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Fisheries Development in India: Who benefits?

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"The notion of development as solution must be turned on its head because it is development that has caused modern poverty...To eradicate poverty we must seek not the promotion but the abolition of the development project as we 'know it today'"(21)

Through the export of prawns and other high quality marine products India earns quite a lot of foreign exchange. This is because these products realise high prices in the international market and there are no restrictions for them to enter the markets of the industrialised countries. In many cases however the modernisation of fisheries which is often referred to as the 'Blue Revolution' damaged the ecology of the coastal areas and threatens the livelihood of the small-scale fishermen and their families. The study has a deeper look into the process of modernisation of fisheries in general and its impact on small-scale fishermen on the Chennai coast in particular.

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Some Trends in World's Fisheries

As in other countries also in India it was believed for many years that marine products are an unlimited resource. Meanwhile it became clear that overexploitation of this resource is causing a lot of ecological, social, economical and political problems. In 1970 for example Peru landed more than 12 million tonnes of anchovies. 14 years later the annual catches had decreased to 23,000 tonnes (6). The same happened to the herring caught in the North Sea. In 1968 more than 850,000 tonnes were landed, but ten years later the catches had come down to a little more than 40,000 tonnes (6). Nowadays many

traditional fishing grounds are entirely overfished. Already at the beginning of the 80s the FAO warned that eleven of the big fishing areas (six in the Atlantic and five in the Pacific Ocean) had collapsed (2). Therefore most of the big fishing nations are in a search for distant fishing grounds to where they can send their huge fishing-vessels, equipped with the latest technology to trace big fish schools and catch them. Still today a major part of the annual marine landings is caught by a handful of nations. Compared to former times developing countries are also among the big fishing nations of the world. At the beginning of the 1950s only 27 per cent of the world's

Table 1
The World's Biggest Fishing Nations

	1938			1970			1990	
	Mill. t	%		Mill. t	%		Mill. t	%
Japan	3.56	17.42	Peru	12.61	18.12	China	12.10	12.44
USA	2.25	11.01	Japan	9.35	13.43	Sowjetunion	10.31	10.60
Soviet Union	1.52	7.44	Sowjetunion	7.25	10.42	Japan	10.20	10.49
China	1.50	7.34	China	6.86	9.86	Peru	6.54	6.72
Northern Ireland	1.19	5.82	Norway	2.98	4.28	USA	5.54	5.70
Norway	1.15	5.63	USA	2.75	3.95	Chile	4.97	5.11
Canada	0.84	4.11	India	1.74	2.50	India	3.79	3.90
Germany	0.69	3.38	South Africa	1.55	2.23	Indonesia	3.08	3.17
France	0.53	2.59	Spain	1.53	2.20	South Korea	2.75	2.83
Spain	0.41	2.01	Thailand	1.44	2.07	Thailand	2.65	2.72
Total (1-10)	13.64	66.73		48.06	69.05		61.93	63.68
Arest	6.8	33.27		21.54	30.95		35.32	36.32
Total	20.44	100.00		69.6	100.00		97.25	100.00

FAO-CRQ 1973/74 and 1991/92

fish landings were realised by developing nations. In 1992 their share had increased to more than 60 per cent (6). In many of these countries there was indeed a "Blue Revolution", a modernisation of the fisheries sector which helped to increase fish-landing considerably, but also led to ecological and social problems.

By far most of the fishes are consumed in the countries where they are caught. There is however a growing tendency for international trade in fishery products. In 1960 less than 10 per cent of the marine landings was consumed in other nations than where they were caught. Up to 1987 this share had risen to almost 30 per cent (22). It is interesting to

Table 2
The World's Biggest Importers Of Fisheries Products (1992)

	A		B		C		D		total	
	Value	%	V	%	V	%	V	%	V	%
Japan	5656	29.2	350	13.7	5190	38.3	1227	17.1	12504	29.1
USA	2112	10.9	135	5.3	2831	20.9	898	12.5	6012	14.0
Spain	1297	6.7	194	7.6	1154	8.5	250	3.5	2918	6.8
France	1412	7.3	110	4.3	749	5.5	625	8.7	2913	6.8
Italy	1131	5.8	307	12.0	702	5.2	427	6.0	2589	6.0
Germany	1174	6.1	182	7.1	179	1.3	500	7.0	2050	4.8
UK	821	4.2	15	0.6	154	1.1	765	10.7	1760	4.1
Denmark	669	3.5	45	1.8	201	1.5	205	2.9	1127	2.6
Thailand	817	4.2	NA	0.0	63	0.5	NA	0.0	885	2.1
Netherlands	453	2.3	29	1.1	135	1.0	169	2.4	790	1.8
Total (1-10)	15542	80.2	1367	53.5	11356	83.9	5066	70.8	33549	78.2
Other countries	3829	19.8	1188	46.5	2185	16.1	2093	29.2	9377	21.8
all imports	19371	100	2555	100	13542	100	7158	100	42926	100

