8. FISHERIES DEPARTMENT

8.1. Introduction

The **Pennaiyar upto Krishnagiri** sub basin is spread over in Krishnagiri District. There are 6 irrigation tanks in the sub basin and are under the control of Public Works Department (WRO). All are non-system tanks, receiving water during North-East monsoon (October to December) and the water retention period varies from 3-6 months during normal rains. Since the water retention period is very much limited, any water surplus after irrigation could not be expected. As per the existing scenario, the scope for fisheries development activities in this sub basin is limited. Under IAMWARM project, improvement of water retention period is expected through renovation and restoration, provision of dead storage etc., in the irrigation tanks and also by water conservation measures. Therefore, the opportunity for fish culture in these irrigation tanks of this sub basin is also likely to improve. There are two reservoirs in the Sub-basin

1. Kalavarapalli reservoir, Hosur.
2. Krishnagiri reservoir, Krishnagiri

Fishery rights of these two reservoirs are with the Fisheries Department. Krishnagiri reservoir has fish seed reading farms which caters to the need of the Krishnagiri reservoir. However the Kalavarapalli reservoir depends on the fish seeds from outside the sub-basin

The development of fisheries in the sub basin will generate employment opportunities to the farmers and fishermen and increased profitability leading to the rural upliftment by enhanced inland fish production to provide protein rich fish food to the rural people.

8.2. Aquaculture in irrigation tanks by Establishing Govt. fish seed bank :

Stocking of quality fish seeds at the right time in required quantity will ensure optimum utilization of water for fish production. However the mismatch of the breeding season of Indian Major Carps with that of fish culture season in irrigation tanks of this sub basin causes sudden spurt in fish seed demand soon after the onset of North-East monsoon rains. Establishment of fish seed rearing farms to maintain seed stock helps to meet the fish seed demand at the appropriate season.

Again, the success of the operation and maintenance of the fish seed rearing farm is depending upon the availability of sufficient ground water / river water / canal water at the fish seed farm site. The location near Kalavarapalli reservoir is ideal for the establishment and successful operation of the fish seed rearing farm with the present technologies propagated in India.

Of the 6 tanks in the sub basin, 2 tanks with an effective water spread of about 41 ha and Kalavarapalli reservoir with an EWSA of 250 Ha are considered suitable for fish culture.

The fish seed demand for the water bodies identified for fisheries development is about 2.90 lakhs.

The success of fish culture and attainment of expected fish production is dependant upon the retention of water in the culture area for a minimum of 5-6 months with a minimum depth of 1 meter. The implementation of the composite fish culture technology is for optimum income and enhanced fish production. The tanks identified will be stocked with quality fish seeds viz., Catla, Rohu, Mrigal and Common Carp at the stocking density of 1000 Nos / ha. of effective water spread. The expected fish production from 2 tanks will be about

12 tonnes per annum (300 kgs / ha) and from the Kalavarapalli reservoir about 25 tonnes (100 kgs / ha). The total expected fish production will be about 37 tonnes/annum as against the present production of about 70 kgs / ha from the irrigation tanks and 40 kgs / ha from reservoir.

The fishery rights of these water bodies are now with the Government. The rights of these irrigation tanks shall be obtained by the Water Users Association, Registered/unregistered ayacutdars association or any other person as lessee and the beneficiaries after getting the fishery rights be imparted training on the technology of Composite fish culture etc.,

Under IAMWARM project, the fishery lessees of the identified irrigation tanks shall be supplied with the required fish seeds for one year to demonstrate aquaculture in irrigation tanks. The fish seed demand of the irrigation tank and Kalavarappalli reservoirs shall be met by establishing a fish seed bank. The site near Kalavarapalli is an ideal location to establish a fish seed bank. The fish seed bank will be owned and operated by the department of Fisheries. The existing technical manpower with the department will be utilized for the operation of the unit. This shall be a sustainable fish seed rearing unit which in turn will substantially enhance the fish production of the sub basin.

