

# AN ECONOMIC SURVEY ON THE RESOURCES POTENTIAL AND DEPLOYMENT IN THE FISHERIES SECTOR OF KERALA

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**ABSTRACT:** : India has a seacoast of 6000 km and of that 589.5 km coastal line is in Kerala, which is around 10 per cent of India's coastline. The fisheries sector had undergone important structural changes in the middle of the 19<sup>th</sup> century. The growth of the fishing sector stimulates the development and employment in related industries which contribute significantly to the total economic growth of the country. Besides providing direct employment, the industry is an income generator as it supports processing establishments, gear and equipment manufacturers, boatyards, refrigeration and ice making plants and transport services in addition to those working in governmental and private fisher based institutions. This paper is an attempt to review the various economic significance of the marine fisheries sector through its share in the Gross State Domestic Product (GSDP) of the state, the growth of fish Production and its share in the Exports of the state.

**Key Words:** Gross State Domestic Product, Fish production, Fish export.

## 1. Introduction

Among the maritime states in India, Kerala occupies a prominent position in fish production. Kerala is gifted with several inland water bodies consisting of 44 rivers (covering an area of 0.85 lakh hectares), thirty major reservoirs (covering an area of 0.30 lakh hectares), tanks and fresh ponds (0.25 lakh hectares), backwater bodies numbering 45 and extensive brackish water area (2.43 lakh hectares). But the inland fish production in Kerala accounts to only around 11.06 percent of the total fish production in India. The potential of inland fisheries has not been tapped to the full extent. Kerala which once enjoyed a leading position in the marine fishing sector in India is losing its importance in the sector, as states like Gujarat and Orissa manage it in a better way. The water coast of Kerala is blessed with marine wealth with about three fourth of the fish wealth of the country. In 2016-2017, the fish production in Kerala was 6.76 million tonnes, while 4.88 million tonnes were from the marine sector; 1.88 million tonnes were from the inland sector. Kerala has a fishermen population of 10.29 lakhs, of which 7.92 lakhs are marine fishermen and 2.37 lakhs are inland fishermen. The largest number of fisher men population is in Alappuzha (1.91 lakhs) followed by Thiruvananthapuram district (1.70 lakhs) and Ernakulum (1.37 lakhs). At Present there are 222 marine fishing villages in Kerala and 113 inland fishing villages (Economic Review, 2018). Its contribution to GSDP is about 8.8 percent which is of great significance to the state's economy. The share of fisheries sector in the State Domestic Product has declined from 1.12 percent in 2011-12 to 1.09 per cent in 2016-17. The fact is that fisheries sector is a contributor to the national as well as state economy cannot be neglected. It is the major source of livelihood to the people of Kerala.

## 2. Objectives of the study

1. To analyse the resource potential of fisheries sector in Kerala.
2. To examine the predicted share and trend of fisheries sector in GSDP.
3. To estimate the predicted share and trend of marine products export of Kerala.

## 3. Research Methodology

The present study is completely based on secondary data. The data have been collected from various sources like publications of the Government of India and Kerala, National Planning Commission, State Planning Board, books, reports, journals, periodicals, published and unpublished research reports, working papers, dailies and web site.

## 4. Data and Discussion

### 4.1. Fish Production in Kerala

The total fish production in Kerala during 2016-17 was 6.76 lakh metric tonnes. Production of the fisheries sector in the country mainly arises from marine and inland sector, which includes both capture and

culture fisheries. The marine fishery resources of the State have almost attained the optimum level of production. At the national level about 65.77 per cent of the total fish production is contributed by the inland sector, where as at the state level, the share of inland sector is relatively less than the marine sector. The marine fish production in Kerala has tended to fluctuate while the inland fish production has shown signs of improvement from 1999-2000. The current level of Inland fish production is 2.10 lakh tones, and it shows an increase of about 8 percent over the previous year.

