of training these 22 POs to be commercial fish farmers. Many of the 22 POs existed in a fragile state before USAID/LEAD and "The Family Affair" PO's intervention, while others are newly formed. A Fish Value Chain Development Officer with the USAID/LEAD project spoke to the characteristics of the 22 groups: "They have their own leadership and management. They have been working for three years or more. ("The Family Affair") and the field officers work with groups to strengthen them in areas such a leadership, administration, savings, etc."

"The Family Affair" PO has begun training the 22 POs and has concrete plans for how the development of these groups will progress. The chairman says, "So far we have conducted one training with them on how to construct ponds." Two members attended a week-long pond construction training at "The Family Affair's" fish farm. The LEAD project is using a Farmer Field School (FFS) approach, which is an interactive, on-farm learning experience designed to educate farmers, enhancing their ability to make informed decisions concerning their own farm's management (van den Berg 2004).

"The Family Affair" PO will conduct a FFS on every topic of fish production and sale, including value addition, with two members from each PO attending each training session. In addition to educational services that "The Family Affair" PO has been entrusted to provide the

groups, the chairman describes the inputs that "The Family Affair" PO will supply to the other POs in kind, "We will help them with money for feed and fry, for every group. For each group we will want to have 3,000 square meters of ponds." "The Family Affair" PO employs extension personnel to provide on-farm advising to the 22 POs.

It is clear that "The Family Affair" PO's activities in developing producer organizations and using the farmer field school approach are dictated by the project goals of USAID/LEAD (United States Agency for International Development Livelihoods and Enterprises for Agricultural Development). The Agri-Unit director for the USAID/LEAD project said, "We are trying to look at farmers as our entry point, but not individual farmers. If we worked with individual farmers it would take us 70 years to accomplish our goals. That is why we are looking at farmer groups – we call them producer organizations – of those who are commercially minded and commercially oriented." Commenting on the farmer field school approach, he says, "We bring farmers together for the farmers to identify their own problems and identify solutions together and help link them to other farmers." The "linking" of farmers through "The Family Affair" PO would not have occurred without direction from USAID. A Family Affair PO member and USAID/LEAD technician says, "We are currently working with groups because it is easier for outreach and accessing government assistance."

This service that "The Family Affair" PO provides to the regional POs will prospectively perpetuate "The Family Affair" PO's business model. The secretary said, "We hope to train 600 fish farmers, create demand for our seed, our feeds, and our factory that we hope to build… We need all those we train to become commercial fish farmers so they will come in by themselves and continue to buy feed and fry from us." When the secretary was asked for his assessment of the POs that "The Family Affair" PO is developing, he said, "We believe they will stand on their

own after LEAD. According to our vision, all the groups will still continue getting fingerlings from us."

Previous attempt at working with producer organizations

The secretary of "The Family Affair" PO is also the project manager employed by LEAD, and he provided insight on previous problems encountered with working with fish farmer groups. "(Pond) management is not done well. There is variation in feeding because many people are feeding." He also speaks of the challenges associated with people transitioning from IDP camps back to their homes, where they attempt to establish farming enterprises, saying, "One of the problems was that some of the groups were formed in the camps where people are together but not necessarily from the same area. So when they leave the camps they are living in distant places. This was a problem in 2007 with the NAADS groups." NAADS, Uganda's National Agricultural Advisory Service, provides financial assistance and training to a spectrum of agricultural producer groups. Also, he sees problems with individuals joining groups without a commitment to fish farming: "All of them should have an interest in fish farming, not just the project."

Goals

When asked about the goals of their producer organization, all executive members interviewed listed construction or infrastructure-based goals that they aim to achieve if donor funding is ascertained. The treasurer, Mzee's wife, cited their need for a water heater for the hatchery, as the solar heater does not supply heat at night. When asked when he hopes to build more ponds, Mzee replied, "You will tell me when you say if you support me." Currently, the hatchery built in 2004 is being renovated through assistance from the LEAD project. The chairman stated their three year goal, which is to build a feed mill, and a five year goal, which is

to build a fish processing factory for exporting fish to Sudan. They also anticipate building dormitories and a guest house for those who come to be trained, as well as a structure to house a formulated feed outlet. They would like to build a workshop where the orphans can learn job skills, as well as construct a swimming pool for recreation. Construction of ponds is currently undertaken in anticipation of future donor funds, both for ponds currently under construction and a reservoir. The chairman says, "For us, we keep on making ponds. We are still looking for phase two of NUSAF." NUSAF stands for Northern Uganda Social Action Fund, the regional funding agency that first encouraged "The Family Affair" to form a group.

"The Family Affair" PO's fingerling sales goals are secondary to their infrastructure development goals. This is partially a result of a decreased fingerling market and partially a result of a distorted incentive system inherent in development assistance. Aid programs favor construction projects rather than profitability of enterprises in natural markets.

Fingerling sales

"Between 2004 and 2006 fish farming in northern Uganda had gone down and is now beginning to increase," says a Family Affair PO member and a LEAD-employed fish farming technician. In 2009, "The Family Affair" PO produced 40,000 fingerlings, 30,000 of which were purchased by organizations, including the Food and Agriculture Organization of the United Nations (FAO), AT Uganda Ltd, a national NGO, and the African Development Bank (ADB). Only one producer organization purchased fingerlings from "The Family Affair" PO in 2009.

