



3.8 FISHERIES

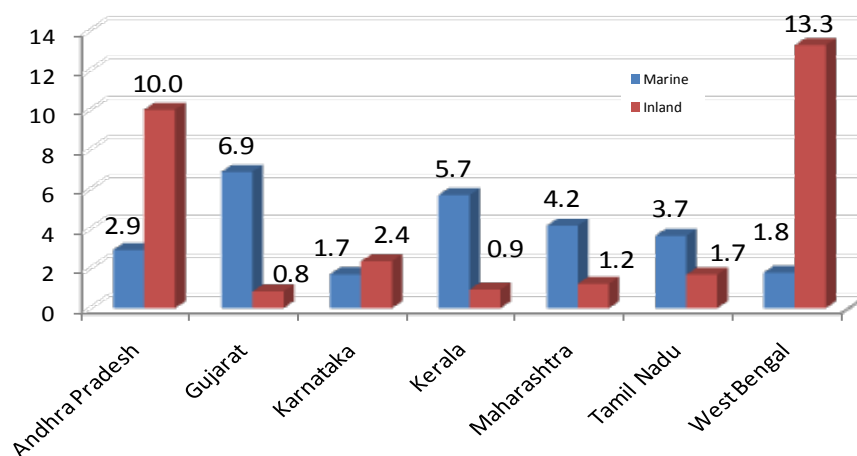
Introduction

Fisheries sector is one of the important food production sector in the State contributing to the livelihood as well as food security of a large section of the economically under-privileged population. In recent years, it has assumed greater significance and its contribution towards the State and the National economy in terms of livelihood and nutritional security, rural employment generation and foreign exchange earnings have been enormous. Fisheries include marine, freshwater and brackish water sub-sectors. The fisheries sector contributed

₹2,680 crore to the GSDP (at 2004-05 prices) during 2011-2012 in the State, which is 0.80 percent of the total GSDP. During 2011-12, the export of marine products reached 73,991 tonnes valued at ₹2,801 crore.

India is second to China in total fish production; sixth in marine fish production (after China, Peru, Indonesia, USA and Japan); third in inland capture fisheries (after China and Bangladesh) and second in aquaculture (next to China). Tamil Nadu ranked fourth in marine and sixth in inland fish production in India in 2009-10 as in Graph 3.8.1.

Graph 3.8.1: Fish Production in Major States 2009-2010 (in L.MT)



Tamil Nadu with its 1076 km of coastline, 1.90 lakh sq.km of Exclusive Economic Zone (EEZ) and a continental shelf of about 41,412 sq.km is one of the leading producers of both marine and inland fish and fish products. At present 6,728 mechanised boats and 56,792 traditional crafts (24,160 Vallams and 32,632 catamarans) are engaged in the marine fishing. The marine fish potential in Tamil Nadu is estimated at 7.00 lakh metric tonnes (L.MT.). There are 591 marine fishing villages and 363 marine

fish landing centres in the State, with a population of 9.15 lakh fishermen of which, 2.60 lakh are actively engaged in fishing. There are three major fishing harbours and three medium fishing harbours. Apart from these harbours, other infrastructure facilities like jetties, fish landing centers, cold storage, ice plants and link roads have also been created in the State.

The inland fisheries sector has about 3.73 lakh ha. of water spread area

(reservoirs, major irrigation and long seasonal tanks, short seasonal tanks and ponds). The inland fisherman population is about 2.23 lakh. About 5,000 ha. are being utilized for fresh water aquaculture. There are five fish seed production centres with an annual production potential of 402.5 million early fry and there are 33 fish seed rearing centres with capacity to produce 85 million fingerlings annually. The potential inland fish production is 4.50 L.MT. In Tamil Nadu, the total brackish water resource is 56,000 ha. of which 6019.21 ha. are actually under aquaculture production. Five Brackish Water Fish Farmers' Development Agencies (BFFDA) are functioning in the State covering all 12 coastal districts except Chennai district. 12 Fish Farmers Development Agencies (FFDA) have been established in Tamil Nadu to popularize fish culture activities and generate employment opportunities in rural areas.