As per estimates of Government of Kerala, 2013-14, among the states, Gujarat was the highest contributor of marine fish production followed by Kerala. In total fish production in 2016-17, Andhra Pradesh was the highest contributor and Kerala stands at 7<sup>th</sup> position. According to the Food and Agricultural Organization (FAO, 2016-17), Kerala attained the fourth position among the other Indian states. The total fish production from Kerala shows an increasing trend irrespective of the declining percentage contribution and the augmented fish production over the years can be due to the increased mechanization in the fisheries sector. The fisheries of Kerala is suffering from over exploitation, by the use of unsuitable fishing gears that result in a high level of wasteful by catch and destruction of egg bearing and juvenile larvae (V Vijayan et al). The details of fish production in Kerala is shown in the table 1

**Table: 1 Fish Production in Kerala (Lakh metric tonnes)**

Year	Marine	Inland	Total	% change
2006-07	6.01	0.76	6.78	0
2007-08	5.58	0.77	6.36	-6.60
2008-09	5.98	0.79	6.77	6.06
2009-10	5.86	0.81	6.67	-1.50
2010-11	5.83	1.03	6.86	2.76
2011-12	5.7	1.17	6.87	0.14
2012-13	5.6	1.21	6.81	-0.88
2013-14	5.53	1.4	6.93	1.73
2014-15	5.31	1.49	6.8	-1.91
2015-16	5.22	1.86	7.08	3.95
2016-17	5.24	2.02	7.26	2.47
2017-18	5.17	2.1	7.27	0.13

Source: Gok, 2006-2018

It is clear from the table that the total fish production in Kerala is showing an increasing trend irrespective of the decreasing trend in the contribution to the national average. While considering the total fish production in Kerala there is 6.74 percent increase from 2006-2007 to 2017-2018. This is due to the improvement in the commercialization of fish production and the technological development. Among the maritime states in India, Kerala occupies the second position in marine fish production. The total fish production in Kerala during 2017-18 was 7.27 lakh metric tonnes. The marine fishery resources of the State have almost attained the optimum level of production. At the national level about 65 per cent of the total fish production is contributed by the inland sector, where as at the State level, the share of inland sector is relatively less than the marine sector. The marine fish production in Kerala has tended to fluctuate its fish production has increased marginally from 5.22 lakh tonnes in 2015-16 to 5.24 lakh tonnes in 2016-17 due to rich under exploited demersal and pelagic resources of Kerala.

#### 4.1.2. Predicted Total Fish Production in Kerala

The predicted total fish production in the state for 2019-2020 is 7.20. It also shows an increase of 1.8 percentages from the previous year. The predicted fish production in Kerala during the year 2030 will be 7.65 Lakh metric tonnes and in 2040 there will be 5.55 percent increase in production. By 2050 the total fish production from Kerala is predicted to be 8.55 lakh metric tonnes. By the wise exploitation of resources Kerala can increase the total fish production to higher levels.

**Table 2: Predicted Total Fish Production in Kerala (Lakh metric tonnes)**

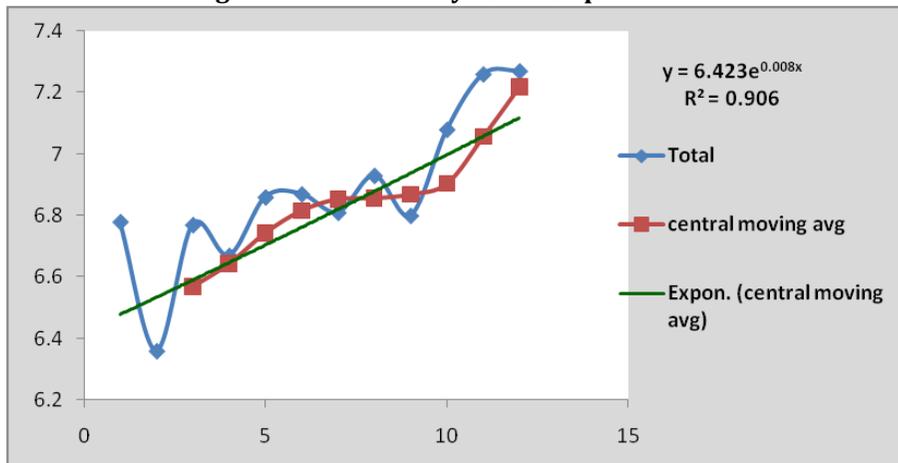
Year	Total Fish production (Predicted)	Percentage change
2019-20	7.20	0.69
2030	7.65	5.88
2040	8.10	5.55
2050	8.55	5.26