Since 2004 "The Family Affair's" business structure has been built on accessing donor funds. This requires that "The Family Affair" align their producer organization's goals to the donor's goals. Even the sales of the fingerlings they produce demonstrate the donor saturation in this region of Uganda: 75 percent of "The Family Affair's" fingerlings are sold to aid

organizations. Natural markets are not at work here, but given the social and recent-historical context of this region, it may be some time before natural markets emerge as driving economic forces.

Case study four: "The Cooperative Society"

"The Cooperative Society," located in western Uganda, began in 2004 when several members were invited by the minister of fisheries for training at the Fisheries Training Institute (FTI) in Entebbe. The commissioner told them to form groups "in order to be heard and known by government and NGOs." Ten members went for training, and upon returning spoke with interested friends and neighbors and began organizing. First, the group registered as an association but changed their registration to a cooperative society at a minister's recommendation. The group is currently registered at all levels, from the local council one, or village level, up to national level, with the Uganda Cooperative Alliance (UCA). This cooperative society is overseen by the head of the Uganda Fish Farmers Cooperative Union and receives technical assistance from the county fisheries officer, who attends gatherings, answers farmers' questions, addresses fish farming problems, and makes farm visits. "The Cooperative Society" also receives some assistance from Uganda Cooperative Alliance and the Ugandan government in the form of fingerlings and training.

"The Cooperative Society's" 90 members include men, women, and youth, with members coming from four sub-counties within the district. Leadership offices are elected positions, and include chairman, vice chairman, treasurer, general secretary, publicist secretary, advisors, and committee members.

Differences between the leaders and members

Two focus group interviews, one with the positional leaders and one with a subset of the members, indicate that there are differences between the members and leaders concerning benefits received from their cooperative society activities and involvement in other types of farming groups and cooperative societies. For example, when asked what other agricultural producer groups they were involved in, the leaders listed beekeeping, dairy production, banana wine processing, organic pineapple, coffee production, poultry production, tree planting, and animal husbandry as the principle activities of other groups of which they are a part. The members listed poultry production, beekeeping, and banana production, which are, agricultural activities which require less up-front capital and with less value-addition components than the leaders' activities.

There are also differences between the leaders and the members of "The Cooperative Society" concerning sources of motivation for joining the group, level of satisfaction with their fish farming enterprises, and extent to which their expectations of the group, the government, and NGOs have been realized. Leaders showed higher levels of satisfaction with their fish farming operations, which is probably related to the fact that leaders had been fish farming longer and had larger fish farming operations than the members, on average. Throughout the discussion leaders' and members' often disparate attitudes are noted. Importantly, leaders were significantly older individuals than the members.

Benefits of membership: addressing deficiencies

One of the primary goals of fish farmer associations is to meet member farmers' technical shortcomings. Therefore, an assessment of farmers' perceived deficiencies in fish culture practice and how these are addressed by producer organizations is a good measure of the viability of a producer organization, especially as it pertains to long-term farmer involvement

and growth. Farmers in "The Cooperative Society" identified deficiencies in several areas crucial to their fish farming operations.

First, farmers acknowledged lack of inputs, specifically feed and fingerlings. "The Cooperative Society," through connections with the government and Uganda Cooperative Alliance (UCA), are sometimes given fingerlings for distribution to members. However, these have been given in insufficient quantities or are of low quality and promises of fingerlings are often not met. When farmers purchase their own fingerlings, "The Cooperative Society" also plays a beneficial role by decreasing each farmers' cost through bulk purchase of fingerlings and sharing transportation costs.

Farmers also require fingerlings of high quality, which refers to each fingerling's size, viability after stocking, and subsequent growth rate. In terms of procuring fingerlings of high quality, the collective knowledge, experience, and social capital of the individuals in the producer organization gives farmers access to better fingerling producers and excludes others who peddle poor quality fingerlings. In the same way, the member-farmers who purchase formulated feeds share transportation costs and collectively negotiate for bulk prices. In the future, "The Cooperative Society" aims to serve as an Ugachick feed vendor for the western regions, which will provide income and further reduce feed costs for members. Member-farmers who are not yet at a scale of operation to purchase formulated feeds receive instruction in making feeds from locally-available ingredients.

Financial shortcomings were at the forefront of member-farmers' stated deficiencies. Many farmers have yet to realize profits from their fish farming operations, though all of them have harvested fish for household consumption. All fish farmers expect profits, and most members who have operated for two production cycles reported generating profits. In addition

to teaching productive pond management, the producer organization aids farmer-members in achieving profits through collectively marketing farmers' fish, reducing the time the farmer must spend searching for buyers, as well as reaching the best possible price. Farmers also receive advice on marketing and pricing their fish.

Farmers with a desire to expand their fish farming operations find access to capital to be a problem, especially in terms of credit and land; lack of capital is often an inhibiting factor in improving their fish farm's productivity. The producer organization, while not currently aiding farmers in accessing credit, hopes to increase resources to the point of providing production-cycle loans to member farmers.