(Value in Mills US \$)

A : Fish : fresh/frozen
B : Fish : salted/dried/smoked

C : Mollusc : fresh/frozen
D : Fish/Mollusc : processed

United Nations, Yearbook of International Trade Statistics 1992.

note that even the developing countries share in catches as well as in exports of marine products had risen considerably during the last decades, while most of the imports are taken by developed countries. Today the developing countries play a major role in both catching fish and exporting them whereas the developed countries' are the markets where this high quality source of protein is consumed. Among the world's top ten importers of fishery products there is only one developing country (Thailand) where most of the imported fish is re-exported after processing.

Fisheries in developing countries appear to fail to satisfy the need of poor consumers, but to benefit the urban rich and the consumers in the developed nations. As the purchasing power of the lower strata of the population in the developing countries is quite low it tends to be more profitable to catch even cheap fish varieties for fish meal to feed it to poultry rather than to sell it in the local market. The world's catches are stagnating at a level of about 100 million tonnes a year whereas in the year 2000 the total demand of fishery products will be about 125 million tonnes. The trend that rich consumers both in the developed as well as the developing

countries consume a growing share of the fish catches is therefore very likely to continue. What used to be the cheapest source of protein for the poor in many countries is likely to become unreachable for them.

Fisheries Development in India

India has a coastline of about 6000 km (including all the islands being part of India more than 7500 km, (17)). The Exclusive Economic Zone (EEZ) spreads over about 2.02 million sq.km and the continental shelf, where about 90 per cent of the marine fisheries resources are living, is about 414.000 sq.km (18).

The fisheries sector employs more than 1 million people. About 450.000 are active fishermen, most of them working on traditional fishing-boats, while the rest are working as fish-vendors or in fisheries processing units. Since India achieved independence the fisheries sector underwent many changes. The fish landings increased five fold and in 1991 India's share in world's fish landings was about 4.2 per cent, being about 2 per cent of India's GNP. The export of fishery products contributed about three to four per cent to India's foreign exchange earnings.

Table 3
Development of India's Exports of Fisheries Products (1960-1992)

	Quantity		Value		Value		Share on Total Export (in %)	Rank among All Export Products
	(1000.t)	(Index)	(10 Mill Rs)	(Index)	(Mill US-\$)	(Index)		
1960-61	19.9	100	5	100	10	100	0.78	19
1970-71	32.6	164	31	620	40	400	2.02	13
1980-81	69.4	349	217	4340	274	2740	3.23	12
1985-86	87.5	440	409	8180	334	3340	3.75	10
1988-89	115.6	581	630	12600	435	4350	3.11	8
1989-90	124.4	625	687	13740	413	4130	2.48	10
1990-91	158.9	798	960	19200	535	5350	2.95	9
1991-92	190.0	955	1443	28860	585	5850	3.28	7
1992-93	210.8	1059	1743	34860	602	6020	3.25	7
1993-94			2552	51040	814	8140	3,7	
1994-95			3337	66740	1063	10630	4,0	
1995-96			3384	67680	1012	10120	3,2	

Source : for 1960-1992 : Economic Survey 1993-94 for 1993-1995 : EPW, 14.12.1996, p. 3214

In the 1970s India was the world's biggest producer of prawns, but meanwhile it was overtaken by China and Indonesia. The high prices for prawns and other high quality marine products makes the export of such commodities very lucrative. It can however be noted that the devaluation of the Indian currency leads to a decrease/stagnation of the export earnings per unit. In 1992-93 India earned US \$ 2856 a tonne, whereas in 1980 a tonne of marine products brought almost US \$ 4000. Besides the devaluation of the Indian Rupee it is in particular the concentration on a few countries and a few products which makes India quite vulnerable against world market's price fluctuations and decreasing demand. Almost 90 per cent of the export earnings from marine products are from prawns, lobsters and cuttle-fish (15).

