The Status of Sri Lankan Fisheries *from the perspective of fishworkers*



Oscar Amarasinghe

A study sponsored by

The International Collective in Support of Fishworkers (ICSF)

27 College Road, Chennai 600 006 India.





Accn No: 1426 MEN No: 2247

Forward

The International Collective in Support of Fishworkers (ICSF) is in the process of conducting a major study on the status of fisheries from a fishworker perspective in eleven countries during 1999-00 to 2000-01 period. The pilot phase of this study has already begun in five countries, which include Sri Lanka (Asia), Senegal (Africa), Brazil(Latin America) Iceland (Europe) and Canada (North America). This report deals with the status of Sri Lankan fisheries from the perspective of fishworkers.

The following are the objectives of the Sri Lankan study.

Long term objectives:

- to create a better understanding of the status of small-scale fisheries* and fishworkers** amongst, planners, policy makers, institutions, groups and individuals involved in fisheries development and fishworkers' welfare
- •
- to promote more equitable and sustainable use of fisheries resources

Short term objectives:

- to document the status of marine small-scale fisheries
- to document the economic and social status of fishworkers
- to study the impact of other resource users (industrial fisheries, tourism, aquaculture, coral mining, etc.) on the small-scale fisheries sector
- to explore the prospects, potentials and problems for sustaining and developing smallscale fisheries
- to establish the main threats to small-scale fisheries

In this study, <u>small-scale fisheries</u> is defined as, "all fishing units, whether traditional or modern, which do not demand heavy capital investment and do not require the intervention of industrial concerns or capitalists outside the fishing communities. Moreover, the owners of these crafts are personally involved in decision-making in respect of production and marketing". Since many individuals in fishing communities were able to purchase multi-day boats through state sponsored fisheries credit schemes and subsidy schemes, the present day deep-sea crafts can also be categorised as smallscale fishing units.

The term fishworker is used to mean all men, women and children who derive their livelihood from fisheries. In this broad sense, fishers (active fishermen and fisherwomen consisting of equipment-owners and crew-workers) together with other individuals who are indirectly involved in fisheries, are grouped under the term fishworker.

This study was carried out in the following steps.

- a. A working document was initially be prepared by the Principal Investigator based on information available from secondary sources (articles in journals, magazines, research reports, other publications, etc..) and from discussions held with fishworkers during short informal visits to a number of fishing villages in the southern, western, and north-western provinces of Sri Lanka. Officials of the Ministry of Fisheries and Aquatic Resources development were also contacted several times to clarify matters.
- b. Efforts were made to enumerate the various non-governmental organisations (NGOs) involved in fisheries-related activities. The objectives of the present study were then explained to these NGO's and also to a number of selected fisheries cooperatives. They were then asked to submit a short typewritten report on various aspects of the fisheries sector in which they were involved.
- c. Two workshops were held in Matara and Negombo in early April 2000, with the participation of representatives from all relevant fisheries-related NGOs and a few efficiently functioning fisheries cooperatives. The working document on the study was distributed among the participants before hand, and the participants were asked to discuss this document. Through group discussions, information on various topics, which were not dealt in the working document, were obtained (a list of all participating NGOs are provided in annex , while the topics for group discussions are enumerated in annex 2).
- d. The final report was prepared with the use of all above information.

Several weaknesses of this study should be mentioned. First, information on fishing activities carried out in the northern and the eastern districts of Sri Lanka were scanty. It was not possible to make field visits to these areas due to the prevailing war situation. Although invited, neither the NGO's nor fisheries cooperatives operating in these areas were represented at the workshops. Second, accurate information on socioeconomic characteristics of the fishworker population, such as the level of education, family sizes, experience, were not available. Such information will be made available once the report of the 1997 Census of marine fisheries is published. Third, in-depth field studies could not be carried out due to time constraints. Therefore, quantitative information on certain aspects could not be obtained.

Several individuals contributed heavily in the preparation of this report. Dr. Steve Creech, who was the coordinator of this study, extended his fullest support, by way of reading manuscripts, suggesting alternative ways of presenting facts, editing the final report, etc. Moreover, he made a significant contribution towards identifying the relevant NGO's. All his valuable assistance is gratefully acknowledged. Thanks are also due to, Miss. Gayni De Silva, data entry operator of the University of Ruhuna, Matara, and Mr.

Anthony Pillai of Colombo, who did the Sinhalese and English translations of the working document. Help extended by the late Dr. Anton Attapttu and Mr. Shantha Bandara of the MFARD is also acknowledged with many thanks. The Vice Chancellor of the University of Ruhuna and Mr. Anuradha Wickramasinghe of the Small Fishers Federation, are also thanked for providing all assistance in organising workshops. Last, but not least, assistance extended by the initiators and sponsors of this study, Mr. Sebastian Mathew and the International Collective in Support of Fishworkers, Chennai, India, are to be mentioned with deep gratitude. In fact, their efforts have brought into light, a number of important issues in marine small-scale fisheries of Sri Lanka, that never received the attention of academics, researchers, local planners and policy workers.

Dr. Oscar Amarasinghe

Department of Agricultural Economics Faculty of Agriculture, University of Ruhuna, Mapalana, Kamburupitiya.

14 July 2000

Chapter 1. Fisheries in Sri Lanka: an overview

1.1 Land, Climate and People:

Situated in the Indian ocean. Southeast of India, Sri Lanka is a small country having a land area of 65,510 km² lying within the latitude 6° -10° N and longitude 79°-82° E. Sri Lanka being close to the equator, the mean temperature on the plains ranges from 80-82°F. The hill country in the centre of the island rises up to 6000 feet and it has a cooler climate. From the central mountains originate 103 perennial rivers, which flow across the coastal plains in a radial manner to fall into the Indian Ocean.

Sri Lanka has a total population of 19 m (in 1999) consisting of 74% Sinhalese, 12.6 Sri Lankan Tamils, 5.6 Indian Tamils, 7.1% Moors, while the rest consisting of Burghers, Malays and others. Apart from being a multi-ethnic country, Sri Lanka's population is also characterised by its multi-religious nature; with Buddhists, Hindus, Muslims & Christians forming 69.3%, 15.5%, 7.6% and 7.5% of the population respectively. Many social indicators of the population remain quite favourable for development. People are highly literate with a literacy rate of 89.3% (the highest in South Asia). The annual rate of growth of population is 1.1%. With the extension of health facilities to even the remotest areas of the country, the crude death rate and infant mortality rate have fallen substantially, to levels of 5.8 and 17 per thousand respectively. The population enjoys a life span of 72 years, a quite high figure compared to that of many other Asian countries. Sri Lanka's GNP in 1999 was Rs. 1,090 billion, with a per capita income of US \$ 807 (Rs. 4,707.00)¹.

Sri Lanka has a 1,760 km coast line of which 1,150 km are sand beaches, possessing a shelf area (up to 120 m depth) of 30, 000 km². With the declaration of the exclusive economic zone in 1976, Sri Lanka has Sovereign rights over an area of about 230,000 km² of the Sea².

1.2 Fisheries Resources:

Fisheries resources are categorised under three broad types: (1) Marine resources, (2) Inland resources, and (3) Brackish water resources.

1.2.1 Marine resources:

The marine resources in Sri Lanka are divided into two sub-sectors: the coastal fishery and the offshore and deepsea fishery. Fishing activities concentrated within the area of the sea extending up to 40 km from the coast are considered as the coastal fishery. On the basis of resource studies carried out in the past, annual sustainable yields have been estimated as 250,000 MT consisting of 170,000 MT of pelagic species and 80,000 MT of demersal species. The actual coastal fish production in 1998 was 166,700 MT. The offshore fishery consists of fishing activities concentrated between 40 km and 96 km from the coast while

² See figure 1

Central Bank of Sri Lanka, Annual Report, 1999; 1 US \$ = Sri Lankan Rs. 70.00 approx.

the deep-sea fishery is in the area beyond 96 km from the coast. The magnitude of these resources is not accurately known but the potential exploitable limit has been estimated at around 90,000 MT³. However, the actual catch in 1998, amounted to 63,500 MT. Recent studies by NARA⁴ recommended to stop granting subsidies for the construction of offshore gillnet vessels because this fishery has already achieved the maximum economic profit. Moreover, this study indicated that, although the catch from gillnets could be increased, this would result in a decline in catch rates per boat.

In respect of rates of exploitation of marine resources, recent resource studies using catch and effort data⁵ revealed that coastal resources have been biologically over-exploited (actual yield exceeding the Maximum Sustainable Yield). Studies carried out along similar lines in the southern near-coastal fisheries (up to 15 km from the shore)⁶ revealed that while coastal fish resources in Matara have been biologically over-exploited, Galle and Hambantota nearcoastal fisheries were being operated below the maximum sustainable yield.

1.2.2 Inland resources:

Sri Lanka has 103 perennial rivers, locally known as Ganga, Oya; of these, 23 river basins are larger than 500 km². Of the total area of 280,000 hectares of inland water bodies, 160,000 hectares are lakes and ponds while the rest (120,000 hectares) consist of lagoons and marshlands. The inland reservoirs and tanks usually carry water all the year round (70,000 hectares) and other reservoirs and tanks (76,000 hectares) usually do not carry water all over the year and are called seasonal tanks. Present (1998) production in the inland fisheries is 29,900 MT.