One way that "The Cooperative Society" acts as a financial safety net is through an emergency fund that it maintains for its members. Farmers annually pay into this revolving fund and are able to access small loans to pay unexpected bills unrelated to fish farm operations, such as a death in the family or hospital bills. In this way, "The Cooperative Society" also functions as a burial society, one of many such societies that farmer-members may belong to. Burial societies serve an important function in terms of civil society and financial security (Makumbe 2002). Thus the cooperative provides broader social and economic benefits to its members beyond inputs and guidance for fish farming.

Knowledge and skills development

A major theme that the leaders and members identified as a benefit to their involvement was the learning that took place in the course of "The Cooperative Society's" activities. Both members and leaders often mentioned learning broadly about pond management, how to grow fish, and resources for fish farmers, and specifically about fish species identification, appropriate

stocking densities, good sources of inputs, making feeds from locally available ingredients, appropriate feeding, and marketing and pricing of their fish.

Along with these skills, fish farmers noted some deficiencies in the learning they had received. Many were frustrated by receiving contradictory information from different training programs they had attended. Several mentioned stocking rates as an example, saying, "At one training we were taught a stocking rate for catfish of six fingerlings per square meter, so we stocked that amount, and at a different training session, we heard only two per square meter. Which is correct?" Many felt that the topics were not completely covered at the trainings and desire regular access to technical support, saying, "We need continuous training." Some farmers were frustrated by their own resource constraints that prevented them from putting into practice what they had learned in training about optimum stocking densities and the use of formulated feeds. Along those lines, many farmers found it difficult to be away from their farms and families for two-week-long training sessions.

In fish farming training, farmers were eager to learn environmental improvement techniques that they integrated into their fish farming operations. They listed water harvesting and decreasing erosion through pond side tree planting as conservation efforts they employ. Leaders in "The Cooperative Society" identified human capital-enhancing skills they developed while occupying elected positions. These included business, leadership, communication, English, marketing, learning from one another in the group, hearing new ideas from outsiders, and growing in personal confidence.

Fish farming enterprise as status symbol, source of pride

A common benefit cited by both the leaders and members of "The Cooperative Society" was the status in the community derived from their fish farming enterprises as well as through

leadership positions they held in "The Cooperative Society." Farmers take great pride in their fish farming enterprises. This pride is reflected in the physical care and management of ponds, evidenced by the well-kept grass, as well as the ways the farmers use their fish. The act of a farmer serving fish he or she had raised at a special event, such as a child returning home from boarding school, or to important people, like visitors, is both a demonstration of achievement and status and a source of farmer pride.

A special meal is usually served to children returning from boarding school and fish farmers who are able to serve fish are offering their children a treat: "Fish is something they never would have eaten at school." Also, fish farmers discussed how their fish ponds improved the appearance of their homes. Ponds demonstrate the ability to develop their resources and this physical evidence increases their neighbors' perception of the farmers' success. One fish farmer said, "A neat and well-organized home is a symbol of status."

The ability for fish farming households to feed fish to their families is also a source of pride as they actively provide nutritious, high-value foods for their children. Farmers who were receiving income from their ponds spoke of the increased prestige that their improved incomes brought as well as the ways they invested this income into land and education. One farmer mentioned expanding his land holdings as a result of fish-based income. Several spoke of the pride they felt from sending their children to boarding school with income from their ponds. Finally, farmers were proud to be able to share fish harvests with their disadvantaged neighbors, knowing that they had a nutritious, valuable food to offer. While farmers cited compassion and empathy as reasons for gifts of food to poor neighbors, sharing fish is also an important demonstration of agency and wealth.

Leadership positions in cooperative society as status-conferring

Discussions with the leaders revealed the status conferred on elected cooperative society leaders. Being elected to a position in a society is public recognition of status and affords opportunities to further improve status. Fish farmers holding leadership positions in "The Cooperative Society" talked about the business and communication skills they had gained through their roles. One man who had limited schooling was able to improve his English through interchanges with more educated peers. Also, leaders are often nominated to go to training and bring back the information they received to share with the members. The opportunity of learning information first and presenting it to members at a meeting reinforces the leaders' status.

Several leaders are retired. In Uganda, government employees are required to retire at age 60. After retirement, their community involvement and status usually decreases. Involvement in "The Cooperative Society" is a means of maintaining their community-serving and active lifestyle. One woman, a retired teacher and committee member who proudly pointed out her former students among the members, shared the confidence and influence she maintains post-retirement through her involvement in this organization. She holds a leadership position and therefore a responsibility to be busy and engaged. She says, "I am able to pick up my nice dress, put it on, and I forget my old age."

Advocating for the fish farming sector

Leaders articulated several key areas where networking and advocating for the fish farming sector are important responsibilities of their producer organization. Consistent with the society's goal of addressing farmer deficiencies, the leaders seek to "Work together to solve the challenges of fish farmers with one voice." In order to unite the fish farmers' voices the leaders

have sought out relationships with fish farmers outside their producer organization and thus built social capital. The president boasted, "Now we know all the fish farmers in the entire county."

The leaders interact with individuals and groups who have resources that their member famers need. These resources include fingerlings and training and are sought through relationships with government officials, foreign donors, and the UCA. With an understanding of the linkages between fish farming and other development arenas, the leaders have aligned their fish farming goals with goals such as poverty alleviation, environmental preservation, and malnutrition, especially as it is experienced by HIV/AIDS victims. Advocating for the fish farming sector includes recruiting new fish farmers, and "… spreading the message that households with land and water can earn good incomes through fish farming." Thus the logic and objectives of the donor shape the direction of the cooperative.

