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Original Article

A study of fisheries sector in Kerala

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Abstract

Kerala is known as God's own country with a coastline of 590 km, with uncountable water bodies, play a massive part in livelihood of the people, also in ecological diversity and economically. More than 10 lakh fisher men of the state, sustain their living through aquatic biodiversity and fish wealth of Kerala. It's also support many activities like commercial fishing, aquaculture, recreation, education etc. Additional demand on the state's marine resources, due to increasing population which complexes the management of the resources over time. This research paper deals with the study of the institutional mechanism, for management of fisheries sector, it also includes the study of the status of fisheries sector in Kerala interms of fish production along with fisher folk population. This study is done on secondary data which is collected from various sources of information including online sources. Institutional mechanism of Kerala's fisheries sector was documented based on secondary sources, whereas percentage and growth rate were used mostly for the analysis of data related to fish production, income from fisheries, fisheries folk population etc.

Keyword : Fisheries sector in Kerala, Institutional mechanism, status of fisheries sector

Introduction

Kerala covers an area of 38.863 sq. Km, geographically divided into three climatically distinct regions, the eastern highlands, the central Midland and the Western Coastal plains. The total population of schedule tribe (1.45%), schedule caste (9.09%), indigenous Tribal Adivasis (1.10% of the population), some of tribal residing in the Eastern District of Wayannad (35.82%), Palakkad (1.02) and Idukki (15.66%). With a coastline of 589.5 km, it is enriched with Inland water bodies, Constituting richness in fisheries resources, which form an important sector and act as major role in the lives and economy of the people in the state. Kerala rank fifth interms of Coastal length, and it's one of the leading maritime states. The EEZ constitute about 1.78% , whereas fish landings centres constitutes about 12.38% of the country. In the state about 222 fishing villages are mostly dependant on marine sector and activities like processing of fishes, marketing of fishes , about 2 lakh of people are dependant on such profession for their living. 2.98% the state population and it's livelihood with many active fishermen are dependant on the marine sector {77%}and from Inland (23%). The fishery sector resulted in earning huge amount of both goodwill and foreign exchange. About 2.26kg from rural and 2.10kg from urban monthly fish consumption and a gap in the supply of fish consumption and domestic fish production has been found in the state.

Presently around 6lakh tonnes of fishes are produced every year. The economy of fishery in Kerala had been conceptualized in a network of relationship, in the realms of production consumption and exchange. Relationship exchange and production in this rudimentary economy are being influence by the growth in external and internal consumption. Until in the early sixties, economy of fishery in the state influenced largely by forces of internal demands from the rural and urban markets, this is because of the non-availability of the reliable modern processing technology. The Blue Revolution technologies have revolutionized , these relationship and started influencing internal relation in many significant ways. Since then, external relation became crucial for domestic producers, traders and the consumers. The opening up of village economic in the world of markets has influence the fishery sector too. The sector is now exploiting maximum benefit from the globalisation trends. The fishery sector, provides an earning to fishery folk , and their increasing demand day by day both in domestic as well as in foreign markets.

Fisher folk population in the state is about 11.114 lakh(marine sector- 8.58 lakh, Inland sector-2. 556 lakh). According to the report the population of the fishermen is the highest in Alappuzha with a population of 1.86 lakh followed by Thiruvananthapuram.

This study focuses on status of fisheries sector in Kerala and institutional mechanism for its management. Review of technological changes in fisheries sector of Kerala can reveal the chronological changes happened in the fisheries sector of Kerala. Present status will be assessed in terms of fish production, fishermen population and associated information. Therefore, the present study was undertaken with the objectives as to study the institutional mechanism for management of fisheries sector in Kerala and to study the status of fisheries sector in Kerala in terms of fish production and fishermen population

METHODOLOGY

The study is based on secondary data collected from various sources of information including online sources. Institutional mechanism of Kerala's fisheries sector was documented based on the information collected from secondary sources. Percentage and growth rate were used for the analysis of data related to fish production, income from fisheries, fishermen population etc. Data entry and analysis was carried out in MS-Excel.

