

An Analysis of the Contribution of Fisheries to the Economic Development of Kerala

V. Geethalakshmi, Nikita Gopal, V. Radhakrishnan Nair and G.R. Unnithan
Central Institute of Fisheries Technology, Cochin - 682 029, India

Fisheries has been a traditional enterprise in Kerala with a contribution of 1.95% to the NSDP during 2003-04. The state has built an impressive infrastructure both in fish and fish processing sector. The sector provides employment to more than one million people either directly or indirectly. This article outlines the impact of fisheries on the development of economy of the state and suggests measures to achieve the targets to ensure a viable fisheries sector.

Keywords: GSDP, per capita income, foreign exchange, unit value, food security

The state of Kerala, has a land area of 38,863sq. km, blessed by nature in the form of large continental shelf of 39424 km², coastal line of 590 km, an inland water spread of 3.03 lakh ha and a brackish water area of 65,000 ha. suitable for the development of fisheries. The current fish production from marine sector of Kerala state has been estimated as 5.23 lakh tonnes. Area under culture is 13,400 ha out which estimated production is 9750 tonnes in 1999-00. Production is 73.9 thousand tones per hectare of inland water area. Apart from the fact that fisheries support about 10 million people in the state, it provides an important source of cheap and highly nutritious food and contributes immensely to food security of the state.

In spite all these strengths, there are important bottlenecks for the growth of the sector in Kerala which need immediate attention. In this paper, the authors have made an attempt to evaluate the growth and the impact of fisheries on the economic development of the state of Kerala taking into consideration the contributing factors, strengths, opportunities, threats and short-

falls so as to initiate appropriate managerial interventions in time. The scope of this paper is to analyze the economic contribution of fisheries in Kerala during the past decade and not to measure the impact of fisheries. The discussion on the economic contribution is done with the help of secondary data which was collected from various sources.

Rao & Rao (1989) have discussed the growth of Indian fisheries with respect to its contribution to GDP, export earnings, infrastructure, employment and research. Kurien & Chacko (2006) elaborated on the importance of fisheries sector in the light of its contribution to the economy of Kerala and stressed the need to modernize the sector. Dada (2004) examined the significance of fisheries sector in the Nigerian economy and its contribution to employment and food security in the country. The contribution of fisheries to the GDP of Pacific Island countries was brought out by Gillett & Lightfoot (2001).

Materials and methods

The paper discusses the contribution of fisheries sector to the state income, resource

and infrastructure development, employment, food security and foreign exchange. The data pertaining to different parameters such as the marine and inland production, aquaculture production, exports etc. were collected from various publications of the State and Central Government sources. Information on Gross State Domestic Product was collected from the publications of the Directorate of economics and Statistics, Govt. of Kerala and the official website of the Planning Commission. Details on sea-food processing were collected from MPEDA publications.

Results and Discussion

The GSDP is one of the most important macro-economic indicators of the economy of a state. It represents the income originating from the factors of production physically located within the geographical boundaries of the state and represents net value of goods and services produced within the state. The data pertaining to the GSDP of Kerala at current and constant prices for the past few

years had been analyzed and presented in tables 1 and 2.

The GSDP is constituted by the primary, secondary and tertiary sectors. The total GSDP of Kerala was estimated at Rs.9,09,801.5 million at current prices and Rs.4,34,404 million at constant prices during 2002-03.

Fisheries come under the primary sector along with agriculture, livestock, forestry mining, quarrying, etc. The analysis of the data on GSDP showed that the contribution of primary, secondary and tertiary sectors is 16.0%, 22.23% and 61.78% respectively at constant prices and 17.12%, 24.08% and 58.78% respectively at current prices, during 2002-03. During 1993-94, the contribution of the sectors were noted to be 30.68%, 20.61% and 48.80% respectively at current prices. A comparison clearly indicated that the contribution of primary sector to GSDP is gradually decreasing which means that the dependency of the state's economy is gradually shifting to secondary and tertiary

Table 1. GSDP of Kerala at constant prices (1993-94)

