

AQUACULTURE WITHOUT FRONTIERS

PROJECT PROFORMA

Preliminary applications need only complete Sections 1 & 2. If a full application is requested, applications will be asked to complete all Sections

SECTION 1. Project Outline

Project title: Aquaculture for nutrition and supplementary income for the rural poor in the Sunderbans, India

Proponent's name: Dr. Nanna Roos, Dr. Shakuntala Thilsted and Ganesh Sengupta

Phone: +4535334797, +4535332497 and +62217979

Fax: + (45)3533 2079

Email: ganesh@sydfynsmaail.dk, nro@life.ku.dk, sht@life.ku.dk

Proponent's organisation: India Group Funen

Project Number: Assigned by AwF

Country/ies: Denmark

Administrative Contact:

Title and Name Mr. Biswajit Mahakur

Position Secretary

Organisation Joygopalpur Gram Vikash Kendra

Phone +91 3218 213 919/878

Fax

Email ganesh419@vsnl.net

Postal Address Village: Joygopalpur, P.O. J.N.Hat, PS: Basanti, District South 24 parganas, West Bengal, Pin: 743312, India

Street Address Same as above

Funding request (totals for each year)

Year 1	Year 2	Year 3	Year 4	Total
US\$ 6,000	US\$ 4,000			10,000

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

Year 1	Year 2	Year 3	Year 4	Total
2000	1000			3,000

Project Duration: 2 years
Proposed Start Date: 010108
Proposed Finish Date: 311209

Key Contacts:

Project Leader: Partner Country

Title and Name Mr. Ram Prasad Pramanik
Position Project leader
Organisation Joygopalpur Gram Vikash Kendra (JGVK)
Phone 9732522848
Fax
Email ganesh419@vsnl.net , mahakurb@yahoo.co.in
Postal Address Village: Joygopalpur, P.O. J.N.Hat, PS: Basanti, Dist. South 24 Parganas, Pin:32187433, West Bengal, India
Street Address Same as above

Collaborators:

Title and Name Dr. Nanna Roos, Dr. Shakuntala Thilsted
Position Associate Professor
Organisation Institute of Human Nutrition/children nutrition and International Nutrition Department of Life Science University of Copenhagen (RVAU)
Phone +(45)35332497
Fax + (45)3533 2079
Email nro@life.ku.dk
Postal Address Rolighedsvej 30, DK 1958 Frederiksberg C, Denmark
Street Address same as above

SECTION 2. Project Summary

2.1 Need

The project area belongs to the Sunderbans, the largest mangrove delta area in the world, one third of it belongs to India having an area of about 10,000 km². Half of it is inhabited by more than 4 million poor people having an annual income of less than US\$300 per family. Due to the lack of electricity there is no industry in the area and the source of production belongs to agriculture, animal husbandry and fishery. Increase in population has caused encroachment of pasture and other available land for agricultural production, which has caused tremendous set back for the animals. Due to high rate of application of chemical fertilizers, the soil quality is depleted resulting in great fall in income in agriculture in the area. Along with poverty, there is a severe protein scarcity among the inhabitants, which affects specially the women and the children.

Each household has more than one pond, nevertheless the rate of fish production is low due to poor capacity of the farmers and lack of supply of good quality fingerlings. There is a high demand of fish in the local market of Calcutta. Fish being an appropriate source of protein in the local area, fishery possesses a high potential for development, which can be related to the existing ponds in the area. Joygopalpur Gram Vikash Kendra (JGVK) is an NGO devoted to support and promote rural development in Sunderbans, one of the poorest regions of India. The project area is burdened by poverty, child malnutrition and lack of education. The activities of JGVK are aimed at alleviating poverty on household- and community level, and includes agriculture, animal husbandry, fishery, education, home industry, health etc.

In 2006, JGVK initiated a small experimental aquaculture programme in collaboration with researchers from Bangladesh Agriculture University, Bangladesh and University of Copenhagen, Denmark¹. The activities were a sub-component of a research project in Bangladesh aimed to develop and disseminate a rural aquaculture technology of integrated pond polyculture of carp species (silver carp, Catla, mrigal, rui), prawn and a small indigenous fish species, mola (*Amblypharyngodon mola*). Mola has a very high content of important nutrients such as vitamin A, calcium and iron, and the integrated production can therefore provide income as well as a nutritious complement to the household diets².