RESULT AND DISCUSSION

1 Institutional Mechanism for management of fisheries sector in Kerala

Territorial waters of Kerala, the fisheries sector are being managed by different agencies under the state Department of Fisheries. The state Department of Fisheries deals with conservation, management and promotion of sustainable fisheries resources, implementing agencies of the state government policies at community level. Moreover it targets, on the livelihood and socioeconomic of fish farmers, Fisher folk, traders and other stakeholders. Major activities such as infrastructural development and technology diffusion, we're shouldered for enhancing the income of fisher folk and other stakeholders, the educational standard and welfare of the community. The state Department is an important agency of Kerala marine fisheries regulation act, which was approve in 1980, and also in addition revise in various years. Recently, initiatives has been developed for the augmentation of fish production through aquaculture promotion, extracting maximum value from fishery resources by value addition of fish and also various social security and welfare measures for the inclusive development of fishermen and aqua farmers were implement by the department. The following are the different agencies under the Department of Fisheries which serves various activities the fishery sector of Kerala:

- Kerala State Cooperative Federation for Fisheries development Ltd (MATSYAFED),
- Agency for Development of Aquaculture, Kerala (ADAK),
- Kerala Fishermen's Welfare Fund (KFWEB),
- State Fisheries Resource Management Society (FIRMA),
- Fish Farmers Development Agency (FFDA),
- Kerala State Coastal Area Development Corporation(KSCADC),
- National Institute of Fisheries Administration and Management (NIFAM)
- Society for Assistance to fisherwomen (SAF)
- Kerala Aqua ventures international limited (KAVIL).

2. Socio-economic aspects of Fisheries sector in Kerala

In this section, attempt was made to study the socio-economic status of fisheries sector of Kerala in terms of fish production and fishermen welfare. The state has a coastline of around 590 Km with 222 fishing villages in the marine sector and 123 fishing villages in inland sector. Marine sector contribute to major share of fish production in the state(70%), contrary to the national scenario where contribution of aquaculture(74%) is more.

Table 1: Fisheries sector of Kerala : Basic information

Fisheries-parameters	Kerala	India
Length of coastline	590 Km	8118 Km
Number of marine fisheries villages	222	3477
Annual fish production	0.68 MMT	14.16 MMT
Marine	0.48 MMT	3.72 MMT
Inland	0.2 MMT	10.43 MMT
Total fisheries population	1044361	2,80,63,538
Active fishermen registered(marine)	295787	1153553

(Dof, 2020)

The annual production in the state from both marine and inland is about 0.68 MMT lakh tonnes per year, (marine : 0.48 MMT, inland : 0.2 MMT). The total number of marine fisheries villages in the state is 222, with total number of active fishermen of 295787 registered in marine sector and resulted fisheries population is 1044361 in Kerala.

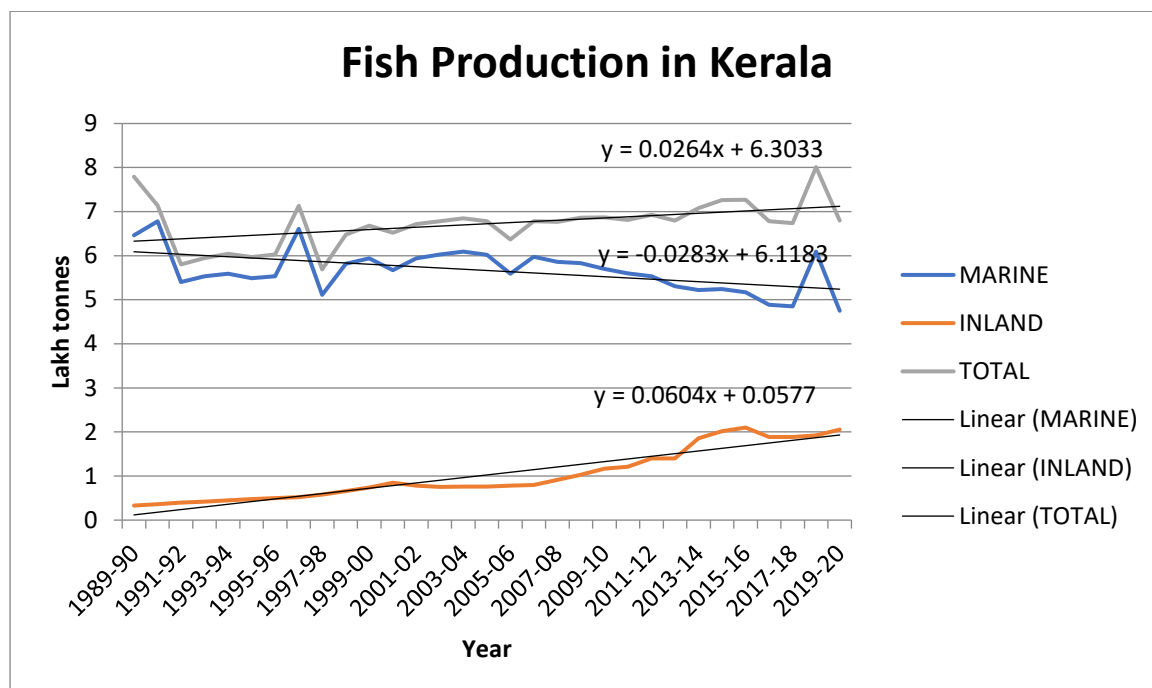
Table 2 : Fish production in Kerala (lakh tonnes)