Industry of origin/ Year	Primary sector	Fishing sector	Secondary sector	Tertiary sector	Total GDP
1993-94	8051.45	711.88	5427.16	12847.31	26326.02
1994-95	8819.85	763.58	6002.22	13679.02	28501.09
1995-96	8743.98	668.84	6395.15	14618.88	29788.01
1996-97	8956.81	733.05	6377.43	15555.79	30890.03
1997-98	8513.12	629.82	6583.31	16686.09	31782.52
1998-99	8741.07	680.12	7199.93	18123.24	34064.24
1999-2000	8969.47	735.82	7323.04	20223.42	36515.93
2000-01	7304.02	734.62	7990.81	22375.61	37670.44
2001-02 ^a	7232.21	751.56	8842.3	24443.07	40517.58
2002-03 ^b	6943.19	757.93	9660.12	26837.1	43440.41

^aProvisional estimate ^bQuick estimate

Table 2. GSDP of Kerala at current prices (1993-94)

Industry of origin/ Year	Primary sector	Fishing sector	Secondary sector	Tertiary sector	(in Rs. x 10 ⁷)
					Total GSDP
1993-94	8051.55	711.88	5427.16	12847.31	26326.02
1994-95	9803.85	748.05	6715.14	15357.64	31876.63
1995-96	11880.88	934.49	8351.1	18530.34	38762.32
1996-97	13296.36	1137.54	9453.57	21709.97	44459.9
1997-98	13364.72	1162.97	10805.2	25314.55	49484.47
1998-99	14061.12	1264.96	12848.09	29337.74	56246.95
1999-2000	15611.08	1533.25	13207.28	33701.33	62519.69
2000-01	14880.94	1552.34	15462.86	39426.12	69769.92
2001-02 ^a	14818.71	1723.68	18676.63	45938.2	79433.54
2002-03 ^b	15583.67	1877.08	21912.37	53484.11	90980.15
2003-04					90172.00

^aProvisional estimate ^bQuick estimate

sectors. This is similar to the trend noticed in many developing countries of the world.

On an average fishing contributes to 9% of GDP in Primary sector and 2% to the total GDP at constant prices and 9.5% of GDP in Primary sector and 2.35% to the total GDP at current prices. The contribution of Kerala to national GDP amounting to Rs. 9,01,720 million (current prices) during 2003-04 was only 3.57%.

The contribution of fisheries to the primary sector and the total GSDP in Kerala was on an increasing trend and it was 9.82% in 1999-2000 against 2.02% to the total GSDP (at current prices) which is substantial compared to the all India figures of 4.73% and 1.38% respectively (Central Statistical Organisation, 2001). The contribution of fisheries to the primary sector has been steadily increasing during the past decade (1993-94 to 2003-04) as is evident from table 3 and it was 12.05% during 2002-03 at current prices and 10.92% at constant prices.

The time-series data of the total fish catch indicates the dynamic nature of the fisheries sector in the state. The inland fish catch is on the increasing trend and the marine fish catch seems to come to a stagnation over the years. In terms of

Table 3. Percentage Contribution of fisheries to the GSDP of Kerala at constant (1993-94) and current prices

Year	% contribution to Primary sector		% contribution to GSDP	
	At current prices	At constant prices	At current prices	At constant prices
1993-94	8.84	8.84	2.70	2.70
1994-95	7.63	8.66	2.35	2.68
1995-96	7.87	7.65	2.41	2.25
1996-97	8.56	8.18	2.56	2.37
1997-98	8.70	7.40	2.35	1.98
1998-99	9.00	7.78	2.25	2.00
1999-2000	9.82	8.20	2.45	2.02
2000-01	10.43	10.06	2.22	1.95
2001-02 ^a	11.63	10.39	2.17	1.85
2002-03 ^b	12.05	10.92	2.06	1.74

quantity Kerala produced 6.78 lakh tonnes of fish in 2002-03 of which 88.93% was contributed by the marine and 11.06% by the inland sectors respectively. The share of Kerala to the fish production at the national level was 3 % in the inland and 21% in the marine sectors. The inland fisheries sector had shown very impressive growth over the years. During 2002-03 alone the fish production from inland waters was 75000 tonnes. The fig.1 gives the trend of fish production

from the state as compared with India as a whole.