Source: Computed

**4.1.3. Trends in Fish Production in Kerala**

This section deals with the trend analysis of total fish production in Kerala. Analysis are done with twelve years time series data from 2006-2007 to 2017-2018 and estimates of forecasts are given for 2018-19 and 2019-20. Also forecasts are given for the years 2030, 2040 and 2050. For this purpose the time series data have extrapolated by fitting exponential trend line. Predictions are done with only this trend line. An exponential trend equation  $Y = 6.423e^{0.008x}$  is fitted for the data on the total fish production in Kerala. This line of best fit indicates a coefficient of determination of 0.906, so that the line fitted is 90.60 percent best fit to the data. In the equation 6.423 is the intercept and the 0.008 is the regression coefficient or the slope of the equation. These values show the increasing trend in the total fish production in Kerala. The trend analysis of fish production in Kerala is shown in the figure: 1

**Figure: 1 Trend analysis of fish production**



Source: Computed

**4.1.4. District wise Fish production in Kerala**

In Kerala the contribution of fish production from marine sector is higher than the inland sector mainly because large numbers of fishermen are concentrated in marine sector than the inland sector fishing and also the marine resource potential is higher than that of inland resource in Kerala. Kollam district in the southern zone is the highest contributor of marine fish production in 2016-17 with 1.10 lakh tones and the least contribution by Malappuram district of northern zone with 0.7 lakh tones. The highest inland contribution by Alappuzha district and lowest inland fish production by Kollam district both are in the central zone. Kerala has a substantial share to the all India production. The details of district wise fish production in Kerala during 2016-17 is shown in the table

**Table: 3 District wise Fish production in Kerala (in Lakh Tones)**

Sl.No	District	Marine fish production	Inland Fish Production	Total Fish Production
1	Thiruvananthapuram	0.64	0.06	0.7
2	Kollam	1.10	0.2	1.3
3	Alappuzha	0.44	0.35	0.79

4	Pathanamthitta		0.03	0.03
5	Kottayam		0.12	0.12
6	Ernakulam	0.8	0.4	1.2
7	Idukki		0.03	0.03
8	Thrissur	0.21	0.27	0.48
9	Palakkad		0.22	0.22
10	Malappuram	0.7	0.07	0.77
11	Kozhikkode	0.94	0.06	1
12	Wayanad		0.02	0.02
13	Kannur	0.23	0.05	0.28
14	Kasargod	0.22	0.23	0.45
	<b>Total</b>	<b>5.28</b>	<b>2.11</b>	<b>7.39</b>

Source: Economic Review 2018

The number of people depending on fisheries for their livelihood is increasing, it is reflected in the decline in fish production and the gross revenue generated remains stagnant indicating the need for opting alternative employment opportunities. It also affected fishing labourers by drastic reduction in their per capita earnings. There is a significant difference in the first and last sales value indicating high involvement of intermediaries between producers and consumers. The high price spreads are mostly benefiting the traders and majority of them are from non-marginalised communities.

#### 4.2. Share of Fisheries Sector in GSDP

Fisheries sector emerged as a vibrant sector and is being considered as a strategic sub-sector for promoting agricultural diversification. It has a predominant strategic role as a foreign exchange earner and also acts as a principal source of livelihood to coastal areas population. Gross State Domestic Product is a measure in terms of money, of the volume of all goods and services produced within the boundaries of the state during a given period of time (Gok). Fisheries sector of Kerala contributes a major share of the GSDP from the agriculture sector and occupies a significant position in the state economy. Its contribution to the Gross State Domestic Production in percentage is depicted in the table 4.

