

# AQUACULTURE WITHOUT FRONTIERS

## PROJECT PROFORMA

### SECTION 1: Project Outline

**Project title:** AwF: Holy Women Group: Scaling-up Fish Farming to Mitigate Poverty among Smallholders in Homa Bay County of Kenya

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**Proponent's organisation** Holy Will Women Group

**Project Number** Assigned by AwF

**Country/ies** KENYA

#### Administrative Contact:

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#### Funding request (*totals for each year*)

Year 1	Year 2	Year 3	Year 4	Total
USD. 7,590	USD. 2,500	USD. 800	-	USD. 10,890

#### Funding support from contributing agencies/individuals (*totals for each year*)

Year 1	Year 2	Year 3	Year 4	Total
USD. 1,000	USD. 1,500	USD. 1,700	-	USD. 4,200

**Project Duration:** 3 years

**Proposed Start**

**Date:** 1<sup>st</sup> March 2011

**Proposed Finish**

**Date:** 30<sup>th</sup> February 2013

**Key Contacts:****Project Leader: Partner Country**

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**SECTION 2: Project Summary**

**Please summarise the following in approximately one page: Need (why the project is needed), Objectives, Methods, Outputs (what the project will deliver) and how these will be made available to farmers and benefit the rural poor.**

This project is aiming at scaling-up small-scale fish farming to mitigate poverty among smallholders in South Rachounyo District in the Homa Bay County of Kenya who, through government initiatives, have been involved in fish farming without prior training that would have enabled them engage in the activity with prerequisite skills or have a reliably reachable fish hatchery where to source certified fingerlings for stocking or restocking their ponds.

Thus the project will establish a semi-intensive *fish hatchery cum production centre* where high quality fingerlings and table size tilapia will be produced under *Happa* system (net enclosure) and in earthen ponds of 20ms x15 ms respectively. The project will also organize quarterly open field days, in collaboration with the Ministry of Fisheries, to conduct at least 800 smallholders through sequential processes of successful aquaculture, including site selection, water quality, pond construction, characteristics of certified seeds, stocking rate, feeding, predators, harvesting techniques, preservation, marketing, soil and water conservation and book-keeping.

To fully implement this project, we will require chain-link for fencing off a 5.1 acres land that we have already acquired, acquire assortments of farm tools, protect water intake point, construct 8 ( 20mx15m) earthen ponds (beside two ponds that are already in place), construct 4 concreted holding ponds, purchase a 4.5 *hps* standby water pump, acquire *Happa materials*, purchase assortments reticulation hardware, acquire mature brood stocks, buy start- up feeds, purchase training materials, put up a farm store and hire resource persons.

If implemented as proposed, smallholders in this region will farm fish while applying tested and scientifically proven practices, thereby greatly improving the nutritional standards, increasing households' incomes by over 200% and thus significantly reducing overall poverty level. The initiative is expected to progressively run for three years on budgetary implication of only USD. **15,090**, of which total commitment sought from AwF is only USD. **10,890**. However, the immediate amount sought from AwF for the activities falling in first year is only USD. **7,590**. Other project costs will be met by us, as spelt out in the project funding schedules.

## **SECTION 3: Project Justification and Methods**

### **3.1 Background and Justification**

Global demand for fresh-water fisheries products, deforestation, unsustainable fishing practices and over reliance on lake fish for income and nutrition, have contributed to the declining catches from Lake Victoria, resulting into serious food insecurity, nutritional disorders and low income among the inhabitants of this region. These situations have further accelerated poverty level to all time high in this community (the *luo*) that, from time immemorial, had solely relied on lake fish for its economic and nutritional survival.

Well aware of this fact and coupled with the national economic crunch, the Government of Kenya, through the Ministry of Fisheries recently came up with the National Economic Stimulus Program to mitigate and cushion people against resultant socio-economic effects, under which the National Aquaculture Economic Stimulus Project is premised. This national program that originally targeted 4,700 peasants and youths in 140 constituencies in Kenya through construction and stocking of earthen fish ponds has since been scaled up, due its success, to cover 20 additional constituencies in the second phase.

