



A HISTORICAL ANALYSIS ON THE EVOLUTION OF MARINE FISHERIES IN INDIA

Dipayan Singha,

College Contractual Lecturer, Ramsaday College, Amta

&

Dr. Amit Majumder,

Assistant Professor & Head, Dept. of Commerce (St.III, Formerly Reader)

Bijoy Krishna Girls' College, Howrah

ABSTRACT

Fishing for eradicating hunger is noticed as an activity from the Stone Age which has not become a profession of a large sector of people. Fishermen are engaged in farming or procurement of fish from water sources. Three fourth of Earth's surface consist of water making it a huge source of marine resources. Fishing industry has emerged to be a contributing sector of GDP and employment as well. Extension of EEZ for better reach and output has been contributing to development of this industry. Simultaneous requirement of capital, technology and man power is a prerequisite in this industry. Indian fishing industry contributes about 6.3% of global fish production as well as 1.1% of Indian GDP and 5.15% of agricultural GDP. States like Gujarat, Kerala, Maharashtra, Tamil Nadu, Andhra Pradesh have revealed a significant growth in past years and states like Pondicherry, West Bengal, Odisha, Lakshadweep, Daman and Diu, Andaman and Nicobar Islands have depicted a slow growth rate but none of the states show negative figures in comparison to previous years. The study reveals the periodical changes in fish catching in different states of India along with its contribution to the world. Special focus on marine fisheries have been emphasised in the study to recognise the true scenario of marine fishing industry.

Keyword:- Marine Fishing ;Fishing Industry.

Introduction

Fishing is recognised as a source of food since the Stone Age. A fisherman is the one who is engaged in capturing fish and other species from a water body, it is a mode of self-employment, which started with an objective of survival and transformed into a source of business. Water makes up about 71% of the earth's surface leading to a great source of natural marine resources. Of the total water content 96.5% is ocean salt water. Marine fishes are a part of natural resources that are being procured by these fishermen for living and earning. According to the Food and Agriculture Organisation (FAO) of the United Nations, fish output in India doubled between 1990 and 2010. India acquires 8129 kilometres of marine coastline involving over 1.5 million fisher people who are directly related to fish catching and others who are indirectly related to this occupation. Being a natural consumable resource it contributes to food security of India, fish is considered as a food source and an income source simultaneously. An Exclusive Economic Zone is a sea zone over which a state possesses marked rights regarding the exploration and use of marine resources. EEZ ranges up-to 200 nautical miles (nmi),i.e. 370400 meters from its coastline. This expanded the marine fishing opportunities and transformed the business to its greater dimensions.

Fishing in coastal region follows a similar trend throughout India. Marine fish being a natural resource does not require any effort of production. These resources are auto generated in the sea through breeding of fishes. The only effort is made by the fishermen is to procure the fishes from the sea. Fishermen work as a team to extract the fish from the sea, skilled and unskilled labour forces together achieve the job. Financing the entire business is an integral part to conduct the business operations smoothly. Formation of a cartel is observed as different persons provide different resources like the boat, net, other valuable resources. These persons come together for mutual benefit and mutual share of profit which is pre-determined according to their contributions made which may vary time to time.

The fishing process can be classified in two ways in terms of duration

- Long fishing- in this kind of fishing the boat is packed with enough resources to survive a month's trip. Usually 15 days of fishing is involved in deep sea which depends on the season and weather conditions

- Short fishing- this kind of fishing is completed within a day. This is a regular activity that is found in practice by most of the fishermen. This includes low risk and is advantageous in summer so that the fish is transferred to the market in fresh condition.

Winter season is considered to be the most preferred season for fishing but fishing being the toughest part of the business many other factors like full moon, dark moon, high tide, low tide effect the procurement of fish and the fishermen are experienced enough to act considering all the factors. After procurement of fish classifications can be made according to their breed, size, quality etc. so that the fishes can be sold in different markets in different rates.

The fixture of rate and quality is made on three major segments:

1. Export market – These are the premium quality fishes that have demand on foreign market and the only market in which the rates of fishes are pre-determined the only factor manipulating the rate is convertibility of a rupee.
2. Domestic market – these fishes are packed and transferred to different states according to their demand in different markets in India. The price fixation differs according to the demand and supply of the fish.
3. Local market – this market meets the demand of the local people of the coastal region. Mostly comprises of small fish for local consumption of low price. But a small portion of premium fishes are also available for the tourists and local business men involved in tourism. The rates of the fishes in this market are fixed as the consumers are perfectly aware of the market rate.

Dehydration process is done by salt and sugar but frozen form of transportation is most preferred as clean fishes are transported in this process for consumption. These packed fishes are delivered to different parts of India which may further go through transportation to reach every part of India in demand.

