

Project no. **032103**

Project acronym

BOMOSA

Project title

Integrating BOMOSA cage fish farming system in reservoirs, ponds and temporary water bodies in Eastern Africa

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CO	Confidential, only for members of the consortium (including the Commission Services)	

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KENYA

1 INTRODUCTION

Aquaculture is the farming of freshwater and saltwater organisms including molluscs, crustaceans and aquatic plants, however fish farming is the principal form of aquaculture. Fish can be grown in ponds, temporary water bodies or in floating cages. The latter is an uncomplicated technique which is most commonly used in North America by commercial fish farmers. Cages offer protection from predators, provide controlled feeding, and simplify monitoring and harvesting stock. Cages are therefore a convenient approach to raising fish for personal consumption, as well as for commercial purposes (Baldwin and Holligsworth, 2007).

The BOMOSA project involves producing fish in floating cages where they are fed using developed feeds. The fish farming help to improve people's livelihood through improved protein intake and income provision. It's important that the new technology of fish farming be accepted locally in the areas where the cages have been set, for sustainable management of the project. This will promote the adoption of the technology in the regions as well as the success of the project in the area.

Every society has its own complex identity which determines how they accept new technologies in the area. Social acceptability has various definitions; however it is noted that it is a complex synthesis of multiple opinions, values and attitudes. It involves a judgment process by individual or some aggregation of individuals (Stankey and Shindler, 2006, Clausen and Schroeder, 2004). In order for a project to be accepted socially, people in the area incorporate the perceived reality with its known alternatives and then decides whether the practice is superior or sufficiently similar to the most favorable alternative practice. Factors determining acceptability of fish farming in cages may include ethical and gender concerns, perception of the society on the project, perceived benefits, management issues as well as environmental implications, since studies have shown a link between social acceptability of aquaculture and its environmental impacts (Whitmarsh and Palmieri, 2007).

From the baseline survey carried out earlier, a guideline for a social acceptability study was developed, and a social acceptability survey done in the central and Eastern regions of the country. The Overall objective was to understand the ethical, ownership and community-related issues in order to identify and solve any potential conflicts at an early stage. Specifically the study aimed to:

- Assess gender related issues.
- Assess Ethical issues around the project sites.
- Evaluate additional income vs. social impacts ("livelihood effects")
- Assess community acceptance of the BOMOSA and understand their social and cultural concerns with the project

2 METHODOLOGY

The study was carried out in Central (Ruthagati and Mairo) and Eastern (Ngeki) region. Primary data for the survey was collected through a household survey and focus group discussions. A sample frame was generated with the aid of provincial administration in the selected villages, constituting all the members of the community accessing the water bodies. Systematic random sampling was then used to select respondents to the questionnaire. A total of 108 respondents, 58 male and 50 female were visited, 36 people in every site. Key informants were drawn from fish sub sector stakeholders in the community. A semi structured questionnaire and a check list used to collect data on various factors in order to assess the social acceptability of BOMOSA project.

3 RESULTS AND DISCUSSION

3.1 Fish consumption patterns

Results indicate that fish was not consumed regularly as indicated by 50% and 37.9% male and female respondents respectively (Figure 1). Men were noted to have consumed fish for a longer period than women with the mean of 24.7 years and 16.1 % for men and women respectively. Only 1% of men indicated that they have never consumed fish as compared to 10% women. This may be explained by the fact that, many respondents indicated that they get fish mainly from the dams in their area, and fishing is done mainly by men. In addition, 60% of men rated fish as available in their area as opposed to 48% of women.