In Homa Bay County alone, where the project area falls, a total of 1500 earthen ponds were constructed in the first phase to benefit small holders and youths. However, like many other government development initiatives that often have dimensions on political segregation, quick expediency coupled with improper planning and poor implementation strategies, this noble initiative faces teething problems ranging from lack of effective involvement to poor dissemination of relevant skills that smallholders can apply to fully reap the benefits of the intervention. On the under hand, the program also failed to take into account where the peasants and youth could source certified fingerlings. The only reliable fish hatchery in this region, Dominion Farm that is situated over 200Kms away, is already overwhelmed by the demands from commercial farmers that have the capacity to acquire from them at fry stage.

Therefore, this project is intending to establish a fish hatchery cum production demonstration farm that will produce certified fingerlings and mature tilapia under semi- intensive fish farming. The centre will also conduct quarterly workshops that will draw attendance of at least 800 small holders in learning skills on sequential elements of semi-intensive fish rearing, including construction of earthen ponds, pond preparation, stocking, feeding, control of predators and diseases, harvesting techniques, marketing, preservation, and soil and water conservation.

### **3.2 Project Context (relationship to other activities)**

Since time immemorial, only the demands for live baits was fuelling the illegal and unscrupulous practice of fishing fingerlings of tilapia and catfish at the designated fish

breeding sites in the shorelines of Lake Victoria. However, the introduction of semi-intensive aquaculture farming among small holders has aggravated this practice to unprecedented level. This is due to the escalating demands for fingerlings to stock or restock the ponds that are continuously being constructed in this area, through government and individual initiatives. The problem is partly attributable to none availability of reliable fish farm where small holders can source certified fingerlings, and partly due to lack of knowledge and skills on on-farm fingerlings can be produced.

Fortunately, this project will equally expose peasants that may be interested in venturing in on-farm production of live baits, especially the preferred catfish fingerlings. Thus if implemented, as proposed, this project will also ease pressure of fishing in the designated fish in Lake Victoria, ensure biodiversity and positively contribute towards restoring and maintaining desirable eco-system of the Lake at micro level- *as it goes, small steps combined together make a big step.*

### 3.3 Detailed Methods/Strategy (specify for each objective)

***Objective 1: To effectively strengthen the capacities of 24 members of the group with appropriate skills on semi-intensive fish farming for on-ward cascading, the same, to at least 800 small holders every year;***

Based on the already identified training need, 24 members of the group will under go 5-day on-farm training on semi-intensive fish farming through practical exposure to the construction 8 (20mx15m) ponds. The trainings will be facilitated by staff from both the Ministry of Fisheries and the Kenya Fisheries and Marine and Research Institute. The training will cover semi-intensive fish rearing including; site selection, earthen pond construction, stocking, feeding, predators and diseases, harvesting, marketing, preservation, soil and water conservation. At the end of the training workshop, participants will be able to apply **Integrated Agricultural Aquaculture (IAA)** system in farming fish and cascade the same to other 800 smallholders.

***Objective 2: To establish and maintain a semi-intensive model fish farm for training, production and demonstration on semi-intensive fish farming as a viable venture in producing adequate nutritious food and creating sustainable incomes among small holders and youth in South Rachuonyo District, beginning May 2011;***

The group will initiate collaborative partnership with the Ministry of Fisheries in establishing and maintaining a semi-intensive model fish farm for training, production and demonstration on semi-intensive fish farming as a viable venture in producing adequate nutritious food and creating sustainable incomes among peasants and youth. The Divisional Fisheries Officer or an officer assigned by him will conduct follow-up visits and provide technical back-up from time to time. However, should this proposed partnership prove bureaucratic or unworkable, the group may apply for services of a volunteer from AwF in the second phase of the project

