Marine Fish Catching and Fish Marketing of Fishermen in Tamil Nadu and All India

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Abstract

Fish protein has today come to be rated high by nutritionists. It is only appropriate that India, having accepted the goal of "healthy food for all" does its best in commercial fishing. Global Fisheries and aquaculture production have increased from 117 million tonnes in 1978 to 125 million tonnes in 1999. As the production from capture fisheries has almost remained stable during the last decade, the increase has largely come from aquaculture.

This study aims at (i) Portraying the socio-economic status of the fishermen in the Ramanathapuram district in Tamilnadu, and (ii) examining the methods of fish catching and fish marketing in the study area. Relevant primary data and yearly reports on production and export of fish in India were collected for the period from 1990-91 to 2010-11. Secondary data for the study were also collected from the records of journals, statistical handbooks and year books. Tabular analyses were done to work out the percentages and average values.

The study finds that the marine fish production had increased to 3.2 million tonnes in 2010-11 from 2.3 million tonnes in 1990-91. The highest marine fish production was 3.2 million tonnes in 2010-11, followed by 3.1 in 2009-10. The lowest marine fish production was 2.3 in 1990-91. India's export of marine products value had increased from 4007.6 crore rupees in 1996-97 to 11550.5 crore in 2010-11. India's highest export of marine products value was 11550.5 crore in 2010-11.

The study concluded that most of the fishermen's main problem in raising finance is their inability to give security for the loan. Even for getting financial aids through government banks, security is essential. The study found that food assistance and cash grants from government and non-governmental organisations, as well as donations of boats and fishing gear and boat repair stations were all available to them.

Introduction

Fish protein has today come to be rated high by nutritionists. It is only appropriate that India, having accepted the goal of "healthy food for all" should be taking a fresh look at fishing. The catching of fish falls into two categories: commercial fishing and sport fishing. Commercial fishing is one of the world's major industries and an important source of food supply to a large per cent of population.

While in agriculture farmers attempt to increase the harvest of the land, fishing, attempts to reap the harvest of the sea and the inland waters. With ever increasing growth of population, uninhabited land has become scarce. With ever-growing population, the basic food needs require large production. So, the marine sources of food materials should be exploited to ensure balanced diet with animal protein and fat.

Global fisheries and aquaculture production have increased from 117 million tonnes in 1978 to 125 million tonnes in 1999. As the production from capture fisheries has almost remained stagnant during the last decade, the increase has largely come from aquaculture. The global pattern of fish production owes much to the activities of China that accounts for 32 per cent of the world total in terms of quantity. Other major producers are Japan, India, the United States, the Russian Federation and Indonesia.

Indian Fisheries

Indian Fisheries are an important component of the global fisheries and the sector has been recognised as a powerful income and employment generator. It is also a source of cheap and nutritious food. The sector's contributions to foreign exchange earnings are substantial and the earnings constitute 1.4 per cent of the GDP. More than 6 million fishermen in the country depend on fisheries for their livelihood**.** The country with a long coastline of 8118 Km. has an Exclusive Economic Zone (EEZ) extending to 2.02 million Sq.Km. - 0.86 million Sq.km. on the West Coast, 0.56 million sq.km. on the East Coast and 0.60 million sq.km.around the Andaman and Nicobar Islands - which is highly suitable for developing capture and culture fisheries. With the absolute right on the EEZ, India has also acquired the

responsibility to conserve, develop and optimally exploit the living marine resources within this area.

Fisheries in Tamilnadu

Tamil Nadu, with its 1076 km of coastline (13 per cent of the countries coastline), 0.19 million sq.km of EEZ (9.4 per cent of the India's EEZ) and continental shelf of about 41412 sq.km is a leading state in fish production. The marine fisheries potential of the State is estimated at 7.19 lakh tonnes (3.69 lakh tonnes from less than 50 m. depth and 3.5 lakh tonnes beyond 50m. depths) as against the all India potential of 39.34 lakh tonnes. Of the East Coast states, Tamil Nadu handles the maximum catch followed by West Bengal.