Visions for "The Cooperative Society's" future

The leaders of this organization actively plan to expand "The Cooperative Society's" presence in the region as a locus of fish farming specialization. They state that the society's success is built on the member-farmers' success, which explains why their first goal is to increase all members' fish production and thus, household income. For some, increases in income from fish farming have already lead to sums sufficient to purchase more land to expand fish farming operations and pay children's school fees. Plans to rent an office space, retail Ugachick formulated feeds, and offer production-cycle loans to members are all part of their vision to increase member-farmers,' and therefore "The Cooperative Society's," success. Leaders also articulated several community-development goals, such as creating opportunities for local youth with little education to earn incomes from pond construction and a fish consumption goal for the community to which they belong. One leader cited the FAO nutritional

recommendation that individuals eat fifteen kilograms of fish per year, and her vision is for the fish farmers in “The Cooperative Society” to supply that amount of fish for local consumption.

V. Conclusions

This chapter summarizes the central findings of the study. It also treats the practical, empirical and theoretical implications of this research. The discussion in this chapter profiles the contextual and inter-organizational characteristics of fish producer organizations which either contribute to or inhibit the organizations' development of member farmers.

The thread of misdirected development assistance runs through each of the following categories of discussion. It should go without saying that the primary goal of a fish-productive aquaculture producer organization cannot be orchestrating its activities to qualify for the most donor assistance possible. Nonetheless, there are multiple aspects at play in the relationships between each of the producer organizations examined and funding agencies (both governmental and NGO). These relationships are considered in light of the ways the structures they produce aid or inhibit fish farmer organizations in strengthening profitable, commercial member farmers.

Catalysts for fish producer organization formation are determinants of farmers' fish production

I found the answers to the following guiding questions for case study assessment interconnected and very similar in all four cases.

3. What are the priorities of each producer organization?
4. What are member farmers' expectations to producer organizations?
5. Why were these producer organizations initially formed?
6. What are the goals of each producer organization?

8. How do member farmers and producer organization leaders gauge the success of their fish farm operations?

Specifically, across cases, the catalyst for group formation influenced each producer organization's goals and priorities, as well as members' expectations. Members' expectations are shaped by the promises of the government official encouraging the individuals to form a fish producer organization. Also, catalysts for group formation and subsequent priorities and goals are directly related to members' fish production. Fish producer organization goals and priorities determine whether or not the member farmers and leaders view their activities and enterprises as successful. In instances where the goal of engaging in fish culture is to receive money rather than generate income, success is not measured in fish production, but in the amount of money received (Grivetti 1982).

Group formation and evidence of donor-seeking

Across cases, every producer organization formed based on the advice or encouragement of government officials and group formation was related to receiving funding for the producer organization's activities. Though no case besides "The Family Affair" kept concrete production records for their organization, based on farmers' assessments of production and profitability, some conclusions can be drawn about the connection between donor support and fish production or fish farm profitability.

"The Unaccountable Leaders" worked through an existing community based organization (CBO), an association dedicated to environmental conservation, in order to receive government support for their fish farming activities. However, there is no system or mechanism for equitable distribution of benefits among members of this group-managed fish farm, even though much of the funding comes from government agencies or donors. The fish farming project coordinator

says, “People who have put in big investments must take the lion’s share,” implying that the project coordinator himself, who arranged for the funding, was the “lion.”

“The Helping Hands” producer organization was made up of a subset of members of a regional organization focused on poverty alleviation. When the chairman was asked why this organization was formed, he replied, “The idea was to serve the needs of the members of the group and to get creditors.” This group works with cross-cutting issues, in response to donor goals; in order to receive funding from NAADS, the group must provide HIV/AIDS education to its members. This producer organization has received or sought funds from NAADS, USAID-LEAD, and local government agencies. Because this organization has not begun cage farming no assessments can be made about fish production. There is additional evidence of “The Helping Hands” catering to the goals of government assistance-givers in order to receive benefits. “The Helping Hands” producer organization is the organization that all assistance for fish farmers in the region must funnel through, as pronounced by the president’s assistant at a regional fish farmers meeting arranged by the chairman of “The Helping Hands.” The restructuring of the fish farmer groups in the region to align under “The Helping Hands” producer organization was entirely motivated by the announcement of new funding mechanisms.

“The Family Affair” was a functioning fish farm for 30 years, from 1973-2004, and operated by an individual and his family, until a district fisheries officer advised the farmer to organize as a group in order to be eligible for regional, government-sourced funding. Still, many members of this producer organization are the chairman’s family. Besides accessing funding based on having a group structure, the name of the organization includes the word “orphan,” which expands the chairman’s entitlement to donor funds. The chairman’s brothers died of AIDS, leaving him with the responsibility of providing for his nieces and nephews. When asked

about the organization's connection to orphans, the chairman said, "We choose to work with orphans because these government structures of assistance require that we reach cross-cutting issues. It is the first step to get the money." This producer organization has received funds from a regional funding agency, WFP, and USAID.