Review of literature

CMFRI (1977) points out a distinct tradition of fishermen. They belong to all the major religions namely Hinduism, Christianity, Islam and several communities which differ from State to State. Several factors such as a low social status, poor economic conditions,

illiteracy, heavy inter service of middlemen, traditional fishing equipment's and methods of fishing, low production rate and income influence the socio-economic conditions of fishermen. This sector has been receiving considerable attention from the Government from the first five year plan. Organised attempts are made to promote fishery co-operatives in our country.

Fernando (1981) Suggested development of Internal market facilities must be developed with suitable transport facilities. Fishermen should be educated sufficiently to preserve fish at the catching point itself. Modern fish processing units must be established in all the important fishing centres along with State fisheries units. Fishermen in the coastal area should be provided with proper sanitation and medical facilities, drinking water, wells and electricity. Giving priority to all port for berthing facilities and processing units with freezer-cum-ice plants for the use of small fishermen. Alternate jobs during off-season should be provided to the fishermen and their womenfolk.

Durairaj (1981) studied Marine Fishing Industry in Thanjavur district has discussed the distribution of income, indebtedness and the annual average return per craft of both the mechanised and non-mechanised sectors. The study recognised the need to improve the efficiency of catamarans by suitably modifying the traditional craft. The study recognised the annual net return per craft in catamaran sector was more than that of the mechanised sector. The low return per craft in the mechanised sector was mainly due to the high cost of diesel and oil.

CMFRI (1985) analysed the living conditions of the small fishermen in India. Artisanal fishermen landed 40 per cent of the marine fish production in India with traditional implements. They put in an effort of 8-12 hours a day in the sea to earn an income of `10-20 or even less. The standard of living of artisanal fishermen is generally low. Lack of technology and services makes them inefficient. Educating the fisher folk is the most important step in helping them and making them aware of the programmes available to them.

James (1990) in his article analysed, the total marine potential and the average production in the mechanised and traditional sector. The study unveiled that the coastal areas had been fished to its optimum level and the potential in offshore and deep sea fishing are yet to be conquered. The study suggested for joint ventures with countries having expertise and experience in high sea fishing for tapping the vast off-shore and deep sea fishing resources.

Sehara et al., (1992) described the monsoon fisheries in the west coast of India. During monsoon period (June-August) fishing operation are substantially reduced to about 10 per cent of the total units and non-mechanised units are reduced to 25 per cent. The household income during monsoon is very low and consequently fishermen become permanent debtors. To overcome these difficulties, it is suggested to constitute a public agency to purchase fish at a minimum price whenever there is a glut at the landing center, and to provide adequate finance at reasonable terms and conditions through co-operatives.

Chidambaram et al., (1997) have studied marine fish supplies in Tiruchendur area. They have described fishing operations, financial requirements, and profitability in fishing and production problems encountered by the fishermen. They have also given policy suggestions for the development of the fishermen.

Girija et al., (1998) stated that the development plans for marine fisheries lay emphasis on improving the lot of marginal fishermen in India. A concerted effort to coordinate fishing would improve the subsidiary activities of fishermen household, by tapping the fishermen to process and market a substantial portion of the fish landed and also would definitely go a long way in improving the socio economic conditions of this sector. Technological developments for handling fish can be easily transfer benefits to beneficiaries involved. Infrastructural support by way of cold storages, processing space, transportation network and sales outlets are to be enhanced. By expanding the co-operative set-up in Kerala will develop the potential work force of fishermen and the apex body of the cooperatives will be able to penetrate export trade by properly coordinating the production at different work centres in addition to emerging as a major player in the domestic fish trade.

Objective of the study

The study is conducted to analyse the trend over past years in the marine fishing industries all over India. How procurement of marine fishes evolved to become a contributor to Gross Domestic Product.

1. Analyse the trend of the industry.
2. Evaluate the fish catch in marine and inland fishing.
3. Contribution of India in respect to the world.

4. Total fish production form independence till now. And show the improvements in the industry.
5. Contributions of different states to marine fisheries.
6. Evaluate the status of West Bengal for past few years in respect of other states.

Research Methodology

In order to make inroads into the growth of marine fisheries in India since independence, an extensive study is envisaged based on the data available in public domain to enquire on the trends of fishing in general and marine fisheries in particular. Under this circumstance, exclusive uses of data available from Indiastat.com have been undertaken. After collection of data the same have been analyzed with appropriate statistical tools like trend analysis as well as line and graph method.