Review of the Eleventh Five Year Plan

The objective of the Eleventh Five Year Plan was to increase fish production by encouraging fishermen to exploit underutilized marine fishery resources, to improve and strengthen infrastructure facilities for fish landing centres, to augment aquatic resource production in inshore areas through conservation measures, stock enhancement and establishment of artificial reefs to provide hygienic and safe fish and fish products to consumers, to uplift the socio-economic conditions of fisher folk through welfare measures and by generating employment opportunities, to continuously improve the knowledge and understanding of fisheries resources and their conservation especially to promote sustainable eco-friendly coastal aquaculture.

Physical and Financial progress

Construction of fishing harbours at Muttom and Rajakkamangalamthurai in Kanniyakumari district under Build, Operate & Transfer (BOT) system are in progress. Under Rajiv Gandhi Tsunami Rehabilitation programme (RGTRP), establishment of

ten Fish Landing Centres (FLC) at a total cost of ₹49.97 crore are in advanced stage of completion. Under Emergency Tsunami Rehabilitation Programme (ETRP), reconstruction and modernisation of Nagapattinam fishing harbour (estimated cost ₹35.65 crore) and Pazhayar fishing harbour (estimated cost ₹27.56 crore) are in progress and FLCs at Annankoil, Parangipettai taluk in Cuddalore district (estimated cost of ₹13.50 crore) and at Nagoor village in Nagapattinam district (estimated cost of ₹10.60 crore) are under progress.

Subsidy assistance has been extended to encourage private participation in fish seed production. 10 fish seed production centres with total production capacity of 100 million early fry per annum and 70 fish seed rearing centres with total capacity of 35 million fingerlings have been established in private sector.

During the Eleventh Five Year Plan period, as against the cumulative target of 18.92 L.MT. of marine fish production, the achievement made was 20.42 L.MT. During the same period, the inland fish production was 8.46 L.MT as against the target of 9.25 L.MT. As against the Eleventh Five Year Plan outlay of ₹557.70 crore, an amount of ₹543.00 crore was spent during the plan period.

Problems and Constraints

The major issues in the fisheries and aquaculture sector in Tamil Nadu are: 1). Optimization of fish yield, 2). Stock enhancement in inland and marine waters, 3). Reduction in post harvest losses to promote deep sea fishing, 4). Development of adequate support infrastructure for modern fishing, 5). Adequate processing and pack houses and 6). Monitoring and e-governance practices etc.,

Twelfth Five Year Plan Objectives

The Twelfth Five Year Plan aims at holistic development of the sector. It is now



widely acknowledged that fisheries have a major role in the supply of nutritious protein for the growing population and in accelerating the overall economy of the State. To achieve this, it is essential that both increase in production and resource sustainability would go hand-in-hand. In the Twelfth Five Year Plan, it is necessary to develop fisheries and aquaculture in upland lakes and streams, saline and water logged areas and irrigation canals. In the non-food sector, due attention is required on ornamental fisheries to generate employment in both rural and urban areas.

Strategies

Marine Fisheries

a). Exploitation of deep sea / offshore resources such as Tuna and squids optimally, b). Safety of fishermen at sea and welfare of fishermen, c). Entrepreneurship development and self employment, d). Development of institutional arrangements and legal frame works, e). Introduction of lead boat to mother vessel concept, f).

Utilizing the Potential Fishing Zone (PFZ) forecast for fishing in the predicted zones, g). Development of coastal infrastructure such as fishing harbours, h). Promotion/ development of shrimp/multi species marine fin fishes/marine ornamental fish hatcheries and i). Motorization of traditional fishing crafts.

Inland Fisheries

a). Sustainable management and development of capture and culture fisheries, b). Construction of fishing vessels and c). Reservoir fisheries development, fish culture in pens and cages, fresh water fish/ ornamental fish/ hatcheries.

General

a). Development of public aquarium and oceanarium, b). Development of wholesale fish market, fish retail outlets, value added fish products, fish processing and export, c). Fisherwomen empowerment, d). Co-

Box 3.8.1: Ornamental Fish Breeding-A Boost to the Economy

Kolathur in Thiruvallur district has ornamental fish culture specialists who breed high class ornamental fishes like Aravana, Flower horn and Oscars. There are nearly 50 people engaged in fish production of commercial species like American chichilids and African chichilids. In addition to that, there are about 100 people involved in breeding common ornamental fish varieties. Apart from the technical ornamental fish culture, allied activities like live plant and worm feed production, fabrication of tanks, glass cutting etc provide employment for more than 250 people. Thus, the initial fish culture has created a multiple effects in employment creation in the village.