a. Physical:

1)	No. of tanks for fish culture	.. 2
2)	No. of reservoirs	..1
3)	EWSA covered under fish culture	.. 291ha.
4)	Estimated fish production	.. 47 tonnes / annum

b. Financial:

Establishing one unit of fish seed bank. .. Rs. 16.00 lakhs.
(including two years operational cost)

8.3. Aquaculture in farm ponds

The Agriculture Engineering Department is developing farm ponds in the fields of farmers to facilitate aquaculture, rain water harvesting and irrigating their crops during critical period. The locations have been identified jointly by Fisheries Department and Agriculture Engineering Department. The IAMWARM concept of farm pond excavation is prioritized on fish culture so as to utilize this pond as a source of additional income to the farmers.

To demonstrate the practice of fish culture in farm ponds and to encourage the farmers to adopt the technology of scientific fish culture in farm ponds, all inputs (cost of fish seed, fish feed, manures and fertilizers etc) shall be given to the farm pond beneficiaries besides training them on the technology of fish culture.

It is anticipated that about 15 farm ponds, each with 0.1 ha water spread area and with minimum of 1.5 meter depth to ensure water retention for a period of 5-6 months shall be developed in this sub basin to encourage the farmers to take up fish culture.

a. Physical:

1	No. of beneficiaries	: 15 farmers
2	Area developed for aquaculture	: 1.5 ha.
3	No. of advanced Fingerlings required	: 15,000 Nos
4	Anticipated fish production	: 9 tonnes / annum.
5	Expected revenue to the farmer at the rate of Rs. 9,500 / farm pond	: Rs. 1.36 Lakhs / annum.

b. Financial:

Cost of Input @ Rs.14, 500/- will be Rs.2.18 lakh.

8.4. Formation and maintenance of dead storage in irrigation tanks by WRO

The irrigation tanks are located sporadically in several villages and water management is an essential pre requisite for optimum utilization of this scarce resource. Maintaining dead storage in irrigation tanks as a measure of water management will benefit the villagers yielding multi utilities including successful fish culture.

1) Water availability in dead storage after completion of irrigation will benefit cattle.
2) Ground water recharging is continued.
3) Water is usable for bathing.
4) The cultured fishes can be harvested easily in prime condition.
5) Fish mortality due to high temperature / sudden drain of water can be averted.
6) Fish seed rearing can be done in irrigation tanks itself, wherever possible.

Since the tanks identified for fisheries development in this sub basin are rain fed and the water retention period varies between 3-6 months during normal rains, the provision of dead storage under PWD(WRO) component of renovation and restoration of irrigation tanks is considered necessary to facilitate fish culture activities. WRO will create dead storage in suitable tanks where ever possible.

It is suggested to excavate 1 ha. – 5 ha. extent in each of the 2 tanks with 1.5 m depth below the sill level to ensure water retention for 5-6 months, and continued to maintain this dead storage by removing silt up in the successive years.

The provision of dead storage in the identified irrigation tanks will facilitate culture fishery as self employment as against the existing capture fishery i.e., hunting the available natural fishery.

8.5 Fish Kiosk

Profitability of aquaculture like any other venture depends on the market price the produce receives. Fish being a highly perishable commodity requires proper preservation, before it reaches consumer. Fish with good preserved quality, adopting hygienic preserving technique will receive better price and good consumer preference. The proposed fish kiosk will have modern fish preservation facilities to keep the fish in prime condition. Hence with an objective to get better price and consumers' preference a modern fish kiosk is proposed to be established in the sub-basin which will support the additional inland fish production by assured marketing. This kiosk shall be owned and operated by WUA or fisherman co-operative society.

8.6 Fishing Implements

The project scenario with good quality seed materials is expected to produce about 45 tonnes of fish in the Sub basin. For harvesting this fishery effectively fishing implements shall be provided to Fishermen Co-operative Societies in the Sub basin. Five units of implements with one coracle and gill nets will be supplied for effective fishing.