The time series data on the inland fish catch in the state shows an increasing linear trend. A model

$Y=28.3+4.28*t$, where variable $t=1$ during 1990-91 formulated on time variable, has been identified as a good fitting model, with $R^2 = 0.92$ and significant coefficients. Under baseline conditions, the model gives a inland fish production forecast of 113.9 thousand tonnes in the year 2009-10.

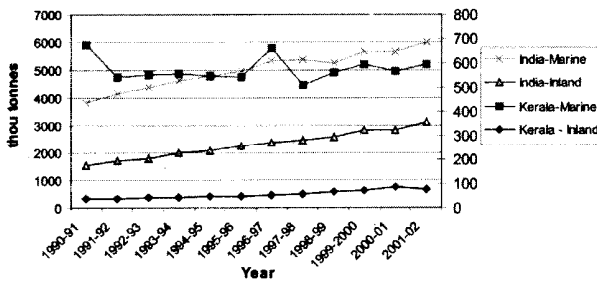


Fig. 1. Trend in fish production Kerala and India

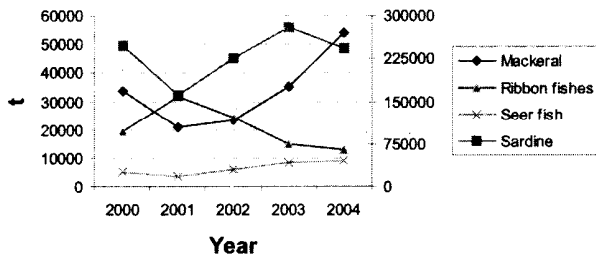


Fig. 2. Production of commercially important species in internal markets (Kerala)

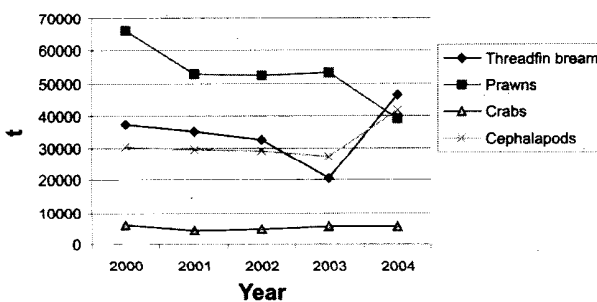


Fig. 3. Trend in production of export oriented species from Kerala

The production of commercially important species over the years have been dwindling over the past five years (fig.2 and 3).

The production trend in respect of export oriented species from Kerala is given in thre fig. 3

Studies undertaken at CIFT (Unnithan *et al.*, 2004) showed that 77% of the operation cost for fishing was towards fuel affecting the returns realized by the fisherman. The escalation in diesel prices over the years showed a clear increasing trend (Fig. 4) whereas the pace of increase in prices

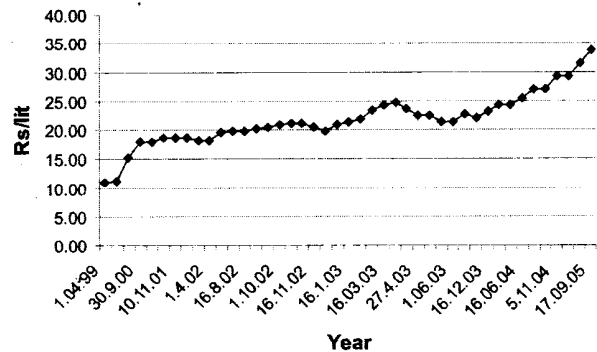


Fig. 4. Diesel Prices at Kerala (1999-2005)

realized for important species at the landing centre was not appreciable. A study conducted at CIFT (Unnithan et al, 2005) revealed that only 55% of the fishing capacity was actually utilized and the vessels remain at sea only for a few days at seas due to uneconomic fishing. The fishing capacity may be judiciously decided and aspects like diversification of fishing techniques, adoption of modern fishing methods, improvements of craft and gear design, use of advanced electronic equipments for targeted fishing etc. kept in mind. Field studies undertaken showed that for a multiday trip for fishing for 7 days the expenditure for fishing would be to the tune of Rs.1 lakh of which Rs.81600 was towards fuel. Deep sea fishing is not undertaken by many of the fishermen because if the catch is poor the fishing trip becomes totally uneconomical. To make fishing economical, fishermen even resort to night fishing although they realize that it will harm the resources in the long run.