Between December 1990 and February 1992 the wholesale prices in Japan for prawns from India came down by more than 20 per cent (14). Under the headline *Oversupply from aquaculture depresses shrimp market* the FAO reports in its *Commodity Review and Outlook 1990-91*:

Table 4

Export-earnings from Marine Products

year	Quantity (in 1000)	Price per tonne	
		(in Rs)	(in US-\$)
1960-61	19.9	2513	503
1970-71	32.6	9509	1227
1980-81	69.4	31268	3948
1985-86	87.5	46743	3817
1988-89	115.6	54498	3763
1989-90	124.4	55225	3320
1990-91	158.9	60415	3367
1991-92	190.9	79947	3079
1992-93	210.8	82685	2856

Source : *Economic Survey 1993-94*

- In 1989, the world shrimp market was overshadowed by slow demand in Japan which, combined with large cold storage

holdings, led to a sharp decline in prices. Some shrimp species recorded a 40 to 50 percent reduction in prices'.

In the following year it was reported in the same publication:

- Japanese shrimp consumption collapsed in 1991 as a result of the liberalisation of meat imports. Prices fell abruptly, in June-July 1991, almost to the disastrous level of 1989. Demand and consumption in the United States were rather depressed in 1991, as the recession influenced restaurants sales. Black tiger shrimp was in over-supply on the United States market'.

Scope for expansion of India's fish landings

The estimations on which quantities of marine products can be caught on India's coast in a sustainable way vary from source to source. At the beginning of the 1980s Srivastava et al. estimated that the catches could be increased by the factor 3,4 or even 8 (18). In absolute terms this would have been between 4 and 11 million tonnes. In the meanwhile the estimates were revised. In its Eighth Five Year Plan the Government of India fixes the annual maximum yield to 4 million tonnes (13). By far the highest potential is in the waters up to 50 m depth. Here about 2.3 million tonnes can be realised, whereas the potential in water between 50 - 200 m depth is 1.3 million tonnes and beyond only 0.3 million tonnes (17). The density of fish is highest in the coastal areas (0 - 50 m) where it is about 11 tonnes/sq. km. In waters beyond 50 m the density is less than 1 tonne/sq.km (8). At the moment most of the catches are from waters less than 50 m deep. There is hardly any scope for further expansion in these areas as many of them were already overexploited in the middle of the 1980s (9). According to fisheries experts emphasis should be given to the deeper waters and to species which were not much exploited in the moment like tuna and even anchovies for fishmeal production

(16). Expanding fishery activities to deeper waters is however highly capital intensive and local investors hesitate to do so. The cost of a deep-sea fishing vessel of 25 m length was about Rs 13 million at the beginning of the 1990s (19, 3). It is however not clear how such vessels can be profitable as most of the high priced marine products are concentrated in coastal waters. As long as it cannot be made sure that the deep-sea fishing vessels operate only in deeper waters there will be disastrous consequences for the small-scale fishermen. But even then it is likely that the expansion of deep-sea fishing activities has an adverse impact on coastal fisheries as many species migrate according to the season from deeper to coastal waters and what is caught in deep-sea by big vessels cannot be caught by small-scale fishermen. Poor consumers, which depend on cheap sources of protein like oil sardines or anchovies will be negatively affected if deep-sea vessels will start to catch such species in future. Another way of expanding India's fish catches is seen in propagating aquaculture.

- The population of India is expected to rise to 100 crores by 2000 AD and 70 per cent of this is likely to be non-vegetarian eating fish, if it is available at affordable prices. [...] India needs major changes in fisheries development policies to change the pattern of growth and ensure more investment in areas where the return per unit of effort and time is the highest. The waterlogged areas are used for fish-based mixed farming and extensive aquaculture. Now a move must be made from extensive aquaculture to hi-tech industrial aquaculture" (4, p. 227).

It is however doubtful, if such a development strategy really benefits the poor consumers in India as high-tech industrial aquaculture is not only ruining the coastal eco-systems, it is also highly capital-intensive and by this the products of such aquafarms are far beyond the reach of poor consumers. These farms in

most cases are anyway 100 per cent Export Orientated Units (EOUs) and so the expansion of intensive and semi-intensive form of aquaculture is not a way to ensure fish-products at affordable prices for poor consumers in India.

The Modernisation of Fisheries and its Impact on Small-scale Fishermen

Like in the agricultural sector where one speaks of a "Green Revolution", the modernisation of the fisheries sector was more than just the introduction of a new technology. Also here it is justified to speak of a 'package approach'. The new kind of fishing vessels were accompanied by the construction of landing centres/ports for the trawlers, creation of servicing facilities and modern forms of processing and marketing infrastructure.