Source: Department of Fisheries, GoTN





management and community involvement in fisheries management, e). Skill upgradation of fishermen for alternate employment, f). Information, Education, Communication and Capacity Building and g). Development of resource specific fishing methods.

Twelfth Five Year Plan programmes

Ongoing schemes

Being the poorest of the poor, the welfare of fishermen community in the State is of utmost importance. Thus, the welfare schemes implemented for the fishermen community during the Eleventh Five Year Plan are proposed to be continued during the Twelfth Five Year Plan also. However, changes have been proposed in some schemes to make them more beneficial and comprehensive. The components that are proposed to be continued are as follows:

Marine Fisheries

Group Accident Insurance for Active Fishermen

Under this centrally sponsored scheme (shared equally by the Centre and State), the State and Central Government will pay the total insurance premium of ₹30 per beneficiary (at ₹15 each). In case of death/permanent disablement, the fisherman will be given ₹one lakh and ₹50,000 for partial disablement. The scheme will be continued during the Twelfth Five Year Plan.

National Saving-cum-Relief scheme for Marine Fishermen

Under this Centrally sponsored scheme, the marine fisherman contributes ₹600 @ ₹70 per month as his share for the first eight months and ₹40 for the ninth month. The contribution is matched with total amount of ₹1,200 equally by the Central and State Government (i.e. ₹600 each). Thus, a sum of ₹1,800 including the fisherman

contribution is disbursed to the beneficiaries during the three lean months. The scheme will be continued during the Twelfth Five Year Plan. Similar schemes for fisherwomen are being implemented with State fund.

Special Allowance to Fishermen families during non fishing period

The welfare of fishermen is always a priority to the Government. Besides the relief assistance to marine fishermen / fisherwomen beneficiaries under saving-cum-relief-scheme during the non-fishing period, the Government extends assistance of ₹4,000 per marine fisherman as a special allowance during non-fishing period. During the Twelfth Five Year Plan, it is proposed to continue the scheme.

Box 3.8.2: Seamless Communication Network Facilities to Marine Fishermen

A pilot project 'Seamless Communication Network Facilities to Marine Fishermen' is being implemented at Ramnad district. This project provides effective communication network between fishing crafts in the sea and crafts with shore stations by simple touch of a SOS button in Very High Frequency (VHF) handheld sets. It is proposed to distribute Short Wave (SW) capacity of handheld VHF sets to traditional fishermen free of cost and 25 W capacity with GPS fixed mount marine radios for the benefit of mechanised fishing boats on subsidized rates along with towers. VHF repeaters with tracking software to assess the movement of the boats from shore and base station will be established. The scheme is to be implemented by M/s. ELCOT Ltd. Chennai.

Source: Dept. of Fisheries, GoTN



Motorisation of Traditional Crafts

Under the Centrally sponsored scheme, the State is providing subsidy assistance for the purchase of Out Board Motors (OBM) / In Board Engines (IBE), to be fitted in the traditional crafts of fishermen. Under this scheme, the fishermen will be provided with 50 percent subsidy of the unit cost with a ceiling limit of ₹30,000/- per OBM/IBE, which will be shared equally between Centre and State. The scheme will be continued during the Twelfth Five Year Plan.

Reimbursement of Central Excise Duty on High Speed Diesel (HSD)

The subsidy on Central Excise Duty on HSD is limited to ₹3 per litre with a ceiling of 500 litres per boat, per month during the active fishing months. The subsidy will be provided to the mechanised fishing vessels with overall length less than 20 metres and registered prior to the Tenth Five Year Plan period. The owners of the mechanised fishing boats should belong to BPL category. The scheme will be continued during the Twelfth Five Year Plan.

