CHAPTER I

INTRODUCTION

The world’s population explosion is becoming a source of increasing concern for all countries, because the problem of feeding billions of people is becoming acute every day. The shortage of food for human beings has been one of the major problems in many parts of the world including India. Land resources are no longer considered sufficient for meeting the actual food requirement of the growing population. The exploitation of marine food resources can adequately support quite a bigger population of the world. Fisheries deliver more than 150 million tonnes of food and around 15 per cent of the dietary to the 7 billion people living in the world\(^1\).

Sea resources and inland water resources, compared to agricultural resources are renewable and replenishable year after year. They constitute self-sustaining ‘fund’ resource which can be profitably exploited year after year within the maximum limits of its economic exploitation. About 70 per cent of the Earth is occupied by the sea. It covers an area of 510 million sq km. Sea water is twice as productive per acre as any area of the land\(^2\). Land resources cannot supply the animal protein found in fish in rice eating countries, where people suffer from malnutrition, fish food is one with high nutritional value. Therefore development of fisheries has assumed considerable significance in recent years throughout the world. It is being felt that the main weapon in war on hunger could be developed by supplementing agriculture with ‘pisciculture’.


Fishing is one of the oldest occupations of man. It is a major industry all over the world. Fishing is one of the oldest means of livelihood. Since three-fourth of the earth’s surface is covered by oceans, people living in the coastal areas went to sea in search of food. As the demand for food increased, fishing activity expanded from shallow water to deep-water. In earlier time, fishing was considered as a way of life, as fishermen had to work with the unpredictable natural conditions for their livelihood.

The critical problem of the world today is shortage of conventional food. Rise in demand for food and rise in food prices are still the common problems of many developing countries, including India. The race between population and land based agricultural production still persisting in many parts of the world despite some technological improvements that have been brought out in raising the agricultural productivity. The belief that food from land resources will be able to support the ever increasing population is relatively becoming paradoxical and “Malthusian Pessimism” still pervades in many parts of the world presuming that land resources could produce enough food grains by improving the technology, it would not help in producing nutritious and balanced diet required for individual. Even in developed countries, like Japan, U.S.A, and European countries, the fish meet most of their food requirements. The percapita consumption of fish is very high in these countries compared to the developing countries\(^3\). The problem of ‘Protein Gap” at present is more acute in India and other developing countries. This gap can be filled up by producing fish food from the world seas.

Fish and other forms of sea food which are available in large quantities in the oceans of the world would be able to meet the food needs of mankind. Compared to the food production from land resources, marine fishery resources are not only self-renewing and replenishing but also can be constantly harvested year after year.

Besides being vital source of food supply for people all around the globe, it provides employment to million. They are also a vital item of trade for coastal areas. The general development of the sea food industry leads to the development of ancillary industries such as fish net making, ship building, metal works, storage and refrigeration units and transporting units. The development of these industries will raise the standard of living of the people. Capture fisheries and aquaculture supplied the world with about 148 million tones of fish in 2010, of which about 128 million tones was utilised as food for people. With sustained growth in fish production and improved distribution channels, world fish supply has grown dramatically in the last five decades, with an average growth rate of 3.2 per cent per year in the period 1961-2009, outpacing the increase of 1.7 per cent per year in the world’s population.

Fish and fishery products are among the most traded food commodities world wide. In 2010, they accounted for more than half of the total value of traded commodities in Greenland, Seychelles, Faeroe Islands and Vanuatu. In the same year, fishery trade represented about 10 per cent of total agricultural exports and 1 per cent of world merchandise trade in value terms.

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5 *Ibid* p.63
The fishing industry has a vital role to play in all round development of Indian economy. Fisheries development has been assigned a very important place in the economic development plans of India. Surrounded by sea on three sides and possessed big rivers, bays, lakes and numerous artificially built canals, reservoirs, tanks and ponds, India possesses ideal condition for improvement of fisheries. Organisation of this industry on modern lines will go a long way in solving the food problem in the country and improving the lot of fishermen who constitute quite a significant part of India’s population.

Indian fisheries are an important component of global fisheries. It is both marine and inland. Inland fisheries are the culture and capture of fisheries in fresh water. It is also called fresh water fisheries. The fresh water catch is more potential than that of the sea. Culture and capture of fishes in the sea is called marine fisheries. Fisheries sector plays an important role in the socio-economic development of India, generating employment for a large coastal population. In Tamil Nadu also fishing plays an important role.

**1.1. IMPORTANCE OF FISHING INDUSTRY**

Fishery development can make significant contribution to the development of Indian Economy. It plays an important role in the nation’s food security. The main benefits which can be derived from the fishery development and associated growth are discussed below.