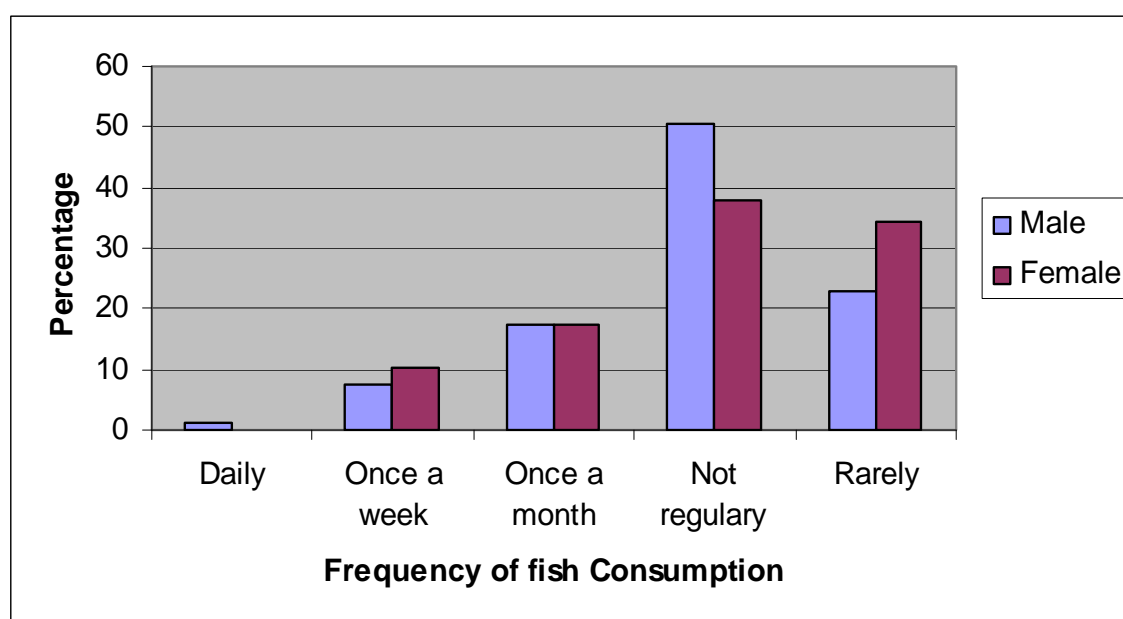


Figure 1: Fish consumption by gender

Results indicate that fish availability, unpleasant smell and allergies are some of the factors that influence fish consumption. Some respondents indicated that the young babies are not allowed to eat fish for fear of bones.

3.2 Fish availability, types and sources

Tilapia was noted to be the most preferred and consumed type of fish Central and Eastern regions. Consumers indicated that Tilapia is more tasty and readily available, hence its preference. However Catfish (*Clarias Geriepinus*) was also mentioned as another fish type consumed mostly in the central regions (Ruthagati and Mairo areas). Consumers in Ruthagati and Mairo indicated that Mudfish was also a preferred type, because it has less bones and it has more flesh as compared to tilapia. Carp species was available only in Mairo area where they stated that it is obtained from Honi River. Only 5% of the respondents indicated that they were consuming Fish fillet, because it is relatively expensive.

Majority of respondents in Ruthagati, Mairo and Ngeki indicated that they acquire fish from the dams, rivers and streams within their locality, mainly wild fish. Men were more likely to access these dams and be engaged in fishing, hence the high consumption of fish among men relative to women. However some respondents also indicated that they buy fish mainly from open markets, hawkers, restaurants, fish kiosks and supermarkets. About 60% of men

rated fish as available in their area as compared to 48% of women. However, 43.5% of respondents stated that fish was unavailable.

3.3 Preferred fish sizes, preparation and cooking methods

Majority of the respondents indicated that they preferred the larger fish sizes, 250 grams and above. This is because they are fleshier and have bigger bones hence easier to eat. Fish was mainly bought in raw form then cooked by deep frying, steaming, roasting and stewing methods. It was noted that Men relatively more familiar with fish handling than women, as indicated by 22% of women who said they have problems with fish preparation while only 10% of men indicated so. Inadequate knowledge and unpleasant smell were indicated as the main reasons why women did not like preparing fish. However, the responsibility of fish cooking is mainly for women although 42% of the respondents indicated that it is men who cook fish at their homes. Men usually cook the fish where women do not like eating the fish or in cases where the women are not familiar with fish cooking methods. Deep frying and steaming were the most used fish cooking methods. Twenty two percent of female respondents indicated that they encounter problem/difficulty when cooking fish as compared to only 10% of the male respondents. Some of women do not know how to cook fish. Some respondents indicated that fish was expensive to cook, since it required a lot of cooking oil especially when deep frying. Therefore, most consumers opt to use the less costly methods such as steaming and roasting.

3.4 Fish preservation

Majority of people do not preserve fish at home for they get only for immediate consumption. However incase of bulk purchases, some respondents indicated that they preserve by airing in the house, dipping in cold water & salting. The most appropriate methods of fish preservation such as deep freezing and smoking were not used due to lack of facilities.

