Traditional Fishermen Folk In Kerala & Their Livelihood Issues

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PREFACE

This internship report is submitted to Centre For Civil Society, New Delhi as a part of the research internship offered during the period May – June, 2004. The topic is **'Traditional Fishermen Folk in Kerala and their livelihood issues'.** I, being myself brought up in a village had already an understanding of the issues confronted by the fisheries community of Kerala. When I started the work, I tried to be more objective in approach and independent in analysis.

The criterion for selecting the case studies was very difficult. The division between the traditional fishermen and the trawlers is very narrow nature. The traditional fishermen also worked in the mechanized segment to earn their livelihood. The methodology of the study was the review of the literature and then to understand the problems at sight. I travelled extensively to many major and minor harbours, fish markets, inland landing centres and self groups. During this internship period, I met many leaders and the representatives of many organizations. The short span of time was an area of concern. Within this period allotted, I tried to cover most of the issues the traditional fishermen are facing by interacting and discussing with them. I left out the option of conducting individual case studies since it seemed to be worthless one in the Kerala context. Rather, I have tried to summarise the various points that have come up during the interaction with many in this area. More emphasis was given to the live study and understanding the problem.

I do not believe that this report speaks immensely on the topic. It can be considered to be a pilot study that would help in the future to go on for an in depth analysis on various issues of the sector. I thank all who helped me to realize this report and extend thanks to Centre for Civil Society, New Delhi for the support extended to me. Moreover, I enjoyed the internship period as it provided me to have a look at the livelihood issues of the society and exposed me to real world.

INTRODUCTION

The God's own country is known for her ravishing beauty and hospitality nature. The potential in the tourism segment has been emphasised over the years. Lakes, rivers, ponds and lagoons supplement this argument along with the food habits especially fish as major menu. While the tourism flourishes, what is happening to the community associated with the fisheries along the costal line of Kerala?

Out of 6000 km sea coast of India, Kerala has a coastal line of 589.5 km, which is about 10% of India's cost. The state is endowed with rich inland water bodies consisting of 44 rivers (having an area of 0.85 lacs ha), 30 major reservoirs (0.30 lakhs ha), fresh ponds and tanks (0.25 lacs ha), 45 backwater bodies and extensive brackish water area (2.43 lakh ha). But the inland fish production accounts for only about 11.06% of the total production. It has been found that the potential development of inland fisheries has not been tapped to the desired extend. Kerala, which has been the leading maritime state in the whole of the Indian Union all these years is losing its importance, giving way to better managed states such as Gujarat, Orissa etc. The water coast of India is very rich in marine wealth with about three-fourth of the fish resources of the country. The high rate of rainfall and the large number of rivers make Kerala the most fertile for fish. One speciality of the Kerala coast is mud banks, known in Malayalam as "*Chakara*". It is the formation of clay and organic mothers in the coastal waters which takes place often soon after the monsoon in the calm sea area resulting in a good harvest of fish. Whatever the season offers, the plight of the fishermen is almost fixed since there are no fixed rules and regulations as far the traditional and mechanised sectors concerned while dealing with the fish catching. Survival of the fittest is the order of the day.

The fisheries economy has two sectors: traditional and mechanised. The traditional sector has two areas: the marine and the inland. At present the traditional fishing sector has only a limited surplus production of fish for market. The traditional fisheries sector has been a livelihood means for many over the years. They have vast knowledge of the ocean about winds and currents based on local area of their operation. The fishing economy consists of three operations: harvesting, processing and marketing of fish. Harvesting or catching of fish contributes 66% of the work force in the fisheries sector (Mathew 2000, p.24). Harvesting is related to the means of production and productive relations of crafts like boats, canoes and gears like nets and hooks used to trap fish. The productive relation is concerned with relation of owners and workers in fishing operations. It is not possible to identify the sector with anyone of the community in Kerala. The Mukkuvas (Hindu) and the Mappillas (Muslims) are the leading fish workers of Southern coast while Velana and Arayana (Hindu) in the Cochin area. The members of Latin Catholic community are seen at different parts of the state. For the traditional fishermen, sea is the life support and fish is the Oxygen for them. They are being indebted to the cultural, social and economical aspects of life to the sea and its surroundings. Life in the coastal village revolves around the fishing seasons.