Fisheries Resource/Production Enhancement

In recent years, the fisheries wealth in inshore water is being overexploited due to excessive fishing. Apart from enforcement of 'Tamil Nadu Marine Fishing Regulation Act 1983', stock enhancement, habitat development and diversified fishing methods are some of the measures to protect the resources. The government has taken steps for development of fish habitats by setting up of artificial reefs in the inshore water as a conservation measure. 18 artificial reefs have been installed so far. The programme will be implemented by devotailing the funds under NADP, State and Central Government schemes.

New Schemes

Modernization of Existing Fishing Harbours / Fish Landing Centres and Construction of new Fishing Harbours (FH) / Fish Landing Centres (FLC)

Most of the existing FHs and FLCs provide essential facilities such as break waters, navigational channels for easy movement of fishing vessels, wharves for ideal berthing of vessels, fish landing, inputs receiving, auction and packing hall for handling and auctioning of fish. However, at present, not even one of them meets the national/international standards of hygiene and cleanliness to ensure fish quality and



Fig.3.8.1: Fish Landing Centre - Keelakarai

food safety. Constitution of management body for all the existing FHs/FLCs that are being modernized should be done on a priority basis. Apart from imparting training and creating awareness of hygiene and cleanliness among stakeholders, seed money has to be provided for operational expenses at least for the first year of operation.

In the new FHs under construction, whether designed by international or national agency, it is necessary to have a re-look at the infrastructure meant for landing and handling of fishes and on facilities provided to the Fibre Reinforced Plastic (FRP) boat



owners for ensuring hygiene and cleanliness. During the Twelfth Five Year Plan, it is proposed to modernise twelve new FLCs in seven coastal districts. A sum of ₹650 crore has been proposed which includes GoI share.

Mid Sea Fish Processing Unit with Carrier Mother Vessel

During the Twelfth Five Year Plan, it is proposed to develop mid sea fish processing units by adopting carrier mother vessel–baby vessel. The carrier mother vessel stationed at mid sea will have the facilities for fish processing and provide essential inputs for the baby vessels involved in commercial fishing in the deep sea. The Mother Vessel will also act as a 'Value Added Export Oriented Park' and ensure quality standards for export and good price to fishermen for their catch. In consultation with all stakeholders including private vessel owners and fishermen, the scheme will be implemented in PPP mode with an outlay of ₹80.00 crore.

Conversion of Mechanised Fishing Boat and Upgradation of Motorised Fishing Crafts as Tuna Liners

While the exploitation of fishery resources in the shore areas is very high resulting in uneconomical catch, the resources



Fig.3.8.2: Upgradation of Fishing Crafts

in the deep sea is largely unexploited. To have a sustainable fishery and to harvest the unexploited/ underexploited/untapped oceanic fishery resources like tuna, bill fishes, sharks and the neritic tunas like

little tuna, frigate mackerel, bullet tuna, seer fishes etc., the existing mechanized boats can be converted into tuna long liner. Under this scheme, 25 percent subsidy upto ₹5.00 lakh per fisherman is provided. An amount of ₹25.00 crore has been proposed for this purpose.

Installation of Hybrid Guide Lights in Coastal Villages

Traditional fishermen have to go long distance to catch more fishes for their livelihood. Fishermen find it difficult to reach the shore from sea by locating a shore based landmark and hence this has necessitated the provision of hybrid guide lights. Installation of guide lights in nine coastal districts by wind and solar energy replacing the conventional electrical energy is well received by the fishermen. It is proposed to continue the scheme in the Twelfth Five Year Plan.

Fisheries Management for Sustainable Livelihood (FIMSUL)

a). Promotion of Co-Management in Marine Fisheries Management

Studies revealed that Marine Fisheries

Box 3.8.3: Tamil Nadu Fishermen Welfare Board

Tamil Nadu Fishermen Welfare Board is functioning with its head office at Neelankarai, Chennai with a membership of 4.12 lakh fishermen. The Welfare Board has sanctioned Relief Assistance and settled claims worth ₹7.94 crore.

The Welfare / Relief schemes being implemented by the Tamil Nadu Fishermen Welfare Board are as follows: Relief for death during fishing or after fishing and loss of any organ; Natural death relief; Funeral expenses; Assistance for Education (this includes free higher education for children of fishermen who died during fishing); Marriage Assistance and Old age pension.

Source: Dept. of Fisheries, GoTN.