The experimental trial was very successful and proved that a great but underutilised potential for increased pond polyculture exist in the project area. The average production in 30 ponds was appr. 2 t/ha of which prawn contributed 10% and mola 10%. The homestead ponds are very suitable for semi-intensive pond polyculture, and JGVK participants of poor rural farmers were highly motivated to continue to develop aquaculture as a highly profitable production which at the same time contribute importantly to improve the local food supply. The research team from BAU contributed important to training of JGVK staff in basic pond management and in monitoring the production performance. The result of the experimental introduction of the integrated carp-mola culture was that production technology (species combination, stocking density, management practises) was highly appropriate for the area and the available resources, and the fish production was satisfactory with regard to survival. However, it was concluded that a major constraint for improving the total productivity was availability of carp fingerlings of high quality as it was noted that the growth of all carp species was below the expected growth rates compared to similar production conditions in Bangladesh. The available fingerlings were apparently of poor physical and/or genertic quality.

To continue and expand small-scale integrated pond polyculture in the JGVK area as an integrated part of the overall aim of poverty alleviation, the following needs were identified to be crucial:

- the JGVK staff need further training in pond management in order to provide technical support to the farmers
- there is a great need for establishing a local hatchery for production of quality seeds to be provide to local fingerling producers.

2.2 Objectives

¹ Research and capacity building project: "The role of fish on food and nutrition security in developing countries: focus on combating micronutrient deficiency". Supported by Danida, Denmark. Project manager: Dr. Nanna Roos, Dep. Human Nutrition, UC, Denmark. Recent relevant publications by project partners:

Roos N, Wahab MA, Hossain MSAR, Thilsted SH (2007). Linking human nutrition and fisheries: incorporating micronutrient dense, small indigenous fish species in carp polyculture production in Bangladesh. Food and Nutrition Bulletin, 28(2):280-94

Roos N, Wahab M, Chamnan C, Thilsted SH (2007). The role of fish in food-based strategies to combat vitamin A and mineral deficiencies in developing countries. Journal of Nutrition; 137:1106-9

² Roos N, Islam MdM, Thilsted SH (2003). Small fish is an important dietary source of vitamin A and calcium in rural Bangladesh. International Journal of Food Sciences and Nutrition; 54:329-39

The overall objective of the project applied to be supported is to alleviate poverty in the project area through expanded aquaculture production among poor farmers. To reach this overall aim the specific objectives are defined:

- i. To improve the capacity of 10 JGVK staff and 100 beneficiaries (poor farmers) for optimising the pond management of semi-intensive integrated carp-mola ponds to reach a production of 3-4 t/ha.
- ii. To establish a small local hatchery to secure local availability of quality carp fingerlings
- iii. Secure supply of fingerlings to the local consumers through a number of local fish farmers.

2.3 Methods (summary for each objective)

The method is derived from the past years experience with fishery in the area.

a) Month 1-3: The villages are identified as project area. The project will be started by signing an MoU between IGF and JGVK. After selection of a project steering committee the project staffs are selected for appointment. Detailed discussion and finalisation of the project content and its implementation is attained. A kick-off meeting/workshop will be organized in the site involving project steering committee members and others (hereunder KVL and BAU) to be involved in the project team in order to further discuss and prepare specific plans for the activities.

b) Month 2-6:

- The project staffs are trained in skill development, aquaculture management & servicing.
- Awareness activities are undertaken in the project area in hygienic habits and intake of nutrients and vitamins, hereunder protein and mola as source of vitamin A.
- The inhabitants are organised in 10-12 SHG's
- The 100 beneficiaries are selected, 70 for fish farming & 30 for hatchery ponds
- Training of the beneficiaries with basic capacity building in group dynamics and trained in small scale aquaculture as well as raising of fish juveniles in their nursery ponds
- The brooder ponds are selected along with acquiring of the brooder fishes
- Construction of the hatchery
- Fish farming manuals (at least 100) are produced in local language, which will be for the distribution to the families selected for training

c) Month 6-12:

The Project Team will provide training on farming fish together with vegetables on the dyke. Each farmer will receive a copy of the manual and training on the following:

- methods of construction of pond and vegetable garden
- Initiation of the hatchery application and production of fish juveniles
- stocking and taking care of fish e.g. feeding
- knowledge on how the fish ponds and vegetable garden can be managed together by recycling the nutrients within the system
- keeping the records of inputs, outputs, food intake and of other related indicators

Production and distribution of fish juveniles is undertaken to the nursery farmers growing fish fries for supplying to the farmers for growing.