The State has a fishermen population of about 6.9 lakhs, of which 2.62 lakh fishermen are actively engaged in fishing from 591 marine fishing villages scattered along the coast. There are 994 primary fishermen co-operative societies, which include 289 inland fishermen and women cooperatives with a membership of 337,598 men and 59486 women members. Presently, 10278 mechanised fishing boats and about 49000 traditional crafts, of which 20000 crafts have been motorised with outboard motors, are engaged in marine fishing. There are three major fishing harbours, two minor fishing harbours and several fishing landing centres, which partially cater to the landing and berthing requirements of the marine fishing fleet.

While the contribution of marine fish production of Tamil Nadu to the All India marine fish production was in the range of 13.4 per cent in 1999-2000, contribution of inland fisheries to the total fish production from inland resources of India was about 4 per cent. As against the total fishery potential of 9.65 lakh tonnes from both inland and marine resources of Tamil Nadu, the present level of fish production is 4.75 lakh tonnes, which is about 49.5 per cent of the total potential. The export of marine products from the State during 2001-2002 amounted to 58,483 metric tonnes valued at Rs. 20,164 million.

Major Fishing Districts in Tamilnadu

Tamil Nadu has become one of the leading producers of marine fish. The annual marine fish production in the State stands at 3.93 lakh tonnes. The actual fish production had witnessed a marginal improvement from 3.93 lakh tonnes in 2007-08 to 3.97 lakh tonnes in

2008-09. Of the major marine fish producing districts in the State, Ramanathapuram district tops the list with 81569.65 tonnes, followed by Nagapattinam, Thiruvarur and Thanjavur (78881.50 tonnes), Tuticorin (48510.27 tonnes), Kanniyakumari (39627.60 tonnes) and Chennai (32086.60 tonnes) put together accounted for more than 60 per cent of marine fish production in the State.

Of the total marine fish production (3.97 lakh tonnes), the share of demersal variety was at 2.26 lakh tonnes and pelagic variety accounts for 1.71 lakh tonnes. In spite of this achievement, in many states, it created inter-sectoral conflicts in traditional and mechanized sectors, problems between fishing groups of different states and conflict between ring seine and trawl labourers. But the worst impact was the changes it brought in the livelihood pattern of the labourers working in trawlers. For almost two months of the year those fishermen who contribute a major portion of export valued marine products are deprived of any source of employment and their income levels face a serious setback during the period. This period is usually associated with problems like poverty, malnutrition and increase in debt among the fisher folk communities engaged in trawling (Kurien John, 1978, 1995; Datta *et al.*, 1989; Joseph Sherry, 1995). The present study was undertaken to address changes in the livelihood of fishermen in the form of problems like unemployment, poverty and low-income level, following implementation of trawl ban in the marine fisheries sector.

Objectives

1. To portray the socio-economic status of the fishermen among the Ramanathapuram district.
2. To examine the methods of fish-catching and fish marketing in the study area.

Methodology

Collection of Data

For the present study, the time serious data and yearly reports on production and export of fish in India were collected for the period from 1990-91 to 2010-11, 2001-02 to 2010-11and 1996-97 to 2010-11. Secondary data for the study were also collected from the records of journals, statistical hand books and year books. The available information is judiciously used in the paper.

Tools of Analysis

(1) Tabular analysis

Tabular analyses were done to work out the percentages and average values.

(2) Estimation of Compound Growth Rate

The exponential trend equation which directly gives a constant rate of increase/decreases per unit of time is sometimes called the "Geometric" or Compound Growth Rate.