LOOKING BACK

During the post independent period, the fishery sector was its nascent stage. The sector was never considered to be an area of trade. The catching was mainly meant to meet the daily requirements. It provided cheap and calorific item in the food menu. The post independent period has seen a three-pronged strategy for the fishery development:

1) Institutionalisation of the knowledge of fishery "related activities"
2) Adoption in the tropical waters of India, the "modern" (western) fishing technique used in the temperate water eco-system of the marine countries of Europe and Scandinavia.
3) The creation of fishery bureaucracy.

During this time an active interest was taken as a part of the "Grow more food campaign" of the Government of India, a fish sub-committee of the policy was appointed. Committee No5, on Agriculture, forestry and fisheries was appointed by Government of India to review the position of fisheries in India to recommend the measures necessary for their development (Abraham 1996, p.13).

In was during 1953, at Quilon district, first modernisation drive with the help of the Indo-Norwegian fisheries community development project was introduced. This project dealt with a fishing port of mechanised boats to venture into deep sea. It was meant to catch more fish. The investment and daily coast for fishing were also grown along with the same. The fishing gear remained the same namely gillnets, though they were made of superior quality material. The quantum of fish catch considerably increased. Since the project lacked to meet the ends financially, it caused the illegal fishing methods in the Kerala coast for the first time. To save the face, Norwegian project introduced trawling by sixties. As the market boomed, it compelled others also to unleash with huge investments during sixties. The state encouraged such initiatives. A schism developed between the traditional fish workers and the mechanised boat owners who were mostly from outside the fishing community. By and large, the fisheries sector usurped the industrial status all of a sudden, in which anyone with capital could enter into. But the high cost of investment and gear did not match with the price of the fish. The increased demand for prawns in the international market prompted Norwegians to introduce bottom trawling in Neendakara. Bottom trawling has the capacity to catch everything. It destroys the small fish and kills all other species as

well. The reason for the failure of Indo- Norwegian project was that it did not involve the local and traditional fisher people in the process (Thomas Kocherry 1998)

Until 1960, fishing in Kerala was entirely dominated by the non-mechanised, traditional country crafts – *kattumarams*, plank and dugout canoes – using a variety of tackle and gear. These traditional technologies had been evolved over the centuries to suit the specific ecological context of the seas as well as the distinct characteristics of the various fish species (Kurein, Vijayan 1985, p.1782). During this time, there was a rapid change from cotton to nylon nets. The overall fish harvest and that of species like prawns also increased substantially. By the mid sixties the modernisation oriented growth model soon introduced in Kerala. Till then, the overall picture in Kerala fisheries was one of abundant fish availability in the inshore waters, easily accessible to the large numbers of traditional fishermen. There seemed little scope for the improvements in their craft and gear so as to increase the catches. The technological barriers such as the need to have fishery specific skills, the social barriers like artisan fishing; being the occupation of lower social caste, prevented free entry of capital and labour from outside the traditional fishing communities into fishery (Kurein, Vijayan 1995, p.1784).

The government introduced a charter policy in the eighties to exploit deep-sea resources and transfer of technology. This also ended up in fishing in the territorial water. Not a single Indian acquired any charter vessel within the five years because of the high cost of investment involved as in the earlier cases also. Finally it was also scrapped, as it was also a failure. Then, the government of India introduced schemes to supply Mexican trawlers to exploit shrimp from the deep sea. Even though it was introduced in Vishakapatanam harbour, the fishermen all over India had an impact by the foreign trawlers. Overall analysis of the last forty years show that, the coastal line which was once known for the traditional gears and crafts used for the fisheries has been given way to larger vessels and mechanised trawlers.

WHO ARE THE TRADITIONAL FISHER FOLK ?

According to Thomas Kocherry in the paper "suggestion for improvement of socio- economic status of traditional fisher folk", the traditional fisher folk are all those men, women and children who earn a livelihood by involving in harvesting, handling, processing and marketing of fish and fish products. Therefore traditional fishermen folk include [1]

1) Artisan fishermen, working on non mechanised and motorised crafts in coastal waters
2) Fishermen working on mechanised boats in coastal waters
3) Workers at fish landing centres involved in unloading, sorting and icing.
4) Workers involved in traditional methods of fish curing and drying.
5) Workers involved in prawn peeling sheds.
6) Workers in fish processing firms.
7) Workers involved in marketing of fish inside the state. They include men, women and children. They need not belong to the fishing castes as well.

Even in the above stated definition, one could see anomalies if it is analysed in the context what the present situation is offering. There are middlemen proactive at the landing centres and markets and trade union - again both at landing centres, harbours and markets and so on - eating away the pie meant for traditional fishermen.