8.7 IEC / Capacity Building

Capacity building of Farmers / Fishing Communities:

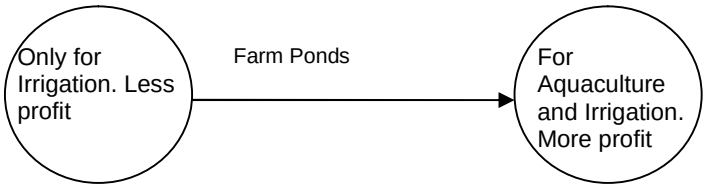
Fisheries Department in IAMWARM Project would work with farmers and Fisher Folk in the sub-basin villages. The department would also work closely with AED wherever there are feasibility for Aquaculture in Farm Ponds that are likely to retain water for more than 4 months. Fisheries Department will focus on establishing "Fish Seed Banks" that would be providing quality fish seeds.

IAMWARM Project's target groups are mainly the WUAs who are agriculturist with little knowledge on aquaculture. Hence training and capacity building on fish seed rearing, culture etc. is highly essential.

Capacity building activities will start with campaigns in favor of raising aquaculture in Farm Ponds, followed by exposure visits and then “On the spot” training programmes.

Follow-up visits at regular intervals would focus on ensuring sustainability of aquaculture activities.

Village Level, Component 1, Change Behaviour: One day awareness campaigns have been planned in sub-basin villages, where there are Farm Ponds are located that could retain water for more than 4 months, will be organized with IEC materials such as Posters and Hand Bills.



Village level, Component 2, Technical Input: On the spot trainings will be organized at Farm Pond sites only after Cluster level training programme.

25 farmers will be taken for an exposure visit to an Aquaculture Farm for exposing them to Aquaculture, fish breeding and rearing.

Cluster level, Component 2, Technical Input: 15 representatives from Aqua Farming community will be taken for an exposure visit for exposing them to the concept of “Value addition to the product” and Marketing strategies.

About 10 progressive aqua farmers will be identified and taken to Nellore district of Andhra Pradesh to acquire field knowledge on all male culture of prawn (Scampi), best management practices In freshwater aquaculture systems and health management.

The Nodal Officer and implementing Officer of Fisheries Department will have to ensure the inclusion of small and marginal farmers from marginalized communities in all their capacity building programmes. Women farmers will be identified and motivated to participate in the training programmes.

Training Matrix

	Training content	Time frame	No.of trainees	Type of CB Programme	Who will do it	Duration and Location
Component 1. Change Behaviour						
Village Level	Sensitising farmers	June to November	All Villages in the Sub-basin.	Village meeting, Campaign. IEC.	Department Officials	One day, at selected villages.
Cluster Level	Facilitating farmers to decide to have farm ponds in their fields for Aquaculture.		25 farmers.	Exposure visits		Two days, Thanjavur.
	Aquaculture, Ornamental fish culture, fish breeding and rearing	January to May	25	Exposure visit	Department Officials	One day, Sattanur.
Component 2:Technical						
	Sustainability of Aquaculture skills.	At regular intervals.	15 (Proposed) Farm Ponds.	On the Farm trainings	Department Officials	One day at respective villages.
Cluster level	Technical Knowledge on Aquaculture and Fish Seed rearing	June to December of 1st and 2nd year.	25	Training	Department Officials and Outsource technocrats.	3 to 5 days. At Krishnagiri.
	Value added products and hygienic marketing	1st year	15	Training and field visits to Ideal Marketing places.	Department Officials	Two days, Chennai.
	Fresh Water Aquaculture, emphasis for Prawn farming.	2nd Year.	12	Exposure visit	Department Officials	Three days. Nellore, AP.