Compound growth rates were estimated by fitting exponential trend equation of the following type.

$$Y = ab^t \text{ - - - - - - - - - - - - - (1)}$$

Where,

Y = production/Export

t = Time variable in years

a = constant

and b = (1 + r)

Where, r = compound growth rate

The equation (1) takes the linear form by taking logarithms of both sides of the equation as follows:

$$\text{Log } Y = \log a + t \log b$$

Compound growth rate is computed using the following formula

Compound Growth Rate (CGR) = (Antilog (Log b) – 1) x 100

Table: 1

Tamil Nadu General Information of Marine Fishing Villages-Year 2010

Sl.No	District	Costal length of the maritime district(in kms)	No. Of marine fishing villages	Population			Mechanised crafts	Non-Mechanised crafts	Gears	Literates	Employed men	Employed women
				Male	Female	Total						
1	Chennai	19.0	44	36552	34505	71057	908	1662	9418	43205	19511	5449
2	Thiruvalllur	27.9	58	20845	20958	41803	98	5101	36629	16653	12064	2914
3	Kancheeepuram	87.2	44	13179	12630	25809	7	3250	10291	12775	7815	1361
4	Villupuram	40.7	19	7542	7381	14923	17	1804	11477	6855	4225	1790
5	Cuddalore	57.5	49	20856	19726	40582	640	5000	55987	21163	11910	2454
6	Nagapattinam	187.9	51	40796	38972	79768	1465	4129	32652	39144	23753	5416
7	Thiruvarur	47.2	13	5291	5074	10365	--	47	19589	6739	3150	1646
8	Thanjavur	45.1	27	12952	12426	25378	469	1031	33032	12115	5990	839
9	Pudukkottai	42.8	32	12944	12083	25027	866	1710	32129	13125	6813	504
10	Ramanathapuram	236.8	184	60234	57057	117291	1804	5078	88847	65545	34574	8441
11	Thoothukudi	163.5	21	35828	33730	69558	352	2197	42193	50122	19158	2022
12	Tirunelveli	48.9	7	10275	9935	20210	--	1395	28653	16047	5339	815
13	Kanniyakumari	71.5	42	71018	66922	137940	1383	9366	24735	95578	40168	3692
	Total	1076.0	591	348312	331399	679711	8009	41770	425632	399067	194470	37343

Source: Marine Censuses-2010

The Table 1 shows that the Tamil Nadu general information of marine fishing villages-2010.

Tamil nadu has 13 coastal districts and 1076.0 Kms coastal line. Ramanathapuram district has longest coastal line in 236.8 kms. Compared to Tamilnadu districts, followed by 187.9 kms. of Nagapattinam, 163.5 kms. of Thoothukudi and 87.2 kms. in Kancheepuram. The lowest coastal line district is 19.0 kms. in Chennai. In about 591 marine fishermen villages of Tamilnadu, 348312 male and 331399 female (a total of around 679711) fishermen are in Tamilnadu. Ramanathapuram district has the highest number of fishermen villages 184, mechanised fishing crafts 1804, fishing gears 88847 and fishing employed women 8441 in Tamil nadu, followed by highest fishermen villages 58 in Thiruvalllur and 49 in Cuddalore. The lowest fishermen villages are 7 in Tirunelveli district. Kanniyakumari district has the highest fishermen male population of 710118 and the female population of 66922, and fishermen literates 95578. This district also has the highest total of non-mechanized fishing grafts 9366 and employed men 40168 in Tamilnadu. The lowest male population 5291, female population 5074, fishermen literates 6739, non-mechanised fishing grafts 47 and employed men 3150 are found in Thiruvarur district.

Note that fishing as a profession is caste-based in Tamilnadu. There are castes which exclusively go for marine fishing and also there are castes which deal with inland fishing. There is some change in this pattern and it also looks like that individuals from non-fishing castes are presently involved and employed in fishing activities. But details of such involvement and its impact on fishing as an economic activity are yet to be documented.