3.5 Factors influencing fish consumption

In the two regions, majority of the respondents (63.0%) indicated that they had no problems with fish consumption as shown in Figure 2 below. Fish was considered as a superior protein source, hence it was preferred to other protein sources such as beef, goat meat, mutton and pork. However, availability of other substituting protein sources at home such as chicken and eggs was a major factor influencing the consumption of fish.

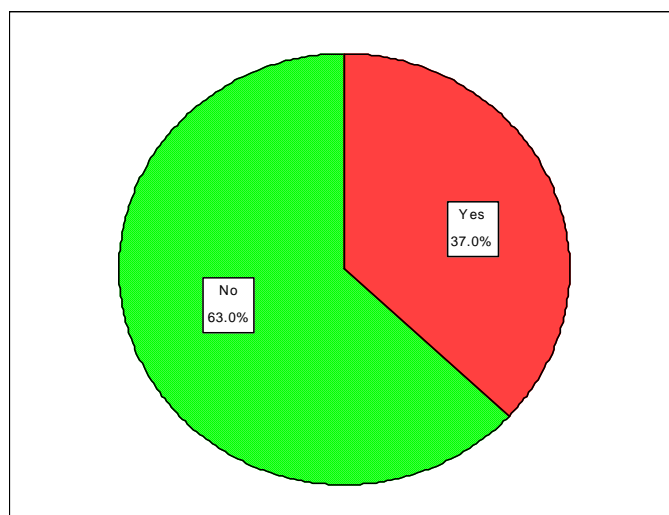


Figure 2: Percentages of people with fish eating problems

Fish consumption is also influenced by cultural beliefs among the community members. However, the cultural beliefs and perceptions that fish can only be consumed by the people in the lake region are getting eroded as generations change. Results indicate that only 2.6% of respondents had cultural issues to limit their fish consumption, and this was especially among the older respondents. It was also noted that there were no religious beliefs that could affect fish consumption in the regions. Muslim, Christians and traditional believers all accept fish as source of protein across all the areas.

3.6 Problems encountered in the BOMOSA project

Some problems were reported which have been a challenge to the progress of the project and realization of project benefits. High mortality rates of fingerlings were reported especially in Mairo, Ruthagati and Lukenya. The situation was worst in Mairo, with less than 25% survival rates. Long distances from the dams to the hubs where they obtain fingerlings coupled with logistical issues was another main challenge which could be a threat to sustainability of the project. Slow growth rates, possibly due to climatic conditions, was also reported in Mairo. Finally, vandalism of cages and theft of fish was a major problem especially in Ruthagati and Ngeki.

3.7 Potential benefits and negative Impacts of the BOMOSA project

The respondents and participants in the focus group discussions were asked to state whether they perceived that the project has been of benefit to the community. In Mairo and Ruthagati, over 70% stated that the project has some benefits in their regions, however in Ngeki 61% of respondents indicated that the project has no benefits realized so far. This result indicates the extent to which the community members have been involved in the project. Figure 3 indicates that majority of the residents and participants felt the project would improve food security at household level, through improves access to cheap protein and additional income. Support to rural livelihoods, employment creation and other benefits such as improved gender integration and education were reported as other benefits.