Introduce an idea of nutrient re-cycling avoiding external inputs in which fish are fed with kitchen wastes and farm by-products, and pond-water is fertilized using animal manure to grow natural food for fish and to irrigate vegetables

Supply fish fries to the beneficiaries and the outer area to grow them in their ponds along with supervision by the project staffs.

Production of the fish and the vegetables along with consumption and selling of the surplus products.

d) Month 13-20: During this phase, main focus will be the continued support on construction, & renovation of the ponds with vegetable garden. The farmers will receive continuous assistance on the management, supplementary training, eventually formation of sales groups etc. The farmers can undertake partial harvest for home consumption or sell continually after stocking according to the instructions. Data collection and monitoring of the activities will be undertaken. Increase women's participation in social activities

e) Month 21-24: Farmers start final fish harvest in groups rotationally. Support by the local staff continues along with monitoring of the activity and keeping of the records. All the data from their log-books will be collected and compiled in a computer. Stakeholders' meeting/workshop will be organized and pre-reports will be presented. Final report will be prepared and submit to the AwF and other concerned authorities

2.4 Outputs (specify for each objective)

Month 1-5:

- Together with experts from BAU and India finalisation of the hatchery programme.
- Broodery ponds are made ready along with selection and insertion of the brooding fish in the ponds.
- Construction of the hatchery along with the necessary preparation for its running. and production is running.
- Preparing of the nursery beneficiaries to prepare their ponds, receive juveniles and grow them.

Month 6-12.

- Production of the various fish juveniles in the hatchery with support from experts from BAU and India.
- The juveniles are supplied to the nursery beneficiary farmers
- The activities are monitored with proper guidance and data collection.
- The fries are supplied to the beneficiaries.

Month 13-24.

- Meetings are hold with the beneficiaries along with analysis of the attained results and hear the suggestions from them.
- Analysis of the programme is undertaken along with necessary adjustments and alternations involving the brooding fishes, brooder ponds, running of the hatchery, increased capacity of the project staffs, new market situation along with the demand from the beneficiaries and the oute world.
- Continuation of the adjusted activities from the previous year.
- Reporting to AwF.

2.5 Benefits

In addition to receiving animal protein and vitamins for the rural households, the proposed project would encourage the beneficiaries to get involved in social activities for its improvement. The infrastructure at JGVK will support maintaining the increased capacity, production, income etc. along with further improvement in the project area and the outer world. The small-scale fish farming integrated with vegetable production through dyke farming is introduced in the project area. The idea has shown to be very successful in Bangladesh having very similar geographical conditions to that of in the Sunderbans. Nutrient recycling system is introduced in the area avoiding the need of external inputs. Fish are fed with kitchen wastes and farm by-products. Pond water is fertilized using goat/chicken/cow manure to grow planktons which serve as natural food for fish. Ponds serve as storage for fertile water which can be used to irrigate the vegetables grown on the dyke or nearby the land, and the vegetable leaves/stumps/peels can be used as inputs for fish ponds. Once ponds are constructed and increased production of fish is attained, it may be maintained with limited efforts. Women organised in groups can take part in social and economical activities through social and economical activities. Families can catch few fish for

family consumption or for sale at any time and any day. This increases the amount and frequency of animal protein intake in their regular diets. Fish has often been considered “Living Cash” and pond as “Saving Bank” because women can catch their fish any time they want and sale whenever they need cash, especially to cover expenses for festivals (e.g. buy new clothes) and child education.