First steps towards such a fishing industry were made at the end of last century. In 1898 the Government of the then Madras Presidency was advised to modernise the fishery sector in order to fight famine. Even as this plan did not materialise it led to the appointment of a fisheries officer in 1905 who was supposed to conduct a study on the feasibility of modernising fisheries. In 1907 this post was converted into the Madras Fisheries Department. In the following years trawling was started on trial basis, but without much success. At the end of the 1920s there was a discussion to close the Fisheries Department as it consumed too much subsidies without bringing much revenue to the Government. Already in 1908 F.A. Nicholson, Director of the Madras Fisheries Department warned against the introduction of trawlers. He stated:

- [...] that Madras did not need steam trawlers and that to jump from the catamaran to the steamer was impossible and would be unwise even if it were possible, because revolutionary methods

here as elsewhere were a mistake' (1, p. 208).

Also Anugraham in his study on the socio-economic situation of Madras fisherfolk foresaw the development which became reality many years later.

- If steam trawling is undertaken, it will certainly revolutionise fishing in India and give rise to an intense competition between the poor fishermen and the rich capitalists. [...] The fishermen are likely to complain of a depletion of stock in the fishing grounds because of the activities of a trawler anywhere near their fishing limits (1, p. 210).

It took almost another 30 years before the decision was finally made to modernise India's fisheries sector. At the first All Indian Fisheries Conference held in New Delhi in 1948 it was decided to apply for foreign assistance and to buy trawlers. In 1952 a Technical Co-operation Agreement between the Government of India, the USA and the United Nations was signed according to which mechanised fishing vessels, ice plants and fish-processing plants were bought in the US and one year later the Indo-Norwegian-Project (INP) in Kerala was started. From there the modernisation of fisheries spread to all other coastal states in India.

The problems of modernisation in fisheries are many fold. Bottom-trawling leads to the destruction of the marine ecology and hence to the depletion of the fisheries resources in the long run. The trawl-net is drawn along the sea-bottom like a plough. It destroys the habitat of the fishes as well as their breed. This is the reason that since many years bottom-trawling is banned in many developed countries. As the mesh-size of the trawl-net is very small young fishes and prawns are also killed, which has an adverse effect on the reproduction cycle of the

fishes/prawns. Quite a substantial part of the catches by trawl-nets are economically unviable and hence regarded as waste and thrown back into the water. In the Bay of Bengal this by-catch constitutes as much as 85-95 % of the catch, which could be consumed by poorer sections of the society (11). Prawn-fisheries is most profitable during the monsoon-season as the prawns in that time come close to the shore to breed. To fish during these months destroys the stock and leads also to overfishing in the long run especially when trawl-nets are used which are very effective to literally empty huge areas of their resources. The mechanised trawlers also soon came into conflict with the local fishermen using traditional vessels as both were competing for the same resource: prawns. There is however a major difference between the small-scale fishermen and industrial companies investing in the fisheries sector: as the first are rather little mobile they have to take care that the resource is not ruined because they and their future children are not likely to have alternatives to staying in the very same area and living on the very same resource. For a company however, investing into fisheries is the same as investing in any other trade. They try to get as much profit as possible out of their invested capital within a short time and when fisheries turns out to be no longer lucrative as the stocks are destroyed, they easily shift to another business to invest their money.

For consumers of fish modernisation led to growing fish-prices, because of several reasons: first of all modern fisheries is much more capital-intensive than traditional fisheries. Modern fisheries is also consuming much energy. To run the boats, to supply ice-blocks, to transport fish in cool-vans etc. much energy is needed and as a consequence fish becomes more expensive. At the beginning of the modernisation process fish was the cheapest source of protein in India, now it is by far the most expensive. Johan Galtung summarises his

experience with the Indo-Norwegian-Project in Kerala:

- My evaluation is that it is a scandal, and not a partial scandal but a total scandal. [...] the INP project failed in four ways: less protein became available to the population, the level of living of the fishermen decreased, partly violent conflict between the traditional and modern sectors emerged, and depletion of the raw material, particularly the shrimps, set in. Still, however, the project was a success in the sense of being a major source of foreign currency (10, p. 259).