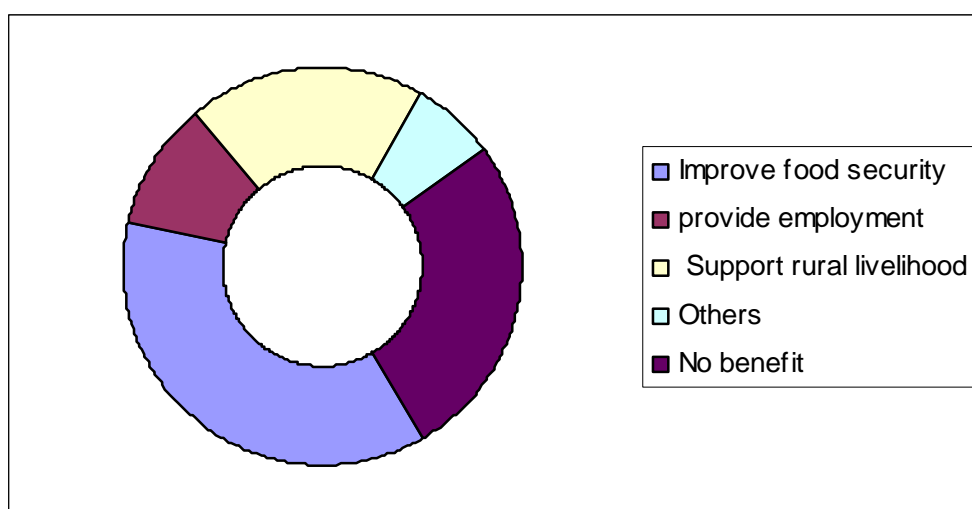


Figure 3: Potential benefits for the BOMOSA project

Only few people, about 11% thought that the project may have negative environmental impacts. However, this was based on their perceptions that the fish feed and drugs are likely to poison the water, which they also use for other purposes such as livestock watering, washing and cooking. As indicated in Figure 4, income was another important factor influencing fish consumption. However, the lower income category respondents were found to consume fish more regularly. However, this category does not majorly purchase their fish but rather acquire it freely from nearby water bodies.

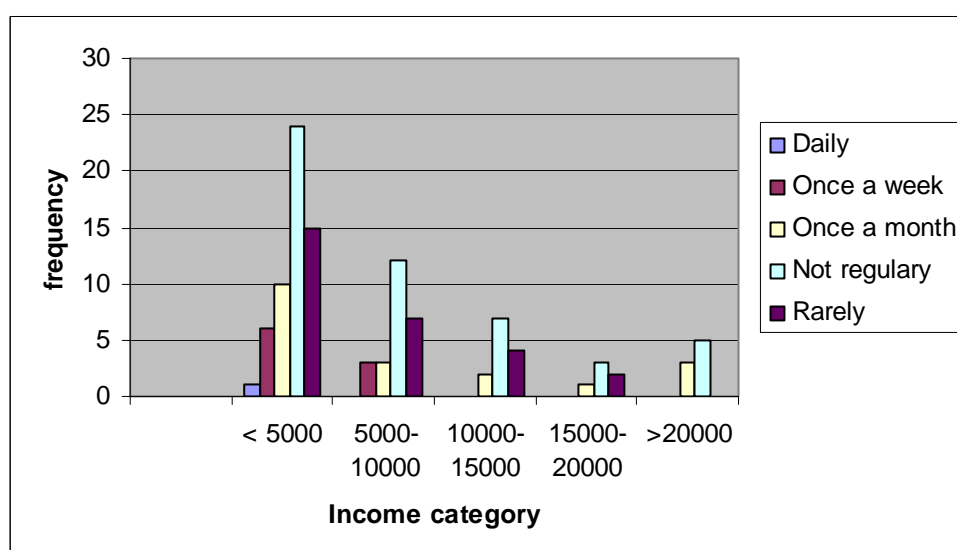


Figure 4: Fish consumption by income categories

3.8 Perception on BOMOSA fish cages

People in central and eastern regions are familiar with the traditional /wild fish farming where fingerlings are introduced in a water body and then left to feed on their own. However, it was noted that 95% of the respondents are aware of the BOMOSA cages fish farming introduced in their areas. This includes both group members and non- group members. However project members illustrated better understanding of the BOMOSA cage fish farming than those not included in the fish farming groups. The fact that even non- group members knew

about BOMOSA cage fish farming can be explained by the social network theory (Mertens et al., 2005), which explains that information is usually shared in a community within people of different ages and gender. This information sharing in a community is vital in influencing people's judgment on the project in relation to its benefit and impacts. Majority of community members stated that BOMOSA cage fish farming projects in their areas cannot meet the demand of fish in their areas. Only 6.5% of the respondents indicated that, the project can meet the fish demand in the area. 92.6 % stated that in the current status, the project will fall short of meeting community demand on fish.

It was noted that the demand of fish in the visited regions is high and with the low capacity of production in the cages, then all the consumers cannot be satisfied. The people believe that the cage farming system is superior to the wild fish farming especially in harvesting practice, where in cages it is easier to harvest and sort the fish as compared to the wild fish farming system.