Regulation Act (MFRA) is generally not very effective for want of community participation. So, a co-management approach viz., four tier fisheries co- management platforms at village, district, regional and State level is proposed. This could be done in a phased manner, initially with selected districts, possibly with the Palk bay districts. Another landing base based co-management pilot could be at Chennai harbour and species based management system with lobster fisheries in Kanyakumari in the Twelfth Five Year Plan.

b). Rationalisation of Fishing Fleet Strength

FIMSUL has concluded that the fish catch of major species has declined or remained stagnant. The per craft fish catch has come down due to saturation of mechanised and motorised crafts in the coastal waters. There is scope for diversification to deep sea, but limited. It is important to develop a trawl fleet reduction as even a freeze of trawl fleet at the current strength is inadequate to address the problem. The catch cornered by the mechanised sector, especially, the trawlers are disproportionately high compared to the motorised and non-motorised sector where maximum fishermen are employed. In spite of this, the economic viability of trawling is not promising according to many mechanised operators. The situation is worse in the Palk bay area where there are more than 2000 trawlers, many of them are able to survive only. This brings in the need for rationalisation of fleet strength, especially, the trawlers to start with Palk bay area. It is suggested that in the Plan period, 40-50 percent of the trawlers in Palk bay could be decommissioned through the buy back scheme. Replacement if any, should be deep sea vessels to operate offshore only, and also not to replace more than 30 percent of the boats decommissioned.

c) Comprehensive Approach in Livelihood Enhancement and Diversification

The pressure on the fishery resources

and inadequacy of fishing alone to support the livelihoods of many fisher families, necessitates to either enhance the exiting fishery based livelihoods in an efficient manner or to diversify into other fishery related or non fishery related livelihoods. Instead of a direct prescription on a particular skill or technology as a solution, the intervention should go through the following process viz, recognise and build up on the existing strength of the community, capacity building, combination of technology and skill and enable them to adapt to the changing trends.

d) Improved Knowledge Management within the Department of Fisheries

The FIMSUL project has identified the need of improved knowledge management for the officials of department, improving the capacity for understanding and responding to information and programme management (e.g. in planning, management, critical thinking, facilitation etc.) at all levels and digitization of library.

Fish Processing Infrastructure

a). Sea Food Processing for export

Tamil Nadu is an important seafood processing and exporting State in the country. There are 28 modern seafood processing plants with captive pre-processing, ice production and frozen storage facilities approved for export to European Union (EU). Another nine plants have been approved for export to non-EU countries. Apart from the above, there are seven chilled fish exporting units, 11 live exporting units, one major independent cold storage (EU approved), two approved ice plants and one approved pre-processing unit (independent) in the State. The sea food exported from Tamil Nadu is mainly to USA, EU, Japan, South-East Asia, Middle East and China. Over 4000 persons including 70 percent women are directly employed in the export processing industry and over 12000 persons are indirectly



employed in the supporting /allied fields. The Marine Products Export Development Agency (MPEDA) has proposed to set up a seafood park in the Special Economic Zone (SEZ), Thoothukudi. This park would concentrate on producing and exporting value added products, primarily in the ready-to-cook and ready-to-eat categories.

b) Fish Processing Parks

To cater to the fish processing needs of the State and thereby increasing the export value as well as fulfilling the domestic need, strengthening the infrastructure facilities like cold chain, drier has been proposed and this ensure better price for the catch. The Government of Tamil Nadu has proposed to set up fish processing parks as pilot project in the coastal districts viz., Chennai, Cuddalore and Nagapattinam in PPP mode. National Fisheries Development Board (NFDB) and the Ministry of Food Processing Industries will provide assistance for this scheme.

c) Fish Drying for Export

Tamil Nadu is an important production and export centre for dried fish in the country. There are 64 approved dried fish production and exporting centres. Because of poor quality of fish used for drying and adoption of primitive methods of drying, the State is not fetching a better price compared to dried fish produced in other States. It is proposed to create adequate facilities in the FLCs for drying and to follow new scientific methods of drying including solar driers.