The aquaculture pilot project that JGVK had undertaken last year with support from KVL, BAU and IGF had shown tremendous good results with the beneficiaries with simple means. In this project the fish fries were brought from outside hatcheries resulting in great difficulties and loss. This is why construction of a hatchery was observed to be inevitable. The present application looks to be the beginning of an effort that may render tremendous change in the area in a few years. In this connection the results consisting of the built up infrastructure, the beneficiaries may be used as demonstration to the outside world. Application of the results to extend the activities to the outer world is already planned for the future programme to support the large rural poor.

SECTION 3. Project Justification and Methods

3.1 Background and Justification

The project is situated in Sunderbans in West Bengal in India. The area is a part of the Ganges-Brahmaputra delta and consists largely of Mangrove forest and arable land, where people grow rice as the main crop. Fishing and livestock keeping are other activities from where people make a living. The population belongs to the world's poorest with an annual income of less than US\$ 300 per family. The local government has declared Sunderbans among the 6 environmentally most important and stressed areas in West Bengal.

Men and women take part in all activities. However, women carry out most of the work. In order to promote a development process in the community, a local NGO by name Joygopalpur Gram Vikash Kendra (JGVK) started its efforts about 8 years ago by organising the women in self help groups (SHG) and work with them to promote development through their increased awareness. This has led to improved social conditions for the women both in their families through reduced violence on them and increases rights etc. The efforts have quickly involved the children, other members of the family resulting in different activities in education, income generation, health, environment etc.

Fish is a very good source of protein and nutrients, and all the households possess at least one pond, but the production in the ponds are very low, the local people believe that it is due to the environment. A little more than a year ago KVL in Denmark and BAU in Bangladesh, undertook a pilot project in Basanti island in the Sunderbans in collaboration with JGVK where trial with growing fish was undertaken with 33 farmers having ponds with fingerlings imported from hatcheries at far away distance. The results were overwhelmingly good, by which the beneficiaries could understand that with proper care fish can be grown with a high rate of production. Simultaneously a large portion of the juveniles were lost during the transport. This had also shown great need of building up of local production facilities of juveniles, a very typical scenario in the region, where the rural areas are seen to be devoid of centers having potential for development. The results are published at the 8th Asian Fishery Forum³. In order to profit from the abovementioned results, continued efforts are necessary to give the results a shape by which the steady production of fish can be established and sustained for the local poor, which the proposed project is considered to cooperate with.

Justification for building up of a hatchery:

One of the main conclusions of the already completed project activities (2006-2007) was that a major constraint for improving the carp productivity was local access to high quality fingerlings. This conclusion was based on the experience of the involved farmers and confirmed by the BAU researchers who consulted and monitored the production trial in 30 ponds.

A survey on the reason for the poor quality of the carps was performed by BAU researchers and IGF staffs to identify the bottlenecks for getting access to high-quality fingerlings. They found that suppliers carried fingerlings over a distance of 250-300 km, where the nearest hatcheries are situated (at Bolagarh in Hoogly district and Ramnagar in Bankura). In the eastern Sunderbans, about 2.5 million people live in an area of 2.500 sq. km, where there is no hatchery.

The transport facilities were poor and the fingerlings were exposed to low oxygen as well as hard physical handlings before reaching the project site. As a result of this the fingerlings receive severe injuries and most of them die after they are released in the ponds.

In addition, the genetics of the available fingerling was clearly of poor quality, as the growth performance was below the expected level. Apparently, the hatcheries supplying the fingerlings do not have a systematic breeding programme. They tend to use small fish and fail to ensure a good genetic material for fast growth in their brood stocks. Therefore the BAU and KVL researchers concluded that a major constraint for improving the production performance, and hereby the profitability, of the fish ponds, was the lack of local availability of quality fingerlings. IGF concluded that this could not be obtained through the existing supply system, and therefore recommended setting up of a hatchery in the Sunderbans.