1.2.3 Brackish water resources:

These resources are situated in the coastal belt such as estuaries or lagoons or marshes. They amount to 120,000 hectares, of which 80,000 ha consist of deep lagoons and estuaries. The rest are shallow lagoons, tidal flats, mangrove swamps and saline marshes. The deep lagoons and estuaries are ideal for fisheries and aquaculture. The estimated suitable land available for brackish water coastal aquaculture is about 6,000 ha⁷, where the salt content of the water varies between fresh water and that of the sea or between 0.5 and 35 ppt. Sri lanka's brackish water habitats are rich in biological diversity. Shrimp is the major fish variety produced in this sub-sector.

- ³ Ministry of Fisheries and Aquatic Resources Development; Six Year Fisheries Development Programme, 1999-2004.
- National Aquatic Resources Research and Development Agency (NARA), (1998): Report on the offshore pelagic fishery resources survey 1995-1997 Kotagama H., (2000), mimeo

⁶ Amarasinghe O. (1999): The economics of a fishery and optimal resource use (mimeo)

Samaranayake R.A.D.B. (1986): Status and prospects for brackish water aquaculture in Sri Lanka, J.Inland Fish, Vol.3, December 1986, pp 88-90

7

1.3 Fish Production and consumption

1.3.1 Fish production:

. .

The world fishery production in 1995 was 112.3 million MT, of which 21.6 million MT came from inland fisheries. Sri Lanka's share in the total fish production in the world in 1995 remained at 0.21%; a very small share indeed.

Reliable statistics with respect to fish production in Sri Lanka in the pre-World War II period are not available. Available information reveal that the production of marine fish in 1950 was 25,000 MT. At present (1998), fish production amounts to 260,100 MT with 230,200 MT of marine landings and 29,900 MT from inland fishing activities. From its 1950 level, fish production has recorded a 10 fold increase thanks to the mechanisation and modernisation programmes implemented by the state⁸.

1.3.2 Per capita consumption of fish:

Statistical data indicate that per capita fish consumption in 1958 remained at a level of 15.56 kg per year. What is surprising is that, even with tremendous production increases facilitated by the modernisation drive, per-capita consumption exceeded this level only in 1996, when per capita fish consumption reached 16.52 kg per year. Of the present (1998) per capita consumption of 16.9 kg, 13.16 kg come from domestic production while fish imports provide 3.76 kg. The present level of fish consumption is much below the nutritionally adequate level of 21.0 kg of fish (per person per annum) recommended by the Medical Research Institute of Sri Lanka⁹.

Of the daily per capita availability of 53.8 grams of proteins, fish account for 9.76 grams, which is 18 percent of the total. Fish also form the major source of animal proteins and all other forms of animal proteins contribute only 6.56 grams to the total per capita protein availability¹⁰.

1.4 Fisheries in Sri Lanka's Economy:

1.4.1 Fish Exports and Imports:

Exports of fish in Sri Lanka comprised until recently of fish that are not usually locally consumed. The quantity of fishery exports has almost doubled during the 1993-1998 period¹¹. At present, exports mainly consist of ornamental fish, fresh and chilled fish (like Tuna), crustaceans (lobster, shrimp, crab), etc. Seventy five per cent of the export earnings from fisheries are obtained from shrimp. Today (1998), the value of exports of fish and fishery products amount to Rs. 6,750 million, accounting for 1.89% of the total export earnings of the country.

⁸ See table 1

 ⁹ See table 2
¹⁰ National Aquatic Resources Research and Development Agency (NARA), (1999). Sri Lanka Fisheries-Year Book 1999, Colombo, Sri Lanka.

¹¹ See table 3

Fish imports too show an increasing trend since early 1980's. Following civil disturbances in the North and East of the country, which resulted in reduced fish landings, fish imports continued to contribute significantly to the local consumption of fish. At present (1998) a quantity of 71.9 million MT of fish and fish products (consisting mainly of dry fish and canned fish) are imported to the country with a value of Rs. million 4,063¹², accounting for approximately 1.27% of the total import bill of the country.

1.4.2 Contribution of the Fisheries Sector to the Gross National Product:

The size of the contribution of a particular sector to the Gross National Product of a country gives an indication of that sector's economic importance. Value added by the fisheries sector in 1998 was Rs. 23,661 million, which accounted for 2.63 percent of the Gross National Product of the country. Sri Lanka being a country with a coast line of 1700 km and endowed with vast amount of fisheries resources, the contribution of the fisheries sector to the country's GNP is rather small.

1.5 Fishworkers: their cultural, social and economic environment:

1.5.1 Fishing villages, population and employment:

There are 1050 fishing villages in the marine sector while the corresponding figure for the inland sector is 1289¹³. This add up to a total of 2,339 fishing villages. About 87,808 households live in the marine fishing villages while the inland fishing villages are occupied by 11,920 households with a total of 99,728 fishing households for the country as a whole. The marine sector accounts for 85% of the employment in the fisheries sector. About 98,444 people are actively engaged in fishing in the marine sector while the inland sector provides employment to 12,891 active fishworkers, with a total of 111,335 persons actively engaged in fisheries. A further 22,000 persons (16,000 in the marine sector and 6,000 in the inland sector) are indirectly employed in fisheries, especially in marketing and other ancillary services. Information on the numbers of different categories of fishworkers are not available. Yet, rough estimates indicate¹⁴ that the fishworker population consists of 10% craft owners, 30% crew workers, 5% fish merchants, 1% fish processors (fish drying and curing), 5% gear suppliers and 49% women and children. In the year 1994, the total number of people depending on fisheries as their major source of income was around 520,238; consisting of 461,738 in the marine sector and 58,500 in the inland sector¹⁵. However, the Ministry of Fisheries and Aquatic Resources Development has estimated the total fishery-associated population to be around one million 16 .

¹⁶ Ministry of Fisheries & Aquatic Resources Development; Six Year Fisheries Development Programme 1999-2004.

¹² See table 4

¹³ See table 5

Estimates made by fishworkers at a workshop conducted in Matara, on the 1st of April 2000 by the principal investigator of this study.

¹⁵ Ministry of Fisheries & Aquatic Resources Development, (1995): National Fisheries Development Plan 1995-2000, Colombo, Sri Lanka.

1.5.2 The history. society and culture:

Sri Lanka is a multi-ethnic and multi-religious society, in which each ethnic group represents predominantly one religious group. The majority of the Sinhalese are Buddhists, Tamils are Hindus and, Moors and Malays are Muslims. As Buddhism does not favour people engaged in slaughter trades, fishing does not carry much prestige as an occupation. It is also interesting to note the caste distinctions among those employed in fisheries. Among the Sinhalese, it is the people of the *Karava* caste who practise fishing as their principal vocation, while among Tamils, the *Karava* caste is more active in fisheries. Traditionally, fishing in Sri Lanka has been in the hands of the *Karava* caste people who seem to have descended from the *Kuru* refugees, scattered after their defeat in the great war between the *Pandavas* and the *Kauravas* of *Kuru*'s, related in *Mahabharata*¹⁷.

Many fishing communities take the form of ribbon like settlements along the coast. A traditional village appears as a conglomeration of small houses, built with clay and thatched with coconut frond, occasionally pierced by few cemented houses of the more affluent. A special feature of the fishing village is its 'village identity'. Each village is separated from the other in relation to productive activities and, links to the interior agricultural villages are few. This is not to say that the attitude of fishworkers towards those outside their own village is hostile, but social relations are mainly confined to the village. This is true even in the case of marriages. Marriage partners are often members of the same village community.

Fishworkers are considered to be 'spendthrift' in nature. It is evident that the many uncertainties their occupation is fraught with, the daily variability of their incomes, and the daily nature of their decision making process, could not help determine a particular structure of time consciousness among marine fishworkers. In its turn, this form of time awareness reflects itself in their attitudes towards risk, saving, planning, and innovation. Thus the off-noted fatalistic gambling spirit of fishermen has no doubt to be related to the high degree of unpredictability of their daily catches.

1.5.3 The role of women and children:

The role of women in fisheries varies with ethnicity and religion. In the catholic communities along the western coast, women play an active role in fish handling and marketing in the beach. Participation of women in active fishing and net mending activities is also noted in these communities. In the predominantly Buddhist southern coastal fishing communities, the presence of women in the beach is not socially accepted and they hardly get involved directly in fisheries activities. However, many women in the southern fishing communities are involved in various other income generating activities such as, rope making (from Dondra to Rekawa), brick making (Kirinda, Thissamaharama, Medilla, Marakolliya, etc.) agriculture (Kahamodera, Rekawa, Kirinda. Hambantota) and animal husbandry (Kirinda and Hambantota) which bring in supplementary incomes.

Women claim that they play an increasingly important role along with the pace of development of the fisheries sector. The increasing rate of personal savings noticed in

¹⁷ Raghavan M.D. (1961): The Karava of Ceylon-Society and Culture (K.V.G.De Silva & Sons, Colombo).

fishworker families,¹⁸ can be partly attributed to increasing involvement of women in financial management. Household responsibilities of women are growing along with the development of the ultra-modern deep sea fisheries sub-sector in which the fishing trips are longer, usually about 1-1½ months. Not only the women have to feed, educate and protect children and to manage the household, but they are also supposed to confront and resolve all health and other household problems and, to meet social obligations. Women claim that, all social relations with kin, friends and other individuals and groups are maintained by them, because the men hardly find time to do so. Instances of wives of the young fishworkers having love affairs with other men in the community, when their husbands are absent from home for long periods, are also not rare.