Inland Fisheries Stock Enhancement and Innovative Culture Methods

It is proposed to enhance inland fish production by stocking advanced fingerlings of fast growing fishes in short seasonal waterbodies, introduction of cage culture in reservoirs to increase productivity. The innovative culture such as raceway, cage

culture, pen culture, running water culture and other new culture will be developed to reap good fish production, assured returns and to provide revenue oriented employment for rural people. Establishment of brood stock bank for Indian major carps like Catla,

Box 3.8.4: Aquaculture in Farm Ponds

Thiru.Karthikeyan of Kakuppam village, Villupuram district, under TN-IAMWARM project has undertaken aquaculture in his farm pond constructed in 0.1 ha area from 2009-10. Fish fingerlings like Catla, Rohu and Mrigal were supplied to the beneficiary and adequate training on aquaculture was provided. Successful crops have been



harvested with a maximum yield of fish production at 600 kg/0.10ha and he has earned on an average ₹35,000/- per crop.

Source: Dept. of Fisheries, GoTN

Rohu and Mrigal from various sources is quite essential for the good quality of seeds to be produced.

Repair and Renovation of Government Fish Seed Farms/ Hatchery

As against the demand of 22.32 crore fish seeds for Tamil Nadu, the production capacity is only 8.50 crore in public sector and 10.70 crore by private entrepreneurs, thus, leaving a shortfall of 3.12 crore of fish seeds. To bridge the gap, the Government



fish seed farms needs to be strengthened which are now underutilised. Further, it is also proposed to repair and renovate the Government trout hatchery at Avalanche, Ooty.

Breeding of Endangered Native Fishes of Tamil Nadu

To conserve and propagate the native fishery like *Labeo fimbriatus*, *Labeo calbasu*, *Cirrhinus cirrhosa*, *Puntinus serrana*, *Clarias sp.*, *Mystus sp.*, and other endangered native species, breeding will be undertaken and seeds will be produced and stocked.

Subsidy Assistance to Fish Seed Production and Rearing

In order to minimise the gap between the demand and production of fish seeds, the fish seed production needs to be increased both by the department and private fish farms. Hence, the private entrepreneurs will be encouraged by extending 50 percent subsidy to establish fish seed production and rearing centres.

Culture of Sea Bass and Tilapia

To promote the culture of Asian sea bass *Lates calcarifer*, subsidy assistance to farmers at ₹1.50 lakh per ha will be given by covering 20 ha/year. Similarly, to promote the culture of Tilapia, subsidy to be provided at ₹1.00 lakh per ha by covering an area of 10 ha./year.

Trout

Trout fisheries of Tamil Nadu have to be revived by bringing improved strains. Hence, brood stock bank in upstream water will be stocked with good quality of broods collected from other parts of India.

Establishment of Ornamental Fish Export Hub

To promote ornamental fish export oriented business, establishment of ornamental fish trade hub with full fledged infrastructure facilities are the urgent need of the hour and would be undertaken in cities like Chennai, Madurai, Trichy and

Coimbatore which have air ports with air links to other countries.

Culture of *Litopenaeus vannamei*

Frozen shrimp is the largest export item from India in the marine sector. There is considerable potential for output to be increased in Tamil Nadu and shrimp processing is employment intensive and also tends to employ a lot of women (Vision Tamil Nadu 2023).

SPF *Litopenaeus vannamei*-the newly introduced shrimp has the potential of increased production compared to *P.monodon*. Thus, the State's shrimp production will be accelerated. In order to encourage more farmers, subsidy assistance (@ ₹1.00 lakh/ha.) is to be provided. It has been proposed to culture *Litopenaeus vannamei* in 2000 ha. (400 ha./year) in the Twelfth Five Year Plan.



Fig. 3.8.3: *Litopenaeus vannamei*

Moreover, to create additional infrastructure at Government Model Brackish water Fish Farms at Eripurakarai (Thanjavur district) and Vaniyanchavadi (Kancheepuram district) for *L. vannamei* culture, an additional outlay of ₹1.40 crore has been proposed.

Fish Farmers Development Agency (FFDA)

The existing subsidy amount is proposed to be increased (i) from ₹60000/ha. to ₹1.00 lakh/ha. for construction of new ponds (ii) from ₹10000/ha. to ₹20000/ha. for input subsidy for one year and (iii) from ₹12500/ha. to ₹25000 /ha. for reclamation / renovation of existing ponds.