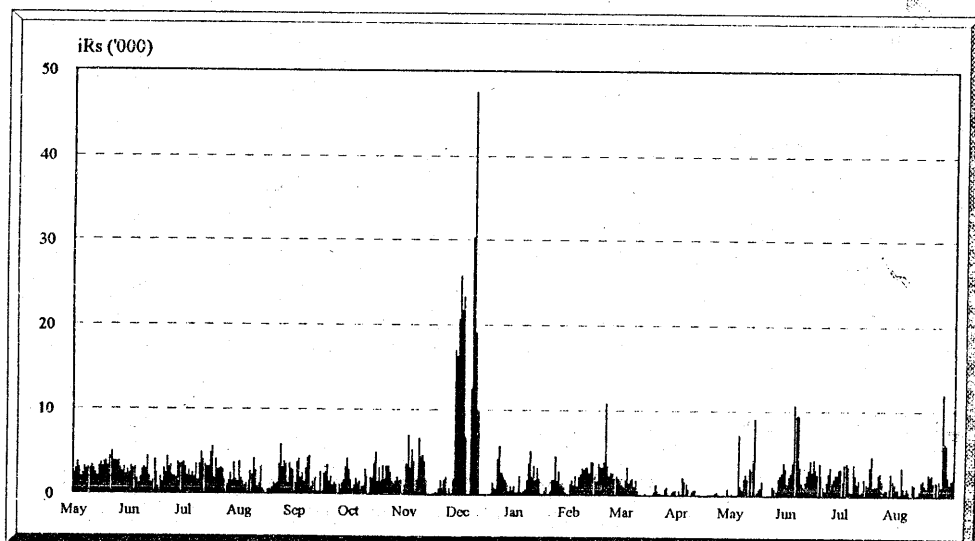
The Impact of Mechanisation on Small-scale-Fishermen: Some Empirical Evidences from Tamil Nadu

It is widely accepted that the mechanisation of fisheries had a negative impact on the socio-economic conditions of small-scale-fishermen. It is however quite difficult to quantify the impact of the *Blue Revolution* on the income opportunities of

small-scale-fishermen. The findings of an empirical study carried out in a fishing settlement of Chennai city between 1990 and 1992 shows that the livelihood of small-scale fishermen is threatened by the trawlers. Nowadays small-scale fishermen like trawler fishermen earn quite a substantial part of their income by catching prawns. Most of the earnings of one year are therefore made in a very short period of the year: the prawn-season. If one has a closer look on the daily incomes it becomes clear that during the prawn season even small-scale-fishermen can earn quite a lot and little imagination is needed to figure out what will happen if a substantial part of the prawns during this period would be caught by trawlers.

Fig. 1 shows that there is a distinct seasonality in the incomes from fishing. A big share of the income was earned in a single month during December 1991. If we have a look on the composition of the catches (Fig. 2) it becomes obvious that this seasonality of incomes is due to prawn catches. In Tamil

Madras, May 1991 - August 1992

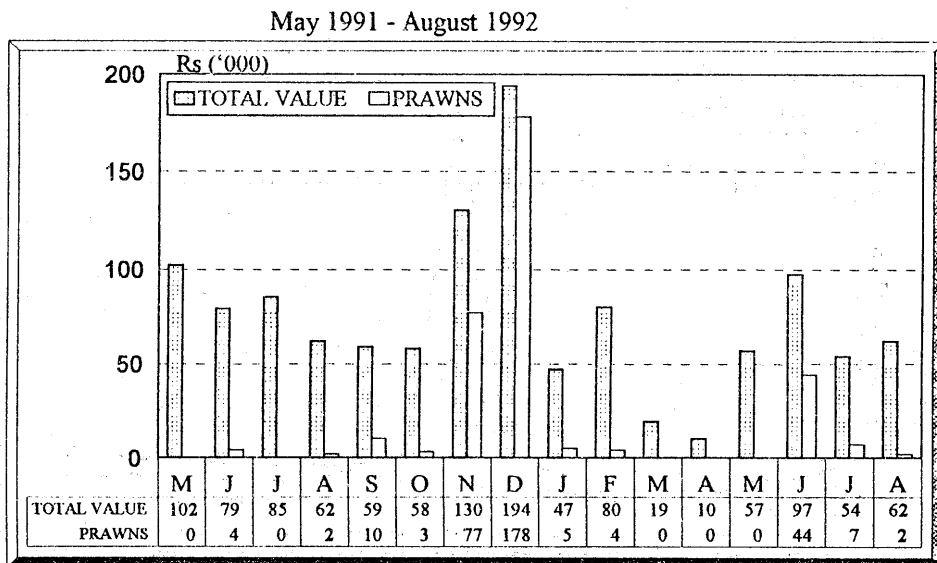


Madras, May 1991 - Aug 1992; E. Weber

Fig. 1

Table 5
Income from Fishing between Nov., 27 and Dec., 10, 1991 (in Rs)