[1] " Traditional fish workers in Kerala are socially marginalised and geographically isolated. They do not have any share in the economic and political life of state. In this sense they are truly "subaltern" class in Kerala" (Mathew 2000, p.34)

WHAT IS PRESENT?

The introduction of mechanised boats and advanced nets changed the fishery sector altogether. The recent introduction of in board engines in addition to out board engines changed the situation into a more complex one. The cost of operation for traditional, outboard and inboard are varying. The market demands the frequency of fishing operation using the mechanised vessels. The outboard engine consumes 45 litres of Kerosene per hour while the inboard consumes only 15 litres of diesel per hour during voyage. The maintenance cost also less for the inboard sector.

It is very difficult to separate the non-mechanised from mechanised sectors. At least most of the traditional fishermen have stepped into the threshold of mechanisation by and large. This has been necessitated by various reasons.

1) The lack of fishing activities along the coastal line since the fish wealth there being over exploited. This compels the fishermen to go for the deep-sea fishing.
2) Unparallel or mismatch among the fishermen with respect to the mechanisation. Trawlers and large fishing vessels go for deep-sea fishing which compels the ordinary fisherman also to strive for the same.
3) Fluctuating "price" mechanism prevailing everywhere. The middlemen decide the price of the fish once the fishermen land up after a heavy toll in the sea.
4) Mismatch in the market price of fish in relation with the increase of fuel price. But it does not permit the traditional fishermen to revert back to the old style of fishing as it might only head to the poverty.
5) Increased activity of trade union at the harbours and markets. Earlier, if all the workers related with fisheries were done by the community people, today the trade union has a claim under the labour regulations. Eventually the money has been taken out of the poor fisherman's pocket. The increased trade union activities in Kerala have attracted the people from outside the fishermen community to embrace this job at large. Though the fishermen are also a part of the trade unions, there is a growing trend of outsiders to dominate this segment in the recent times.

The government gave emphasis to the foreign exchange earnings through increase in production.[2] Since then, the might of the larger groups decided the course of action. In the increased competitive environment, traditional fishermen also went after mechanisation at large. But this has been developed into new dimensions.

The conflicts between the trawler crews and the *kattumaram* fishermen grew in intensity over the time. Many incidents are reported on the fighting between traditional fishermen vs boat crew away in the sea. If trawling is carried out in the same area as *katttumaram* fishing there is great risk of damage to the latter fishermen's gear as well as to their lives. Moreover, since the catching capacity of the trawlers is very high, it affects the catch of traditional fishermen. Even though there is a law stipulating twenty-two kilometres depth of sea only for traditional fishermen, the trawlers never kept the rule.

Whether the person working in motorised or non-motorised area, the following are his daily earnings (approx.): it is tentative since the rough weather and bad season costs around two hundred and fifty days for non-motorised fisherman while the motorised fisherman goes for fishing two hundred and fifty days on an average annually. The following table is constructed on the sample study conducted among the fishermen at Neendakara and Thankasseri.

[2] "Fish harvests have fluctuated showing secular trends that first increased (1970-75), then substantially declined (1975-80), increased significantly again (1980-90) but have remained stagnant at that level describing the decade 1990s". (Kuren John, Paul Antonio 2001, p.8)

Table 1

Type of Operation	***Daily earnings (Rs)***
Non-motorised	100-150
Motorised	150-175

One cannot strictly go by the amount one gets out of the sector. This is because there are many other factors, which decide the outcome or profit of the sector. With the increased mechanisation the ownership of the fishing units vary from five to sixty depending upon the size of the craft. Earlier if it was the kith and kin of the headman (leader of the unit) who were the partners in the ownership, now people from outside the community play a decisive role in this. In addition, the owner can recruit workers agreed to work for a period of time. There are six possible combinations in the ownerships pattern in the traditional fisheries.

1) Individual ownership
   Owner worker
   Owner workers
2) Collective ownership
   Owner workers
   Non-owners partners
3) Individual Ownership
   Owner worker
   Non-owners labourers
4) Collective ownership
   Owner workers
   Non-owners labourers
5) Individual Ownership
   Owner non-worker
   Non-owners labourers
6) Collective ownership
   Owner non-workers
   Non-owners labourers

(Mathew 2000, p. 25)

Among the six types of ownerships mentioned above, the fourth and fifth ones are predominant along Kerala coast. The ratio of the profit sharing between the owner and workers vary at different places. The mostly seen profit sharing mechanism is 35% for the owner and 65% for the workers. But this 65% is again divided among the workers. Earlier the boat and the net cost around Rs 2 lacs to Rs 8 lacs, now the inboard engine fitted boats cost around Rs 22 lacs to Rs 30 lacs.