4 CASE STUDIES

4.1 Ngeki-Machakos case study

People around Ngeki dam stated that fish is frequently consumed in the area and is acquired from the dam mostly by the young men. 13 key informants, majority being women from the area indicated that they are familiar to the wild fish farming system where fingerings are introduced in the dam and left to feed by their own. They consider BOMOSA cage system as a new technology of fish farming but since the introduction of the cages they have acquired more information on the system. The type of fish mostly consumed in the area is the Tilapia for it is locally available from the dam; however Nile perch (I form of off cuts) is also consumed and is obtained from the market in raw form. It was noted that many people prefer buying raw fish so that they prepare using various methods according to individual preference.

Many people in the region consume small and medium fish sizes which are available in the dam, but would prefer the large size which is believed to be tasty, fleshy and has fewer bones. The most commonly used preparation methods are roasting, deep frying, stewing and baking. It was noted that preparation of fish is done by women and they have no problem with preparation or eating. Children are assisted by adults to eat fish in order to remove bones and by the time they get to the age of school, they are usually conversant with fish eating. According to the discussion help with the participants, no preservation at home is done because they only get enough for consumption, and no surplus.

The community demonstrated understanding of local ownership of the BOMOSA fish project, the participants indicated that from the project, they expect various benefits such as source of protein as well as income source for the group. The male youth are expected to be the most beneficiaries from the project. It was pointed out that once the project expands, it will create employment to the male youth and also create interest of scholars in fish related fields to both male and female youth. Some individuals were interested in starting their own cages for fish farming. There were no cultural, ethical or religious issues noted around the BOMOSA project. However the project was reported to have faced some form of vandalism of the nets and theft of fish which the community believed can be effectively solved through community policing in the area. It was reported that at the time of introduction of the cages, community members expressed their concern of water pollution from the fish feeds. Change of smell of water since then has been attributed to fish waste and fish feeds from the cages.

Training of local people on fish farming was noted to be a pressing issue to the participants, they pointed out that in order for them to sustainable manage the project they require the know –how on the various steps involved in cage fish farming.

The management of the project was noted to be women's affair, this was attributed to the fact that women are more committed to group's activity and have less politics.

4.2 Ruthagati-Karatina case study

In Karatina, Ruthagati dam it was also noted that they consume fish frequently obtained both from the dam and the market. This was revealed in a discussion held at Ruthagati with 30 project members. Tilapia and mudfish were noted to be the most consumed fish types due to their availability in the area. However many people prefer mudfish for it is more fleshy and has less bones. Fish is consumed by young and old men and women in the area and majority of people eat fish in markets where it is already prepared and is available in small portion which are economically manageable. It was noted that few people buy raw fish to prepare at home frequently, however when they buy table size fish is preferred in order to serve all family members. The raw fish is prepared by women mainly by deep frying, baking or steaming. No home preservation is done for they buy only enough to consume at once.

The community demonstrated a very positive opinion on BOMOSA cage fish system; they confirmed that it is easier to harvest the fish from the cages as compared to harvesting from the dam. They also preferred consuming fish from the cages which confirmed that they had no cultural ethical beliefs or religious issues against the project. Management of the project was noted to be for the old men and women, since most of the young men and women were reported to be working away from home. Thus it was noted that the project would benefit the older generation more in terms of knowledge acquisition and protein source.

Gender roles in relation to fish management, harvesting and preparation before cooking were noted to be non specific. Women were involved in pulling the net during harvesting from the dam and men were also involved in removing scales and degutting the fish. This demonstrated the any role can be played by men and women in regard to fish harvesting.

4.3 Mairo-Endarasha case study

In Endarasha, it was unlike the other areas, few people consume fish because majority and especially the older generation fear the bones in fish and the smell of fish puts them off. This was reported in a discussion with 14 fish project members, two of whom were women. The fish types consumed are Tilapia from the dam and Clarias from the market. In the area, Clarias is preferred for it is believed to be tasty than tilapia. The few people who consume fish either buy cooked fish in small bits from the market or get the raw fish from the dam and prepare at home. The fish size preferred is the plate size for it is considered to be fleshly.

Contrary to the other type of food which is prepared by women at home, in many families in Endarasha, fish is prepared by men and majority of women do not like fish due to the smell and bones. It was reported in the discussion that preparation methods of fish are not well known in the area. It was noted that utensils used to prepare fish are usually kept separately and given to men when they need to prepare the fish. Children are usually cautioned by their mothers against eating fish for the fear of bones. Roasting and deep frying were the preparation methods of fish used in the area, with the deep frying being preferred, but the cost of fats/oils is usually a hindrance to deep frying of fish.