3.2 Project Context (relationship to other activities)

The vision of JGVK is to build up a strong society having a standard of living possessed by the basic elements of livelihood in the poverty stricken and environmentally important area of Sunderbans. The women make the foundation of the families that constitute the brick stones of the society, thus improvement efforts through the women will automatically reach the families. The mission of JGVK is to secure sustained development on a holistic basis, projected through the women beneficiaries that constitute the central part of the intervention and initiation of all the activities. The generated intervention is process based, where the efforts were initiated by organising the women in SHG's, hold together through a bank account. When the women were organised and became aware of their problems, they were eager to improve their conditions through capacity, building and economical

³ Kunda M, Mahakur B, Sengupta G, Wahab MA, Roos N, Thilsted SH (2007). Introduction of small indigenous fish species Mola (*Amblypharyngodon mola*) in pond aquaculture with carps and prawn in the Sunderbans region, India. 8th Asian Fisheries Forum, November 20-23, 2007, Kochi, India, Book of abstracts, PEO 007:134

development. With the small savings in their accounts they were able to free them from the moneylenders they were dependent on during their adverse periods and earned respect among their family members and the society as well.

With the changed situation the women demanded improvement in their economical situation when income generation activities were undertaken along with micro credit. Then demand was made for education of their children as well as for themselves, subsequently for health programme etc. In connection with these demands capacity building as well as advocacy activities were initiated as a means to work with the projects as well as sustainability. This is how by initiating a dynamic development process at the grass root level, a number of different but interrelated activities were initiated to attain a desired holistic development.

JGVK now undertakes various activities ranging from animal husbandry, organic agriculture, health, capacity building on participatory basis, education, vocational training and home industry production, drinking water, sanitation, environmental programme etc. The applied fishery project supports the health project with nutrition supply to the local society, supports the families with increased capacity and economical upliftment, supports the agriculture through mixed cultivation, supports social upliftment by creating a number of jobs and entrepreneur activities, social support to the families by providing economical equality between the men and women, providing educational security for the children, environmental security by realising the pressure on the local ecology by reducing the open water fishery etc.

3.3 Detailed Methods/Strategy (specify for each objective)

From the overall point of view the strategy being a consumer based local organisation JGVK in West Bengal undertaking responsibility of the technical, economical and social improvements among the local inhabitants in the area they live in and work daily. The extended support with the economical means from the AwF, contribute with capacity building of the local organisation along with facilities and logistics. The project strategy and the activities are organised in 5 overall areas where efforts are applied. The strategic sequence and the rationality of the areas of the efforts are: 1) Capacity building of JGVK, so it

can work with 2) building up the infrastructure and facilities at JGVK necessary to support the activities along with 3) organising, capacity and awareness building of the beneficiaries, enabling them to participated in the project for at better livelihood and are able to 4) implement the activities by utilising the abovementioned elements. To secure a successful implementation 5) application of a management and monitoring system is necessary to secure effectivity of the project.

1. Capacity building of JGVK

JGVK has a great deal of experience for development work but only for a year with fishery involving 30 beneficiaries. Thus JGVK needs capacity building of its personnel necessary to undertake planning, maintenance of fish stocking, hatchery, and servicing, monitoring etc. for proper implementation of the project. The capacity building of the JGVK personnel is undertaken with the help of fishery experts from Denmark, Bangladesh and India. A local person experienced in fresh water fishery is appointed fulltime to support the technical work.

2. Infrastructure at JGVK:

Together with the technical expertise the personnel prepares the brooding ponds, collect the brooding fishes, constructs the hatchery together with other supporting elements. Besides, the personnel select 20-30 farmers having more than one pond and train them up as nursery farmers to rear the fish juveniles into fingerlings before selling to the beneficiaries.

3. Capacity building of the beneficiaries:

With the help of its infrastructure consisting of the SHGs, village committees, the personnel selects about 70 poor farmer beneficiaries affiliated with JGVK and organise them to work together in fishery groups. They are also trained to prepare their ponds, receive the fish fries; look after them with proper care etc.

4. In due course the production of carp juveniles is set in with the and raised them to the fry stage, and distributed to the nursery ponds kept ready, while the beneficiaries are prepared with their ponds to receive the fingerlings. Subsequently the fingerlings are distributed to the beneficiaries who are kept under supervision till the fishes are big enough for harvesting.

5. The personnel undertake monitoring of the activities with regular visits to the beneficiaries and support them with supervision and data collection in the formats delivered beforehand. During the end of the season review is undertaken to access the results attained so far, review and evaluation of the activities and prepare for the next year to continue the same cycle once again with necessary modification.