Data Analysis

Marine fisheries have evolved to be one of the most important segments of agricultural sector. Procurement of natural resources without replacement cost may harm our environment but marine fisheries provide a huge employment status to many Indians. Indian fishing industry contributes about 6.3% of global fish production as well as 1.1% of Indian GDP and 5.15% of agricultural GDP.

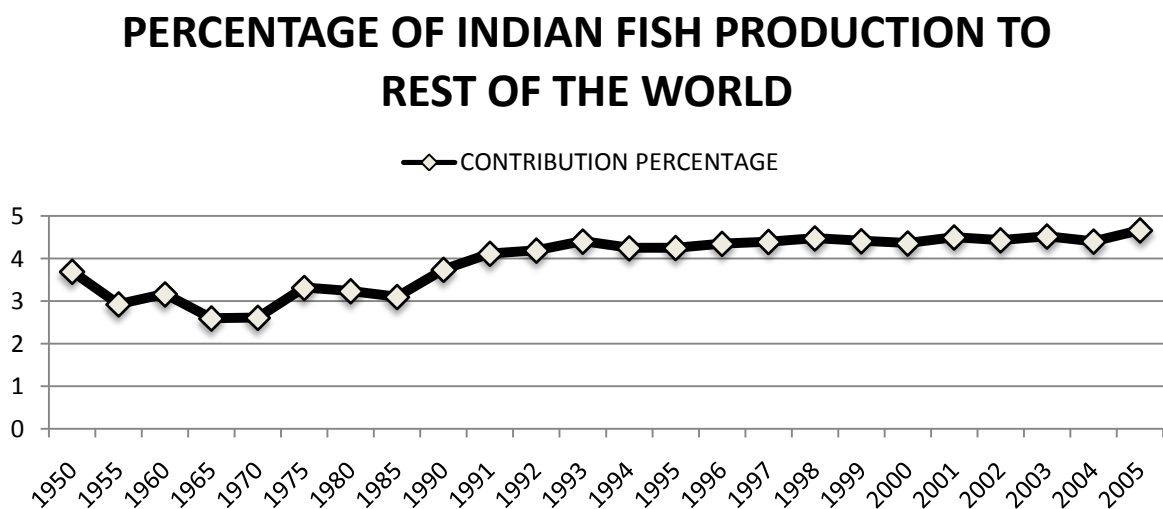
Table#1: Contribution of India to World Fish Production

Contribution of India to World Fish Production						
(In ' 000 Tonne)						
Year	World Production			Contribution of India		
	Total	Marine	Inland	Total	Marine	Inland
1950	19755	17521	2234	730	520	210
1955	28641	24968	3673	839	596	243
1960	36691	32665	4026	1162	880	282
1965	51229	46141	5088	1331	824	507
1970	67280	61277	6003	1759	1086	673
1975	68341	61481	6860	2267	1482	785
1980	75586	67953	7633	2446	1555	891
1985	91553	80888	10665	2839	1747	1092
1990	103590	88997	14593	3875	2300	1575
1991	98261	84664	13597	4045	2390	1655

1992	100885	86329	14556	4232	2512	1720
1993	104477	88351	16126	4606	2676	1930
1994	112559	94659	17900	4785	2796	1989
1995	116411	96220	20191	4951	2754	2197
1996	120199	98038	22161	5231	2910	2321
1997	122542	98783	23759	5385	2949	2436
1998	117790	92593	25197	5275	2763	2512
1999	126651	99468	27183	5592	2848	2744
2000	130433	101831	28602	5689	2852	2837
2001	131002	101550	29452	5897	2930	2967
2002	133651	102953	30698	5924	3107	2817
2003	133187	101828	31359	6025	3107	2918
2004	140492	103796	36696	6190	2989	3201
2005	142691	103401	39290	6658	2995	3663
2006	143648	101990	41658	7014	3159	3855

Source : Ministry of Agriculture, Govt. of India.

Chart#1: Percentage of Indian fish production to the rest of the World.



Indian fish production has depicted a continuous growth throughout the years representing the consistency in growth of both inland fish production and marine fish procurement. Since 1950 Indian fishing industry went through minor disruptions as the economy was not stable and trying to cope up with structural changes. But from the above Table 1a clear scenario has been noticed since 1990 in this industry and no downfall have been noticed and this industry has also emerged as a contributing sector to GDP. A stable growth is noticed in the above chart from 1990 to 2005.