The profit sharing and cost dividing are different at different locations; same is the case with the middlemen also. The role of the middlemen in the harbours nullifies the voice of the fishermen who engage in the fishing by going to the waterside. The increased demand has led the traditional fishermen to actively involve in the mechanised fishing. It resulted in the deep-sea fishing while they complain about the encroachment by the trawlers. Many of them, work in the trawl boats owned by the individuals. Sometimes, the traditional fishermen folk come together and manage the crafts and gears. The initiatives of the Matsyafed helped them financially through the loans and subsidies. But, they seldom cared to repay the loans even in the good seasons. Over the years, as in the case of the depletion in the sea wealth, there is also depletion in the number in the case of traditional fishermen

using traditional methods for fishing. To maintain the crafts and gears, the fishermen approached the middlemen who lend out the money at large. The middlemen retrieved the money by auctioning the fish while the fishermen return from the sea. In Kerala, it has been in the practice over the years. The fishermen do not have any voice in the price of the fish, which they caught. It is happening in both traditional and mechanised. Even in the small markets in the cities and in the fishing harbours, the situation is almost same. Thankassery harbour known for least mechanised or non-mechanised boats the shares are as given below:

The middlemen auction the fish at the landing centres of Thankassery as everyone. They take two rupees as their commission for each hundred rupees of the auctioned fish. Immediately they pay money to the fishermen or sometimes, they deduct the same from the debit, the fisherman owes to him. The money lending business propelled during the time of mechanisation of sector as the Government subsidy was very meagre in terms of value. At Valiathura coastal area, the middlemen are more acknowledged to the crisis in the fisheries sector. They do not have a fixed rate as commission during trade.

Table 2: Cost and Profit on a mechanised Boat

Number of boat	1
Avg. daily catch (value)	Rs 1000
No. of workers	6
Diesel cost	Rs 400
Miscellaneous	Rs 75
Balance	Rs 525

Balance amount of Rs 525 has been divided among eight shares as the additional two shares are taken into consideration in terms of boat and net. The maintenance cost is thus summed up over a period. Even then, this amount is not adequate for the maintenance they say. The above statement is same for even trawlers since the number of workers, diesel cost and so on increase proportionally. The above study was conducted among the fishermen at Munambam and Neendakara.

The development in the communication sector has brought both advantages and disadvantages to the sector alike. Since the price of the fish is of fluctuating one, the communication divide helps the merchants and major players in the fishery sector to exploit the traditional fishermen. The price is dictated by the price of the fish in the global market of that time or at least in the nearby markets. Those fishermen who have both transportation facility and sustainable income to back themselves have the advantage over the rest by swift movement of fish to the nearby markets which offer higher price.

Over the years, the government at large has neglected the protection and safety of the fishermen community. The government is responsible for the acts of omissions and commissions since most of the fishermen and by and large the fishing sector also regulated and controlled by the government. The situation is same whether they are in sea or on the land. Decades back itself, food and Agricultural organization (FAO) stipulated fourteen life saving tools containing kit on the board of vessel in order to save the life of fisherman. While fishing, it is learnt that more than ninety eight percent of fishing boats in Kerala lack these facilities on their board.

The government also lacks the infrastructure in terms of lifeboats and patrolling. There are only five patrolling boats for the coastal line of 590 km of Kerala. Even the police machinery does not have proper equipments like GPS and life saving tools. The monsoon season of

Kerala – June to August – is a nightmare to the traditional fishermen who, mostly live on the coastal shore[3]. Almost all the years, the sea would wash away their possessions and thus driving them to relief camps. The Government's attitude has been lethargic for many years in this regard. The trade unions and fishermen do not have the sophisticated and technically advanced equipments to tackle the emerging situations many times. The accidents often occur during the rough seasons hence the availability of the manpower only does not solve the crisis. Support is often sought from the Southern Naval Command, Kochi for the rescue operations. Here, the request has to come from the concerned authority and by the time, it would not do any good for the missing fishermen.