**1.1.1 NUTRITIVE VALUE OF FISH**

Malnutrition is a world wide problem for which the development of under exploited and unexploited fisheries resources offers a promising solution. Fish is rich in protein and it also contains fat, inorganic substances and Vitamin A. The protein
content of fish ranges from 12 percent to 20 percent, the general average being 17 percent.\textsuperscript{6} Fish protein consists of a considerable proportion of soluble proteins, which is easily digestible and thus valuable for human consumption. In one bound of fish, the food value comes to be 300 - 600 calories, which is much higher compared to other food of human consumption.\textsuperscript{7} Fish is a renewable resource available at relatively cheaper cost. Hence the poor people especially those who live on the coastal line have fish in their normal diet.

**1.1.2. EMPLOYMENT OPPORTUNITIES**

The importance of fisheries as a source of employment is also significant. Fisheries sector plays an important role in the socio-economic development of people. In India about 14 million fishermen draw their livelihood from fisheries. The fishery sector provides employment to 11 million people in India.\textsuperscript{8}

The employment potential of the fisheries is not confined to fishing and selling activities. There are many upstream and downstream activities which generate a lot of employment. The development of fisheries support the growth of a number of supporting industries involving net making, servicing and repairing fishing crafts and gears, landing and berthing facilities, ice plants and storage facilities, production and supply of seed and feed processing and marketing.

**1.1.3. INCOME GENERATION**

Fisheries are capable of generating considerable amount of income fisheries helps the poor not only by increasing employment but also by increasing their earning


level. As a result of concerted effort of central and state governments, fish production has continuously been increasing in India and has reached a recording level of 690 million tonnes during 2006-07\(^9\). It has resulted in increase in the earnings of fisher folk.

1.1.4. FOREIGN EXCHANGE EARNINGS

One impetus for fisheries development in many developing countries including India, is its potential for export and foreign exchange earnings. The export of marine products has steadily grown over the years. Less than 10 percent of fish production was exported bringing in foreign exchange earnings of ₹6300 crores in 2000-2001 and nearly ₹7300 crores in 2006-07 in India. In dollar terms export earnings of India from marine products exceeded over 1.8 billion dollars\(^{10}\). India is a major supplier of shrimp to Japan, U.S.A. and still has tremendous untapped potential in this segment\(^{11}\).

1.1.5. INFRASTRUCTURE

The fishing industry with ports and associated services scattered around the coast can play an important role in maintaining some degree of balance in the distribution of population between urban and non-urban areas. Similarly the development of new ports can facilitate investment in infrastructure like roads, cold storage and ice plants etc, so essential to the general development of remote areas.

1.2. CHOICE OF THE TOPIC


\(^{10}\) Gaurav Dutt and Ashwan Mahajan, *op.cit*, p.101.

\(^{11}\) N.Arumugam, *op.cit*. p.6.
The selection of the topic is justified on the following grounds.

There is a growing feel in developing countries that social research should be a problem and policy oriented one. Research in fisheries has not drawn the attention of many social scientists, even today it remains one of the least explored area. The systematic and comprehensive study on the fishing industry and its various aspects in Tamil Nadu is very much limited. The Fishery Scientists and Fisheries Research Institute like Central Marine Fisheries Research Institute (CMFRI) at Cochin have been mostly concerned with the biological aspects of marine fisheries, in isolation with the economic and social dimensions. Though the fishing industry is economic in nature, the thinking of fish biologists has not tended to take techno-economic considerations into account, in formulating research and development problem on fisheries.

Social scientists are not making a large contribution to the planning of fishery development by providing information to the planning process. Lapse suggests greater University participation in fishery research.  

The general development of fishing industry leads to the development of ancillary industries, fish net making, ship building, repairing units, metal works and engineering units, packing and packaging units, storage and refrigeration units etc. The development of these industries will raise the standard of living of the people.

The fishery sector in India is interrelated with the economy, particularly with the rural sector of the country, which consists of large number of backward and

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economically weaker section of the society. Fishery sector provides the opportunity to bridge the gap between the availability and requirements of high quality protein, a subsidiary food for internal consumption at reasonable prices and it has export potential also. Considering the significance of fisheries, the planning commission of India focused special care on this sector.

The present study is chosen in view of the principles of academicians towards applied research in social sciences. Academicians are interested in problems associated with long-term policies which focus on bringing about improvements in standard of living of vulnerable sections of the population, creation of employment opportunities and thereby generating additional incomes for the poor, narrowing regional imbalances etc.