Therefore a strategy for sustainable production should be evaluated by utilizing technologies like fuel efficient vessels for

reduction in loss to the primary producer, more focus on aquaculture and optimum utilization of inland water resources. Handling of the catch onboard should be improved to ensure quality and fishermen should be trained in simple onboard post-harvest technologies during multiday fishing.

An important indicator of development in any state for any sector is the infrastructure existing there with respect to the sector. The fisheries sector can be broadly characterized under two activities namely fishing and fish processing. Owing to technological advancements in the fishing sector, the crafts have grown in both size and capacity. In the harvest sector, there were 2238 mechanised crafts, 10210 motorised and 26469 traditional crafts in Kerala during 2003-04. There are six fishing harbours and 9 landing centers for mechanized boats and 14 landing centers for traditional crafts in the state. Apart from modern fishing harbours, there are 49 fish landing centres, spread over the entire 590 km coastline of Kerala. In tune with the development in fisheries, a large number of ice plants, boat building and repairing yards, net making plants, net mending and repairing facilities, fuel pumps, refrigerated and non-refrigerated trucks and other carriers etc. also have come up on the coastal belt.

The state contributed to 16.4% of marine products exports by way of quantity and 18.04% by way of volume during 2003-04. Kochi continued to be the 2nd largest port in terms of value (Rs.1135.7 crore) but it became the 3rd largest port in terms of volume during 2004-05. Table 4 gives the details of quantity and volume of various marine products exported from Kerala during the year 2003-04.

Table 4. Exports from Kerala ports 2003-04

Item	Kerala		India	
	Qty (mt)	Value (Rs. Crores)	Qty (mt)	Value (Rs. Crores)
Fr shrimp	29198	597.43	129768	4013.07
Fr squid	10875	129.3	138023	620.73
Fr cuttlefish	17657	240.65	37832	372.92
Fr finfish	10543	49.56	39610	435.18
Dried item	29	0.64	3779	64.04
Live item	278	12.82	2341	51.10
Chilled item	767	11.23	12574	145.68
Others	7280	57.50	480.90	389.23
Total	76627	1099.13	467297	6091.95

Table 5. Disposition of fish catch in Kerala (in tonnes)

Year	Total	Marketing Fresh	Freezing	Curing	Canning	Reduction	Offal For Reduction	Miscellaneous Purposes
1994	614217	343957	128983	61421	6141	42994	12286	18435
1995	580672	325176	121940	58067	5806	40646	11615	17422
1996	625493	350276	131354	62549	6255	43784	12510	18765
1997	630810	355714	130893	63207	6750	44724	10724	18798
1998	606132	339436	127288	60613	6060	42429	12122	18184

Source: Handbook of fisheries statistics 2000, GOI

An evaluation of the export scenario in the state indicates that there has been an export growth of 18.48% in quantity and 44.46 % of value during the last decade. It was also noted that the export market was highly dominated by shrimp and the contribution of value added products is negligible. In 2004, 32.54% of the exports from Cochin port was shrimp based. Fig. 5 gives the trend of marine product exports from Kerala port during the last 15 years. The trend in export of value added products has been increasing in a slow pace (Fig. 6).

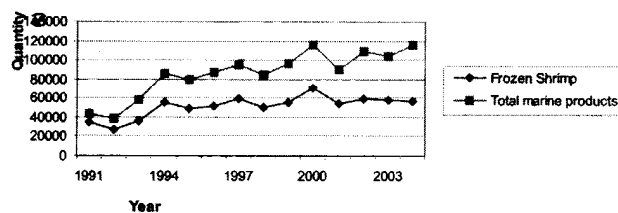


Fig. 5. Trend of marine products exports from Cochin port

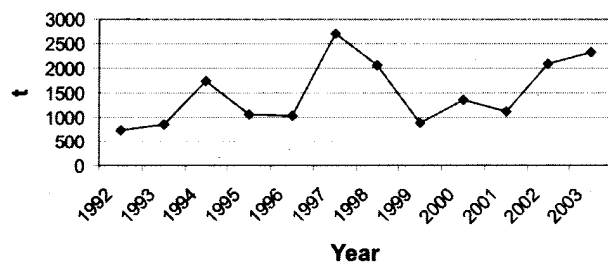


Fig. 6. Trend in export of value-added products during 1992-2003 (Kochi port)

Though the exports have increased manifold in the past years the unit value realized for our products in dollar terms has not actually increased. Incorporating modern facilities at fisheries harbours and fish landing centres, improving hygienic and quality standards in fish handling and transportation etc. and bringing more processing factories under the HACCP plan will also ensure the higher unit value both at export and domestic markets. Only by diversification of markets, value addition, and introducing modern marketing strategies etc. can better unit price for the product from the state be ensured.