Another issue, faced by the traditional fishermen is the increased price in the case of kerosene and diesel over the years. One study shows that in the last ten years, the price of the oil increased three times while the price of the fish in the international market increased only by one and half times. Ultimately, the international price of the fish goes down to the fishermen.

Table 3

Year	***Price of Diesel per litre (Rs)***
1990	5.74
1992	6.19
1996	7.84
2000	18.84
2003	23.76

There has to be a revised approach towards the export of seafood products. The variation in the dollar exchange value shows a downward trend in the fishery sector at the value level; Cuttle fish, in 1995 traded on seventy-five per kilogram, now also gets the same price only. But there is a huge difference between the exchange value of dollar in 1995 (Rs 32) and of now in 2004 (Rs 45). In the last four years, the cost of fishing has been increased by 150% but the change in the fish price is less than 10%.

There is a changed scenario after the liberalization process started in India. In 1991, the total catch was 23.25 lacs tonnes, out of which about 3 lacs tonnes of fish came from the deep-sea fishing. The government felt no scope for further development in the territorial waters. Over the years it has been proved that the traditional fishermen are capable of deep-sea fishing. But the Central Government in recent times started issuing licences to foreign vessels allowing them deep sea fishing. This has a gross impact on the fishermen. If the government is looking for private investment, along Kerala coastal line alone the most of the vessels are operated in private sector. The foreign vessels deploy updated technology for fishing thus causing filtering of the bottom sea. This has been a major issue of concern in the fisheries sector for the last few years.

The mid nineties, the inland fisheries faced a big crisis due to fish disease. It has been resulted from the growing pollution in the coastal area and the left over by the factories in large volume. The average population density along the Kerala coast is very high compared to the inlands of the state. The thickly populated coastal line lacking the sanitary facilities is the one reason for the pollution. All along the coastal areas including the lake sides, ponds

[3] "Every fisherman prefers to live on the sea front near the point where he lands his craft and from where he can observe the sea. As a result the population density in Marine fishing village is around 2652 persons per sq.km. This is in comparison to the state figure of 742 per sq. km. which is already one of the highest in the country." (Kurien, Paul 2001 p.9)

and canals are bearing the brunt of factory outlets. Most of these canal systems are interlinked making the problem more acute. The growing demand for the shrimp in the international market urged the Government to initiate the developments in the aquaculture. The participation of fish workers in this is very negligible. The traditional fishermen folk by their experience have identified the resources in the deep sea. But the fluctuating market value and the competition have led to the over catching knowingly. It has other reasons also. In the pretext of going beyond the territorial waters, the mechanised boats are fishing invariably within the territorial sea using the banned gears. Hence the very purpose of the legislation was defeated resulting in the destruction of the marine wealth as well as conflict between small-scale artisan fishermen and the mechanised boat operators. The unemployment issue in Kerala may be another reason for the growing marine population in the state of which the people from the other communities play a major role. For the growing fishermen dependent on inshore fisheries, the use of offshore or deep-sea resources is one way to find additional employment and succour for their growing population. A number of the offshore resources are common with the inshore resources. Our own fishermen can harvest a good portion of these lying outside the inshore sea provided they are given improved craft, gar and other necessary infrastructure facilities.

At the landing centres, the trade union plays an important role. The union has fixed charges for icing and loading the trucks. It varies from harbour to harbour. The variation in the fixed labour cost is only with shrimp and fish mainly. The average labour cost for icing the fish with one block of ice (50kg) is Rs 5. Most often it has been observed that the trade union workers would procure more money than the fisherman who has been to seaside for many days.

Kerala Government created Matsyafed in principle to protect the fisheries community of the stat. The structure of the federation was envisaged in a way that each marine village would be having a cooperative society to represent in the apex body. At present, out 223 marine villages in Kerala, there are 852 societies. This has been largely resulted from the politicking of the cooperative societies by political groups of the state. In a way it defeated the very purpose of the federation.

The regulation that stipulates none of the deep-sea fleet would enter the 22 nautical mile zone is not closely followed and there is no inspection from the Fisheries Board also. It is not possible for them to monitor the entire Kerala seacoast with only five speedboats they are managing. In a way it is leading to the deep-sea fleet encroachment into the inshore waters catching the migratory species, which has been the treasure for the traditional fishermen for centuries. The dominance of the foreign and domestic trawling ships has changed the harbours into the war zones during monsoon trawl ban period. The lack of machinery to monitor the sea line has led to the night trawling eating away the share of the traditional folk.