Team	November						December						Rs. per trip	% out of 16 months	
	27	28	29	30	1	2	3	6	7	8	9	10			Total
1	410	650	530	650	800				970	800	800		5610	701	17
2	100	600	600	700	700	370			750	800	600		5220	580	20
3	300	400	420	500	700	500	460		700	1100	680		5760	576	24
4									800	700	0		1500	500	8
5	200	500	500	500	500	380			800	700	0		4080	453	17
6	100	500	500	600	500	400	350		800	500	0		4250	425	17
7	120	400	500	600	500	450	500		1400	1400	600		6470	647	23
8	500	700	550	600	650	650	500		800	1400	500		6790	679	22
9	100	400	600	650	650	350	350		800	1400	500		5800	580	23
10		500	500	500	800				800	800			3900	650	18
11	400	400	540	800	500	280	380		800	950	450		5500	550	19
12	210	400	400	450	450	350	350		800	1400	500		5310	531	21
13	200	120	500	500	700	500			950	950			4420	553	17
14	800	300	1500	1800	600	1000	300		600	1200	300	150	8550	777	25
15	300	300	200	600	500	900	300	1500	300	4000	560	300	9760	813	20
16	600	600	150	800	600	1400	120		1500	2000	600	60	8430	766	18
17	900	900	100	400	300			600	600				3800	543	20
18	600	600	300	300		300							2100	420	13
19	600	600	150	800	600	1400	120		1500	2000	600	60	8430	766	18
20	300	1000	1000	600	1500	2000	400		1200	3000	400	120	11520	1047	23
21				300	100								400	200	2
22	300	300	200	600	500	900	300		300	4000	560	300	8260	751	17
23	600	600	150	800	600	1400	120		1500	2000	600	60	8430	766	23
24	300	1000	60	200					1200	3000			5760	960	16
25	500	900	300	900	1000	800	300		900	1000	600	200	7400	673	18
26	1200	60	1200	1600	500	380	100	100		610	6615	1020	7385	671	19
27				510					420			520	1453	483	9
28	1300	800	1200		1330	935		770	940	860	860	590	9585	959	33
29	750		920	800	1320	890		1050	800	1585	1310	595	10020	1002	32
30	880	420	1535	979		940	370	1000		1510	2300	620	10545	1055	27
31	1050	700	670	1000	1300		350	1060	1040		860	650	8680	868	26
32			1100			600			1180	830			3710	928	16
33	540	750	1050	1430	949	1080	650	970	1200	1500	1020	980	12110	1009	32
34				1170	710	1580		1500	1220	1230	1300	1430	10410	1268	29
35		200	440	520					705	1130			2995	599	10
36	1200	550	1030	1600	780	1420		1130	615	1480	730	1190	11725	1066	27
37	1600	150	1200	950	1050	1200	440	2700	1370	1540	1105	1020	14325	1194	32
Total	16960	16300	20595	27500	21710	23265	6760	12380	30260	47375	18950	9865	250120	563	21
No. of teams going for fishing that day															
	30	31	33	34	30	28	20	11	33	32	28	18	37		
0	565	526	624	756	724	831	338	1125	917	1480	677	548	6760		



Madras, May 1991 - August 1992; E. Weber

Fig.2
Value of Marketable Catches of 37 Fishing-teams
May 1991-August 1992

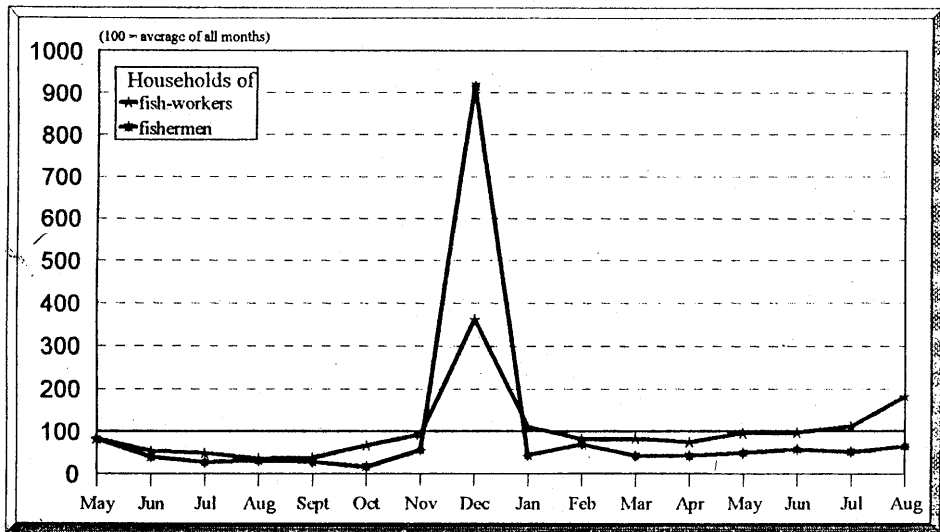
Nadu the months of November and particularly December are by far the most important months for catching prawns.