3.4 Methods and Outputs Table

Objectives	Methods/Activity	Outputs	Timeline
Capacity building	Organisation and capacity building of the personnel, nursery farmers & beneficiaries	Capacity building of:70 beneficiaries for fishery in their own ponds, 20-30 nursery farmers	Jan-Apr 08 Jan-Mar 09 April 08
Preparation & production of juveniles	Chinese system	About 200 kg of juveniles will be produced	Apr-Jul 08. Apr-Jul 09.
Production and distribution of the fish fries along with monitoring	A big part of the juveniles are sold to the nursery farmers, who supply the small fish programme	1000 kg fries with the nursery farmers 10 tons of fish from the ponds and 15 tonne of vegetables with the beneficiaries.	May-Dec 08 May-Dec 09

3.5 **Travel table**

Person(s) or position travelling	Approximate date of travel	From / to	Purpose	Duration
The project staffs	Regularly	In the project area	Project activities	up to a day
The project staffs and some organisational leaders	Regularly	The project area to Kolkata, other relevant areas	Project related activities	up to several days
The project staffs	Periodically	Basanti to outside	business	More than a day

3.6 **Project personnel**

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

Name	Sex M/F	Agency	Position	Time in project (%)	Funded by
Ramprashad Pramanik	M	JGVK	Coordinator	100	Project
Uma Kanta Gayen	M	JGVK	Field Worker	100	Project
Prasad Mondol	M	JGVK	Field Worker	100	Project
Tajjul Laskar	M	JGVK	Field Worker	100	Project
Pradeep Patra	M	JGVK	Trainer/expert	100	Project
Shankar Maity	M	JGVK	Field Worker	100	Project

Supplementary information of the project personnel:

Name	Designation/qualification	Job specification
Mr. Ramprasad Pramanik	Overall responsible person Received training from experts from Bangladesh and attended FFS sessions	Planning, looking after the proper implementation of the activities, writing of the reports, cooperate with the people with expertise in fishery.
Mr. Pradeep Patra	In charge of the hatchery Experienced with 10 years of practical work	Collection and maintenance of the brooder fishes, selection and looking after the nursery ponds, training up of the nursery farmers,
Mr. Prasad Mondol	Field workers for 2 villages FFS trained	Organising SHG and fishery groups and looking after them, selection of nursery ponds with the village committees, looking after the receiving and paying back of the loans, testing the water in the ponds, visiting the farmers regularly and helping them with solving their problems
Mr. Tajrul Sheikh	Same as above	Same as above
Mr. Shankar Mondol	Same as above	Same as above
Mr. Umakanta Gayen	Same as above	Besides the above jobs, he will be responsible for collection of data, keeping of the accounts, daily contact with the office and exchange of information.

These persons will be involved in the project full time. As the project is an integrated part of the organisation JGVK, various persons will be involved when necessary. In connection with training some efficient trainers may be involved: the leader of the organisation Biswajit Mahakur is one of them, some resource persons may be involved like Dr. Das from a local Government fishery research centre. The involvement will be periodical. The in charge of the hatchery Mr. Pradeep Patra will undertake regular training of the different farmers.

Roles and responsibilities of the partner agencies:

This project build directly on the results from a research project conducted by KVL and BAU in close collaboration with IGF. The contribution for the researchers from BAU will be on direct consultations about technical issues, in continuation of already completed activities. The staffs at IGF and BAU have developed very good collaborative relations, and consultations can be conducted through visits as well as long-distance by e-mails and telephone consultations. BAU is a cornerstone for the already successful implementations of aquaculture in the project site. The KVL researchers will primarily contribute to 1) further fundraising initiatives, and 2) to ensure that the results from the project are reported internationally as a very important example on how improved low-technological aquaculture systems can be implemented to benefiting both economical and nutritional development in rural settings in developing countries.

The contributions from BAU and KVL are based on “good-will” as all the funds applied for are allocated to field activities and training of the directly involved staffs. The BAU and KVL researchers have long-term commitments to the field of developing and implementing sustainable aquaculture in the region. The e-mail addresses are given above.

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

JGVK is the implementing organisation. The research capacity belongs to KVL (with participation of Nanna Roos and Shakuntala Thilsted) and BAU (Dr. Wahab and his assistants). These two institutions will guide the research part of the programme with fixation of the activities and data collection formats likewise during the pilot phase, completed last year.