Four (4) open field days, targeting over 800 peasants every year, will be organized at the group's fish farm on quarterly basis. The moderators to be sourced from Lake Basin Development Authority, Ministry of Fisheries and Kenya Marine and Research Institute will be involved in facilitating sessions using the **After Action Review Techniques (AART)** that will allow for structured discussions to enable the peasants and the youth to learn from activities that will have been completed. During such sessions, participants will be encouraged to ask questions like, *what happened, why it happened so, what went well, what needs improvement, what lessons can be learnt and what experiences can be shared etc.*

***Objective 3: To produce over 200,000 high quality certified fingerlings of tilapia and catfish , every quarter, to effectively satisfy demands for stocking and periodical restocking of fish ponds in the Homa Bay County in Kenya;***

### **Production of Tilapia Fingerlings:**

Tilapia fingerlings will be produced under net enclosures popularly referred to as **HAPPA**. The "Happa" (net enclosure or "bitinan") is like an inverted mosquito net which the four top corners are tied to bamboo stakes. It is made of fine meshed polyethylene netting. The seams are sewn with nylon threads and double stitched to prevent splitting. A "Happa", measuring 3 m long, 3 m wide and 1.5 m deep is the most common size used. They will be installed in 4 selected ponds, where slow moving current will be directed. The open part of the "Happa" will be two feet above the water surface.

The dimensions are based on our intention to use the Happas in earthen ponds of 20m x15m. The net enclosures will be installed in the pond directly such that fresh water from the in-flow gently passes through them. Provision will be made to ensure that the opening part of the Happas will be 60cm above the water level. Brooders weighing between 100 -200 grams will be placed in each enclosure at a ratio of 1 male to 5 female. A routine check made 12 days after stocking the brooders will reveal eggs having hatched into fry. It is anticipated that a total fry production of 450-500 per Happas will be realized.

Feeding will be done in the "Happa" daily for the presence of schooling fry. Two weeks after stocking of brooders, the fry will be scooped out and transferred to the rearing ponds. The collected fry will be fed on commercial feed at the rate of 5 percent of the total body weight.

Upon reaching desirable fingerling size, the group will carry out complete harvesting to allow the ponds that were in use to heal and recover. Excess fingerlings will be temporary kept in holding ponds as they await buyers.

### **Production of Catfish Fingerlings:**

Being a community based organization with little experience and restricted capacity of producing catfish fingerlings and low capital investment; we intend to use the cheapest and simple methodology of producing catfish fingerlings. The technology is adopted from the proceedings of a training course we participated in at Kibos fish farm in Kenya. Here we succeeded in reproducing African catfish fingerlings in semi-artificial system. This system is described here below:-

- We will construct small brood stock ponds (20 m<sup>2</sup>) where 10–20 breeders will be kept, as the male catfish from grow out ponds won't be mature until after 6 month.
- A happa of 3 m<sup>2</sup> made of mosquito netting (mesh size 1 mm, investments 500 Shilling) will be placed in a pond which is fertilized with poultry manure and ½ filled with water.
- “Ripe” females (300–500 gram) will be injected with catfish pituitary and placed together with males in the happa at a ratio of 3:1. The pituitary will be obtained from carefully selected fresh carcass of a medium sized catfish to be bought from local fish vendors at Achuna Market.
- The following day water is allowed into the pond to full capacity. This is to “cheat” the breeders that a new breeding season has arrived.

- Spawning takes place in the night after injection and the following morning the breeders will be removed from the happa and returned to the broodstock pond.
- The fertilized eggs will be left in the happa where they will hatch and after 3–4 days developed larvae from when they will be released into the rearing ponds.
- The released larvae will be raised to fingerlings following the common procedures. They will be harvested and graded after 3–4 weeks where the medium sized fingerlings will be returned to the same ponds. Harvesting and grading after 3–4 weeks will be the most critical factor.