"The Cooperative Society" began as an association, but the leaders changed their organization's registration after the minister of fisheries advised them to form a cooperative society. This registration change allowed them to receive assistance (or, the promise of assistance, as many promises have not been fulfilled) from the Uganda Cooperative Alliance (UCA).

Umbrella structure

Each producer organization operated within a larger umbrella structure, where fish farmer organizations are affiliated with a larger organization: "The Unaccountable Leaders" PO is under a regional organization dedicated to conserving environmental resources; "The Helping Hands" PO is a sub-set of members of a poverty alleviation organization who share the goal of cage culture, as well as a regional administration and funding structure of fish farmer groups throughout the region; "The Family Affair", at the mandate and expense of USAID-LEAD, is overseeing the development of 22 other fish POs; and "The Cooperative Society" is a regional PO under the umbrella of the Uganda Fish Farmers Cooperative Union, and also registered with the Uganda Cooperative Alliance. The impacts of these "groups within groups" structures require further study, though some important elements emerged from this research.

Goal displacement and distortion

From the four cases examined, the most significant impact of the umbrella structures was that the goals of the "umbrella" organization color the goals of the groups they "cover." When this

"cover" is tied to financial support, the goals become mandates. Specifically, umbrella structures impact how the PO determines its goals and addresses cross-cutting issues. Often, the goals of the funding agency do not include developing commercial fish farmers, though this may be a primary goal of the PO.

Funding agencies' directions can potentially distract POs from their objective of developing productive fish farmers or promote strategies that are ineffective in practice. Part of the reason for this promotion is that fish farming is touted by government officials as a profitable farming enterprise that anyone can do. The perception is: men and women, widows and orphans, everyone can earn money from fish farming. While most successful fish farmers, as well as technical experts seriously question the validity of that perception, government officials still design and fund projects to organize fish farming projects connected with reaching unrelated goals. Examples of funding agency goals unrelated to productive fish farmer development include reaching cross-cutting issues such as providing HIV/AIDS education and reaching vulnerable populations (i.e. women, orphans, and disabled people). An example demonstrates the ineffective strategies of one of these efforts: the disabled fish farmer group operating under "The Helping Hands" producer organization cited problems with physical mobility as one of their major constraints to operating a profitable fish pond. Their mobility-related disabilities prevented this group from efficiently managing their ponds. According to their production records, the group of disabled people found fish farming financially unsustainable and plans to abandon production (unless, of course, they receive increased subsidies).

However, fish farmers' ability to improve the lives of the very poor is not only accomplished through training vulnerable people as fish farmers, and may not require funding agency dictates. The PO with the least donor support, "The Cooperative Society", addressed

cross-cutting issues quite differently than "The Helping Hands" or "The Family Affair", the two most donor-involved POs. "The Cooperative Society" members aided vulnerable people as individual farmers, not as a collectivity, by providing poor neighbors with on-farm employment opportunities and sharing nutritious, farm-raised fish.

Diversification versus specialization

In the cases examined the umbrella structures which specialize in fish producer organization development yield member fish farmers with higher production than umbrella structures which oversee a spectrum of projects. Therefore, the answer to the second guiding question for case study assessment is that producer organizations which are effective at facilitating their members' fish production provide services directly related to fish farm productivity. "The Cooperative Society," under the umbrella of the Uganda Fish Farmers Cooperative Alliance, and "The Family Affair," are the two highest-producing fish farmer organizations examined.

Fish production-based umbrella structures are better able to develop productive fish farmers partially because of their social capital: bonding social capital, which unites the members of a producer organization and bridging social capital, which connects people and institutions. A host of relationships set these specialists apart, as they have long-term working connections with technical experts, government research stations, universities, international experts, fingerling producers, feed distributors, and development professionals. Through these relationships, fish production-based umbrella structures are better poised to advocate for the fish farming sector, broaden member farmers' resources, and develop productive fish farmers.

Additionally, umbrella structures which specialize in fish producer organization development are less likely to seek funding for non-aquaculture related development projects,

efforts which distract diversified umbrella organizations from focusing on improving fish farmers' successes.

A group in name only: accessing designated funds

Two producer organizations, "The Unaccountable Leaders" and "The Family Affair", operated in group structures for the expressed purpose of accessing donor assistance designated for farmer groups. Without the funding agency's mandate that funds are available for farmer groups only, these would be independent entrepreneurs or family businesses. In fact, the chairman of "The Family Affair" began fish farming in 1973 and only began operating in a group structure in 2004, in order to become eligible for funding. The chairman says, "We are currently working with groups because it is easier for outreach and accessing government assistance."

From the funding agency perspective, the purpose of working with groups instead of individual farmers is to provide assistance to more farmers. Paul Forrest, the co-director of the USAID/LEAD, said at a conference in northern Uganda, "We are trying to look at farmers as our entry point – but not individual farmers. If we work with individual farmers it would take us 70 years to accomplish our goals (of reaching 650,000 farmers in two years). That is why we are looking at farmer groups …". However, funding agencies' reports of number of farmers receiving services are erroneous, as in the case of "The Unaccountable Leaders," where the list of farmers includes the names of those who are not actively participating in the rearing of fish or receiving the funding agencies' services. USAID/LEAD knows that donors are looking at the number of Ugandan farmers served as an indicator of success.