BOMOSA project is known to the community and people in the region had very high expectations of the project. It was expected that within few months, fish was to be harvested and generate income to the community. The problem of drying of fish after introduction to the cages and slow rate of growth has however made the people in the area doubt the economic viability of the project. The people's opinion on BOMOSA cage fish farming system is that it is a labor intensive technology which may not be economically viable. Management of the project currently is seen to be BOMOSA's staff responsibility but young men demonstrated strong wish to manage the project after determining its economic benefits. It was noted that culturally, fish is not well accepted in the area by the older generation, they believe it was meant to be eaten by communities from the traditional fish consumers along the lake region. However, with modernization and better understanding of nutritional benefits of fish, the younger generation has adopted fish eating and considers cage fish farming as a business opportunity in the area. They pointed out that they could construct dams in their farms and cages to introduce fish. This explains their concern about economic returns of the BOMOSA cage fish farming.

5 CONCLUSIONS: FUTURE OF BOMOSA PROJECT

Imperative conclusions were drawn from this survey which can hold to draw implications for the future of the BOMOSA system. The project has been ethically accepted in all the sites, this was evident in the study. The community members stated that involving more members of various ages and gender in management of project would boost the project acceptability. It was also noted that there are no gender conflict that may arise in implementation and management of fish projects. Social structure of the studied community suggests that integrating men and women of various ages in management of the project is important to the sustainability of the project. 35% of respondents believed that management of fish projects should be youth's responsibility. This is to make them have employment as well as being responsible for development activities in the area. However in Ngeki, women are believed to be committed to project activities than men, and hence management of project should be bestowed up on them. In Ruthagati, both men and women are believed to make better management decisions on the project.

However towards more integration of the project in the community to realize more benefits, the following need to be considered:

- There is need for a stakeholders' training on cage fish farming. This will help to eliminate all controversies, and improve the community's knowledge on cage culture.
- An outreach programme on benefits & impacts of cage fish farming to all community members can be kick started in all BOMOSA project areas.
- There is also need to demonstrate the economic viability of BOMOSA project, to encourage expansion to both community dams & individual dams.

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UGANDA

1 INTRODUCTION

Uganda's multicultural communities commonly cause a major challenge to the success of many development projects externally developed and tried in these communities. Such were the worries at the introduction of BOMOSA cage fish farming project in Ndolwa, Kasolwe and Kamuli High SS communities in Kamuli district. The three sites lie in the Uganda cattle corridor that is traditionally known for predominantly pastoralist communities that were known not to consume fish nor let their cattle water at sources that hold fish. With the introduction of BOMOSA there was fear of acute rejection and thus failure of the project, however, immense success has been met in Kamuli with results from the social acceptance and ethical surveys showing positive project adoption and calls for expansion.

The objectives of the study were to:

- Establish ethical issues in Ndolwa, Kasolwe and Kamuli High SS BOMOSA sites that could hinder the success of BOMOSA cage fish farming project.
- Evaluate social acceptance of BOMOSA cage fish farming project in Ndolwa.

2 METHODOLOGY

2.1 The study area

Kasolwe and Ndolwa dams are situated 30km and 45km respectively off Kamuli-Bukungu road from Kamuli town centre, which is about 50Km from Jinja town and 90 Km from Kampala town centre. Both dams lie within the Uganda cattle corridor which stretches right from the south-west Uganda through the central to the north-east of the country, majorly habited by cattle keeper tribes; these tribes historically heavily relied and some up to date rely on cattle keeping for their livelihood.

The people of Kasolwe and Ndolwa are of the Basoga tribe paying allegiance to the Busoga king (Kyabazinga), with minor distinctions in languages families speak due to intermarriages with neighbouring regions and kingdoms/chiefdoms. This has thus created several (about seven) small sub tribes that trace their roots to different descendants and thus have some distinct cultural features from each other. The tribes are socially warm, welcoming and embracing when development projects are brought them, majorly due to their historical calmness and tolerance, and also due to high poverty levels and little hope of making it out of poverty by themselves. However, this presents them and has slowly built them into a proactive, pro development community adopting and making use of the BOMOSA project concept.