Children of fishworkers are also involved in the provision of various supporting services to fisheries activities in the mechanised sector. Although many fishworkers do not encourage their children to take up employment in fisheries, a considerable number of children, especially school-dropouts, are involved in fish marketing on a smaller-scale, removal of fish from nets, providing fuel, drinking water and other goods to mechanised crafts, etc. Some of them also perform the function as caretakers of multi-day boats when these crafts are at anchorage. Ornamental fisheries, is another activity mainly carried out by the young in fishing communities. Expansion of the tourist industry along the coastal belt of Sri Lanka too has caused many children of fishworkers to get involved in this industry as guides and sellers of ornamental items (corals, sea shells, etc.). Sexual abuse of children within this industry is also quite pervasive.

The more educated fishworkers always prefer their children to take up non-fishery employment due to the comparatively low social status afforded to those involved in fisheries and the limited employment opportunities available in fisheries compared to the number of youth seeking employment.

1.5.4 Fishing incomes and Living Standards

In a socio-economic survey of fishing families conducted in 1958-1959 by the Department of Fisheries, the average gross income of a fisher family has been estimated as Rs. 210.79 per month during the fishing season and Rs. 127.77 per month during the off-season. Assuming a fishing season of 6 months and a family of 6 members (as revealed by the findings of this survey), one arrives at a per capita income of Rs. 338.60. This is roughly half of the income of an average Sri Lankan during the same period (Rs. 636.00 in 1960). Therefore, fishworkers were considered a very poor segment of the Sri Lankan population.

The process of modernisation of fisheries that took-off since then, has dampened the inter-temporal variation of fishing incomes and, has led to an increase in the level of

¹⁸ Amarasinghe O., W.A.G.Wanasinghe, S.P.M.Jayantha, A.W.Vishantha Malraj, A.Somasiri and Deepa Nishani (2000): 'Market for Fisheries Credit; the functioning of the market for fixed capital in fishing communities in southern Sri Lanka', in O. Amarasinghe (ed.) *Modernisation and Change in marine small-scale fisheries of southern Sri Lanka*, (forthcoming). O. Amarasinghe (ed.) *Modernisation and Change in southern Sri Lanka*, (forthcoming).

incomes of fishworkers. According to studies carried out in the South of Sri Lanka¹⁹ in the recent years, crew workers engaged in multi-day boats (MDOC), day boats with inboard engines (ODOC), day boats with outboard engine (FRP), mechanised traditional crafts (MTC) and non-mechanised traditional crafts (NMTC), earned monthly incomes of Rs. 8,654, 4,741, 4,692, 3,919 and 2,694, respectively in the year 1994²⁰. On the other hand asset owners (non-fishing owners) earned monthly incomes of Rs. 12,511, 10,238, 6,120, 5,709 and 422, respectively for MDOC, ODOC, FRP. MTC and NMTC. However, studies carried out by NARA (1997) indicate that owners of multi-day crafts receive incomes in the range of 20,183-28.827, while incomes reported for other categories do not differ much from the above study. The variation of incomes among fishing units within a particular technological category has been quite high. For example, incomes of crew workers in MDOC's ranged from Rs. 1,150 to Rs. 25,000, which can be attributed to many factors such as, the age of the craft; type, quality and quantity of the gear; skill of the crew; incidences of damage or loss of gear, etc. It is evident that, sea-going craftowner category earned higher incomes than pure asset-owners or crew workers. Comparison of fishing incomes with those of other occupational categories revealed that, fishworkers engaged in mechanised crafts are earning higher incomes than those earned by most of the other occupational categories in the unorganised sector (workers in the agricultural sector and building construction sector) 21 .

The above study also compared the living standards of craft owner-fishworkers, across different technological categories and, with the average Sri Lankan citizen, in general. This was done with the aid of stock indicators of wealth; such as types of houses, quality of furniture, availability of facilities like water, electricity and latrines in housing units, etc. In general, the quality of houses and availability of various facilities increased with the degree of mechanisation of crafts. Only 2% of all types of craft owners lived in houses with mud walls and cadjan-thatched roofs²², where as 17% of the country's population as a whole lived in such houses²³. In respect of the availability of pipe-borne water supply, only 13.5% of owners of traditional crafts had this facility, while the corresponding figure for owners of multi-day boats was 66%, with an average of 41% percent for all craft owners²⁴. In Sri Lanka, only 30.6% housing units enjoy this facility and, it is therefore evident that the fishing community as whole had better access to pipeborne water supply than the average Sri Lankan. The percentage of all craft owners having electricity facility was 59% those owning traditional crafts, while it was 79% for those having multi-day boats²⁵. The proportion of all country's households having electricity was 54.8% and, according to these standards, craft owners were enjoying above-average electricity facilities. In respect of sanitary facilities, almost all owners of multiday crafts had proper water-sealed toilets while the corresponding figure for owners of traditional craft was 76%²⁶. Compared to the country's average of 64.3% (households

¹⁹ Amarasinghe O. (2000): 'Modernisation and Living Standards of Fishworkers' in. O. Amarasinghe (ed.) Modernisation and change in marine smallscale fisheries of southern Sri Lanka (forthcoming)

²⁰ See table 6

²¹ ibid ²² See table 7.1

²⁴ See table 8

²⁵ See table 9

²⁶ See table 10.1

having water-sealed toilets)²⁷ craft owners appeared to be enjoying better standards of sanitation than the average Sri Lankan.

Fishworkers engaged in mechanised crafts were found to enjoy living standards much above those enjoyed by the average Sri Lankan, while the opposite was true for those engaged in traditional fisheries²⁸. It was evident that modernisation of fisheries has brought about an increase in living standards of fishworkers who were able to adopt the modern fish-catching technology.

1.6 Summary:

Sri Lanka is endowed with a vast amount of marine and inland fish resources, but the knowledge on the availability of resources, rates of exploitation and the state of resources remains poor. The country has achieved very high levels of growth in fish production; recording a 10 fold increase during the second half of the last century. Marine fisheries contribute 89 percent to the total fish landings of the country and account for approximately a similar percentage of employment in the fisheries sector as a whole. However, with respect to per capita fish consumption, the present level of 16.9kg per year, is only slightly above the level of 15.56 kg achieved in 1958. However, the latter levels were achieved with the help of increased fish import volumes, while domestic production has contributed more to present levels of fish consumption. The contribution of fisheries to the GNP of the country remains low, at 2.63 percent.

Fishworkers form a heterogenous category in terms of vocation, ethnicity and religion, but the majority belong to the karava (Sinhalese) or Karyar (Tamil) caste. The total fishworker population of 520,238 live in 2,339 villages, both in the marine and inland sub-sectors. The villages are characterised by 'village identity', which confines social relations mainly to the village itself. Active fishing is carried out by males, but the participation of women in various ancillary services is noted in the western and north western provinces. With the development of deep-sea fishing in the late 1980's, the women are burdened with a host of responsibilities when men are engaged in very long fishing trips. Although children too are engaged in the provision of various fishery-support services, the parents often opt to educate their children to enable them to find employment in other sectors.

Of all fishworkers, those who have adopted mechanised fishing earn higher incomes than their traditional counterparts. The average income of the former category is above that of skilled labour in the unorganised sector, while the reverse is true for fishworkers engaged in traditional fisheries. The standard of living of fishworkers appear to increase along with the degree of mechanisation of fishing crafts. Comapared to various household facilities enjoyed by the average Sri Lankan citizen, those fishworkers in the mechanised sector enjoy above-average facilities while those in the traditional sector enjoy substandard facilities.

²⁷ Table 10.2 ²⁸ ibid.

Chapter 2. Fishing technology and the process of technological change

2.1 Fishing technology in marine fisheries:

Craft-gear combinations used by fishworkers differ considerably among different groups, the heterogenity among which arise from differences in ethnicity, religion, location, etc. Given the open-access nature of marine fisheries, access to technology determines fishworkers' access to a particular resource. Fishing crafts can be broadly categorised into, a. traditional crafts and b. mechanised crafts, which differ significantly in the size of capital investment and the area of operation. The traditional crafts are less expensive and operate mianly in near-shore area, where as the opposite is true for mechanised crafts. Since the type of resources available and therefore, the fish caught, vary widely depending on the resource area; coastal, off-shore or deep-sea, it is more appropriate to describe the different fish catching technology according to resource areas.

2.1.1 Fishing technology in the coastal fishery:

The common indigenous crafts exploiting coastal fish resources of Sri Lanka are, Planked Beach Seine Craft or *paru*; the Outrigger Canoe or *oruwa*; the Log Raft or *teppam / kattamaran* and the *vallam¹*. Fishing techniques commonly employed by these crafts are, handlining, small-meshed gill netting, cast-netting, etc.² (a longer outrigger canoe with sail was used to fish in deeper waters for skipjack, using the pole and line technique). The *paru* is used to carry and lay large beachseine nets. The outrigger canoe is quite popular among the Sinhalese fishworkers while the *theppam* is used by the majority of catholic fishermen in the western and north-western coast. Tamil and Muslim fishermen in the northern and eastern coast prefer the *vallam*. The operation of all these crafts depend heavily on wind movements and weather conditions. Traditionally, fishing was carried out during *haraya* (non-monsoonal times) and fishing activities remained at very low ebb during the *warakana* (monsoonal period). Many of the smaller traditional crafts without sail confine their fishing activities to inshore waters, which require a considerable degree of skill and human energy.