The demand in the domestic market has not been increased over the years and there has not been any effort also. The lacking of storage facilities and processing plants compel the fishermen to yield to the whims and fancies of the middlemen.

ASSESSMENT

What is the solution for this complex issue? These questions require comprehensive legislation, awareness campaign and monitoring machineries. Most of the rules and practises are either obsolete or ignorant of the present scenario. For fishermen, the sea is the abundant treasure and the supporter to his livelihood. What leads to the over catching is the change in the cost of living and difficulty to meet both the ends of the life. The

fluctuating market conditions and the lower price of the fish due to increased players in the field urge him to sustain his life by exploring hitherto unexplored. In the coastal areas of Kerala, during monsoon the sea may take away land and the houses of the fishermen. His life is always in the doldrums. The following are the recommendations found out largely while discussing the issues with the traditional fishermen folk during this project study.

1) Indian coast is rich with fish wealth. So an overall assessment of the total fishery sector has to be undertaken immediately. As per the assessment, a comprehensible ecosystem approach to resource use and fisheries resource management is to be adopted. This shall be regulated under the supervisory of the government of each state in the region.
2) Increase Prime Minster's Kerosene and Diesel assistance to fisheries sector.
3) State should phase out destructive gear, such as bottom trawling and assess and reduce over capacity. All the fishery equipment shall be under the monitoring of an independent local committee having the representation of all the interest groups related with the fisheries. For social economic and ecological reasons the capacity of the industrial fleet that engages in the same fisheries as the small scale sector should be minimized as a matter of property.
4) State should encourage small scale, selective sustainable harvesting technologies with strong back ward and forward linkages that enhances and maintain employment opportunities within fishing communities.
5) The role of women in the economic activities of coastal fishing communities supplements region's livelihood. The degradation of coastal eco systems and the displacement of fishing communities from their living spaces have adversely affected the workload and quality of life of women in the communities. Involvement of Self Help Groups and NGOs in this field can create more opportunities.
6) Recognise the value of the work to develop a database.
7) Women in the fish processing plants are often harassed, sexually exploited and undervalued for their work. In this context, improve condition of work of women in fish processing plants.

8) Recognize the rigid enforcement of marine boundaries in historic waters in relation to the communities that live and fish. Interest of those communities need to be accommodated.
9) Coastal states with surplus resources should consider providing preferential access to such artisan or small-scale sea worthy fishing vessels subject to effective flag state control and response. At present, there is no preferential treatment to anyone in this sector. Apparently, it may sound better, this sector requires fair deal with the traditional fishermen as they are the major chunk in the segment.
10) The specifications and licensing procedures should be maintained with. There is a necessary requirement of the coordination between various agencies in this regard. There is no official mechanism to do the same at present in Kerala. What is the rule stipulates is only on the paper. No one is bothered about these licensing mechanisms since there is no checking or invigilation from the Government side on this regard.
11) Steps are to be taken for the building up of marketing infrastructure and its maintenance. At present, the fish is either transported to the far away places or sold through the traditional markets. The traditional fishermen are subjected to the dictates of the big players because there is no alternative arrangement to sell his catching. Even in the matters of processing also, condition is identical. So there should be initiatives from the Government to run the appropriate marketing mechanisms like fish outlets, processing plants etc.
12) There is an urgency to carry out sea-friendly fishery practises to be adopted soon. This would maximise the conservation of the sea wealth potential at large. More than the increased competition, the difficulty to meet the livelihood means has urged the less

competitive folk resort to unconventional methods of catching the fish using the lamps, crackers, meshed nets, night trawling etc. This has resulted in depleting the small fish reservoir.

13) To check irresponsible and harmful fishing, there should be a 'community policy' of the sea by the fishermen themselves, which would help the conservation techniques.
14) Unscientific and irresponsible fishing' can be done away by educating the fishermen and urging them to have a meaningful approach towards the sea wealth.
15) Matsyafed and other cooperative societies should be depoliticised and they work for the betterment of the fisheries sector.
16) The pollution Control Board should initiate pollute free water bodies in Kerala. It can be done through the frequent monitoring of the water bodies and strict legislations.

Fish being a renewable resource, biologically it would mean that the rate at which the resources are harvested should be in harmony with the rate at which they multiply. Humanly it means that the principles of equity and basic need to get a high priority. Technologically, it implies utilisation the renewable energy resources and methods, which are environmentally appropriate and less destructive. From the organisational and employment points of view, the policy of increased people's participation and decentralisation of investments and planning will offer added impetus.