During the 16 months of investigation about 30 percent of the total income of 37 fishing-teams were from prawns. More striking however is that there are only few days in which the fishermen were able to catch prawns at all. During those days the fishermen earned a substantial part of their recorded income. Within 12 fishing-days in December 1991 the 37 surveyed fishing boats earned about Rs 6800 on an average. Some boats even realised more than Rs 10,000. More than 20 percent of the income from 16 months was realised in this short period. Some of the boats earned even more than 30 per cent (Table 5).

There are days a single boat can earn more than Rs 4000. This makes it clear why the conflicts between small-scale fishermen and trawler fishermen turn out to be so violent. If

the income opportunities from prawns wouldn't be so bright, nobody, not even the small-scale fishermen would bother about them being caught by trawlers.

It would of course be disastrous for the fishermen if this income can not be realised. There are two major threats why this could happen: First: during the period of their highest earnings the weather conditions are the worst. Second: the mechanised boats depend far less on the weather conditions. They can go out fishing while the fishermen with their cattumarams have to stay on the shore. The risk that the mechanised boats catch most of the prawns during those days in very high. If the income from prawn fisheries decreases the economic and social basis of the small-scale fishermen are at risk. Many fishermen and fishworkers likely to be caught in a debt-trap. As Fig. 3 indicates the fishermen repay their loans during the prawn-season which have been accumulated



Madras, May 1991 - August 1992. E. Weber

Fig.3

Repayment of Loans
 May 1991–August 1992

throughout the year. If the income from prawn catches decreases the fishermen might also become unable to raise the necessary capital for investments. Thus, it is no exaggeration to say that their socio-economic status is at risk.

Besides the growing dependency on prawns and the conflict with the mechanised fishing boats which makes the small-scale-fishermen as a whole more vulnerable, there were also changes within the small-scale sector itself which had an adverse impact especially on the fish-workers. Fish-workers are those who don't own means of production like boat and/or nets and therefore depend on fishing on somebody else's boat. Traditionally they receive a share of the catch. Whenever gill-nets are used half of the value of the catch is spent on labour. When the catch is for example sold for Rs 100 and the owner of both the boat and the net employed two

labourers the money is distributed as follows: the owner of the boat/net receives a share of 50 per cent for the means of production (Rs 50). As he also went for fishing he receives a share for his labour. Altogether three persons went for fishing and so the share for labour will be about Rs 17. Totally the owner of the means of production thus gets about Rs 66 and each of the fish-workers about Rs 17. With this meagre income a fish-worker will never be able to save enough money to buy his own boat and nets. Additionally he will frequently face the problem to find employment as there are too many fish-workers. Even when all the traditional boats in the village are in operation there is not enough employment available for all fish-workers. In the fishing-settlement studied there are more than 700 active fishermen (280 of them owing means of production + 435 fish-workers), but only 150 fishing boats. Thus the ratio between active labour force

(both owners of means of production as well as fish-workers) and fishing boats is about 4,8:1. As usually three persons go together on one boat there should be about 80 cattumarams more to offer employment opportunities for all. During the prawn-season this ratio is even higher as many people from the fishing community, who were able to get jobs outside fisheries, return for fishing because of the good income during those days. Even Government employees go out for fishing in the early morning before they go to their office. By this the chances of fish-workers to find employment are worst in the season when the income from fishing is best. There is hardly any scope to improve the socio-economic condition of fish-workers within the fisheries-sector itself. In most of the cases the programmes by the Government to distribute loans and subsidies to buy craft and gear are entirely grabbed by those who already own means of production. Usually they control the co-operative societies through which the programmes are implemented. Their motivation is two-fold: first to have easy access to money on favourable conditions for their own investment needs; second to prevent others to acquire means of production and enhancing the pressure on the marine resources. The fishermen are quite aware of the situation that with more people entering the sector the output for each of them is decreasing. Therefore the only way to ease the whole situation would be to create alternative employment outside fisheries, which is lucrative enough to facilitate the shift away from fisheries. As the present economic policy lays almost no emphasis on labour-intensive industrial development but only on a capital-intensive restructuring of the industrial sector, it is very unlikely that in the secondary sector enough employment will be created to relief the primary sector.