The most expensive of the above technology was the beachseine. Beachseining was the most important fishing activity in pre-war Sri Lanka, accounting for more than 90 percent of the total marine landings. Rural elite preferred to invest in beachseines than in crafts due to two major reasons. First, the nets were hauled from the beach, and therefore, the seine owners did not actually fell into the category of 'fishermen'. Second, they could supervise seine operations from the beach, thereby reducing the risks associated with informational asymmetries that exist between seine owners and seine workers.

About 610 species of coastal fish have been reported in Sri Lanka, of which the more common species caught are *Salaya* (Sardinella melanura), *Soodaya* (S. albella), *Hurulla* (<u>Amyblygaster</u> sp), *Pesalaya* (S.longiceps), *Kumbala* (Rastrelliger kanagurta), *Jelawa*

See figure 2

² See figure 3

(Sphyraena sp.), Lagga (Thrissocles sp.), Karalla (Leognathus sp.), Katuwalla (Chirocentrus dorab), Alagoduwa (Auxis thazard), Haalmessa (Anchova commersoni) and Piyamessa (flying fish) (Hirundichthuys coromandelensis). Most of these species live near the surface of the water or in the water column (Pelagic). Species such as galmalu, uruhota (Lithrinus sp.), Savalaya (Trichiurus savala), some species of Para (Caranx melamphigas), Meevatiya (Lithrinus sp.), Maduwa (species of skatas and rays), flat fish (species of Cynoglossus) and Pannawa (species of Jojnius and tolithus) live at the bottom of the coastal region (dermasal). Also there are various species of fish that live between the surface and the bottom³.

The drive towards mechanisation:

Since late 1930's, experiments have been conducted by the state to introduce suitable mechanised crafts and more productive gear into Sri Lankan fisheries. Among other things, these efforts led to the introduction of the outboard engine and the small mechanised craft (17-23 feet fibre-glass FRP boat) into coastal fisheries. The small FRP boat which was introduced in early 1970's, operates in coastal waters up to about 15 km from the shore, often along with traditional crafts. The outboard motor (OBM) became very popular among fishworkers and they began to mechanise their traditional crafts by fixing an outboard motor. Both the 17-23 ft. FRP boat and the mechanised traditional craft (MTC) often exploit the same resources, for which, they employ small-meshed gill netting as their most common fishing technique. Along with the mechanised craft, the nylon gill net was introduced into Sri Lankan fisheries that replaced all traditional hemp and cotton nets.

With the introduction of the nylon net, gill netting became a popular technique of fishing, which led to a considerable increase in catches. The ten-fold increase in fish production from the 1950's until today is the combined result of both, the introduction of the nylon net and mechanised crafts. Today, the nylon net is used by all types of crafts, the mechanised and traditional alike. Catches from small-meshed gill nets account for 90% the annual coastal pelagic fish production.⁴

2.1.2 Fishing technology in the off-shore fishery:

The off-shore fish resources remained under-exploited since late 1950's. Only large traditional crafts with sail were engaged in off-shore fisheries, mainly in harvesting skipjack (*balaya*). Pole and line fishing for skipjack, a technique mastered by the Sri Lankan fishworkers, was the major technique employed in this fishery.

The technique of pole and line fishing for skipjack requires the use of live fish for bait; the commonly used bait being *imburo* (a small rock dwelling fish). A smaller outrigger canoe which is tied to the deep sea craft and taken to bait fishing grounds with three fishermen on board, assists them in bait fishing. This craft returns back after bait fishing is complete. A craft which leaves around 4.00 am in the morning reaches skipjack grounds around noon. When a skipjack shoal is located, about six fishermen get ready with the poles and lines and

¹ Jinadasa, J. (1993): Marine Fishes and Fisheries in Sri Lanka (Sri Lanka Association for the Advancement of Science, 1993, Colombo, Sri Lanka) ⁴ NARA 1999 (op.cit.)

tie gunny bags (sacks made of jute) around their waists. The rest of the fishermen throw handfuls of *imburo* into the sea while some of them bend out of the craft and splash water using their hands (this action causes water splashing similar to that caused by live bait moving in the water), which is directed at saving live bait. When shoals of skipjack are attracted by the splashing action made by *imburo* and by fishermen, the hooked lines are thrown into water and moved along with moving bait. The fish, while feeding on *imburo* gulp fishing hooks by accident and get trapped. As soon as he feels the bite, the fisherman (who handles the pole and line) jerks the line hard so that the trapped fish is "flown" over from the sea, hit the gunny sack tied to his waist and drops down into the craft. In the presence of a sizeable shoal, 1,000 - 1,500 kg of fish could be caught within an hour. The whole process takes about 11-12 hours.

The above technique was very strenuous and required a high degree of skill and experience on the part of the crew. Moreover, due to the heavy dependence of fishing activities on weather conditions, the risk of zero income due to non-manoeuvrability of crafts was very high. Therefore, fishworkers were reluctant to invest heavily in the traditional off-shore fisheries.

Introduction of new off-shore crafts:

A new off-shore craft, the 3.5 ton craft (28 feet in length) with inboard engine (ODOC) was introduced into the off-shore fishery in late 1950's. This craft soon became popular due to its ability to exploit fish resources that remained under-utilised until then. It operates in off-shore waters employing techniques such as large-meshed gill-netting, long-lining, single-hook and multi-hook trolling, and also purse-seining. However, this boat was not equipped with facilities to ice the fish catch and, therefore, the fishworkers had to confine their fishing activities to one-day fishing trips. This boat is popularly known as the *ek dina yathrawa* (day boat).

2.1.3 Fishing technology in the deep-sea fishery:

Deep sea fishing is of fairly recent origin in Sri Lanka. Although some traditional fishermen claim that they were engaged in deep-sea fisheries with their traditional crafts with sail, it is very unlikely that such crafts were operating beyond 96 km from the shore (the arbitrary line of division between the off-shore and deep-sea fisheries). In fact, exploitation of deep sea resources commenced in late 1980's. The early entrants into deep-sea fisheries were the owners of ODOCs. Due to the inability of the ODOCs to engage in multi-day fishing trips, when catches were low, the fishworkers started introducing an ice compartment to the existing fleet of day-boats, so that they could remain in the sea for more than a day. Subsequently, this modified boat (which was earlier referred to as `tank boats'; *tanki boattu*) was replaced by the multi-day boat which was larger in length and equipped with an ice compartment and a cabin for the crew. Some of these crafts operated today are 45-50 ft. in length and are powered by 50 hp engine. It is not unusual to find radio communication equipment and satellite navigators in these boats. The MDOC is the craft that is mainly engaged in the exploitation of deep sea fish resources. Large-meshed gill-netting, long-lining, trolling are the common techniques of fishing employed by these crafts. In the early

1990's, these boats began to venture outside Sri Lanka's EEZ. First to fish in neighbouring Indian, Maldivian and British Indian Ocean Territorial waters and then in international waters to the north-east (Bay of Bengal) and north-west (Arabian Sea). The continuing pressure to stay at sea for longer periods and to travel further in search of fish is reflected in the continuing increase in the length of multi-day boats. Local boatyards are now capable of producing boats up to 60 ft in length, which can stay at sea for over two months.

About 90 species of oceanic pelagic species of fish have been reported to live in Sri Lankan offshore and deepsea waters, of which the most common species caught are, skip jack or balaya (Katsuwonus pelagis), yellow fin tuna or kelawalla (Thunnus albacares), Spanish mackeral or thora (Scombcromorous commersoni), pirmithora (Acanthocybium solandri), Sail fish or thalapatha (Histioporus orienttalis), short bill spear fish or habara (Telrapturus angustirosstis), striped marlin or koppara (T.audax), Blue marlin or sappara (Makaira nigricaous), Black marlin or kalu koppara (M. indica), sword fish or sappara (Xiphius gladius), Dolphin fish or Vannava (Caryphaens hippurus). Moreover, it has been reported that about 60 species of sharks live in the oceanic waters off Sri Lanka. Some of the more common species are: white tipped shark or sudumora (Carchanius longimanus), Black tipped shark (C. malanopterus), Thresher shark or Kasamora (Alopices pelagicus), Hammer head shark (Sphyrnee zygaena), Great hammer head shark (S.leveni). Some species are reported to be feeding on tuna, which are as long as 120 cm. Baracuda (Sphyraena sp), kattawa (Chrinemus sp), anjillawa (Scomberomorous guttatas) and lena or rainbow runner (Elagatis bipinnulata) have also been reported to live in oceanic waters, but in lesser numbers⁵.

2.2 Characteristics of the new technology

2.2.1 Capital bias:

One of the major characteristics of the new fish catching technology is its high capital intensity. The adoption of mechanised fishing technology (mechanised crafts and accompanying gear) requires a large capital outlay unlike in the case of traditional fishing techniques. A modern craft, such as the Multi-Day Craft (MDOC) with the accompanying gear cost about Rs. 3,764,212 (in 1998)⁶ as against a cost of Rs. 190,796 required for the purchase of a traditional craft (without sail) and accompanying gear. Ordinary fishworkers are unlikely to have savings sufficient enough to meet the heavy capital funds required for the purchase of modern crafts and gear.