APPENDIX

KERALA FISHERIES: AT A GLANCE

GENERAL PROFILE

1.	Number of revenue villages	1452
.	Number of Rivers	44
3.	Coastline of Kerala	590 km
4.	Percentage of Active Fishermen to the Population	0.54
5.	Percentage of share of Fisheries to NSDP at Current price	2.35
6.	Primary Fisheries Co-operative Societies	852
7.	Markets	2703
8.	Dispensaries	38
9.	Harbours	13
10.	Mechanised Boats	4510
11.	Motorised Canoes	29395
12.	Traditional Country Crafts	21956
13.	Number of Inland fishing villages	113
14.	Number of Marine Villages	222
15.	Fish Production 2002 – 03 (Marine)	6.03 Lac M.T.
16.	Fish Production 2002 – 03 (Inland)	0.75 Lac M.T.
17.	Estimated mid year Total Population of Kerala 2002-03	32989
18.	Number of Active Inland Fishermen (2002-03)	44053
19.	Number of Active Marine Fishermen (2002-03)	178369
20.	World Fish Production 2001	130.2 Million Tonnes
21.	World Inland Fish Production 2001 (000 tonnes)	31320
22.	Inland Fish Production in India 2001-02(000 tonnes)	3126.18
23.	Percentage share of State in India's Production 2001-02	2.50

Production (Lac Million Tonnes)	**Fish**	**Prawn**
1998 – 1999	6.48	0.67
1999 – 2000	6.68	0.76
2000 – 2001	6.52	0.76
2001 – 2002	6.72	0.73
2002 – 2003	6.78	0.73

Fishermen population (estimated) during 2001 - 2002

a.	Male	256668
b.	Female	248599
c.	Children	322686
	Total	**827953**

Export from India (2001-02)

a.	Quantity in Million Tonnes	424470
b.	Value in Rs Crores	595705
c.	Percentage share of Kerala in terms of Quantity in Export (2001-02)	16.64
d.	Percentage share of Kerala in terms of Value in export (2001 – 02)	13.70

Marine Profile

Fish Products	***in Lac Million Tonnes***
1998 – 1999	5.60
1999 – 2000	5.94
2000 – 2001	5.67
2001 – 2002	5.94
2002 – 2003	6.03

Exports of marine Products	***Quantity (in Million Tonnes***	***Value (Rs In lacs)***
1997 – 1998	89366	94802
1998 – 1999	70641	81655
1999 – 2000	92148	114696
2000 – 2001	88852	104647
2001 – 2002	72756	95055
2002 – 2003	81393	104582

Inland Profile

Fish Production	***in Million Tonnes***
1998 – 1999	65855
1999 – 2000	74130
2000 – 2001	85234
2001 – 2002	78039
2002 – 2003	75036

*Source Department of Fisheries, Government of Kerala.*

CLASSIFICATION OF KATTUMARAM *

Type	***Overall Length Range***	***Mode***	***Engine (HP)***	***Gear***	***CrewSize***
1. Kattumaram (4 log)	12'-25'	18'	Non motorised 2HP	Gillnets, hook & line, trammel net, boat seine	1-3
2. Kattumaram (3 log)	10'-25'	12'	Non motorised 2HP	Small gillnets	1-2

CLASSIFICATION OF DUGOUT CANOES *					
Type	***Overall Length***		***Engine (HP)***	***Gear***	***CrewSize***
	Range	***Mode***			
1. Dugout (Large)	30'-35'	32'	25+15 / 9.9 HP	Ring Seine (rani vala) Gillnets	8-9
2. Dugout (Medium)	25'-30'	26'	8 / 9.9 HP	Gillnets, Mini-trawl, also carrier for ring seine	4-5
3. Dugout (Small)	18'-25'	20'	Non-motorised; at times 2HP	Small Gillnets	2-3
4. Dugout (VerySmall)	<18'	15'	Non-motorised	Small Gillnets; also for mussel fishing	1-2