YEAR	MARINE	INLAND	TOTAL	PERCENTAGE VARIATION
1991-92	5.4	0.4	5.8	-18.77
1992-93	5.53	0.42	5.95	2.59
1993-94	5.59	0.45	6.04	1.51
1994-95	5.49	0.48	5.97	-1.16
1995-96	5.53	0.5	6.03	1.01
1996-97	6.61	0.52	7.13	18.24
1997-98	5.11	0.58	5.69	-20.20
1998-99	5.82	0.66	6.48	13.88
1999-00	5.94	0.74	6.68	3.09
2000-01	5.67	0.85	6.52	-2.40
2001-02	5.94	0.78	6.72	3.07
2002-03	6.03	0.75	6.78	0.89
2003-04	6.09	0.76	6.85	1.03
2004-05	6.02	0.76	6.78	-1.02
2005-06	5.59	0.78	6.37	-6.05
2006-07	5.98	0.8	6.78	6.44
2007-08	5.86	0.91	6.77	-0.15
2008-09	5.83	1.03	6.86	1.33
2009-10	5.7	1.17	6.87	0.15
2010-11	5.6	1.21	6.81	-0.87
2011-12	5.53	1.4	6.93	1.76
2012-13	5.31	1.4	6.8	-1.88
2013-14	5.22	1.86	7.08	4.12
2014-15	5.24	2.02	7.26	2.54
2015-16	5.17	2.1	7.27	0.14
2016-17	4.89	1.89	6.78	-6.74
2017-18	4.85	1.89	6.74	-0.59
2018-19	6.09	1.92	8.01	18.84
2019-20	4.75	2.05	6.8	-15.11

(Jomon Mathew and Joby Verghese, 2019; DoF, 2020)

Table 2. Showing the fish production in Kerala from 1991-92 to 2019-20. The growth rate of fish production from marine is -0.264% and in inland the growth rate is 5.21%. Fish production in marine sector has increased from 5.4 Lakh tonnes in 1991-92 to 6.61 Lakh tonnes in 1996-97. During the period, overall fish production has increased from 5.8 Lakh tonnes to 7.13 Lakh tonnes. From 1996-97 onwards marine fish production has started declining and reached 4.75 Lakh tonnes during 2019-20, with inter year fluctuations in production. Production from inland sector has witnessed an increasing trend except during 2001-02 to 2006-07

Figure 1. Trend in Fish Production in Kerala



The figure1. represent the fish production graph in Kerala over the years from 1989-2020 , the production of fish were in lakh tonnes. From the graph three different coloured lines can be seen, where blue lines indicating marine production, red one inland and grey coloured line is the total production from both marine and inland source.

The growth rate of fish production in inland increases with time and growing years , it increases with 0.06 Lakh tonnes per year. Whereas, the marine production decreases by 0.029 Lakh tonnes per year. The total production from both marine and inland increases by 0.026 Lakh tonnes per year.