Table: 2

Estimated Marine Fish Production - Craft Wise by Districts for the Year 2010-11

(Quantity in Tonnes)

Sl.No	District	Mechanised	Non-Mechanised			Total
			Motorised	Non-Motorised	Shore seine crafts	
1	Chennai	2156471	7573.137	5145.902	0.000	34283.110
2	Thiruvalllur	0.000	5786298	3857.532	0.000	9643.830
3	Kancheepuram	354.478	928183	6187.388	0.000	15822.949
4	Villupuram	561.257	11613.678	7742.452	539.633	20457.020
5	Cuddalore	16059.458	5333.355	3358.900	780.017	25531.730
6	Nagapattinam	44277.272	15549.840	10566.007	0.000	70393.120
7	Thiruvarur	8283.660	2909.158	1976.752	0.000	13169.570
8	Thanjavur					
9	Pudukkottai	27523.046	9665.884	6567.900	0.000	43756.830
10	Ramanathapuram	54378.409	18872.507	12864.081	337.163	86452.160
11	Thoothukudi	33454.950	11749.123	7983.447	0.000	53187.520
12	Thirunelveli	0.000	5760.468	3840.312	0.000	9600.780
13	Kanniyakumari	26748.376	9393.826	6383.039	0.000	42525.240
	Total	233204.977	113488.356	76476.713	1656.813	424823.859
	Percentage	54.89	26.71	18.00	0.39	100.00

Source: Commissioner of Fisheries, Chennai-6 (2012)

The Table 2 shows that the estimated marine fish production in Tamil nadu - craft wise by districts for the year 2010-11.

Tamilnadu marine fish production craftwise (mechanised, motorised, Non-motorised and shore seine crafts) is highest 86452.160 tonnes in Ramanathapuram district, followed by 70393.120 tonnes in Nagapattinam, 53187.520 tonnes in Thoothukudi and 43756.830 tonnes in Pudukkottai. The shore seine craft marine fish production is followed only in three districts. There are Villupuram, Cuddalore and Ramanathapuram. In total, Tamilnadu marine fish production through mechanised boat is 54.89 per cent, by motorised boat it is 26.71 per cent, by non-motorised boat it is 18.00 per cent and shore seine crafts is only 0.39 per cent.

Table: 3

Production and Export of Fish in India 1990-91 to 2010-11

Year	Fish production (million tonnes)			Export of marine products	
	Marine	Inland	Total	Qty('000 tonnes	Value(Rs crore)
1990-91	2.3	1.5	3.8	140	893
2000-01	2.8	2.8	5.6	503	6,288
2003-04	3.0	3.4	6.4	412	6,087
2004-05	2.8	3.5	6.3	482	7,019
2005-06	2.8	3.8	6.6	551	8,363
2006-07	3.0	3.8	6.8	612	7,620
2007-08	2.9	4.2	7.1	541	8,608
2008-09	3.0	4.6	7.6	602	10,048
2009-10	3.1	4.8	7.9	678	12,901
2010-11	3.2	5.1	8.3	813	13,150
CGR	**2.37**	**10.75**	**6.69**	**13.07**	**21.60**

Source: Department of Animal Husbandry, Dairying and Fisheries. (2012)

The Table 3 shows the quantity and value of fish production and export of marine products in India from 1990-91 to 2010-11.

Marine fish production had increased to 3.2 million tonnes in 2010-11 from 2.3 million tonnes in 1990-91. The highest marine fish production was 3.2 million tonnes in 2010-11, followed by 3.1 in 2009-10. The lowest marine fish production was 2.3 in 1990-91. The quantity of the export of marine products had increased from 140 thousand tonnes in 1990-91 to 813 thousand tonnes in 2010-11. Even though the Indian fishing communities producing 3.1 million tonnes, where as they are exported only for thousand tonnes of marine products. Export of marine products were shows in table was increasing trend expect the year 2003-04, 2004-2005 and 2007-08. The main reasons for decline in the catch rates due to natural calamities, over flow of wind and heavy raining seasons etc.,

The export of marine products value had increased to 12,901Rs. Crores 2009-10 from 893 Rs. crores 1990-91, which were followed by the 10,048, 8,608 Rs. Crores in 2008-09 and 2007-08. The lowest marine products export value was 893 Rs. Crores in 1990-91.