On the marketing side, 73.7 % of the total fish production in the state is marketed fresh and only 7.5% is utilised for freezing, 10.8% curing and 8% for other purposes. No appreciable change is noted in the pattern of disposition of fish over time. Table 5 gives the disposition of fish catch in Kerala in tonnes as fresh, frozen, cured and as offal from 1995 to 1998.

Kerala has a large number of major and minor domestic markets situated both in urban and rural areas. Since very large quantity of fish is being consumed through domestic markets and transported to distant fish markets by trucks and other modes of

transport, special attention has to be given to handling, packaging and transportation so that the quality of fish can be maintained. Sanitation and hygiene of the markets also deserve special attention.

In the processing sector, the growth in infrastructure has been substantial. There are 103 freezing plants, 154 cold storages, 171 registered peeling sheds apart from canning, icing and fish meal plants. The present installed capacity in the fish processing factories in Kerala is 1997.4 tonnes per day, and for economic viability of the plants it is essential that the idle capacity should come down drastically. More quantity of raw material should be made available either from capture or from culture or even by import. In this situation a serious thinking may be given as to what extent the further expansion of the plant capacity is needed to cater to the need of the future in view of the existing rate of idle capacity and the huge capital cost involved in the installation of processing plants. Such management measures will also help in less competition for the raw materials resulting in improvement of capacity utilisation and profitability of the industry. The main reason for high idle capacity is the lack of raw material.

It is evident from the study that the contribution of the fisheries sector to the economy of Kerala has been very substantial and also the growth trend is positive. It has contributed directly or indirectly to the development of transportation facilities, electricity, water supply and improved communication facilities in the rural interior areas, a number of hotels and restaurants have come-up, numerous banks and other financial institutions started functioning, all of which have transformed the quality of life

of the poor fishermen community. On the fishing side eco-friendly fishing techniques and new generation, fuel-efficient vessels should be introduced to minimise the operational costs and also to ensure sustainable production. On the processing side more stress on value added products will ensure better return for our exports. Diversification of export markets and products must be explored. Modern technology for packaging and long distance transportation is to be widely propagated to ensure the quality of fish at the different destinations in the country. The standards of harbours, landing centres, pre-processing centres, domestic markets etc. should be improved and modernised to world class levels which may require substantial capital investment by the state. The fishing and processing capacity may be so regulated taking into consideration the idle capacities and the future requirements by appropriate fishery management interventions.

References

- Anon. (1991 to 2005) Statistics of Marine Product Exports *various issues*. MPEDA, Cochin, India
- Dada, B.F. (2004) Contribution of fisheries to employment, national economy and food security in Nigeria. *Fish Network*, 1, pp. 1-2, 5-6, 7, 14.
- Gillett, R. and Lightfoot, C. (2001) The contribution of fisheries to the economies of Pacific Island countries. Report prepared for Asian Development Bank, The Forum Fisheries Agency and the World Bank.
- Kurian, T. and Chacko, S. (2006) Fisheries sector and Kerala Economy : Tapping the resources. *Kerala Calling*, July, 2006.

Rao, P.S. and Rao, G.K. (1989) Growth and productivity of Indian fisheries. *Journal of the Marine Biological Association of India*, **31**, pp. 218-27.

Unnithan, G.R., Nikita Gopal and Nair, R.V. (2004) Economics of operation of 18m

fuel efficient steel trawler of CIFT design. *Fish. Technol.*, **41** pp.71-76.

Unnithan, G.R., Nikita Gopal, Nair R. V. and Nasser, M.(2005) Fuel consumption pattern by the mechanized fishing sector in Kerala. *Fish. Technol.*, **42** pp 77-82.