**Table: 4 Share of Fisheries Sector in GSDP (in percentage)**

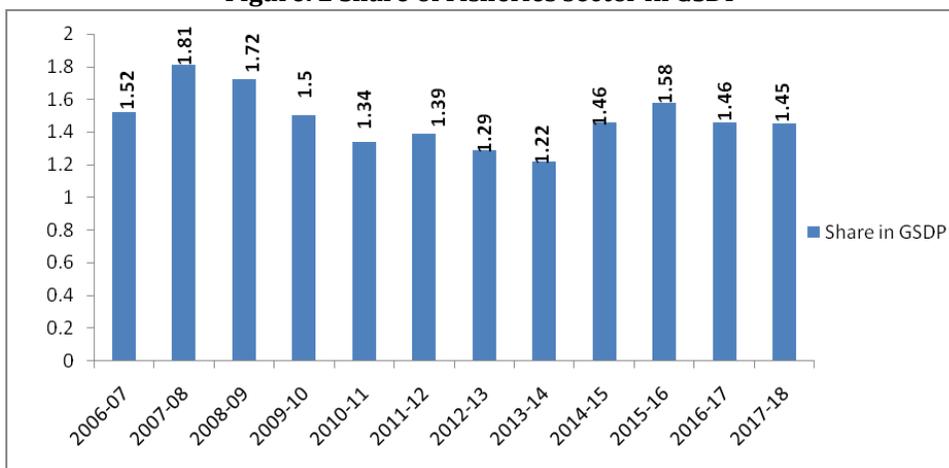
Year	Share in GSDP (in percentage)	% change in the share
2006-07	1.52	0
2007-08	1.81	16.02
2008-09	1.72	-5.23
2009-10	1.50	-14.66
2010-11	1.39	-7.91
2011-12	1.32	-5.30
2012-13	1.29	-2.32
2013-14	1.22	-5.73
2014-15	1.20	-1.66
2015-16	1.16	-3.44

2016-17	1.09	-6.42
2017-18	1.02	-6.86

Source: Directorate of Fisheries, Government of Kerala, 2018

While analysing the share of fisheries sector to the GSDP, it shows a declining trend from 1.09 percent in 2016-17 to 1.02 percent in 2017-18. The Gross State Domestic Product of the State has been increasing over the years, but the share of fisheries sector has been declining. While analysing the contribution of fisheries sector in the GSDP of Kerala, it is found that there is a sharp decline in the growth rate of -49.01 percent during 2006-07 to 2017-18. This will affect the growth of tertiary sector and also the decreasing trend in fisheries capture. Although Kerala waters are home to many commercially exploitable fish species the exploitation may reach its saturation or we have to exploit the underexploited deep sea as well as pelagic resources. The trend in the growth of share of fisheries sector in GSDP is shown in the figure 2

Figure: 2 Share of Fisheries sector in GSDP



Source: Gok, 2006-2018

As per the predicted values the share of fisheries sector in the GSDP of Kerala is showing a declining trend. In terms of contribution to GSDP may be attributed to dominance of other upcoming sub sectors. The predicted contribution of fishery sector in the GSDP of the state for the four years is shown in the table 5.

Table 5 Predicted Share of Fisheries sector in GSDP (in percentage)