3.7 Communication and dissemination strategies

The dissemination strategy is explained above, the communication strategy between the participating agencies like JGVK, IGF, KVL, BAU will be undertaken through e-mail. Participation of the local Government and Inland Fishery Research Centre will take place through some visits of its staff with proper expertise. As the project has a very strong anchorage to the local area, the activities is expected to continue to support the beneficiaries demand. The trained personnel will look after the hatchery and the other involved units. The beneficiaries will receive continued service from JGVK, so secure sustaining of the initiated activities as well as its expansion. As JGVK is a consumer based local organisation, its level of commitment is very high.

3.8 Intellectual Property and other regulatory compliance

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 the expected output, the involved beneficiaries will be socially benefited from improved health condition in general caused by the protein/nutrient supply and the women specially pregnant/mothers will be benefited as lack of protein affluence affects the women most. This improved health condition will cause improved social equality for the women in the families and in the society, through their organisation units like SHGs, VCs etc.

4.2 Economic benefits

Due to low productivity and depleting productivity in agriculture the poor families has been affected very hard in the Sunderbans. There is a great need of improving their livelihood through increased production. Most of the families with a small homestead has at least one pond, which at present bears very low productivity. As fish is a very good source of protein and bears high price in the market, with the ponds that already exist, the possibility of economical benefit is very high.

4.3 Environmental benefits

Due to destruction of the local fish habitats and intensive harvesting of the mother fish, a number of fish species has already become extinct. With secured production of the fish in confinement in the ponds, there will a great deal of release of pressure on the local area, where there will be space for regeneration of the environment.

4.4 Enhancement of capacity

A very important part of the project is increasing capacity both for the organisation JGVK as well as for the farmers living in the area. This will have an inspiring effect to the others for improving their productivity through improved capacity too.

4.5 Continuation of the activities after AwF withdraws its support:

Our initial plan is to supply a few thousand farmers to start with. But soon after we will have to increase the production to reach the huge numbers, which implies increasing the capacity of the hatchery. This will be done in collaboration with the support we have from the fishery experts from Bangladesh and India. The cost of it will be met from the profit that will be kept from the increased production in the ponds.

There is very little profit with paddy cultivation, so the Government is encouraging the local people to cultivate fish and helping them to excavate their ponds, a part of the water could also be used for irrigation. We are encouraged by the Government to work with these farmers to increase their fish production, which we have received capacity and experience in collaboration with the KVL (Royal Veterinary Agriculture University) in Denmark and BAU in Bangladesh. We are preparing to undertake experiments with paddy cum fish cultivation to demonstrate the local farmers, which is profitable and which will improve the rate of income of the poor farmers and supply of nutrition as well. Therefore there are many scopes of fishery in the near and distant future.

SECTION 5: Budget

5.1 Request from AwF

Sl.no	Item	Year 1 US\$	Year 2 US\$	Total
	Investment			
1	Hatchery	2,000	104	2140
2	Generator	468		468
3	Various net & utensils for fishermen groups	550	145	695
	Activities			
4	Group formation and training	300	39	339
5	Pond preparation 50 ponds	409		409
6	Brooder fish purchase 200 kg	450	88	538
7	Medicine	75	19	94
	Local staff			
8	1 Hatchery technician	600	522	1,122
9	5 field staff 24 months	2,000	1,928	3,928
	Local administration			
10	Transport	140		140
11	Data keeping, postage, administration etc.	164		164
	Total	7,156	2,844	10,000

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

The applied project is sought co-finances by IGF

Sl.no	Item	Year 1 US\$	Year 2 US\$	Total US\$
	Investment			
1	Hatchery	585		
2	Generator			
3	Various net & utensils for fishermen groups			
	Activities	31	250	281
4	Group formation and training	51	300	351
5	Pond preparation 50 ponds	168	300	468
6	Brooder fish purchase 200 kg	20	50	70
7	Medicine			
	Local staff			
8	1 Hatchery technician	120	114	234
9	5 field staff 24 months	221	200	421
	Local administration			

10	Transport	151	200	351
11	Data keeping, postage, administration etc.	101	140	241
	Total	1,448	1,552	3,000

SECTION 6: Additional Documentation

- 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