Table#2:Fish Production of Marine and Inland in India

Fish Production of Marine and Inland in India			
(In ' 000 Tonne)			
Years	Marine	Inland	Total
1950-51	534	218	752
1955-56	596	243	839
1960-61	880	280	1160
1965-66	824	507	1331
1970-71	1086	670	1756
1973-74	1210	748	1958
1978-79	1490	816	2306
1979-80	1492	848	2340
1980-81	1555	887	2442
1981-82	1445	999	2444
1982-83	1427	940	2367
1983-84	1519	987	2506
1984-85	1698	1103	2801
1985-86	1716	1160	2876
1986-87	1713	1229	2942
1987-88	1658	1301	2959
1988-89	1817	1335	3152
1989-90	2275	1402	3677
1990-91	2300	1536	3836
1991-92	2447	1710	4157
1992-93	2576	1789	4365
1993-94	2649	1995	4644
1994-95	2692	2097	4789
1995-96	2707	2242	4949
1996-97	2967	2381	5348
1997-98	2950	2438	5388
1998-99	2696	2602	5298
1999-00	2852	2823	5675
2000-01	2811	2845	5656
2001-02	2830	3126	5956
2002-03	2990	3210	6200
2003-04	2941	3458	6399
2004-05	2779	3526	6305
2005-06	2816	3756	6572
2006-07	3024	3845	6869
2007-08	2920	4207	7127
2008-09	2978	4638	7616
2009-10	3104	4894	7998
2010-11	3250	4981	8231
2011-12	3372	5294	8666
2012-13	3321	5719	9040
2013-14	3444	6132	9576
2014-15	3502	6929	10431

2015-16(P)	3583	7213	10795
Abbr.: (P): Provisional.			
Source: Central Water Commission, Govt. of India.			
Ministry of Agriculture, Govt. of India.			
Ministry of Statistics and Programme Implementation, Govt. of India.			
Ministry of Agriculture & Farmers Welfare, Govt. of India			

Marine fisheries in 2015-16 enrolled a growth of 6.71 times growth in respect to 1950-51. This shows the improving trend of Indian fisheries all over the years. Inland fisheries have overpassed the marine fisheries in term of growth and unveil 33.1 times growth in current year in respect to 1950-51. The overall growth is 14.35 times of what it was in 1950-51. The above table 2 depicts historical improvements of fish production and procurement throughout these years. Every possible scenario that we see today is not a change of a day rather efforts of several years have made this condition possible for India.

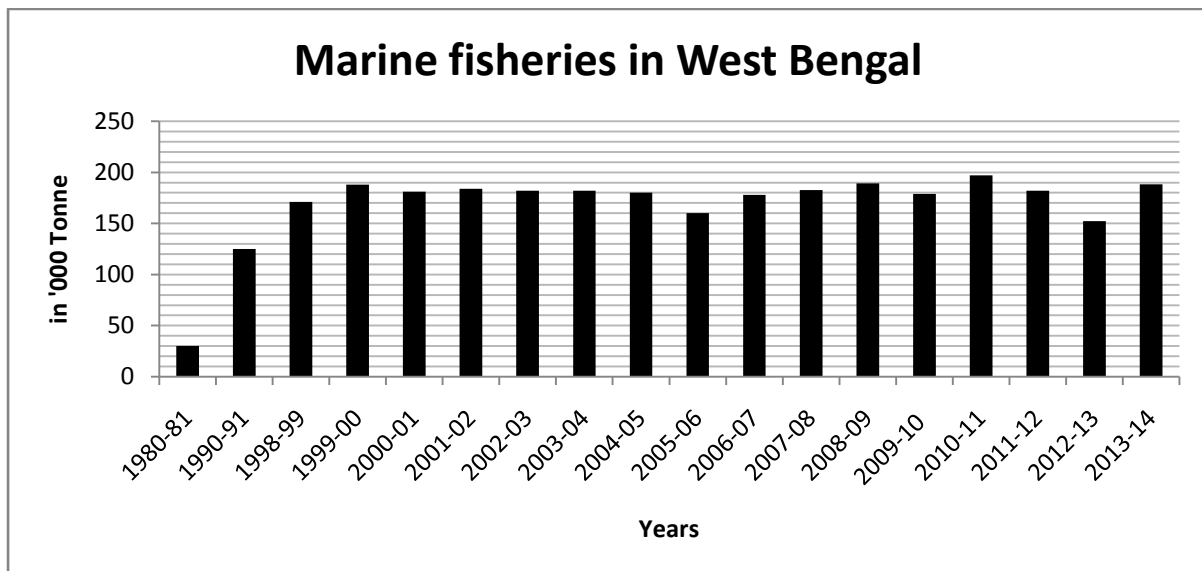
Table#3:State-wise Marine Fish Production in India