Year	Predicted Values
2019-2020	0.68
2030	-0.87
2040	-0.09
2050	-1.65

Source: Computed

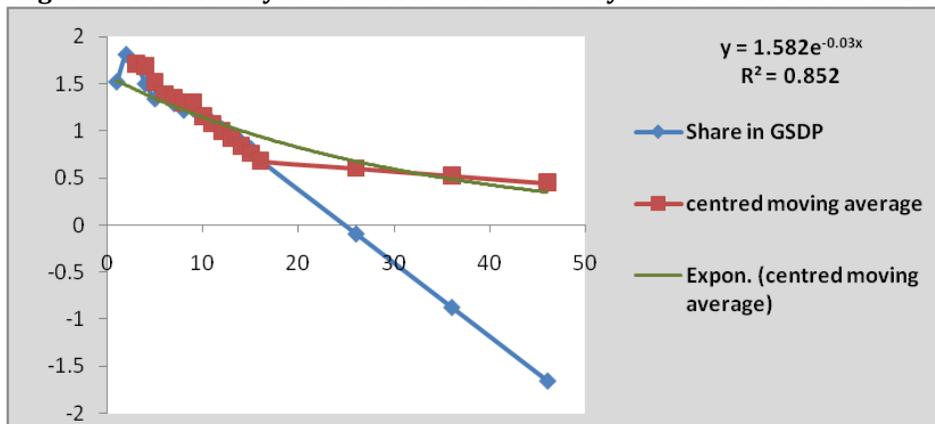
The predicted share in 2019-2020 is 0.68. During the year 2030 the predicted share will be -0.87 percent and in 2040 it will decline to -0.09 percent. By 2050 it is predicted to be -1.65. The decline trend of GSDP share can be credited to the growth of service sector in the Kerala economy. Also it leads to decreasing trend in the capture of fisheries. Though water resources in Kerala is considered as the home of many exportable fish species, the exploitation of these resources may reach its saturation or we have to exploit the unexploited deep sea as well as pelagic resources.

4.2.2. Trend in Share of Fisheries sector in GSDP

This section deals with the trend analysis of share of fisheries sector in the GSDP of Kerala. Analysis are done with twelve years time series data from 2006-2007 to 2017-2018 and estimates of forecasts are given for the year 2019-20. Also forecasts are given for the years 2030, 2040 and 2050. For this purpose

the time series data have extrapolated by fitting an exponential trend line. Predictions are done with only this trend line. An exponential trend equation  $Y= 1.582e^{-0.03x}$  is fitted for the data on the total fish production in Kerala. This line of best fit indicates a coefficient of determination of 0.852, so that the line fitted is 85.20 percent best fit to the data. In the equation 1.582 is the intercept and the -0.03 is the regression coefficient or the slope of the equation. These values reveal the decreasing trend in the share of fishery sector in the GSDP of Kerala. The trend analysis of contribution of fisheries sector to the Kerala GSDP is shown in the figure: 3

**Figure: 3 Trend analysis of contribution of fishery sector to the Kerala GSDP**



Source: Computed

**4.3. Contribution of fisheries sector to GSVA**

Gross State Value Added is the measure of the value of goods and services produced in an area, industry or sector of an economy. About 8.5 percent of the GSVA is from the primary sector contributed by the fisheries sector. The share of State’s GSVA has been increasing, but the share of fisheries sector to GSVA is declining. The contribution of fisheries sector to GSVA is incorporated in table no.6

**Table: 6 Fisheries sector contribution to GSVA**

Year	GSVA(in crore)
2013-14	336293.11
2014-15	356354.73
2015-16	371651.47
2016-17	395721.90
2017-18	424791.11

Source: Economic review, 2018

The share of fishers sector to the Gross State Value Added has been declining from 2013-14 to 2017-18. This is mainly due to the lack of proper utilization of available resources. Kerala enjoyed the primacy for a very long time in production, processing and export of marine products among the maritime states in India.

**4.4. Export of Marine products**

Export of Marine Products played a vital role in the development of marine fisheries and the socio-economic development of the rural population in the coastal areas. The development of infrastructural facilities such as ice plants, pre-processing and processing centres, and transportation facilities for export leads to the growth of export of marine products. The fisheries sector has a valuable contribution to the export of our economy and it is considered as a major foreign exchange earner. In 2017-18 the marine products export from India was at Rs.30420.82 crores, in which Kerala’s share 15.29 percent is, an amount of Rs.4644.42 crores. Kerala has a leading and tremendous position among the maritime states of the country in the case of marine products production and exports. In 1991-92 the marine products export from India was only Rs.1375.87 crores, where the Kerala’s share was amounting to Rs.444.16 crores. Kerala plays a major role in the marine products exports in the country. The export performance of India and Kerala in terms of value from 2006- 07 to 2017-18 are depicted in Table.7