Another major disadvantage of the new technology is its' high 'import dependency'. In fact, the external cost of mechanised crafts varies from 80-90 percent of the total cost.

2.2.2 High profits:

⁵ Jinadasa (1993 : op.cit)

⁶ See table 11

Profitability studies carried out in mid 1990's in coastal fishing communities in the south of Sri Lanka⁷ revealed that all fishing operations of the new crafts were viable in the short and the long run at the prevailing level of fishing effort⁸, as indicated by their positive gross and net profits. Highest net profits were earned by the multi-day operating crafts. The higher the degree of mechanisation of crafts, the higher have been the net profits. Resource rents were positive for all crafts, but those earned by off-shore crafts (ODOC) and deep-sea crafts (MDOC) were considerably higher than resource rents earned by coastal crafts, which could be attributed to the lower rates of exploitation of off-shore and deep-sea resources compared to coastal resources. Both return to capital and labour were found to be highest for small mechanised crafts⁹ and these crafts have become very popular in almost all parts of the country.

2.2.3 Risks and uncertainties:

Fishworkers who adopt the new technology are confronted with new risks which are either absent or less severe in traditional fisheries. Two new important risks can be identified.

a: risks of damage or loss of fishing equipment (which arise from, i. various hazards inherent in the environment in which the crafts operate; ii. sea water seeping into engines; iii. cutting of long drift nets by ships or large fish and, iv. theft during anchorage and in migratory fishing villages).

b: risk of the inability of craft owners to meet operational expenditure on daily fishing trips when fishing is 'poor' (because the crafts are powered by engines, the craft owners have to disburse cash on fuel in addition to food on board for daily fishing trips)

The incidence of damage or loss of crafts and gear is found to rise with higher degrees of mechanisation. As a result, the fishworkers adopting modern technology needed insurance against these risks.

2.3 Rate of Adoption of New Technology

The rate of adoption of the new technology (mechanised crafts and new gear) was highest during the late 1970's and early 1980's; the introduction of the OBM providing the initial stimulus¹⁰. The degree of mechanisation of fishing crafts reached the 50 percent mark by mid 1980's and remained around that figure since then. The total number of 28,261 crafts in operation in 1998 consisted of 5% MDOCs, 9% ODOCs, 24% FRP boats, 7% MTCs and 55 percent NMTCs (non-mechanised traditional crafts). The almost constant proportions of mechanised and traditional crafts and the degree of mechanisation of crafts, which remain fairly stable around 50 percent, may suggest that the different technologies in use have reached their maximum rates of diffusion among the fishworker

⁷ Amarasinghe O. (1997): 'he profitability of new fish catching technology', Journal of Asian Fisheries Science, Vol. 10 (2), pp. 102-116.

⁸ See table 12 ⁹ See table 13

¹⁰ See figure 4

population of Sri Lanka, under the present set of socio-economic conditions, and the state of knowledge of resources.

The widespread use of traditional technology may also be attributed to technological factors. First, the poorest group in fishing communities (those who fish with traditional crafts), will continue to do so, as long as their access to new technology and employment opportunities outside fisheries remain low. Second, with the development of purse-seining, dual fishing units: a fishing unit consisting of a mechanised craft (for hauling operations) and a traditional craft (for net laying), commenced operations as one unit, to catch migratory fish using bag-like purse seines. This is a technological complementarity. Third, such complementary relationships between modern and traditional crafts can also emerge from physical factors. When physical barriers make access to the sea difficult, mechanised crafts are usually anchored beyond the barriers and the crew, gear and fish are carried back and forth by traditional crafts. Needless to say that the presence of physical barriers, such as rocky sea bottoms, may prevent fishworkers from adopting mechanised fishing, because of possible risk of damage to engine propellers, such as the stretch of coastline from Unawatuna to Weligama in the Galle district of Sri Lanka. Fourth, the traditional craft has a relative advantage over the mechanised crafts in the exploitation of fish resources in lagoons and estuaries, because of the shorter fishing trips, calm sea conditions, and possible presence of rocky bottoms (which is usually the case with fishing grounds rich in crayfish). Fifth, the 90 percent subsidy scheme introduced by the government during the recent past to help asset-poor fishworkers to acquire fibre-glass canoes, is another factor leading to the continued use of the traditional craft.

2.4 The role of the state

Fisheries was a sector that was relegated to the background prior to the Second World War, in most of the countries in south-east Asia. It remained an activity providing subsistence to rural folk living along the coastal belt. In Sri Lanka too, little attention was paid to this sector and it remained a part-time responsibility of the Director of the Colombo Museum.

The major impetus to fisheries development emerged with the establishment of the Department of Fisheries in 1941, whose role became significant only in mid 1950's. The state intervened in the development of fisheries in the form of introducing new fishing crafts and gear and, loans and subsidies to those who were willing to adopt the new technology. An extension division was added to the Department of fisheries in 1957 and, in 1958, crafts with inboard engines (24 ft crafts powered by 30 hp diesel inboard engines) were introduced. The first loan scheme to fisheries was also launched in 1959. In order to improve the sea-going power of the traditional crafts, outboard engines (8-15 hp) were introduced in 1962. A programme of fisheries subsidies came into operation and crafts and engines were issued to fishworkers with subsidies up to 50% of the cost. Fisheries cooperative movement (which too started around 1941) was also promoted and crafts, loans and other help was extended to fishworkers through the village level fisheries cooperatives.

The Ceylon Fisheries Corporation (CFC) was established in 1964, vested with responsibilities in fish marketing but, even by the year 1998, the CFC handled only 1.47%

of the total quantity of fish produced in the country. A separate Ministry of Fisheries was established in 1970, which became the major fishery policy making body. In general, promotion, development and management of fisheries in Sri Lanka is the responsibility of the Ministry and it was restructured in 1977 with 7 divisions; marine fisheries. Inland fisheries, fisheries training and education, fishworkers's welfare, planning and programming, development, and implementation of projects etc.

To increase the efficiency of fisheries cooperatives, about 270 village level cooperatives were amalgamated into 45 large primary cooperative societies in the same year (1977). The need for proper landing facilities for newly introduced mechanised crafts was greatly felt and, vested with the responsibilities of construction, maintenance, operation and management of harbours and anchorages, the Ceylon Fishery Harbours Corporation was established in 1972. New knowledge had to be provided to fishworkers who were willing to adopt new fishing crafts and techniques and, in order to cater to this need, the Sri Lanka Fisheries Training Institute was established in 1975.

Freshwater fisheries existed mainly in the form of capture fisheries and the state took an active interest in it only in early 1980's. A subsidy programme for inland fisheries was first designed in 1981. The major fisheries research arm of the Ministry; the National Aquatic Resources Research and Development Agency (NARA) was also established in this year, which conducts research in five major fields; oceanography and hydrography; development of fishing craft, fishing gear and equipment, and fishing methods; social and economic aspects of the fishing industry; processing, preservation and marketing of fish and aquatic products; and development, management and conservation of aquatic resources. For conservation Department, was established in 1984, which has already carried out an array of studies on important coastal environments and formulated conservation and resource management plans for more sensitive areas along with the legislature required for implementing these plans.

During the 1970's and 1980's, a number of internationally funded fisheries development programmes were implemented by the state. With financial assistance from the Asian Development Bank (ADB), the South West Coast Fisheries Development Programme was implemented in 1977. A similar programme commenced in 1980 in the west coast with financial assistance from the ADB. In 1982, the East Coast Fisheries Development Programme was implemented, for which financial assistance came from the Dutch government. With financial assistance from the Abu Dhabi Fund, the North West Coast Fisheries Development Programme was implemented in 1983.

Several loan schemes for fisheries are being operated by the two state-owned banks; the Peoples Bank and Bank of Ceylon. In respect of fisheries insurance, the Sri Lanka Insurance Corporation Limited and the National Insurance Corporation Limited are involved in the provision of insurance against various fishing-related risks.

Due to the pressure exerted by the Buddhist clergy in this country against slaughter of fish, the state withdrew it's patronage to inland fisheries in 1990, which led to a drastic decline in

inland fish production; from 40,000 MT in 1989 to 12,000 MT in 1994. However, with the change of government in 1994, the Inland Fisheries Division of the Ministry was reorganised again and the state commenced extending its support to inland fisheries activities. Another important turning point in institutional development in fisheries was the establishment of National Aquaculture Development Authority (NAQDA) in February 1999, which was vested with the functions of development and management of all aquatic resources in the country.

The role of the state as an 'agent of change'

In the drive towards mechanisation of Sri Lankan fisheries, the state has played a commendable role, as an 'agent of change' or a 'catalyst'. A large amount of subsidies have gone into fisheries since early 1960's to enable fishworkers to acquire mechanised crafts and engines¹¹. Subsidies in 1960's were directed at helping people to adopt off-shore fishing by acquiring 3.5 ton crafts with inboard engines (ODOC). 1970's saw the introduction of the outboard engine which led to the emergence of the MTC. Greater emphasis on coastal fisheries development was placed during the early 1980's and issues of small mechanised crafts (FRP) and outboard engines received priority over other subsidy schemes. Issues of 3.5 ton crafts under the subsidy scheme had declined to a very low level by this time. This period (late 1970's and early 1980's) also marks the highest amount of subsidies granted to fisheries since independence, reaching a peak of Rs. 55.93 million in 1980.