### **Production of Table Sized Tilapia:**

The first and foremost step in producing table size tilapia will be to setting up a pond. Over here, take note of the carrying capacity of the pond. The ideal ratio is a 1 pound tilapia biomass per half cubic foot of water. In a 1000 gallon pond, you can rear 264 tilapia, each of which weighing 1 pound. Likewise, determine the pond size according to the quantity of fish you will be rearing.

### **Parameters**

As is with any type of fish farming; aquaculture of tilapia requires optimal levels of dissolved oxygen, temperature, carbon dioxide, nitrogenous compounds and so on. Natural processes are effectual for maintaining these parameters in a pond, especially when the tilapia is in the fingerling stage. As the fish grows larger, regular water exchange and aeration system are required to maintain water quality.

### **Pond Inhabitants**

We will use common pond inhabitants to serve as biological filter systems. These will include; algae, aquatic plants, zooplanktons and pond flora that together will help in converting the tilapia fish wastes into simpler substances. Thus, the water chemistry will remain in a nearly balanced state, which is tolerable by the tilapia.

### **Species**

In this area, there is only one species of tilapia that is commonly kept. This is the Nile tilapia (*O. niloticus*). This species is considered the best choice among small holder because it is easy to rear and generally likable by the local people.

### **Feeding**

Tilapia is very versatile in terms of its food. It can thrive solely on fish pellets that are sold in fish stores. But, to ensure optimal growth, we will supplementary feed them on wastes of collard, chopped water hyacinth and assortments of selected wastes from the nearby slaughter house. Generally we will ensure a stringent control over what we feed to our tilapia so that we may attain higher output.

### **Care and Maintenance**

The fish food input, population of fish and assimilative capacity of the ponds will be strictly monitored so that the quality of pond water is not negatively affected by eventual wastes that may be generated if these factors are not observed. Hence, providing correct quantities of feed shall be done in accordance with the number of tilapia stocked in each rearing pond that will all be of 20ms by 15ms. Cleaning of wastes, aeration system and water exchange shall be done every time after harvesting as thumb rules for optimal growth and high yields are maintaining water quality and ensuring good nutrition for the Tilapia.

**Objective 4: To increase average annual income of at least 824 small holders and youth that practice fish farming in South Rachuonyo District from USD 330- USD 1006 in a span of one year.**

The group will maintain an active after-sale extension back-up relationship with all small holders that will acquire their fingerlings from the farm to assist with back-stopping services that they may require, while at the same time fast-tracking their continuous fingerling needs. A comprehensive data-base on critical events, including harvesting and restocking dates will be kept by the group. Reminders on possible harvesting and restocking dates will be sent out to the small holders via *sms*. During the first three years, when the group will be receiving grants from AwF, extremely needy small holders will be identified and have their initial supply of fingerlings subsidized by the group.

### 3.4 Methods and Outputs Table

Objectives	Methods/Activity	Outputs	Timeline
To effectively strengthen the capacities of 24 members of the group with appropriate skills on semi-intensive fish farming for on-ward cascading, the same, to at least 800 small holders every year	All the 24 members of the group will be involved through learn-and-do that will cover site selection, pond construction, fish rearing, pond stocking, feeding, fish predators and diseases, harvesting, marketing, preservation, and soil and water conservation. Emphasis will be on how to apply <b>Integrated Agricultural Aquaculture (IAA)</b>	All 24 members of the group will acquire appropriate skills on semi- intensive fish farming that will enable them effectively run their small-scale fish fingerlings cum production centre in South Rachuonyo District.	2 <sup>nd</sup> week of March to 2 <sup>nd</sup> week of April 2011
To establish and maintain a semi-intensive model fish farm for training, production and demonstration on semi-intensive fish farming as viable venture in producing adequate nutritious food and creating sustainable incomes among small holders and youth in South Rachuonyo District, beginning May 2011	This activity will involve Ministry of Fisheries and Water and Irrigation in establishing a model fishing farming centre. Upon the finish of the construction, four (4) open field days, targeting over 800 peasants every year, will be organized at the farm. Moderators will use the <b>After Action Review Technique (AART)</b>	At least 800 peasants and youths will acquire appropriate practical skills on intensive- fish farming that will enable them to effectively run their small-scale fish farms in the Homa Bay County	3 <sup>rd</sup> week of April 2011 to onwards
To produce over 200,000 high quality certified fingerlings of tilapia and catfish, every quarter, to effectively satisfy demands for stocking and periodical restocking of fish ponds in the Homa Bay County in Kenya;	Fingerlings will be produced under <i>HAPPAS</i> . Under this system, the brood fish are stocked into net enclosures submerged in earthen ponds for optimum reproduction.	Over 800 fish farming peasants and youth will have readily available fingerlings of tilapia and catfish for restocking their ponds, thereby substantially scaling up fish production in the area.	2 <sup>nd</sup> week of June 2011 to onwards
To increase average annual income of at least 824 small	On-site training and on-farm follow-up with small holders	All 800 peasants and 24 members of the group	1 <sup>st</sup> week of September