Inland Capture Fisheries

Subsidy assistance for purchase of



fishing crafts, gears and fish marketing unit consisting of a two wheeler and insulated ice box has been proposed to improve the quality of fish to consumer and to increase the revenue to inland fisher folk.

Brackish water Fish Farmers Development Agency (BFFDA)

For promotion of brackish water aquaculture, the Government may take policy decision to lease out fallow, derelict coastal areas which are not suitable for agriculture or any other activity. The private entrepreneurs also need to be encouraged. Through this, an additional 5,000 ha. (1000/year) can be brought under brackish water culture. The existing subsidy amount of ₹60000/ha. has been proposed to be increased to ₹1.00 lakh/ha. for construction of new ponds. The subsidy increase is contemplated due to the cost escalation (increased cost of construction, labour, cost of seeds, feed, manure, overall maintenance etc.,) New subsidy components proposed on par with the Fish Farmers Development Agency components are : i) ₹20,000/ha. for input subsidy for one year and ii) ₹25000/ha. for reclamation / renovation of existing ponds.

Establishment of Aqua Health Clinic

It is proposed to establish one State level and three regional level state-of-art laboratories for the benefit of aqua farmers with central funding to increase the aquaculture production and export earning.

Strengthening of Staff Training Institute

At present, staff training institute is located in a rented building and it does not have adequate facilities to train staff on various aspects of fisheries. It is planned to strengthen the staff training institute similar to the Institute in Andhra Pradesh. Such facility can be utilized for training of staff, not only from the State, but also others who wish to avail the benefits. It is proposed to enhance the capacity of staff in rapidly emerging areas like climate change, mainstreaming, stock

assessment, farmer participatory research, food safety and certification, environmental monitoring, etc.,

Box 3.8.5: Fish Kiosks

Preference of consumers to visit fish markets is largely constrained by the quality of fish, maintenance and upkeep of the markets. Clean and hygienic markets will certainly attract large number of consumers, which in turn, can increase the fish sales, thereby increasing the fishermen's income. Under IAMWARM project, the concept of modern



fish vending kiosk has been contemplated and one such Fish Kiosk has been set up in Verudharnpattu Village, Vellore district. Beneficiaries from Vellore and Thiruvannamalai district fisheries cooperative federation run this fish kiosk. This modern hygienic kiosk is provided with refrigerators for fish keeping, weighing balance, attractive display boards, fish cutting area and wash area. The hygienic condition of the kiosks has paid rich dividends to the farmers wherein, 150 kg of fish per day were sold. The kiosks have attracted the consumers and are paving way for establishment of more kiosks in other areas as well.

Source: Dept. of Fisheries, GoTN



Mobile Fish Marketing Kiosks

In order to increase the fish sales and also to ensure clean and hygienic fishes to public, mobile fish marketing kiosks will be established at Chennai and other major cities of the State. These kiosks will be remedial to the problem of non-availability of lands for establishment of fish stalls in the cities.

Utilization of Fish Waste for Compost Making

The leftover parts of dead fish i.e., heads, tails, internal organs become a waste and its disposal is not properly attended to. If it is handled efficiently, it becomes an excellent organic input for farming, besides serving as an excellent source of protein in poultry feed. In general, disposing of this waste is a great problem for anyone who cleans and processes fish right from big commercial food processors to small sport-fishing operations. Composting the fish waste would be a promising solution and it is a simple method similar to the process home gardeners use to make their own soil enhancer. In the process, the microorganisms generate a great deal of heat which pasteurizes, thereby, eliminating odour and disease organisms. Hence, it is proposed to propagate the fish waste composting technology through adequate training and publicity during the Twelfth Five Year Plan.

Gender – Income Enhancement of Women SHGs.

Fisheries sector is one of the most important sectors that provide ample scope for income generation for the women SHGs. Traditionally, offshore fish related activities are performed by the women. The scope of work in this sector includes viz., solar drying of fishes, growing of seaweeds, production of value added products like fish and prawn pickles, marketing of fishes, supply of high value fishes to star hotels etc., The immediate social impact of SHGs activity will be helping them to supplement their meagre family earnings. Hence, it has been proposed to impart training on income generating

activities for SHGs in the Twelfth Five Year Plan.