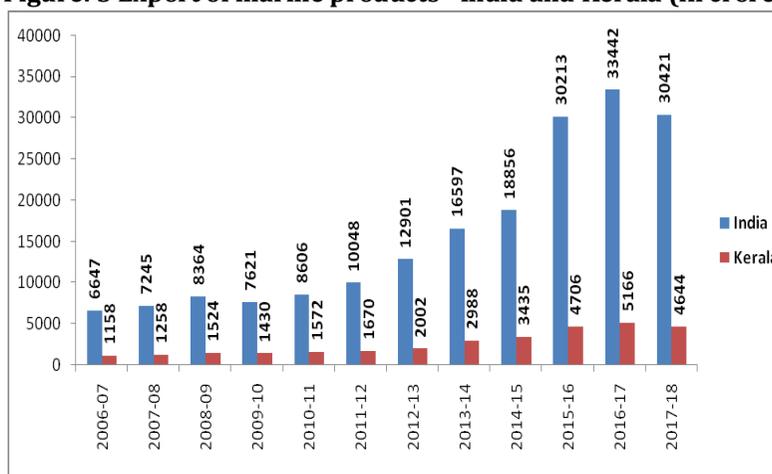
**Table: 7 Export of marine products (in crores)**

Year	India	Kerala	% share
2006-07	6647	1158	17
2007-08	7245	1258	17
2008-09	8364	1524	18
2009-10	7621	1430	19
2010-11	8606	1572	18
2011-12	10048	1670	17
2012-13	12901	2002	15
2013-14	16597	2988	18
2014-15	18856	3435	18
2015-16	30213	4706	17
2016-17	33442	5166	15
2017-18	30421	4644	15

Source: GoK 2006-2018

Kerala has a major share in the export of marine products in the country. The trend in the growth of export of marine products in India and Kerala is shown in the figure 4.6. The State's share has been decline in recent years. In 2012-13 it was 18.22 percent but in 2015-16 it's only 15.27 percent. In short Kerala's share in export is coming down, yet, today Kerala continues to be the major marine product exporting state of India.

**Figure: 5 Export of marine products –India and Kerala (in crore)**



Source: Gok, 2006-2018

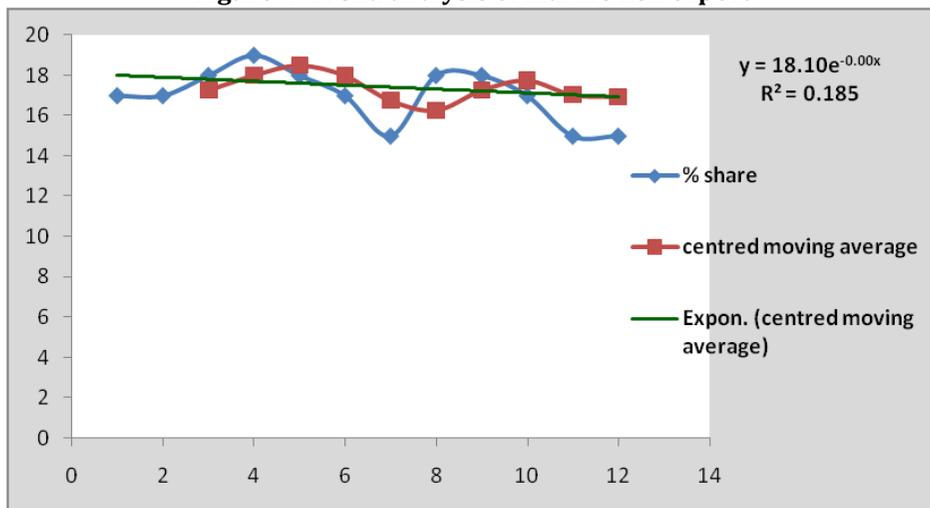
The export demand of fish and fish products attracts the investment support and other forms of development assistance to the sector. From 2010 to 2015 the exports of India and Kerala has increased considerably in terms of value. The marine products exports from the state in 2017-18 have declined by 2.27 percent in terms of value as compared to the previous year. The overall marine product export from the country also declined during this period, the main reasons for the decline in export realization could be the non-judicious tapping of marine wealth and economic slowdown in the major markets.