holders and youth that practice fish farming in South Rachuonyo District from USD 330- USD 1006 in a span of one year.	on adoption of IAA system.	will have their income increased by over 200%, their nutritional standards improved, and poverty level within their households significantly reduced.	2011 to onwards
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### 3.5 Travel table

Person (s) or position travelling	Approximate date of travel	From / to	Purpose	Duration
Walter Owuor	June 2011	Oyugis to Sagana ( Central Province)	Experience and skill enhancement	4 days
Judith Awuor and Mercy Ondiek	September 2011	Oyugis to Mukono in Kampala (Uganda)	Leadership exposure and experience sharing	5 days
Henry Okidih	December 2012	Oyugis to Mwanza ( Tanzania)	Participation in regional workshop on Exploring Alternative Livelihoods for Fisher communities.	5days

### 3.6 Project personnel

#### (i) List of participants involved in the project

Name	Sex M/F	Agency	Position	Time in project (%)	Funded by
Mercy Ondiek	F	Holy Will Women Group	Chairperson	25%	Holy Women Group
Judith Otieno	F	Holy Will Women Group	Treasurer	25%	Holy Women Group
Rita Anyango	F	Holy Will Women Group	Project Secretary	25%	AwF
Walter Owour	M	Holy Will Women Group	Project in-charge	100%	AwF
Bob T. Adinda	M	Fisheries Department	Divisional Fisheries Officer	25%	Government of Kenya
Phillip Opiyo	M	Fisheries Department	District Fisheries Officer	10%	Government of Kenya

#### (ii) Summary details of the research capacity, skills and role of each participant and agency

Name	Skills	Role	Funded by
Mercy Ondiek ( <i>Holy Will Women Group</i> )	Community mobilization and Group management	Administering and supervising all project operations.	100% Holy Will Women Group
Judith Otieno ( <i>Holy Will Women Group</i> )	Record keeping, accounting and group management	Fast-tracking and documenting project activity outcomes	100% Holy Will Women Group



Rita Anyango ( <i>Holy Will Women Group</i> )	Computer literacy with vast experience in MS word, Excel and Access	Collecting, Documenting and compiling project data	75 % Holy Will and 25% AwF
Walter Owour ( <i>Holy Will Women Group</i> )	Water resource management with skills in irrigation, fish breeding and rearing	Ensuring day to day management of the project activities at the farm.	100% AwF
Bob T. Adinda ( <i>Ministry of Fisheries</i> )	Fisheries Extension	Periodical Facilitation and constant technical back-up.	25% AwF.
Phillip Opiyo ( <i>Ministry of Fisheries</i> )	Supervision of fisheries related activities.	Technical Supervision for prompt delivery of outputs.	100% Ministry of Fisheries

### 3.7 Communication and dissemination strategies

The executive board, through the group secretary, will document project outcomes on progression. As is the case with all our projects, we will organize a 1-day result dissemination workshop drawing the attendance of all project stakeholders at each end of annual project cycle from where we will unveil the outcomes. These annual workshops will be attended by all project stakeholders and co-partners. We will also, for the first time, create a website from where progresses on this project will be posted on ½ year basis.