Extent of government support to fisheries declined during the latter part of 1980's, following the structural adjustment policies that accompanied liberalisation of trade in 1977-1978. This led to a significant reduction in capital expenditure by the state. Moreover, budget allocations going to the fisheries sector (as well to other productive sectors) would have diminished, following increased expenditure on defence purposes to cope with the communal riots that commenced in 1983.

The 1990's mark a new era in Sri Lankan fisheries because of the emergence of deep-sea fishing, thanks to the introduction of the MDOC. Almost all issues of crafts after 1991 were MDOC's. A decrease in the number of outboard engines and small-mechanised crafts is also evident, revealing the gradual withdrawal of state support to coastal fisheries. Although the number of MDOC's issued in the 1990's remained low, the introduction of this craft consumed a heavy amount of subsidies and it also required the provision of a large number of accessories (radio communication equipment, radar screens, sonar fish-finding devices, etc.) and the total amount of subsidies granted to fisheries rose up to 101.04 million in 1995. Part of this subsidies would also have gone into the development of inland fisheries which took a new turn after 1994.

It is evident from the foregoing discussion that the state has taken an active role in the process of technological change in fisheries. It has also been able to shift fishing effort from one set of resources to the other by changing the nature of craft and engine issues under subsidy schemes. However, under the present state of knowledge of the resources, which remains rather poor, such a shift of emphasis should be done with caution because

¹¹ See table 14

it affects to a great extent, both the major variables in a fishery: the fish and the fishworkers.

2.5 Summary:

Craft and gear used by fishworkers in Sri Lanka vary considerably with differences in ethnicity, religion and location. Several traditional crafts, the outrigger canoe (oruwa), paru, theppam, kattamaran and vallam, are in operation in coastal fisheries. Most of the traditional crafts operate close to the shore, but the major technique of harvesting near-shore fish resources is beachsening. The coastal waters are quite rich in fish resources and about 610 species have been reported in Sri Lanka. The coastal fishery of Sri Lanka came under the impact of mechanisation and modernisation in early 1970's, with the introduction of the small fibre glass boat (FRP), the outboard motor and the nylon gill net. A large number of traditional crafts have now been fitted with outboard motors and, small-meshed gill-netting has become very popular among all types of fishing units in the coastal fishery.

Offshore fisheries was mainly exploited in the pre-war period by large traditional crafts with sail, which employed the pole and line technique for skipjack. The introduction of the day boat with inboard engine (ODOC) in late 1950's, led to increased exploitation of this fishery, using techniques such as large-meshed gill-netting, long-lining and trolling.

Deep sea fisheries is of fairly recent origin in Sri Lanka, which commenced in late 1980's with the introduction of the multi-day craft. Although it was earlier meant to exploit deep-sea resources within the EEZ, this craft is now engaged in fishing in international waters. Only about 90 oceanic pelagic species have been reported in Sri Lanka.

The new technology, consisting of mechanised crafts, new gear and fishing techniques is characterised by its high capital-bias, high profits and higher risks of loss or damage. Today, about half of Sri Lanka's fishing fleet consist of mechanised crafts. The rate of diffusion of mechanised technology appear to have reached its maximum. The existence of various technological complementaries between mechanised and traditional crafts, the advantage of traditional crafts over the mechanised crafts in the exploitation of particular fish resources, and the state issues of fibre glass canoes under the 90 percent subsidy scheme, etc. all ensured the persistence of traditional fishing activities.

In the process of mechanisation and modernisation of fisheries, the state has played a very important role, especially in the development of the fishery infrastructure. Since its intervention in 1941, with the establishment of the Department of Fisheries, an array of fishery-support institutions have been established by the state. The state has also acted as a catalyst in the process of adoption of mechanised fishing by the fishworkers, by way of providing credit and subsidies to the fisheries sector. By changing credit and subsidy policies the state was also able to shift fishing effort from one resource area to another.

9

· É

Chapter 3. Emerging relations among marine resource users, accompanied by the process of modernisation of fisheries

3.1 Introduction:

The process of modernisation of fisheries was discussed in the preceding section, which was mainly characterised by, mechanising the traditional crafts, introduction of mechanised crafts, and the introduction of new fishing gear and techniques. As shown in chapter 1, this process of modernisation has led to considerable increases in fish production and living standards of fishworkers who had adopted the new technology. However, this process of growth has not led to equitable distribution of benefits to all categories of fishworkers. Neither it has taken place without giving rise to conflicts among resources users. Moreover, technological change, state intervention, market expansion, have all led to changes in traditional relations among fishworkers. Newly emerging relations among fishworkers are evident, some of which appear to be more hostile than friendly; bringing in different groups of fishworkers in direct opposition to each other. Unlike the easily quantifiable measures of growth, such as fish production, per capita consumption of fish, degree of mechanisation of fishing fleet, etc. the above noted social criteria are hardly documented; either due to the difficulty of studying and quantifying social phenomena or, due to the reluctance of the authorities to reveal any conflicts among fishworkers.

In the present study, it was attempted to elicit information on the relations among fishworkers and some other relevant issues, by inviting fishworkers and those who work with fishworker communities, to two workshops. These workshops were held in Matara and Negombo in early April 2000, with the participation of representatives from all relevant fisheries-related NGOs and fisheries cooperatives. Through group discussions, information on various topics were obtained¹, which provide the basis for the discussion to follow. Evidence is also provided from various secondary sources of information, to support the arguments presented.

3.2 Conflicts among resource users in the coastal fisheries :

3.2.1. Conflicts among different technological categories:

Conflicts among different technological categories arise due to two causes.

<u>First</u>, conflicts arise when a particular fish resource (or resources) is exploited using various techniques, which differ in terms of efficiency. Usually, the more efficient technologies are more capital biased and are, therefore, exploited by a few affluent members of the community. A good example is the conflicts among groups of fishermen employing different fishing techniques in near shore waters in late 1960's and early 1970's, when introduction of the outboard motor and the nylon net threatened the landings of beachseines. However, with gradual adoption of mechanised fishing by many beachseine fishworkers and

¹ See annexes 1 and 2

the extensive use of nylon net by fishworkers operating traditional crafts, these conflicts subsided because the new technology was considered more productive than traditionally employed techniques. Moreover, the new opportunities reduced the pressure on the number of fishworkers seeking employment in beachseines.

Another example is the recent introduction of purse-seining with lights. This technique has prompted fishworkers engaged in mechanised crafts to employ this technique in coastal waters to catch migratory fish resources. Strong lights were used by some purse-seine fishworkers to attract fish and, this technique was popularly known as the 'light course'. Some fishworkers believed that the 'light course' was destructive because it resulted in the loss of large numbers of immature small fishes which get attracted to the strong lights (no scientific proof of this phenomenon was found). Opposition to this practice was growing among those who employed beachseines and those operating traditional crafts, especially in the Galle district of Sri Lanka, where the 'light course' was popular. They claimed that the 'light course' has resulted in extremely low fish catches threatening their subsistence. Registration of seines was introduced by the state, charging a very high fee (Rs. 20,000 per seine), but this could not stop the number of nets being introduced into the coastal area. After top level political intervention, the 'light course' was banned by the government as a means of settling increasing disputes among resource users. However, purse-seining, without the use of lights, is still employed by many fishworkers in the country.

Operation of large mechanised crafts in coastal waters is another source of conflict among different technological categories. These crafts are either day or deep-sea boats (multi-day boats) which are supposed to operate in off-shore and deep-sea waters. Since these crafts are equipped with lengthy drift nets, their operation in near-shore waters will have adverse impacts on those fishworkers exploiting the same resources with traditional crafts and small-mechanised crafts.

<u>Second</u>, disputes may also arise among fishworkers exploiting the same fish resources but using different techniques which do not differ much in efficiency or capital requirements. Such disputes can be attributed to the common property nature of fisheries where individuals are pursuing their own intersts. For example, conflicts among those using traditional crafts and those using *kotudal* and, between fishworkers employing beachseines and *kotudal* are common in Thoduwawa, Marawila and Negombo. However, such disputes do not develop in to alarming proportions and are often settled within a matter of a day or two, without the intervention of outsiders.

3.2.2 Conflicts among different users due to the use of destructive fishing techniques:

Use of destructive fishing gear and techniques are the major causes of conflicts among users of coastal resources. Dynamiting of fish dwelling in rock crevices appears to be on the increase in many parts of the country. Those who resort to this practice do not employ it in their own village for fear of social sanctions and, therefore, fishworkers usually blame outsiders for this. It also appears that some of the individuals employing dynamiting of fish do not have a history of fishing and that they exploit coastal resources for short-term gains.

The fishworkers claim that the police often turn a blind eye when complains are made, due to the high economic and political power wielded by some of those individuals employing this technique. Another source of increasing conflicts among users of coastal resources is the harvesting of chank (*hak bello*), lobster and ornamental fish by using diving gear (scuba diving). This technique is again said to be destructive because it disturbs and kills the fish eggs and other marine life found under the rock crevices. Again, fishworkers claim that, this technique is employed usually by outsiders whose diving gear is being financed by big investors. Although, NARA has conducted a study in 1999 on chank fisheries, this study neither indicates the environmental hazards resulting from the removal of chank from rocks nor the impact of different rates of exploitation on chank population.