The estimated compound growth rate of production of marine, inland and total was positive 2.37, 10.75 and 6.69. Exports of marine products quantity and value were 13.07, 21.60 positive.

Table: 4

Export of Fish and Fish Products in Tamil Nadu 2001-02 to 2010-11

Year	Quantity (Tonnes)	Value (Rs.in Lakhs)
2001-02	58482	201640.00
2002-03	70147	250787.00
2003-04	68462	207116.00
2004-05	70809	206804.00
2005-06	72418	199572.00
2006-07	72883	206805.00
2007-08	72644	181314.00
2008-09	68397	177220.00
2009-10	73327	198207.47
2010-11	86181	286019.00
CGR	**2.38**	**0.22**

Source: Director of Marine Products Export Development Authority, Chennai-40 (2012)

The Table 4. Present the results of export of fish and fish products in Tamil Nadu during 2001-02 to 2010-11.

Export of fish and fish products quantity had increased from 58482 tonnes in 2001-02 to 86181 in 2010-11. The highest export of fish and fish products quantity was 86181 tonnes in 2010-11, followed by 73327, 72883 tonnes in 2009-10 and 2006-07. The lowest fish and fish products quantity was 58482 tonnes in 2001-02. The export of fish and fish products value had increased to 286019.00 Rs. Crores in 2010-11 from 201640.00 in 2001-02, followed by 250787.00 in 2002-03 and 206805.00 in 2006-07. The lowest fish and fish products was 177220.00 in 2008-09. The estimated compound growth rate was positive for both quantity and value. The CGR regarded in quantity 2.38 and value0.22.

Table: 5

Exports of Marine Products Principal Countries – Rupees

(Rs. in Crore)

Marine product	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	CGR
China	262.7	427.5	216.8	380.1	529.1	404.9	571.5	408.2	495.5	666.9	516.1	679.0	500.7	1093.6	1266.5	**8.92**
Taipei	78.4	46.3	31.0	47.0	159.1	165.8	203.6	50.4	41.3	46.8	69.6	62.3	98.6	241.5	305.5	**7.30**
Hong kong	146.4	88.1	62.6	79.2	109.5	91.7	109.6	124.8	152.8	183.5	191.2	254.7	328.0	755.1	577.0	**14.88**
Italy	112.3	61.7	86.1	100.8	134.2	142.4	158.1	159.9	168.0	212.9	301.1	293.9	304.4	420.6	517.2	**13.76**
Japan	1695.9	2077.9	2054.2	2127.5	2329.3	1641.8	1555.2	1112.8	1225.0	1133.6	1278.2	1093.3	1028.2	1164.1	1508.1	**-4.61**
Spain	107.8	82.3	136.8	173.3	203.8	288.2	385.8	302.4	459.3	516.0	569.9	633.9	512.5	685.0	755.4	**16.42**
Thailand	53.9	73.0	103.2	101.9	130.0	157.0	224.3	108.0	86.7	113.9	133.6	117.1	187.6	141.4	458.2	**7.78**
U.A.E	343.6	524.5	353.4	274.1	325.1	206.8	167.6	155.5	211.8	246.5	278.5	237.4	263.4	328.9	288.2	**-2.10**
U.K	181.6	181.5	140.9	199.2	278.3	259.4	329.3	296.1	365.6	350.0	414.2	335.5	299.2	386.1	348.2	**6.20**
U.S.A	388.0	515.4	625.0	782.6	1091.7	1294.1	1885.8	1888.4	1512.8	1555.8	1289.3	889.5	961.2	974.0	1770.7	**6.55**
others	637.0	508.7	5587	859.0	1077.2	1246.2	1337.3	1502.1	1750.5	2010.1	2959.5	2330.1	2582.6	3440.0	3755.8	**10.63**
total	4007.6	4486.8	4368.6	5124.6	6367.3	5898.3	6928.1	6105.6	6469.2	7035.9	8001.0	6926.7	7066.4	9900.0	11550.5	**6.16**

Source : Directorate General of Commercial Intelligence and Statistics.(2011)

The Table 5. Shows that the India's export of marine products principle countries from 1996-97 to 2010-11.