**4.4.1. Export Trends of marine products of Kerala**

The present section deals with the trend analysis of export of marine products in Kerala. Analysis are done with twelve years time series data from 2006-2007 to 2017-2018 and estimates of forecasts are given for 2019-2020. Also export of marine products forecasts are given for the years 2030, 2040 and 2050. For this purpose the time series data have extrapolated by fitting exponential trend line. Predictions are

done with only this trend line. An exponential trend equation  $Y = 18.10e^{-0.00x}$  is fitted for the data on the total fish production in Kerala. This line of best fit indicates a coefficient of determination 0.185, so that the line fitted is 18.50 percent best fit to the data. In the equation 18.10 is the intercept and the -0.00 is the regression coefficient or the slope of the equation. These values show the decreasing trend in the total export of marine products in Kerala. The trend analysis of export of marine products in Kerala is shown in the figure 7

**Figure: 7 Trend analysis of marine fish export**



Source: Computed

Marine sector still plays a significant role from the point of its contribution to foreign exchange, besides serving to reduce the problems related to food scarcity of the state. There is also enough scope for further demand for marine products in the world market due to increased consciousness of human health. All these will enhance the contribution of fisheries sector to the economy and this will improve the living standard of fisher folk in Kerala.

### Conclusion

Fisheries sector is looked upon with interest due to its immense potential to contribute positively towards development. They are being exploited by various sectors and the hope of escaping from such exploitations is not seen in the immediate future. Fisheries sector are inseparable from the main stream as they contribute much to the regular food habits of common man and economic activities of the people in the country. If the rich underexploited demersal and pelagic assets are utilized effectively Kerala can boast the top point in total fish production and also contribute productively towards the economic development of the state. It has been accepted as a powerful income and employment generator as it encouraged growth of several subsidiary industries.

### References

- Balakrishnan Nair.N (2000): Report of the Expert Committee on Marine Fisheries Management, Kerala, Directorate of Fisheries, Thiruvananthapuram, PP 49-56
- Das,V.M, Balakrishnan & Suresh Padmakumar.(1992), Impact of Integrated Fisheries Development: Project Phase I: An Evaluation, Centre for Management Development, Thiruvananthapuram.
- Government of Kerala (2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016): "Economic Review", State Planning Board, Thiruvananthapuram
- Government of India (2011): Report of the Working Group on Fisheries for the 12<sup>th</sup> Five year Plan 2012-2017, Planning Commission, P.107
- Kerala Economic Survey (2018): Government of Kerala.
- Nair B. N. (2000). Report of the expert committee for fisheries management studies, Kerala. Report submitted to the Government of Kerala, Directorate of Fisheries, Thiruvananthapuram. 49-56.
- Pillai.V.R. (1959): A study of the Economy of Fisher folk in Kerala, Economic Research Council, Thiruvananthapuram, p. 55.
- Rajana. A. S., & Chandrasekar K. S. (2014): Marine Fisheries Sector in Kerala, India: An Analysis of the Socio Economic and Feed Marketing Impact on the Farmers. In Proceedings of the 3rd International Conference on Management and Economics (Vol. 26, p. 27).

- Rao N. S. (1989). Fisheries development and management in India, 1785-1986: a bibliography. Northern Book Centre.
- Subha Rao.N. (1986): Economics of Fisheries, Daya Publishing House,Delhi.
- Vijayan V, Edwin L, & Ravindran K. (2000): Conservation and management of marine fishery resources of Kerala State, India. Naga, the ICLARM Quarterly, 23(3), 6-9.
- World Bank (2010): Livelihood context and Key Issues, India Marine Fisheries, Issues, Opportunities and Transitions for Sustainable Development, Agriculture and Rural Development Sector Unit South Asia Region