The people of Kasolwe and Ndolwa communities produce milk, beef and hides from cattle, goats and sheep and have a number of crops grown ranging from cereals like maize, wheat, sorghum, rice and millet to beans, ground nuts, peas, cassava, potatoes, bananas, pumpkins to mention a narrow range of foodstuffs all produced at small scale on highly fragmented land pieces.

Family setup, leadership and decision making is widely patriarchal giving women little room for community contribution and therefore little space to directly benefit from community programs, however, these same communities are highly flexible with room for tolerance of the other sex and with BOMOSA provision for gender sensitivity gender issues are now beginning to be catered for with success.

Community leadership is that of the local governance system of Local Councils from LC I (Local Council one) up to LC. V, the communities though purely rural; pay tax, follow government programmes, and fully participate in the democratic process of voting for leaders.

Busoga High SS which was in earlier days called Kamuli High a name that still stands alongside the new one (Busoga High SS) is a Government sponsored secondary/high school located about three (3Km) kilometres from Kamuli town centre. The school to the west of Kamuli town centre has a population of about 700 students and up to 60 teachers that occupy the campus on daily basis. The school is headed by a Head teacher/Head Master Mr. Charles Kaziba supported by Deputy Head teachers, Heads of Departments, Class masters, class teachers, the prefects' body and the students' representative body. BOMOSA at Kamuli High SS is under the BOMOSA club of the school with about 60 student members under the patronage of three teachers out of the 13 that make the teachers' BOMOSA club.

Kamuli High SS has already submitted a concept to the Department of Fisheries resources Uganda requesting for support to expand their project to which answer has not been given, but with plans by the ministry to popularize the project Kamuli High will be one of the forehand beneficiaries. Kamuli High was also promised 100 metres of cage material by Prof. on his visit to the sites (early September) to reach them before December 2008 and this has made them even more hard working.

2.2 Sample design

The survey followed random sampling of a total of sixty (60) respondents to an interview guide with questions delving into potential social, cultural and ethical issues that could hinder or in any way influence BOMOSA adoption and success while evaluating acceptance levels based on a number of variables as will be discussed in the later sections. Twenty (20) respondents were randomly chosen from each of the three BOMOSA sites namely; Ndolwa, Kasolwe and Busoga High SS.

2.3 Data collection

An interview schedule combining issues of ethical considerations and social acceptance was used to gather data triangulated by informal discussions with community members and plot committees and observation especially when it came to social acceptance.

3 RESULTS AND DISCUSSION

The survey delving into ethical issues and social acceptance of the BOMOSA cage fish farming project Ndolwa, Kasolwe and Kamuli High project took the following as key indicators to testing ethical issues and social acceptance. The indicators are: Knowledge of the project, Participation, Innovation, Social-cultural compatibility and changes in the water resource management between the beginning of the project and the current status.

3.1 Participation in the project

Participation was rated the top indicator of social acceptability of the BOMOSA project in all the project plots of Ndolwa, Kasolwe and Kamuli High SS. It was rated on the assumption that higher participation in the different activities under the project indicates high acceptability levels of the project and vice versa.

3.2 Participation in meetings

Participation in BOMOSA community meetings acted to be a major indicator of interest in the non direct benefit project that works on the notion that communities should perfect a technology that should lead to benefits in the long run. Continued attendance and participation in the meeting therefore shows commitment and social acceptability of the project.

Table 1: Participation in meetings by plot (number and percentage)

Sites	Ndolwa		Kasolwe		Kamuli High	
	Number	%age	Number	%age	Number	%age
Always	12	60	9	45	18	90
Most times	7	35	6	30	1	5
Rarely	1	5	5	25	1	5
Total	20	100	20	100	20	100

From the Table 1 above Kamuli High school indicates that 90% of the respondents to the survey always participate in BOMOSA community meetings as compared to 5% most times and 5% rarely. While Ndolwa too has a high percentage of participation represented by 60%; Kasolwe community on the other hand has participation at 45% which is quite low, however, compared to most times 30% and rarely 25% their is clear indication that a larger percentage of community members actually participate in BOMOSA community meetings. Table 2 below shows that 65% of community members participate in BOMOSA community meetings, which confirms that BOMOSA project is a socially acceptable project given the high community participation.