### 3.8 Intellectual Property and other regulatory compliance

There is no intellectual property right or any claim that will arise in the course of or as a result of implementing this project. On the other hand, in conformity with government requirement, we have sought and obtained the approval by the Ministry of Water and Irrigation and National Environmental Management Authority (NEMA) towards the use of water from Orinde Stream from. However, these steps were taken on the assumption that the Kanyamenda springs whose water the farm rely on, that has never dried out even in extreme draught, may dry abruptly.

## SECTION 4: Project outcomes and adoption

**The purpose of this section is to identify the community benefits that might be expected from the project if its outputs are achieved.**

### 4.1 Social benefits

From time immemorial, the *Luo* ethnic community solely relied on Lake fish for their economic and nutritional well being. However, increasing demand for fresh-water fisheries products, deforestation and unsustainable fishing have all conspired in creating serious food insecurity among the inhabitants whose descendants are legendary famed to have followed river Nile from Egypt in search of this commodity before settling around Winam Gulf of Lake Victoria in East Africa. In spite of the community's lust and adoration for fish, it has become a rare and expensive food.

Hence this project, that will bring fish back to the tables, will trigger jogging of memories about rich history and heritage of this economically impoverished community. On the other hand, although the initial cost of constructing a fish pond may be high, low maintenance cost and the potentials of availing nutritious food qualify fish farming as a highly effective

migration intervention among families whose physical strength have been eroded as a result of HIV/AIDS infection. It is noteworthy that this area has the highest HIV/AIDS in the country.

#### **4.2 Economic benefits**

It is projected that within the first year, the project will positively impact on the lives of at least 824 smallholders by increasing their average incomes from UAD 330 to approximately USD 1,006 (a marked increase of almost 200%).

#### **4.3 Environmental benefits**

This project will significantly contribute in reducing the illegal practice of fishing fingerlings of tilapia and catfish at the designated fish breeding sites in Lake Victoria, where most small holders resort to obtain stocking or restocking seeds. In this way, the project will contribute in ensuring the co-balance, as well as restoring the Lake's biodiversity.

#### **4.4 Enhancement of capacity**

Small holders and youths who are already involved in or are planning to get into fish farming will have a centre where to periodically refresh their skills in small-scale semi-intensive fish farming thereby enhancing their capacities in running the enterprise, creating income and improving nutritional standards in their households.

### **SECTION 5: Budget**

#### **5.1 Requests from AwF**

<b>Item</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Total</b>
Salaries	1,800	1500	400	-	<b>3,700</b>
On-costs	300	200	-	-	<b>500</b>
Supplies & services	800	200	200	-	<b>1,200</b>
Travel	750	400	-	-	<b>1,150</b>
Capital	3,940	200	200		<b>4,340</b>
<b>Total</b>	<b>7,590</b>	<b>2,500</b>	<b>800</b>	-	<b>10,890</b>

#### **5.2 Contribution to project (fill in separate table for each contributing agency or individual)**

<b>Item</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Total</b>
Salaries	400	700	900	-	<b>2,000</b>
On-costs	100	300	400	-	<b>800</b>
Supplies & services	300	200	200	-	<b>700</b>
Travel	200	200	200	-	<b>600</b>
Capital	.	100	-	-	<b>300</b>
<b>Total</b>	<b>1,000</b>	<b>1,500</b>	<b>1,700</b>	-	<b>4,200</b>

<b>SECTION 6: Additional Documentation</b>
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- Letters of support
- Any letters confirming compliance with regulations related to transfer of animals, quarantine on plant, soil and animal movement, biosafety, etc
- Short (half-page) curricula vitae (resumes, biodata) of the key project Staff.