Distorted incentive systems

Several incentive systems designed to encourage the development of a profitable and commercial fish farming sector in Uganda have been distorted to the point that they inhibit the economic and human-capital growth they were conceived to attain. What were designed to be incentives to productive fish farm development have evolved into ends in themselves. When leaders profit from distorted incentive systems, members' trust is seriously compromised and member attrition results.

Therefore, part of the answer to the following guiding question for case study assessment is the characteristic of leaders who avoid distorted incentive systems.

9. What are the shared characteristics of producer organizations that sustain member involvement?

Subsequently, to address the following guiding questions for case study assessment, when leaders hold disproportionate power due to their involvement in distorted incentive systems, problems within the producer organization go unresolved and members discontinue involvement in the organization and in fish farming.

7. What challenges arise in producer organizations and how are they addressed?

9. What are the shared characteristics of producer organizations that sustain member involvement?

Model farm designation

Two leaders of producer organizations expressed that they wanted to operate model farms. The leaders of both "The Unaccountable Leaders" and "The Helping Hands" expressed this interest. Also, these two men are most politically active and donor-seeking PO leaders. In Uganda, a model farm is a political distinction. Rather than recognizing farmers who have built

up productive and economically successful farm enterprises through the farmer's own long-term investment and expertise, model farms can be designated before one complete production cycle. In this context, a model farm is one that has been recognized by the president and designated as a demonstration farm for farmer field school education. With model farm distinction comes an inflow of government assistance. This system is well suited to limited funds and staff members but, as previously mentioned, ordinary farmers may perceive model farmers as a privileged group they are unable to mirror (Mangheni 2007). This understanding limits the application of information received during farmer field schools held on model farms. Both of the producer organization leaders interested in achieving model farm status are envisioning the rewards, in terms of money and influence, which are unrelated to fish farm profitability. Yet the rewards from donor money are often more tangible and immediate than proceeds from fish culture. The chairman of "The Helping Hands"' PO included funds in his proposed budget designated for boats and motors that would prove necessary for providing tours of the prospective cage culture operation. He anticipates that visiting farmers will pay a fee to take the tour. The project coordinator of "The Unaccountable Leaders" PO anticipates the attention a cage culture operation model farm will bring to his region. Model farm distinction is a financial end in itself; it is tangentially related to farm commercialization.

Treadmill of development assistance

A theory from environmental sociology, the treadmill of production, aids in explaining a pattern which emerged from the case of "The Family Affair" producer organization. The treadmill of production is a self-reinforcing system whereby politicians respond to the environmental impacts created by capital-intensive economic growth by designing and implementing policies that further capital expansion (Hannigan 1995). The treadmill of

production allows an economy to grow while attempting to mitigate environmental ills. We apply this concept from the Global North to the Global South, where donor agencies wield political power and poorly producing farms, not environmental impacts, are the blight, but capital expansion remains the solution. The treadmill of development assistance is a complex, self-reinforcing pattern of dependency whereby the donor community responds to the poverty and low agricultural output created by donor-driven and capital-intensive farm infrastructure construction by conceiving and overseeing projects that further infrastructure expansion.

Working within this system, the chairman of "The Family Affair" is continually designing new infrastructure construction projects and finding another donor agency to fund the projects. He says, "For us, we just keep on making ponds. We are still looking for phase two of NUSAF (a regional funding program)." In this system, donor funding is not jump-starting a potentially self-sufficient, economically sustainable farming enterprise, but an economic treadmill of assistance and construction. On his farm, the chairman's previous or in-progress infrastructure projects include hatchery tubs (currently being re-constructed to higher standards by the USAID-LEAD project), fish ponds, and a building in which to store feed. Future infrastructure plans include a feed mill, a fish processing facility, a workshop in which to train orphans in job skills, a guest house and a dormitory for farmers who visit for training, and a swimming pool for the orphans' recreation. The profit motive from fish farming, or full productive use of existing capital resources, is therefore subsidiary to construction, as construction is necessary for receiving donor funds. Government or NGO donors do not seem to be looking at fish production as the primary indicator of success.

Records and accounts as evidence of priorities

Investigating the records that POs and member farmers maintain illuminates the PO's and farmers' priorities. Because aquaculture technicians do not always find the specific records they desire (i.e. records reflecting feed conversion ratio (FCR) and profitability) does not mean that no farm or PO records exist. Through open-ended questions about farm and PO records and participant observation, we noticed several trends in records kept which correlated with farmers' and PO's interest.

Records of fish farm operations

Some aquaculture technicians train fish farmers in record keeping of fish farming operations, as records reflect a business orientation and allow farmers to understand values of inputs and contextualize profits from harvests. Specifically, farmers are trained to keep records of amount of feed given to fish, price of feed, frequency of feeding, fish weight at harvest, and price of fish sold (usually measured on a per-kilogram basis), as these are crucial elements in determining the feed conversion ratio (FCR) and profit realized during a production cycle. Frequently, however, aquaculture technicians find that fish farmers do not keep such records, even after receiving training in record keeping (Hecht 2005).