This will keep a huge labour force both in agriculture and fisheries.

Conclusion

The modernisation of fisheries neither helped the small-scale fishermen nor the poorer sections of society who depend on fish as a cheap source of protein. By exporting marine products India can earn quite a lot of foreign exchange. As huge profits are realised from such exports outsiders soon entered the fisheries sector and prevented the fishermen from benefiting. The marine eco-system is now threatened by the technology used in the modern fishing sector, the small-scale-fishermen are marginalized and in many coastal states of India the conflict between small-scale-fishermen and mechanised fisheries created a law and order problem in which during the last three decades hundreds of people were killed and property worth crores of Rs was destroyed. The same is very likely to happen if agriculture becomes a lucrative sector in which huge profits can be made through exports. The cropping pattern will be changed according to the needs of the consumers in the developed countries. Floriculture, horticulture, but also the export of staple food like rice are becoming more and more important for India's balance of payment. The liberalisation of agricultural exports is in an early stage right now. If it accelerates much foreign exchange will defiantly can be earned, but also lots of small farmers and agricultural labourers could be ruined. The Government has to take care that they will get their due share of the benefit from this more and more lucrative trade, who cultivate the land since generations. There is no objection against exports of primary commodities as long as this does not lead to the depletion of natural resources and as long as this kind of liberalisation does not intensify the existing socio-economic imbalances in India.

References

1. Anugraham D.D (1940). The Fisherfolk of Madras: an Economic Survey. University of Madras (unpubl. M.A.-Thesis).
2. Brown L.R (1986). Fr die weltweite Erhaltung der Fischgrnde, (In favour of the world-wide conservation of fishing-grounds), in: epd-Entwicklungspolitik, Materialien II/86.
3. Dandekar R.G (1987). 'Financing of Deep Sea Fishing Vessels', in: *National Bank News Review* 3(7), pp. 17-20.
4. Dwiwedi S.N (1991). 'Marine Fisheries: Fillup to Private Sector Needed', in: The Hindu Survey of Indian Agriculture 1991, Madras, pp. 226-32.
5. FAO. 'Commodity Review and Outlook' (FAO-CRO).
6. FAO, Fishstat-PC. 'Fishery Information, Data and Statistics, Catchtime Series by Country, Species, Area 1970 - 92' Rome, March 1994.
7. FAO. *Yearbook of Fisheries Statistics* (various editions), Rome.
8. Frontline, 18.11.1994.
9. FSI (Fishery Survey of India) (1988). *An appraisal of the marine fishery resources of the Indian Exclusive Economic Zone*.
10. Galtung J (1984). 'The Indo-Norwegian Project in Kerala: A "Development" Project Revisited', in: Internationales Asienforum, 15(1984), 3/4, pp. 253-274.
11. Gordon A (1991). 'The By-catch from Indian Shrimp trawlers in the Bay of Bengal', Madras: BOBP/WP/68.
12. Government of India, Ministry of Finance. *Economic Survey* (various editions).
13. Government of India, Planning Commission, Eighth Five Year Plan 1992-97.
14. *Infofish*, 01.12.1992.
15. Marine Products Export Development Authority (MPEDA) (1993). *Statistics of Marine Products Export 1991*.
16. Silas E.G (1989). 'Marine Fisheries: Need for a technological mission', in *The Hindu Survey of Indian Agriculture 1989*, Madras, pp. 242-55
17. Singhal N.C (1992). 'Marine fisheries: Joint Efforts for a Big Catch', in *The Hindu Survey of Indian Agriculture 1992*, Madras, pp. 171-75
18. Srivastava U.K, M. Dharma Reddy, V.K. Gupta (1982). *Management of Marine Fishing Industry*.
19. Srivastava, U.K., B.H. Dholakia, S. Vathsala, K. Chidambaram (1991). *Fishery Sector of India*.
20. Weber, Eberhard. *Globalisierung und Politische konomie der Armut in Indien* (Globalisation and the Political Economy of Poverty in India): (unpublished Doctoral Thesis, University of Freiburg), Freiburg 1996.
21. Yapa, Lakshman, Ben Wisner, Henry R. Luce (1955). Building a Case against Economic Development, in: *GeoJournal*, 35, pp. 105-118.
22. *Yearbook of International Trade Statistics*.