The choice of the topic is quite relevant as fishermen constitute one of the weaker sections of the society and fish protein is one of the cheapest sources for our population where staple food is rice. Further the unexploited fishery resources offer vast scope for sustained employment opportunities and development of fisheries, if taken up in the right direction in a coastal district like Tuticorin. This would contribute to narrowing regional imbalance.

The in depth of the study will facilitate to highlight various issues connected with production, marketing and operation problems of fishing industry. In these contexts, the study assumes its significance.

1.3. JUSTIFICATION FOR THE STUDY AREA

Tuticorin district in Tamil Nadu is selected for the study area. The selection of the district is justified on the following grounds.
Tuticorin is one of the important maritime districts in Tamil Nadu. Marine fishing, chunk fishing and pearl fishing are famous in this district from time immemorial. The sea around Tuticorin district has a rich potential for marine fisheries resources. The quantum of annual fish catch has been increasing steadily. Annual growth rate of fish production has been very significant. The total marine fish production accounts for 53187.520 tonnes in the year 2010-11\(^\text{13}\). There is greater scope for increasing the output in the district.

The availability of harbour in Tuticorin district, facilitate easy landing of fishing crafts, particularly mechanised boat after fishing. In Tuticorin district, there is a fish seed farm at kadamba. There is a fish curing centre at Punnakayal. There is a fisheries college in Tuticorin Central Marine Research Institute is located in Tuticorin District also. Thus major fishery research development and training facilities and infrastructure exist in the district. In the wake of logistic support being made by the Tuticorin Port to export of fish and fishery products, Tuticorin has made its presence felt in the map of India as one of the biggest exporters.

About 19194 fishermen are directly engaged in fishing\(^\text{14}\). Good road communication is available from the chosen headquarters to villages along the coastline. In this district, there exist successful fishermen sangams founded and nourished by the Catholic Mission with full involvement to improve the welfare of small fishermen. It is believed that study of this type will help for marine fisheries development in the state. In these aspects the selection of the study area is justified.

\[^{13}\text{Government of Tamil Nadu, Department of Economics and Statistics,}\,\textit{Statistical Hand Book of Tamil Nadu, 2012},\,\text{p.132.}\]
\[^{14}\text{Assistant Director of Fisheries (Marine), Thoothukudi}\,\textit{Statistical Hand Book of Tuticorin District, 2011},\,\text{p.84.}\]
1.4. STATEMENT OF THE PROBLEM

In India, fishing industry occupies an important place in the unorganised sector. It provides employment to millions of people directly and indirectly.

Since, fish is perishable in nature, it has unique pattern of distribution. Problems like great uncertainties in production, scattered landing places, too many species, wide price fluctuations and transportation make fish marketing very difficult. Perishable nature of fish leads to demand for ice. If fish vendors are to prevent spoilage and get a better price, they need to preserve the fish. They need access to ice and ice boxes. During the peak season, when ice is in short supply, it is often monopolised by large traders and intermediaries.

In the existing fish markets, basic facilities for storing, processing, clean toilets, access to potable running water and adequate waste disposal measures are not usually available. Such facilities are essential for the hygienic handling of fish, for the health and well being of vendors, for consumer health and for enabling fish vendors in their occupation in a dignified manner.

Introduction of new technology in fishing increased not only the output, but also the cost of production. Production cost plays an important role in deciding fishing operations. There are wide differences among fishermen operating the same type of crafts in the same location. Hence it is necessary to analyse the cost and return of different fishing units. Another challenge faced by marine fishermen is production of fish through aquaculture and its allied activities. The competition among aquaculture farmers and marine fishermen leads to low prices for marine fishes and it creates various social conflicts among them. The clash between the
mechanized and non-mechanised crafts fisher men is also one of the problems of fishermen.

The introduction of new technologies in fishery sector attracted not only the traditional sector fishermen but also other communities to in various fishing activities. The movement has considerable impact on the traditional fishermen and creates various forms of conflicts among them. The fishermen do not get due price for their catches due to inadequate transport facilities lack of fish marketing knowledge, perishable nature of fish and exploitation of fish traders. Fishery sector is largely affected by natural calamities like storm, cyclone flood and Tsunami. The poor fishermen find it very difficult to maintain their family in these situations.

Most of the fishermen are poor. They are not able to purchase good equipment to improve the harvest of fish. The fishermen are unable to get financial assistance from the commercial banks, without collateral securities. Thus the poor fishermen find it difficult to meet their financial requirements. Thus they depend on traders and money lenders for their fixed and working capital. Moreover, the dwindling resources on one hand and the increased cost of fishing on the other have made the investment on fishing a risky affair.