Record keeping, as an innovation, has not been internalized or institutionalized by fish farmers in Uganda. The four stages of technology transfer outlined by Rogers and Agarwala-Rogers (1976) are: (1) the development of a technology that is both compatible with the target environment and the economy, (2) the idea of the technology must be communicated to the target population, (3), the target population must recognize that it fulfills a need and is consistent with existing beliefs, values, attitudes, and status and role relationships, (4) followed by a trial period or outright

rejection. If accepted, the technology ultimately reaches the institutional stage where it becomes part of the socio-cultural system and is no longer considered an innovation.

In the case of the four producer organizations examined, it is clear, from the number of farmers who consistently keep records of their farming operations that the third stage, where the target population understands that the innovation fulfills a need and is consistent with existing beliefs and values, was never achieved. When an innovation is consistent with local culture, belief-system variables are some of the strongest factors determining the number of adopters (Wejnert 2002). The following discussion examines some of the belief-system-based variables that explain why record keeping remains outside the socio-cultural system for Ugandan fish farmers and thus an undiffused innovation.

In Uganda, record keeping (along with fish farming and feeding fish) is an imported rather than an indigenous concept. As such, rural fish farmers find it irrelevant. When conducting interviews with farmers with "The Cooperative Society" we noticed that, when asked about the fish farm records that farmers kept, each responded to the interview question in the local language but said "record keeping" in English. Further questions revealed that there is no synonymous phrase in the farmers' local language. Gertrude Atukunda verified that neither is there a synonymous phrase in Luganda, which is the language of central Uganda, and thought to be the most sophisticated language in the country. As long as the words "record keeping" are not translated into a synonymous phrase in the first language of fish farmers the concept will remain foreign and associated with the goals and priorities of the English-speaking donors, not the farmers themselves. It remains part of the agenda and perspective of the "uppers."

In the interview with "The Cooperative Society", one member spoke of records being unnecessary in all of his farming practices. His sentiments simultaneously demonstrate that fish

farming is a sideline agricultural production system and that farm records are deemed unnecessary in the socio-cultural system of rural Ugandan farmers. In this geographical region, banana plantations are a farmer's primary source of income. In an exasperated tone, the farmer explained his lack of fish farm records, saying, "I treat my pond like my banana plantations: I cut the big one, sell it to the man with the truck. Cut another one, take it to the kitchen. Cut another one, and give to my neighbor. Why would I keep a record of that?" Gertrude Atukunda, describing farmers' unwillingness to adopt a new practice that they do not deem valuable, said, "The attitude toward record keeping is, 'I have done without it and can continue to do without it." It is possible that neither fish farmers nor their advisors have learned how to use records appropriately as a tool to develop a fish farm enterprise.

This farmer's multi-purpose and -use approach to his fish ponds demonstrates the multiple and sometimes competing goals of fish production for him: selling fish for cash income, consuming fish at home, and sharing fish with neighbors. Record keeping is mostly useful for quantifying profits. But, with the multiple goals besides profits, the value of records is diffused.

For this farmer, the goals of home fish consumption and sharing fish with neighbors are practically unquantifiable, though they are valued as investments. That is to say that the farmer, when he feeds fish to his family, understands the nutritional value he provides as well as the long term health benefits of protein consumption. Similarly, he also values sharing fish from his pond with a neighbor, as reciprocal sharing with neighbors provides a social safety net; if the fish farmer is in need in the future, the neighbor he shared with has a responsibility to assist him. To the farmer, these benefits are at least equal to his profit motive.

Because there is no local word or phrase for record keeping there is a problem with internalizing the concept; it sounds foreign and irrelevant to the farmers' multifaceted goals.

"The perception of an innovation is colored by the word symbols used for it … and of course it is the potential adopter's perceptions of an innovation that affect its rate of adoption" (Rogers 1995:236). One approach to facilitating the transfer of record keeping to fish farmers is to develop a meaningful, specific word or phrase in each language where fish farming exists, and teach record keeping skills in culturally-appropriate ways. In India, a government campaign with the goal of encouraging condom use applied this strategy, re-naming condoms with a Sanskrit word meaning "protection" and promoting it with an advertising campaign. In part, the new name helped overcome condom's taboo association with venereal disease and condom use sharply increased (Rogers 1995:237).

To Ugandan fish farmers it is possible that the pen and column-lined paper is not the most meaningful method of understanding the investments and rewards from their fish ponds, regardless of the name of the practice. Perhaps there is another way to have the end result of record keeping, which is that farmers understand their expenses and gains and can make appropriate decisions regarding adaption to make on their fish farms. This is a potential area for future study.

The visitor's book as political record

Though fish farmers may not consistently maintain records of their aquacultural operations, many consistently maintain a visitor's book or guest log which catalogs the date, purpose, name and signature of each esteemed visitor and the visitor's comments and assessment of the farm and his or her visit. Every fish farm, training center, and government office we visited during our stay in Uganda maintained a record book and presented it to us to sign.

Chambers (1997) discusses the role and importance of the visitor's book and the comments within it in the context of "lowers" selective presentation to "uppers." He writes,

"Lowers select where uppers go, what they see and whom they meet. … The farmer visited is resource-rich (and known variously as a master, model, demonstration, progressive, or contact farmer) and can show the package of practices in the field before presenting the visitor's book to be signed. … The glowing words of the VIP or the VVIP in the visitor's book then reflect not a wider reality, but the extent to which the visitor was misled …" Here, the visitor's book's purpose is to demonstrate the farmer's connections to "uppers," or people with resources, including government officials and donors. This record of the "uppers" visit and comments about the fish farm can be used to generate political capital; the visitor's book becomes evidence of success and thus justification for increased assistance.