India's export of marine products value had increased from 4007.6 crore in 1996-97 to 11550.5 crore in 2010-11. India's highest export of marine products value was 11550.5 crore in 2010-11. The lowest export of marine products value was 4007.6 crore in 1996-97. In 2000-01india's highest export of marine products to Japan value was 2329.3 crore, followed by 2010-11 USA 1770.7 crore. The lowest export of marine products to Taipei value was 31.0 crore in 1998-99.

The estimated compound growth rate was positive China, Taipei ,Hong kong ,Italy ,Spain, Thailand, U.K ,U.S.A and others countries 8.92, 7.30, 14.88, 13.76, 16.42,7.78, 6.20, 6.55 and 10.63. Japan and U.A.E was negative -4.61 and-2.10.

Findings

- Ramanathapuram district has highest fishermen villages 184, mechanised fishing crafts 1804, fishing gears 88847 and fishing employed women 8441 in Tamil nadu.
- Tamil nadu marine fish production craft wise (mechanised, motorised, Non-motorised and shore seine crafts) highest 86452.160 tonnes in Ramanathapuram district, followed by 70393.120 tonnes in Nagapattinam, 53187.520 tonnes in Thoothukudi and 43756.830 tonnes in Pudukkottai.
- Marine fish production had increased to 3.2 million tonnes in 2010-11 from 2.3 million tonnes in 1990-91. The highest marine fish production was 3.2 million tonnes in 2010-11, followed by 3.1 in 2009-10. The lowest marine fish production was 2.3 in 1990-91.
- The export of marine products value had increased to 12,901Rs. Crores 2009-10 from 893 Rs. crores 1990-91, which were followed by the 10,048, 8,608 Rs. Crores in 2008-09 and 2007-08.
- Export of fish and fish products quantity had increased from 58482 tonnes in 2001-02 to 86181 in 2010-11. The highest export of fish and fish products quantity was 86181 tonnes in 2010-11, followed by 73327, 72883 tonnes in 2009-10 and 2006-07.
- The export of fish and fish products value had increased to 286019.00 Rs. Crores in 2010-11 from 201640.00 in 2001-02, followed by 250787.00 in 2002-03 and 206805.00 in 2006-07.
- India's export of marine products value had increased from 4007.6 crore in 1996-97 to 11550.5 crore in 2010-11.

Suggestions

Fisheries management is a continuous and interactive process, where, economic, social and ecological costs and benefits are to be understood and interventions designed. A road map for ensuring us trainability, equitability, eco system conservation, eliminating destructive gears reducing by-catch and discards and juvenile destruction, extension of fishing in to new areas, ensuring conservation of endangered and threatened species groups, putting into practice the FAO Code of Conduct for Responsible Fisheries, and ultimately evolving a working model for a participatory management of marine fisheries resources of the country is the need of the hour. This can be achieved only jointly by all the stakeholders including fishers, scientists, policy developers and implementers.

Conclusion

The livelihood process will create opportunities for more income as well as improve the resource base of the poor people of coastal areas. Moreover, institutions involved in income generating activities and other support services may work in close cooperation among themselves for development of sustainable livelihoods system and thus the process will ensure more sustainable use of natural resource base of coastal fishing communities of Ramanathapuram district.

Most of the fishermen's main problem in raising finance is their inability to give security for the loan. Even for getting financial aids through government banks Security is essential.

By way of providing alternate employment the standard of living of the fishermen family will be upgraded due to additional income of the family and also leisure time could be spent effectively.

Furthermore need food assistance and cash grants from government and non-governmental organisations, as well as donations of boats and fishing gear and boat repair stations were all available to them.

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