Table 3: Share of Kerala in Fish production in India over years(%)

Year	Marine	Inland	Total
1991-92	22.07	2.34	13.95
1992-93	21.47	2.35	13.63
1993-94	21.10	2.26	13.01
1994-95	20.39	2.29	12.47
1995-96	20.43	2.23	12.18
1996-97	22.28	2.18	13.33
1997-98	17.32	2.38	10.56
1998-99	21.59	2.54	12.23
1999-2000	20.83	2.62	11.77
2000-01	20.17	2.99	11.53
2001-02	20.99	2.50	11.28
2002-03	20.17	2.34	10.94
2003-04	20.71	2.20	10.70
2004-05	21.66	2.16	10.75
2005-06	19.85	2.08	9.69
2006-07	19.78	2.08	9.87
2007-08	20.07	2.16	9.50
2008-09	19.58	2.22	9.01
2009-10	18.36	2.39	8.59
2010-11	17.23	2.43	8.27
2011-12	16.40	2.64	8.00
2012-13	15.99	2.45	7.52
2013-14	15.17	3.03	7.39
2014-15	14.96	2.92	6.93
2015-16	14.36	2.93	6.76

2016-17	13.49	2.42	5.93
2017-18	12.91	2.11	5.31
2018-19	15.81	1.98	5.90
2019-20	12.74	1.96	4.80

The table 3, showing share of Kerala in fish production in India over years i.e. From the year 1991-92 till 2019-20 respectively. The growth rate of both marine and inland share of Kerala fish production in India is -0.55% and -0.16%. It can be seen that as same in the table 3, here also (table 4) there is the highest fish production shares from the state to the country giving about 22.07 Lakh per tonnes of fish were produced, then as the year pass there is a declined in the percentage of shares from 1990 till 2020, except in the year 1996-1997 there was a slight increase in the fish production, both marine and inland facing a sustained decrease in the production of fish in terms of shares of Kerala in the country and the least or lowest total production of shares from both marine and inland is in the year 2019-20 having of about 4.80 Lakh tonnes of fish production.

As per United Nations System of National Accounts (2008) of 2008, Gross Value Added is defined as the value of output minus the value of intermediate consumption and is a measure of the contribution to GDP made by an individual producer, industry or sector. At its simplest it gives the money value of goods and services created in the economy after reducing the cost of inputs of production (Seshadri, 2020). The table 5 shows the GVA from fisheries in each district along with share of fisheries in GVA from higher levels.

Table 4: Gross Value Added from Fisheries

	Gross District Value added From fisheries (RS. In Lakh)	Share of fisheries sector in Gross District Value added from Agriculture and allied activities (%)	Share of fisheries sector in Gross District Value added from primary sector (%)	Share of fisheries sector in Gross District Value added (%)
Thiruvananthapuram	36585	15.72	14.02	0.88
Kollam	54962	19.67	18.74	1.51
Pathanamthitta	10310	4.72	4.31	0.90
Alappuzha	39891	27.88	27.55	1.40
Kottayam	13897	4.96	4.79	0.56
Idukki	5714	1.90	1.86	0.48
Ernakulam	58512	18.54	17.12	1.17
Thrissur	28728	12.17	11.72	0.72
Palakkad	16247	5.51	5.19	0.61
Malappuram	18527	5.72	5.47	0.48
Kozhikode	31334	15.31	14.85	0.93
Wayannad	3764	2.91	2.86	0.50
Kannur	7461	3.71	3.56	0.27
Kasaragod	19862	11.87	11.65	1.56
TOTAL	345794	10.39	9.89	0.88

Government of Kerala (2022)

The results show that GVA from fisheries was highest in Ernakulam district followed by Kollam district. Prominence of mechanised fishing in these districts might be the reason for higher GVA in these districts. Lowest GVA from fisheries was observed in Wayannad and Idukki districts. The finding is obvious as these districts are mainly hilly areas where fishing is limited to reservoirs and rivers. Share of fisheries in GVA from agriculture and allied sectors as well as in GVA from primary sector was highest in Alappuzha, Kollam, Ernakulam and Thiruvananthapuram districts. It points out the fact that fisheries are important primary sector livelihood activity in these districts.