State-wise Marine Fish Production in India										
(2007-2008 to 2016-2017-upto December 2017)										
(In Lakh Tonne)										
States/UTs	2007-	2008-	2009-	2010-	2011-	2012-	2013-	2014-	2015-	2016-
	2008	2009	2010	2011	2012	2013	2014	2015	2016*	2017*#
Andaman and Nicobar Islands	0.29	0.32	0.33	0.34	0.35	0.36	0.37	0.37	0.37	0.30
Andhra Pradesh	2.55	2.91	2.93	2.89	4.33	4.14	4.38	4.75	5.20	4.01
Daman and Diu	0.26	0.14	0.16	0.17	0.17	0.19	0.19	0.32	0.23	0.18
Goa	0.32	0.83	0.82	0.90	0.86	0.74	1.10	1.15	1.07	0.10
Gujarat	6.45	6.23	6.87	6.89	6.92	6.94	6.96	6.98	6.97	5.03
Karnataka	1.76	2.18	1.71	3.41	3.47	3.57	3.57	4.57	4.12	2.86
Kerala	5.86	5.83	5.70	5.60	5.53	5.31	5.22	5.24	5.17	2.98
Lakshadweep	0.11	0.13	0.12	0.12	0.12	0.12	0.19	0.13	0.12	0.02
Maharashtra	4.20	3.96	4.16	4.47	4.34	4.49	4.67	4.64	4.34	3.49
Odisha	1.31	1.35	1.29	1.33	1.14	1.18	1.20	1.33	1.45	0.14
Pondicherry	0.33	0.35	0.36	0.36	0.38	0.36	0.38	0.42	0.78	0.36
Tamil Nadu	3.93	3.65	3.65	4.05	4.27	4.28	4.32	4.57	4.67	0.82
West Bengal	1.83	1.89	1.79	1.97	1.82	1.52	1.88	1.79	1.78	1.30
India	29.19	29.78	29.90	32.49	33.72	33.21	34.43	36.26	36.27	21.59
* : Provisional.										
# : Up to December 2017.										
Source : Ministry of Agriculture, Govt. of India.										
Lok Sabha Starred Question No. 222, dated on 02.08.2016 &										
Lok Sabha Unstarred Question No. 4032, dated on 27.03.2017.										

Table 3 represents state wise marine fish production as these states or islands are surrounded with sea borders so these states enjoys the privileges of marine fishing. As figure reveal that Gujarat is the leader in marine fishing followed by Kerala, Maharashtra, Tamil Nadu, Andhra

Pradesh, etc. these states have also shown a growth throughout these years. While states like Pondicherry, West Bengal, Odisha, Lakshadweep, Daman and Diu, Andaman and Nicobar Islands, etc. have consistently maintained their stability and have not reflected any growth in past ten years. This reflects that these States and Union Territories are not contribution to the growth of fisheries in India rather holding the position, and the need for development in fishing techniques and modern equipment are recognised.

Chart#2: Marine fisheries in West Bengal



From chart 2 a clear view has come to notice that West Bengal has not been able to show a growing trend but has kept a stagnant position in marine fishing. Inland fisheries are part of agricultural product and can be produced through various means by various techniques and low investments. On the other hand marine fisheries is all about procurement of fish from the sea and involves huge investments, huge risk, uncertain weather conditions, trained fishermen, modern technology, etc. all these factors combined can result in marine fish catch. In comparison to other states like Gujarat, Kerala, Maharashtra, Tamil Nadu, Andhra Pradesh, etc. west Bengal shows no improvements whereas these states showed a rapid growth in last few years.

Limitations of the study

1. The study is conducted on the basis of secondary data available and assumed to be authentic.
2. The study is focused on marine fisheries in an overall perspective and ignoring inland fisheries.

3. The research work is limited to time and further work can be conducted.
4. Conducting a primary survey could judge the actual scenario of a particular area of marine fisheries which could contribute to an in-depth analysis of this industry.

Conclusion

Marine fishing industry has evolved as an important sector of agriculture which makes a significant contribution to the GDP. At the initial stage this industry noticed disparity due to many factors that imbalanced the growth. But with accelerating time a steady growth was noticed in the overall production and procurement of fishes. Technology has played a significant role in development of this industry and the results are visible. Gujarat, Kerala, Maharashtra, Tamil Nadu, Andhra Pradesh have manifested remarkable growth throughout the years whereas states like Pondicherry, West Bengal, Odisha, Lakshadweep, Daman and Diu, Andaman and Nicobar Islands have shown consistent trend of slight improvement irrespective of the opportunities that they have of a vast costal coverage. West Bengal has not displayed any consequential development in fishing industry. Technological developments, skilled labour, heavy investments and many other factors have backed the fishing industry and will take it to new heights in coming future.

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