Relief to post Tsunami / Thane Affected Areas

The impact of Tsunami is still being perceived by fishing community in their day to day life. Changes in fish species catch is the challenging task for them. The 'Thane' cyclone has caused major havoc by destroying the fishing infrastructure. In the Twelfth Five Year Plan, it has been proposed to extend welfare measures like housing and fishing infrastructure and training programmes for better fish catch and processing to the people affected by Tsunami and Thane cyclone.

Farm Level Planning and Aquaculture

Planning process accomplish great success, if the plan provides sufficient systems for optimum utilisation of the dwindling natural resources viz., land and water. In this context, aquaculture fits itself best in an optimum farm level planning. For example, aquaculture in farm ponds has registered a striking success under TN IAMWARM project and act as a show case for large scale upscaling of aquaculture in Tamil Nadu. While customizing the plans for individual farms, inclusion of aquaculture becomes imperative. It utilizes the farmer's land and water judiciously besides the time and labour of the farmer. Farm ponds can also accommodate crops like banana, forage grass, fodder trees along its bunds and thereby enhancing the returns from the unit land on one side and augmenting the green fodder supply of the farms on the other. As aquaculture is not a labour intensive process, it utilizes the available labour in the farm family. Only on inclusion of aquaculture in the farm level plan, the concept of more returns per drop of water gets fulfilled.

Twelfth Five Year Plan Outlay

An amount of ₹1873.57 crore is proposed for the Twelfth Five Year Plan. The details are given in Table 3.8.1.

**Table 3.8.1: Twelfth Plan Outlay - Fisheries Sector**

(₹ crore)

S.No	Schemes	Outlay
Ongoing schemes		
1	Inland Fisheries - FFDA, BFFDA	38.44
2	Fisheries welfare scheme construction of houses for fishermen, Relief Scheme for Fishermen during lean months and ban period, grants to supply of kerosene and Welfare Board	1335.74
3	Development of Fishing Harbours, Fish Landing Centres, Mechanised boats & Infrastructure	247.50
4	Repair and Renovation of Government fish seed farms/ Govt. Trout Hatchery (NADP/NABARD)	65.00
5	Improving inland fisheries for tank and its command areas under IAMWARM Project	7.73
Ongoing schemes – Total		1694.41
New Schemes - State		
6	Conversion of mechanised fishing boat and upgradation of motorised fishing crafts as tuna liners	25.00
7	Mid sea fish processing unit cum carrier mother vessel	80.00
8	Infrastructure creation -like sea food processing, post harvest support, and Wholesale fish market	22.25
9	Establishment of fish processing parks	6.50
10	Culture of SPF <i>Litopenaeus vannamei</i>	5.00
11	Culture of sea bass	1.13
12	Construction of fish dressing/preprocessing centers FDC/pre-processing center	1.56
13	Sun drying/solar drier for value addition to the present fish catch	0.50
14	Establishment of cold chain connecting production with consumption centers and hygienic wholesale and retail markets/ outlets	0.50
15	HRD- Staff Training Institute, enhancing knowledge skills, capacity building, video conferencing	6.50
16	Monitoring and Evaluation- Formation of Fisher Folk Information Centre on PPP mode, video conferencing, e-governance.	20.22
17	Establishment of Fisheries Technology Institute	10.00
Total New Schemes – State		179.16
Grand Total – State Schemes		1873.57



Monitorable Targets for the Twelfth Five Year Plan

- Marine fish production will be increased to (cumulative) 21.74 L.MT during the Twelfth Five Year Plan as against the achievement of 20.42 L.MT during the Eleventh Five Year Plan.
- Inland fish production will be increased to (cumulative) 9.17 L.MT during the Twelfth Five Year Plan as against the achievement of 8.46 L.MT during the Eleventh Five Year Plan.
- 5000 numbers fishing boats will be motorized during the Twelfth Five Year Plan.
- Ten Fishing Harbours and 50 FLCs will be constructed.
- 13 Fish Processing Parks will be established.
- An area of 10000 ha. will be developed under Fish Farmers' Development Agency (FFDA) and Brackish Water Fish Farmers' Development Agency (BFFDA).



Fig. 3.8.4: Fishing Harbour at Muttom, Construction of Breakwater