Use of small-meshed gill net to catch herring in the night (*sekkale rassawa*) has led to conflicts among fishworkers exploiting near-shore resources in the Negombo area. This technique was considered to be disruptive because it was employed during the spawning season of herrings. With the catholic church providing the leadership, fishworkers launched a protest against this practice and, finally, the use of this technique faded away.

3.2.3 Conflict resolution mechanisms:

Traditional barriers of access to resources:

As noted, a special feature of a typical traditional fishing village is its 'village identity'. The social distance maintained between villages has been able to serve the important function of controlling the entry into open access fisheries. The access to the waters boundering a certain village is limited to the inhabitants of the village and outsiders are not even allowed to anchor their crafts or fish in coastal waters. Such a social control of the entry seems to have evolved out of the particular danger of over-fishing that could have resulted in an unregulated or open-access fishery. Nevertheless, with the construction of fishery harbours to provide anchorage facilities to the modern mechanised crafts, these traditional forms started to disintegrate, with the entry of boats owned by individuals outside the village.

Traditional institutional forms regulating entry:

Studies carried out in beachseine fisheries of southern Sri Lanka² showed that common property resources could be brought under some form of control through collective action. The seine fishermen formed a clearly defined group enjoying common rights of use of the near-coastal resource areas called *padu*. Net laying and hauling operations took about three hours and therefore, in a single *padu*, only four nets could be laid on a particular day. Due to within-day variation in catches, the nets that were laid in the morning had more fish than those laid in the afternoon. An institution called the <u>'net sequence'</u> ensured all participants equal access to resource and income. All nets were numbered and were used in a sequence where they were given the opportunity of participating in the morning and afternoon turns. The resource was managed in such a way that prevented any increase in effective effort. The

² Amarasinghe O. (1989); "Technical change, transformation of risks and patronage relations in a fishing community of south Sri Lanka', Development and Change, Vol.20, 701-733.

closely-knit structure of the community of seine fishermen and the low degree of anonymity among participants would have enabled successful enforcement of the terms and conditions of the 'net sequence strategy'.

Market penetration, technological change and state intervention, have all had adverse effects on the functioning of the 'net sequence'. In a nutshell, all these forces had three important consequences at the village level, which finally led to the erosion of this institution. First, more new nets were brought into the fishery, which reduced the number of times a net was laid during a particular year. The catch proceeds were hardly sufficient to meet the subsistence needs of the crew workers. Second, with the opening up of new income earning opportunities outside the sphere of fisheries, the asset owners, who were the village elite and leaders, lost interest in village resources. In fact, they tended to increase their share of village resources to siphon off funds towards more productive non-fishery type of investments. Third, state intervention and the introduction of new technology too offered the fishermen with avenues of economic betterment and alternative means of insurance.

Modern conflict resolution mechanisms:

In catholic fishing communities in the western and north-western provinces in Sri Lanka, the catholic church has been playing a leading role in regulating access to resources and settling disputes among fishworkers. In Negombo for example, fishworkers exploiting ocean resources were not allowed to fish in the Negombo lagoon. Use of mechanised crafts in the lagoon and for trawling in the sea, were also not permitted. Sunday was made a rest day, which allowed people to attend the mass at their church while this move was also tantamount to imposing a regulation such as a 'closed day' for resource exploitation. In return for the services it performed, 5-10% of the income from fish auctions was remitted to the church. However, the role of the church in fisheries resources management is on the decline, which can be attributed to the gradual withdrawal of the youth from religious activities in the church.

Cooperative type of co-management was introduced into fisheries in the 1950's, when beachseines were brought under cooperative management. Limits were imposed on the number of beachseines to be used in each area of their operation (*padu*). Nets were operated according to a sequence and, the members of the cooperative shared the total returns. Issue of ODOCs under subsidy schemes, which commenced in early 1960's, led to the formation of many cooperative type of co-management regimes. Crafts were issued to cooperatives with a 50% subsidy and a bank loan to secure the rest of the funds. The cooperative appointed a caretaker owner to every boat (who undertook to pay back the loan and became the owner after debts were repaid fully) who in turn, recommended a crew. The caretaker owner made production decisions, but the distribution of proceeds was carried out by the cooperative, which operated separate funds for repairs, loan repayment, etc. However, the 'free rider' problem associated with cooperative type of management was soon evident and the system did not yield expected benefits to the members³. Debts were not repaid as

³ Amarasinghe O. (1988); The impact of market penetration, technological change, and state intervention on production relations in maritime fishermen communities: a case study of southern Sri Lanka, unpublished Ph.D. thesis, FUNDP, Namur, Belgium.

required and, many boats became out of function when they were met with damages (for lack of adequate repair funds).

Inland Fisheries Cooperatives is a newly-emerging institutional form that regulate entry into inland fish resources, especially in respect of capture fisheries. It is still too early to make any assessment of their success in sustainable management of fish resources.

3.2.4 Management aspects covered by Ordinances and Acts:

Management aspects covered by Ordinances and Acts and the role of the Minttry of Fisheries and Aquatic Resources Development:

Among the numerous Ordinances and Acts which has relevance to fisheries management, the Village Communities Ordinance of 1889 (VCO) and subsequent amendments, the Fisheries Ordinance of 1940 (FO) and subsequent amendments, and Fisheries and Aquatic Resources Act, No. 2 of 1996 (FARA), can be considered as the major Ordinances and Acts, that cover fisheries management aspects.

The VCO dealt with many issues, with agriculture and fisheries being two important sectors covered by this Ordinance. Under the VCO, 'committees' were formed with the intervention of the Government Agent (GA) comprising of about 25 individuals. Regulating fisheries according to local customs and imposing and enforcing annual tax payable were the two major functions of such committees, that had direct relevant to fisheries. Registration of fishing units (craft and gear) was made compulsory for fishing in all water bodies, except for those close to Hindu and Buddhist temples. Disputes were settled at the committee level or referred to the GA, who made the final decision. A high emphasis was placed on the prohibition of dynamiting and poisoning of fish. Preventive officers were appointed and officials of other sectors were also empowered to function as preventive officers, for detection, confiscation and arrest of those engaged in such activities⁴. This system of control functioned well and a large number of convictions were achieved against cases filed in courts.

The FO of 1940 was enacted mainly to establish the Department of Fisheries. All rules and regulations covered by earlier Ordinances and Acts continued to be exercised in a manner as if they were considered under the FO. Under the FO, an Advisory Board was formed, vested with the function of advising the Director of Fisheries on matters related to fisheries. The Director of Fisheries was the chairman of this Advisory Board. The need for registration of fishing crafts, obtaining licenses by foreign fishing boats and restrictions on the use of different kinds of gear, were emphasized continuously by subsequent amendments (in 1952 and 1953). However, licensing was not applicable to Ceylonese fishworkers. For settling fishing disputes, the Minister was empowered to appoint a committee to hold a public inquiry. On the recommendations of this committee the Minister was supposed to take action that he considered best.

⁴ For a detailed discussion on various aspects covered by fisheries Ordinances and Acts, see, Sivasubramaniam K. (1997), One Hundred Years of Fisheries Management in Sri Lanka: Lessons for the Future, Dept. of Fisheries & Aquatic resources Development, Colombo.

The FARA, which was enacted in 1996, made provisions for management, regulation, conservation and development of fisheries and aquatic resources in Sri Lanka. Many of the characteristics of the earlier Ordinances were kept with minor modifications. Under FARA, the Advisory Board was replaced by an Advisory Council The secretary to the Ministry was to chair this committee. For the first time, apart from ex-officio members, fishworkers were included in this council; two fishers of Sri Lanka Federation of Fisheries Cooperative Societies Ltd., Chairman of the Association of Live-fish Exporters of Sri Lanka, two representatives of women engaged in fishing and six others with special knowledge of and experience in matters relating to the fishing industry, nominated by the Minister. The FARA empowered the Secretary to the Ministry of Fisheries, to plan for management, regulation, conservation and development of fisheries and aquatic resources, in consultation with the council, as and when required. For the first time, provisions were also made in FARA for introducing regulations concerning aquaculture activities.

Under FARA, provisions were also made to prescribe Fisheries Management Areas (FMArs)' and to designate the 'Fisheries Committees (FCs)' for each of such areas (as the Fisheries Management Authority for that area; FMAus). The FMAus were also allowed to make recommendations to the Minister on matters such as, the carrying out of fishing operations, use of different kinds of gear, closed seasons or closed areas for specific species, etc. This Act also made provisions, for the Director of Fisheries to appoint an 'Authorized Officer' (Fisheries officers, officers of the Army, Navy, Air Force, or Police) to settle disputes by conciliation or to proceed to hear the parties and make recommendations. The Minister was empowered to take actions, such as, cancellation of registration of crafts and gear, restrict fishing in certain areas, restrictions on harvesting certain species, restrictions on the use of certain types of gear, etc.