Table 5: Number of Active fishermen in Kerala

Districts	2018			2019			Difference		
	Marine	Inland	Total	Marine	Inland	Total	Marine	Inland	Total
Thiruvananthapuram	53916	107	54023	55118	109	55227	1202	2	1204
Kollam	19528	8176	27704	19951	8353	28304	423	177	600
Pathanamthitta	0	232	232	0	268	268	0	36	36
Alappuzha	26523	17598	44121	26799	17781	44580	276	183	459
Kottayam	0	5226	5226	0	5340	5340	0	114	114
Idukki	0	215	215	0	196	196	0	-19	-19
Ernakulam	12703	13154	25857	12922	13381	26303	219	227	446
Thrissur	5464	1086	6550	5512	1096	6608	48	10	58
Palakkad	0	508	508	0	509	509	0	1	1
Malappuram	35186	1781	36967	36254	1835	38089	1068	54	1122
Kozhikode	22145	1823	23968	22726	1871	24597	581	48	629
Wayannad	0	27	27	0	23	23	0	-4	-4
Kannur	5166	1630	6796	5245	1655	6900	79	25	104
Kasaragod	10245	515	10760	10383	522	10905	138	7	145
TOTAL	190876	52078	242954	194910	52939	247849	4034	861	4895

Table 5, consist the total number of active fishermen in Kerala, from the year 2018 and 2019 showing the changes and difference in the number of active fishermen from both marine and Inland fishery sector of the state and this is done by taking different population of fishermen from different district. In the year 2018 the percentage of active fishermen in marine and inland is 78.56% and 21.43% where as in 2019 the percentage of active fishermen in marine and inland is 78.64% and 21.35%. The growth rate of active fishermen from these years is about 20.158%, but particularly it has seen that in the district Wayannad and Idukki (2018-2019) there has been decrease in the number (though negligible) of fishermen.

Table 6: Membership of Fishermen in Co-operatives in marine districts

District	Fisheries co-operatives	other co-operatives	Total
Thiruvananthapuram	31703	18615	50318
Kollam	20541	7924	28465
Alappuzha	30030	7276	37306
Ernakulam	13013	15950	28963
Thrissur	5648	3418	9066
Malappuram	14421	1856	16277
Kozhikode	15324	8346	23670
Kannur	3485	1180	4665
Kasaragod	7870	2969	10839
Total	142035	67534	209569

(CMFRI-DoF, 2020).

Table 6 points out the membership pattern in fishermen co-operative societies in Kerala. Membership was highest in southern districts namely Thiruvananthapuram, Alappuzha and Kollam. Cooperative membership facilitate fishermen to access various services provided by the co-operative societies.

Table 7: Information on Landing centres and crafts in marine districts of Kerala

District	Landing Centers	Crafts under complete ownership of fishermen		
		Mechanized	Outboard	Non Motorized
Thiruvananthapuram	44	18	3932	1385
Kollam	16	122	858	534
Alappuzha	13	39	951	1906
Ernakulam	19	33	510	751
Thrissur	23	9	204	159
Malappuram	15	53	291	118
Kozhikode	19	231	957	565
Kannur	12	14	325	228
Kasaragod	13	47	381	185
Total	174	566	8414	5841

(CMFRI-DoF,2020).

There are 174 landing centres in the coast of Kerala for facilitating the fishing allied activities. Data on ownership of crafts by fishermen points out that traditional non-motorised crafts are owned mostly by the fishermen. It decreases with the extent of mechanisation.

SUMMARY AND CONCLUSION

Institutional arrangement for management fisheries sector mainly includes state Department of fisheries and associated agencies. The agencies are involved in wide range of activities.

Major share of fish production in Kerala is contributed by marine sector, contrary to the national scenario where inland sector contribute to major share of the fish production

From 1996-97 onwards marine fish production has started declining and reached 4.75 Lakh tonnes during 2019-20; with inter year fluctuations in production. Production from inland sector has witnessed an increasing trend except during 2001-02 to 2006-07. The total production from both marine and inland was found to be 0.026 Lakh tonnes per year.

A look at the share of fisheries sector in Gross value added from agriculture and allied sectors as well as in GVA from primary sector a show that fishery is important primary sector livelihood activity in districts like Alappuzha, Kollam, Ernakulam and Thiruvananthapuram districts.

Number of active fishermen was found to be highest in Thiruvananthapuram, followed by Alappuzha and Malappuram districts. Membership was highest in southern districts namely Thiruvananthapuram, Alappuzha and Kollam.

Data on ownership of crafts by fishermen points out that traditional non-motorised crafts are owned mostly by the fishermen. It decreases with the extent of mechanisation.

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