Financial accounts and records

The producer organization with the best-kept financial documents is also the PO receiving the most donor assistance, "The Family Affair." Bank accounts and financial records are required by donors. Therefore, the PO maintains four different bank accounts. The chairman explains, saying, "With NGOs you don't put money in one place because of accountability." Two factors influence this practice: first, each NGO or government has a relationship with a specific commercial bank. Second, the accountability the chairman speaks of is that a separate fund is maintained for each NGO or government-sponsored project. The un-accountable nature of this multiple-funding-source approach is that only the chairman, who is the required signatory on each account, knows the extent of the financial dealings of the PO. Each NGO does not know of the operations or projects of the others, so there is no coordinated effort; the funding sources and the projects implemented may be unrelated or incompatible. Conceivably, a producer organization may find two streams of assistance for one project, essentially doubly funding one activity.

Piecemeal approach to funding sources

The reality of producer organizations maintaining multiple bank accounts for categories of donor assistance offers an insight into a pattern of assistance-seeking. Related to the treadmill of development assistance, many PO leaders pursue a piecemeal approach to funding sources.

This approach is borne out of the development paradigm of cost sharing, where assistance-receivers invest a percentage of their own financial resources into a project. The purpose of cost sharing is to encourage participant ownership of the project and thus, incentive to manage the project well, as to provide returns on the participant's investment. Since a PO leader realizes that development agencies expect cost sharing, he pursues multiple donors. For example, if one donor will finance 80 percent of a project, and the group members are expected to contribute 20 percent of their own financial resources, the PO leader may not ask his members for the 20 percent but finds another donor, unbeknownst to the first, to finance the 20 percent that is the members' responsibility.

If the leader is also a local politician, or has political aspirations, this piecemeal approach becomes even more important, as the leader will lose popular support if his or her participants invest their own resources into a project that fails. With membership dues or participant investment come expectations of leaders' accountability and financial returns. In the words of the project coordinator of "The Unaccountable Leaders'" PO, "We have people who are ready to pay money to be members but we are not signing them up because we can't take their money when there are no feeds because then they will be asking, 'What is happening with our money?'"

To clarify, this is not a greedy or underhanded approach to doing business but a practical one. This approach was created (and is sustained) by the revolving door of donors and government programs designed to assist the poor farmers of Uganda. A half-century's history

has proven that in time, another donor will come; therefore investing personal financial resources is unwarranted, if not wasteful. However, the piecemeal approach to funding sources has a detrimental impact on the aquaculture development of Uganda as it perpetuates the idea that fish farming is only profitable if a donor pays for the fingerlings and feed.

Conclusion

Though patterns of distorted incentive systems and piecemeal donor seeking were established by donor behavior, the effects damage the viability of producer organizations and undermine their ability to accomplish the goal of becoming profitable commercial fish farmers. As previously mentioned, with each donor comes that donor's own aims, which may or may not align with the PO's goals. In fact, government or donor goals may serve to hinder member fish farmers from focusing on production, profitability, and long-term organizational viability. Donor and governments' requirements certainly threaten fish producer organization leadership development, as this pattern of goal displacement and distortion obstructs leaders from defining, working towards, and achieving goals and forming an organizational identity.

In the current method of operations, leaders of donor-driven fish producer organizations simply follow the dictates of donor organizations, dictates which change with the creation and completion of an endless stream of short-term projects conducted by an alphabet soup of donor organizations. Additionally, fish producer organizations model the donor's short term project orientation. For fish producer organizations in Uganda to support a market-driven, thriving aquaculture sector sustained over time, producer organization leaders must recognize that current government and donor financial incentives are not serving their interests as commercializing fish farmers, and avoid them while demanding that these structures be reformed to serve the intended purposes of governments, donors, and fish farmers.

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Appendix

Interview Questions

Questions for producer organization leaders

1. How did the group begin?
2. How many members do you have?
3. How do you recruit new members?
4. Do members pay dues?
5. Where does your group get information about fish farming?
6. What services does the group provide?
7. What are your goals for the group?
8. What are your goals for your own farm enterprise?
9. What is the leadership structure for your group?
10. When do you hold meetings?
11. For what purposes do you hold meetings?
12. How often do the leaders meet?
13. Is there a meeting agenda? If so, who sets the agenda?
14. What happens at meetings? Who speaks?
15. Do you receive assistance for your fish farm?
16. Have you received any assistance through the group?
17. How do you market your fish?

18. What benefits do you receive from fish farming in a group?
19. What are problems you encounter in fish farming in a group?

Questions for producer organization members

1. What first made you interested in fish farming?
2. What made you progress as a fish farmer?
3. What do you gain from fish farming?
4. What do you gain from being a part of the fish farming group?
5. Have you received any training through being a part of this group?
6. What happens during meetings? Who speaks?
7. Do you receive assistance for your fish farm?
8. What benefits do you receive from being a part of this fish farming group?
9. What is difficult about being a part of this group?
10. What problems does your group face?