CLASSIFICATION OF PLANK CANOES *					
Type	***Overall Length***		***Engine (HP)***	***Gear***	***CrewSize***
	Range	***Mode***			
1. Plank (Very Large) Thanguvallam	58'-70'	65'	25x2 / 40+25/40x2 40+25+25/40+40+25 / 40x3	Ring Seine > 500 kg	25-35
2. Plank (Large)	40'-58'	55'	25+25/40+15 HP	Ring Seine < 500 kg	15-20
			25+15 HP	Carrier for Thanguvallam	8-10
3. Plank (Medium)	25'-40'	33'	25 / 15 / 9.9 HP	Gillnets, Hook & line	4-6
			25 + 9.9 HP	Ring Seine (Seasonal)	6-8
			Non motorised	Shore Seine	35-45
4. Plank (Small)	15'-25'	20'	Non motorised : Occasionally 2HP motors	Small Gillnets	2
5. Plank (Transom)	25'-30'		8 / 9.9 HP, Occasionally 15HP motors	Gillnets, Mini-trawl net	4-5

CLASSIFICATION OF PLYWOOD BOATS *					
Type	***Overall Length***		***Engine (HP)***	***Gear***	***CrewSize***
	Range	***Mode***			
1. Plywood - Small	< 25'		8 HP	Mini - trawl	2-3
2. Plywood - Medium	26' - 30'	26'	8 , 9.9, 15 & 25 HP	Drifnets, hook & line, Mini - trawl	4-6
3. Plywood - Large	30' - 40'	35'	9.9, 15 / 25 HP	Used as carrier for ring seine units Occasionally for ring seine	8 -12
4. Plywood - Very Large	40' -57'		15+25/25x2 / 25 + 40 HP	Ring Seine	12- 25

CLASSIFICATION OF RING SEINES *						
Name	***Qty.***	***Twine No***	***Mesh Size***	***Length***	***Depth***	***Remarks***
1. Ring Vala (Large)	>500 kg	1/3, 3/2 and 2/3 (mixed)	18–22mm	450-1000m	75-90 m	Used with Thanguvallom, Plywood (Very large)
2. Ring Vala (medium)	<500 kg	1/3, 3/2 and 2/3 (mixed)	18–22mm	300-400m	50-70m	Used with Plank (large)
3.Chooda vala	250 kg (150-300)	3/2	8–12mm	150-250m	30-50 m	Used as subsidiary gear with above two
4. Rani Vala	250-400 kg	1/3, 3/2 and 2/3	18–22mm	250-300m	30-40 m	Used with 3-4 dugouts, plywood (very large)
5.Mandu vala	150-200 kg	3/2	12mm	150-250m	20-30 m	Used with 2 dugouts

CLASSIFICATION OF GILLNETS *				
Name	***Qty***	***Twine No.***	***Mesh Size***	***Remarks***
1. Gillnet (Large)	> 100 kg	4/3 and above	90mm and above	This mainly refers to large mesh driftnets used in the deep sea.
2. Gillnet (medium)	30-100 kg	1/3, 3/2 and 2/3	60–70 mm	This category also is mainly related to driftnets. The mackerel net is the most prominent in this category.
3. Gillnet (small)	10 – 30 kg	1/2, 1/3 and monofilament	12-50 mm	This represents a wide range of nets including anchovy, sardine, prawn etc. The pomfret net (4/3 twine and 10mm mesh size, 20kg) has also been included in this category.
4. Gillnet (Very small)	2-10 kg	1/2 monofilament	12-40mm	Mainly refers to very small nets used by non-motorised one man or two men operations.

CLASSIFICATION OF OTHER GEARS *

Name	***Specification***	***Districts where used***
1. Thattumadi (Boat Seine)	Bag shaped net used by two plywood boats or by two kattumarams	Mainly found in Thiruvananthapuram
2. Shore Seine	Both cotton and nylon nets used. About 30 – 40 persons pull the net	Mainly found in Thiruvananthapuram and Kollam. A few in other districts
3. Mini- Trawl Net	2-5 Kg trawl net with two small other boards. Made of either HDPE twine or nylon multifilament.	

ACTUAL HP OF DIFFERENT BRANDS OF OBMs

HP Recorded	***Brand***	***Actual HP***	***HP Recorded***	***Brand***	***Actual HP***
2	Yamaha / Mariner	2	11	Johnson / Evinrude	11
	Suzuki	2	15		12
5	Yamaha / Mariner	4	25	Yamaha / Mariner	22
	Suzuki	5		Suzuki	28
8	Yamaha / Mariner	7 / 8	40	Yamaha / Mariner	?
9.9	Suzuki	12		Suzuki	?

***** *Source : A census of the Artisanal Marine Fishing Fleet of Kerala*

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