Most of the fishermen live in poor socio-economic conditions. Many of them do not have their own fishing crafts and gears and fishing is normally a joint venture. Fishermen bring their catch to the see shore, they may not get fair price from the commission agents. The fisherman finds him helpless because he is generally indebted to the commission agents and as a pre-condition to loan; he has to surrender his catch to the commission agents. The process of surrounding the catch and
payments of commission to the commission agents continues until the loan is repaid. As it is very rarely that the loan is repaid in full and the process of exploitation is unending.

Fishery resources of inland water and sea waters are also affected by ecological, industrial, agricultural and other pollutants and various development activities. Climate change also affects the marine fish production. Overfishing, indiscriminate and unscrupulous fishing activities, ecological disturbances etc have depleted the stock and even endangered several species. Researches in fisheries have not drawn the attention of many social scientists, and even today it remains one of the least explored areas. The problems cited so far necessitates the study on fishing industry.

1.5. OBJECTIVES OF THE STUDY

The objectives of the present study are listed below.

1. To study the socio-economic conditions of marine fishermen in Tuticorin district.

2. To study the cost and return of different fishing crafts in Tuticorin district.

3. To study the problems faced by marine fishermen in their fishing activities.

4. To offer suggestions on the basis of findings of the study.

1.6. METHODOLOGY

The present study is an empirical study based on survey method. This study is based on primary as well as secondary data. The primary data were collected from the fishermen in Tuticorin district. A pilot study was made before the collection of the primary data. Three types of fishing operations were identified.
For collecting the primary data a multistage stratified random sampling method was used. The Tuticorin district constitutes the universe. The fishing villages in this district are the strata. The numbers of craft owners are the primary and ultimate units of the sample respectively. There are 23 marine fishing villages in Tuticorin district. Out of the 23 villages, 6 villages have been selected at random. In the sample villages, 209 non-mechanised crafts, 1261 motorised crafts and 420 mechanised crafts were operated during the study period. By employing proportionate random sampling technique 300 respondents representing the three types of fishing operations namely mechanised, motorised and non-mechanised were selected. The selected samples were 50 non-mechanised craft owners, 150 motorised craft owners and 100 mechanised craft owners. In the non-mechanised sector, no discrimination was found in the crafts. In the motorized sector, 100 sample fishermen were single-day motorized crafts’ owners, and 50 sample fishermen were multi-day motorized wooden crafts’ owners. In the mechanised sector, 50 sample fishermen were single-day mechanised trawler’s owners and 50 sample fishermen were multi-day mechanised gillnetters’ owners. A pre-tested interview schedule was used to collect the data from the sample units. The interview schedule was prepared, keeping in mind the data on different craft-gear combinations used by different fishing units, initial investments, operating costs, species wise catch and return of different fishing crafts. The study period is pertained to the year 2011-12. Data were collected from July 2011 to June 2012.

The secondary data regarding progress of fishing industry in India, Tamil Nadu and Tuticorin have been collected from the published and unpublished records of the Commissioner of Fisheries, Chennai, Assistant Director of Fisheries, Tuticorin,
Fish Exporters Champers, Tuticorin, Export Development Authority, Tuticorin, Central Marine Fisheries Research Institute, Cochin, Central Marine Fisheries Research Institute, Tuticorin, and Central Marine Fisheries Research Institute, Mandapam.

1.7. SCOPE OF THE STUDY

In the present study, an overview of fishing industry in Tuticorin district was presented. Different fishing crafts used in marine fishing in Tuticorin district were identified. Socio-economic status of marine fishermen was studied. The initial requirements of fishing crafts were identified. Cost and return of different crafts and problems of marine fishermen in Tuticorin district were studied. The problems faced by marine fishermen were also identified and suggestions were given on the basis of findings. Area for further research is also suggested.

1.8. LIMITATIONS OF THE STUDY

The present study has the following limitations.

The primary data were collected from the memory of the fishermen, most of them are illiterates. As the respondents did not maintain any specific records regarding cost and return of fishing crafts and other required information, the required data were provided from their memory and hence subject to recall bias. To minimize the recall bias cross checks were made in the field itself.

This study is pertained to the year 2011-2012. The value of input and output in terms of oil, diesel, wages, ice etc. and return in terms of total catch often show wide fluctuations. Price of different varieties of fish also often changes. This is the major limitation of the study.
Innumerable types of fishing techniques are adopted by fishermen all along the coast. Fishing crafts are differing in their size, price, cost etc. There is lot of regional differences. It is very difficult to cover all the centres or all types of fishing methods in the entire district. However maximum care has been taken to include all important types of craft gear combinations at representative centres in order to arrive at general conclusion.