Table 2: Participation in meetings total

Level of participation	Number	Percentage (%)
Always	39	65
Most times	14	23.3
Rarely	7	11.7
Total	60	100

3.3 Innovation by the communities

3.3.1 Initiatives to visit other fish farmers

Kamuli High school has reported to have taken visits to several fish farms to learn more about fish farming on top of purchases of safety gear for students who feed the fish on daily basis. Such innovations by the current BOMOSA project plots are an indication of acceptability of the project by the participating communities.

3.3.2 Initiatives to write proposals for more cages

Both Kamuli High school and Ndolwa plot communities have expressed their need to expand and produce more cage fish by calling on the Department of Fisheries to support them in expanding the current structures. Kasolwe on the other hand is repeatedly calling for replacement of their project. These are all indications of community acceptance of the project and absence of ethical issues that hinder project success.

3.3.3 Initiatives to produce BOMOSA Drama

Ndolwa, Kasolwe and Kamuli High communities have all come up with Music Dance and Drama appreciation of the BOMOSA project that serves as a major indicator of acceptability to the project. The MDD preparations came as a preparation for visiting Government officials to appeal to them for more funding and support to expand the project on the current water sources so as to have more fish produced at these waters. Community appreciation and replication of projects is a key indicator in accepting such projects.

3.4 Knowledge of the project

Knowledge of BOMOSA project by community members was ranked as one of the key indicators of social acceptability by the communities around the BOMOSA plots. The knowledge of the project is assumed to be an indicator of interest since it is common that people only get full knowledge of community activities where they have keen interest which also indicates acceptability. Good knowledge is also a major indication of willingness to adopt and replicate while good knowledge also plays a major role in information dissemination.

Table 3: Numbers and percentages of knowledge about BOMOSA by plot site

Sites	Ndolwa		Kasolwe		Kamuli High	
	Number	%age	Number	%age	Number	%age
Good knowledge	19	95	17	85	14	70
Partial Knowledge	0	00	1	5	3	15
Don't know	1	5	2	10	3	15
Total	20	100	20	100	20	100

As indicated in Table 3 above, Ndolwa community has the biggest number of members with good knowledge of the BOMOSA project owing to the length of time the project has been held in this community. The difference in this percentage with that of Kasolwe and Kamuli High confirms that over time the community members at Ndolwa have come to appreciate the project and thus accept it; on the other hand Kamuli High has a surprisingly high number of non participating community members with good knowledge of the project represented by 70% (given that the respondents were randomly chosen out of the school circles to evaluate the project influence on the school neighborhood). No wonder there is increased requests from the communities for more cages and pier systems.

Table 4: Total number and percentage of knowledge about BOMOSA project

Level of knowledge	Number	Percentage (%)
Good knowledge	50	83.3
Partial knowledge	4	6.7
Don't know	6	10
Total	60	100

On the whole 83.3% as seen in Table 4 represents good knowledge of the project and thus a major indicator of community keen interest and acceptability to the project.

3.5 Social-cultural compatibility with the communities' settings

It was imperative that communities were directly asked for their opinions and knowledge of any social-cultural and or ethical inhibitions to adoption BOMOSA project, to which none 00% of the respondents mentioned a single inhibition while 21.7% did not have enough knowledge about their cultures and therefore did not care what culture says and 78.3% strongly believe there are no social-cultural inhibitions to the adoption and practice of BOMOSA in small and temporary water bodies in Kamuli district the results are seen in Table 5 below. These results also confirm the researcher's conclusions made through observation and informal discussions that there exist no more social-cultural or ethical inhibitions to the use of small and temporary water resources for BOMOSA cage fish farming project in Kamuli district.

Table 5: Indication of social-cultural or ethical hindrances to BOMOSA project by plot

Socio-cultural hindrances	Number	Percentage (%)
Yes	00	00
Don't know	13	21.7
No	47	78.3
Total	60	100

3.6 Changes in water resource management

Another indicator of social acceptability of the project was the changing water resource management and care at all the three BOMOSA plots. At project initiation all the three water dams/reservoirs were almost to ruins with huge bushes around them and relatively low fishing activity at all of them (Ndolwa, Kasolwe and Kamuli High water reservoirs). Over project time however, there is a tremendous difference in appearance between the beginning and present state at all the sites. Plot committees and volunteering community members have kept the sites clean and clear, there in increase in fishing activities at all the three water reservoirs and there is observation of new rules for livestock watering except for Ndolwa where there still exists direct livestock watering.

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