Estimated Budget

	Training content	Description of the cost		Total in Rs
Village Level	Village level Campaigns and meetings.	IEC		27500
		Telecasting in Local Cable TV	15000	
		Printing of Pamphlets	5000	
		Wall paintings	5000	
		Others	2500	
Cluster Level	On the Field Trainings for Aquaculturists.	Lump-sum		25000
	Two days Exposure visit to Tanjavur to facilitate farmers to decide to have farm ponds for Aquaculture. 25 farmers	Food: 25 farmers x Rs 100 x 2 days	5000	20000
		Travel: 25 farmers x Rs 200	5000	
		Accommodation: 25 farmers x Rs 100 x 2 days.	5000	
		Incidentals: 25 farmers x Rs 200	5000	
	Exposure visit on Aquaculture, fish health management, breeding and rearing. One day for 25 farmers	Food: 25 farmers x Rs 100	2500	7500
		Travel: 25 farmers x Rs 100	2500	
		Incidentals: 25 farmers x Rs 100	2500	
	Training on Aquaculture, FishHealthmanagementand Fish Seed rearing. 3 days. 25 farmers.	Food: 25 farmers x Rs 100 x 3 days	7500	25000
		Travel: 25 farmers x Rs 100	2500	
		Accommodation: 25 farmers x Rs 50 x 3 days.	4750	
		Stationery : 25 farmers x Rs 30	750	
		Incidentals: 25 farmers x Rs 300	7500	
		Resource Persons: Rs 500 x 4	2000	
	Training and exposure visit on Value added products and hygienic marketing. 15 members. Chennai.	Food: 15 participants x Rs 100 x 2 days.	3000	15000
		Travel: 15 participants x Rs 400	6000	
		Accommodation: 15 participants x Rs 100 x 2 days.	3000	
		Incidentals: 15 participants x Rs 100 x 2 days	3000	
	Exposure visit for Progressive farmers. 12 farmers to Nellore, AP. Three days.	Food: 12 farmers x Rs 100 x 3 days.	3600	18600
		Travel: 12 farmers x Rs 500	6000	
		Incidentals: 12 farmers x Rs 300	3600	
		Accommodation: 12 farmers x Rs 150 x 3 days.	5400	
For miscellaneous expenses				1400
Total				140000

8.7.1 Fish Health Monitoring

In the fresh water aquaculture system in Tamil Nadu diseases occurrence is sporadic, especially in composite fish culture systems. However, the aquaculturist will be trained in best management practices, prevention of fish disease and diagnosis. Training on curative measures will also be imparted. Exposure visit to model farms will enrich knowledge on fish health monitoring. Besides this, the aqua farmers will be assisted by the implementing officers and by the research unit of the fisheries department located in the sub basin periodically and when necessity occurs.

8.8 Fisheries projection

Activity		Without project	With project	Increase in	
				Area (ha)	Production (tonnes)
Aquaculture in irrigation tanks :					
	Area under fish culture (in ha)	291	291	-	-
	Fish production (in tonnes)	12.9	37	-	24.10
Aquaculture in farm ponds :					
	Area (in ha)	-	1.5	1.5	-
	Fish production (in tonnes)	-	9.0	-	9.0
	Total Area (ha) Fish production(tonnes)	 12.9	 292.5 46	 1.5 -	 - 33.1

8.9 Fisheries project proposal in nutshell

a. Physical

1	Number of irrigation tanks proposed for fish culture	2
2	Number of reservoirs proposed for aquaculture.	1
3	Effective WSA for fish culture	291
4	No. of farm pond Aquaculture	15
5	Farm pond aquaculture area (Total)	1.5 ha.
6	Expected fish production / annum	46.0
7	Govt fish seed bank	1

b. Financial

Sl. No.	Components	No.	Amount (Rs. in lakhs)
1.	Aquaculture by establishing fish seed bank.	1	16.00
2.	Aquaculture in farm ponds	15	2.18
3.	Fish Kiosks	1	4.0
4.	Fishing Implements	5 unit	0.70
4.	IEC / CB		1.40
	Total		**24.28**