Avery few studies exist in the area of cost and return of fishing crafts. Literature available is descriptive in nature. Analytical and quantitative work has not been done in most of the existing studies. Because of time limitations only 300 marine fishermen were selected and interviewed. Hence the results of the study have to be interpreted with the above limitations.

1.9. DEFINITION OF CONCEPTS

MARINE FISHERMEN

One who is engaged in marine fishing and associated activities of design, fabrication and other equipment including the crafts.

FISHER FOLK

Fisher folk refer to both fishermen and fisherwomen in the fishing activities.

PEAK SEASON

Peak season refers to June to August and November to December every year.

LEAN SEASON

Lean season refers to January to March and September to October every year.
MARINE PRODUCTS

The marine products refer to the catches in the sea water.

CRAFTS

Crafts are fishing vessels. A fishing vessel is a specialized vessel used to hunt, locate, catch, load, unload, process and preserve fish at sea. Crafts are also known as boats.

CREW

Crew represents the persons working in the crafts.

FISHING GEARS

A fishing gear is a tool used to capture aquatic resources. The fishing gears are broadly classified into nets and hooks and lines.

TRAWL NETS

Trawl nets are dragging nets. They are towed by one or two boats. They are used in the pelagic and bottom water.

GILL NETS

The gill nets are used to catch the fish by their gills. The net entangles the fish by their gills. It is a passively operated net.

TRAWLERS

Trawlers are fishing vessels involving in towing one or more nets.

GILL NETTERS

Gill netters are fishing vessels operating gill nets.
FISH LANDING CENTRE

Fish landing centre is a place where the fishermen landed their catches.

MECHANISED CRAFTS

The wooden frames and planks are used for the construction of vessels. Nowadays, mechanized boats are made up of steel also. The length of the craft is about 10.8 to 12.6 meters and width is 3.5 to 4.5 meters. Ashok Leyland Diesel engine with horse power of 88 to 108 are fitted. These crafts are operated at a distance 10 to 30 kilometers from the shore. The depth of the operation is 25 to 50 meters. Required manpower for the operation is 6 to 12 persons.

NON-MECHANISED CRAFTS

These are made up of wooden frames and planks without in-built diesel engines. Length of the boat is 18 to 25 feet. This is a traditional type, which is operated for a long time. Required manpower is 1 to 3. This boat is locally called vallam.

MOTORISED CRAFTS

These crafts are made up of wooden frames or fibre with in-built diesel engines with horse power 12 to 18. The length of the boat is 28 to 32 feet. Required manpower for operation is 5 persons. This craft is also called country crafts.

FRP

FRP stands for fibre reinforced plastic. FRP crafts are made up of fibre reinforced plastic.
COST

The cost of production consists of two parts namely fixed cost and operational cost. The fixed cost includes depreciation charges for crafts and engine at 10 percent, gears at 33.33 percent and interest on fixed capital at 10 percent per annum. The operating costs are fuel charges, wages, repairs and maintenance and purchase of ice bar. In the case of multi day fishing, food for fish is also included in operating cost.

FIXED COST RATIO

It is computed by dividing the fixed cost by the gross income.

OPERATING COST RATIO

It is calculated by dividing the operating cost by the gross income.

TOTAL COST RATIO

It is calculated by dividing the total cost by the gross income.

PAY BACK PERIOD

It is obtained by dividing the capital investment by the annual net cash flow.

NET OPERATING INCOME

It is calculated by subtracting operating cost from gross income.

NET PROFIT

It signifies gross income minus total cost.

RATE OF RETURN ON CAPITAL

It is obtained by dividing net profit by initial investment.
CAPITAL TURN OVER RATIO

It is calculated by dividing gross return by capital investment.

1.10. CHAPTER SCHEME

This study consists of eight chapters.

First chapter which is the fore going chapter covers introduction of the study. It includes importance of fishing industry in India, choice of the topic, justification for the study area, statement of the problem, objectives of the study, methodology, scope of the study, limitations of the study and definitions of concept used in the study. The second chapter is devoted for discussion of a brief summary of review of some earlier studies. The third chapter deals with the fishing industry at the world level, in India and Tamil Nadu. In the fourth chapter, profile of Tuticorin district is given. An overview of fisheries is also given in this chapter. Fifth chapter presents the socio-economic status of respondents in Tuticorin district. Sixth chapter presents cost and return of different fishing crafts used for fishing in the study area. Seventh chapter explains the problems faced by fishermen in the study area. Eighth chapter covers the summary of findings, suggestions and conclusions. Besides this, scope for further research is also given in this chapter.