Apart from VCO, FO and FARA, many other Ordinances and Acts are of relevance to fisheries. Although the Chank Fisheries Ordinance (CFO) No. 18 of 1842 and subsequent amendments in 1890 and 1934 dealt exclusively with chank, which was then exploited by foreigners, it made provisions only for registration of divers, issue of export licenses, etc. The other more important Ordinances and Acts are, the Fauna and Flora Protection Act No. 2 of 1937 and the subsequent amendments in 1949, 1964, 1970 and 1993 (specifying protected fish species and establishing natural reserves and sanctuaries), Coast Conservation Act (CCA) No. 57 of 1981 (making provisions for the control of all activities any where from the shoreline to 300m on the land-side and 2 km into the sea), Marine Pollution Prevention Act (MPPA) No. 59 of 1981 (providing for prevention, reduction and control of pollution of the sea), and, National Environmental Act (NEA) No. 47 of 1980 and Amendment No. 56 of 1988 (providing for protection, management and enhancement of the environment, for the regulation, maintenance and control of the quality of the environment and to prevent, abatement and control of pollution).

A scrutiny of Ordinances and Acts in respect of fisheries management issues:

A close scrutiny of all fisheries-related Ordinances reveal several weaknesses in various provisions made in them, that prevent employing efficient management. It should be

noted that decentralised type of management designed under the VCO worked well under the conditions at that time, where management decisions were made at the local level, respecting the traditional norm of equal access to resources and equal income earning opportunities to all'. Such forms of management worked well under the conditions of low level of fishing effort (low population levels) and therefore, low fishing pressure, low levels of education among fishworkers and, weakly-felt need for any management measures. These basic features of the VCO were maintained even in the FO of 1940. Although, it was realised that some traditional gears and fishing techniques were detrimental to the sustainability of resources, provisions have hardly been made to restrict their use. Most of the present regulations deal with the use of particular type of gear in certain specific locations and, the registration of crafts and gear. In respect of rules concerning gear restrictions, generalised rules for the whole country are hard to find. One difficulty in imposing restrictions on fishing gear is the lack of any effective official compilation of fishing gears in Sri Lanka. However, the recent UNDP publication of fishing gears in Sri Lanka can be considered as a step towards meeting this urgent need (this compilation too fails to use any internationally recognised codes for fishing gears).

A complete shift of the approach to fisheries management took place under the FO of 1940, delegating powers to the Minister, to make management decisions; a shift from a decentralised approach to a centralised one. However, the establishment of FMArs, FMAus under the FARA of 1996, can be considered as a reversal of the management approach, leading to more decentralised decision making. However, in respect of settling disputes, no proper body was established. It is questionable whether the system of appointing an array of 'authorised officers' would solve the problem, unless they are able to wield the powers delegated to them. Moreover, political intervention has seriously hampered effective enforcement of rules and regulations. The recent ban on purse-seining is a good example of, the extent to which political intervention is used to settle disputes.

A major shortcoming of FARA is its failure to make provisions for the establishment of a proper Management Authority in implementing various management measures. However, quite recently, the Monitoring, Control and Surveillance (MCS) division of the MFARD recruited more than 100 youth for rescue operations, who have formed an army of coastal guards (*samudra balakaya*). These coastal guards are attached to the offices of District Fisheries Extension Officers (DFEO) and to the above radio-communication centres. In addition to rescue operations, they are supposed to take action against the use of illegal fishing methods.

3.3 Conflicts among groups of migratory fishermen:

Migration can be considered as a kind of temporary mobility of fishermen from an area of low fishing activity to one of high fishing activity. Migration is not a phenomenon that accompanied mechanisation, since traditional fishing populations used to migrate to other fishing villages during *warakana* (monsoon period). But possibilities of migration were constrained by the difficulties confronted by fishermen in sailing the traditional crafts to distant migrant villages or to transport crafts by road, which was costly. Therefore, in the past, many fishermen migrated to distant fishing villages to work as crew labourers. Thanks

to the introduction of mechanised crafts, migration with one's own craft and gear (by sea) became more common. One took only a few hours to migrate to a fishing village 100 miles away from one's resident village. The most common practice of fishworkers in the west and south coasts in the past had been to migrate to fishing villages in the eastern coast. Generally, the fish landings in the south and west coasts are high during April, May, June, July, which coincide with the south-west monsoons, and decrease thereafter and remains low during the non-monsoon period. However, the trend is slightly different in the southern coast alone, because the peak is obtained in June-July rather than in April-May. When the fish catch in the southern coast starts declining, the owners of large mechanised crafts and some owners of small mechanised crafts, migrate to the east coast, where higher catches are obtained during this time (north-east monsoon period) and return to their villages for the New Year in April, to commence fishing operations in their own resource areas with the onset of south-west monsoons.

In migratory fishing villages (such as Kirinda, Patanangala in the south and in Kalpitiya, in the north-west) fishworkers from different villages live in temporary huts along side each other. Disputes emerge when anchorage facilities are limited compared to the number of migrating crafts or when they are forced to chase same shoals of fish or operate in the same fishing ground. Since the social distance among them remain high and, the fact that norms guaranteeing social harmony in resident villages are not operative at such locations, disputes among groups of fishworkers often emerge, resulting in setting fire to huts, fishing crafts and gear, or theft of various equipment. At certain locations, access to more popular fishing grounds are denied to migratory fishworkers (outsiders) by the resident fishworkers who think that they enjoy traditional rights to exploit such resources (a good example is the fishing ground — *paratugala*, in Dondra of southern Sri Lanka). The stronger fishworkers, who command more muscle, have the ability to abuse and counter abuse, and who could resort to violence survive, while the weaker ones drop out. No rules and regulations have yet been formulated to stop or restrict migratory fishing activities.

Land-based conflicts have recently emerged in the southern and western coasts between resident fishworkers and those who have migrated from the eastern coast due to communal disturbances. The latter consists mainly of coastal fishing communities, who have been hardly hit by the civil war in the eastern coast and, have lost their traditional homeland and assets. These families have now settled in crown lands along the coast. Due to the open access nature of marine fisheries, they too have started exploiting coastal fish resources, adding to the already-high fishing pressure on these resources.

The status of migratory fishing activities today:

At present, many fishworkers do not migrate to distant resource areas during lean-seasons due to two main reasons. First, the introduction of fishing methods like trolling (single hook trolling and multi-hook trolling), long-lining, etc. has facilitated year-round fishing because these techniques can be employed during the off-season for gill net fishing (during *haraya*). Therefore, fishworkers have now become more sedentary; remaining in their native villages during *haraya*. Second, due to communal disturbances in the northern and eastern districts, that commenced around the year 1983 and continued to prevail since then, fishworkers refrain from migrating to these areas, where even the fishing activities of the resident fishermen have been disrupted to a great extent.

3.4 Conflicts with asset-owner employers:

Disputes between craft owners and crew workers are quite common, which usually arise at the time of distribution of proceeds. Such disputes are confined to an exchange of a few harsh words and/or the crew worker leaving the craft owner. Quite recently, conflicts between owners of multi-day crafts and their crew workers emerged leading to increased tension between the two groups. Such contradictions among employers and employees can not be understood properly unless attention is paid to the evolution of employer-employee relations in the fisheries labour market.

3.4.1 The labour market

Type of labour:

In traditional fisheries, two distinct types of labour were present: the marakkalahe group (skippers) and the labourers. This difference was more pronounced in traditional skip jack fishery. The more experienced fishworkers carried out the functions of active fishing (using pole and line), while the less-experienced crew labourers threw bait into the sea and splash water using hands. The former category was called Marakkalahe (skippers) while the latter awas called Kalasikarayo (students). The most experienced fishworker in the crew was the Maha-Marakkalahe (chief-skipper) who usually commanded the craft, gave orders and directed all operations. Usually, Maha-Marakkalahe with his experience knew where to find the bait, how to organise the crew, how to locate skipjack shoals, etc. These skilled fishworkers did not easily part with their knowledge and at old age, they usually chose a son or a close blood-relative to teach their rare skills. The Maha-Marakkalahe were rewarded for their special skills by way of receiving a large share of the catch proceeds than the Kalasikarayo. For example, in traditional skip jack fisheries in the south of Sri Lanka, once the expenses are deducted from the catch proceeds, one fifth of the rest goes to the engine (note that many traditional deep sea crafts are today powered by engines) and the remaining portion is divided according to the ration 1:1.5:1. The first portion is the return to owner's capital and management; the second portion goes to the Maha-Marakkalahe, while the remaining portion is divided among the Kalasikarayo. The method of division of catch proceeds reveal the importance of the fishing skills of the Maha-Marakkalahe, compared to general fishing labour.

With the advent of the new technology, many of the functions performed by the *marakkalahe* have been taken over by modern equipment. Today, most of the crew members of modern crafts claim that they are able to manoeuvre fishing crafts and work with the modern equipment. Although every modern craft has a boat captain, he enjoys that position not because of special fishing skills he possesses but for his experience in fishing and his organisational and managerial abilities. Usually, these boat captains do not receive any additional payment for their services, but instances where he is paid an allowance up to 5% of the owner-share have been noted⁵. The fact that this payment is made from owner-

⁶ ibid.; Creech S. & W. Subasinghe(1999): The labour conditions of Sri Lanka's deep-sea workers (research report prepared for United Fishermen's and Fishworkers' Congress).

share (not from the general wage-share) reveals that fishing labour has now become a more 'generalised type of labour'. This has facilitated even seasonally unemployed agricultural labour to join fishing crews, as it was evident in Tangalle of South Sri Lanka⁶.

It is also evident that, along with the introduction of the ODOC and subsequently the MDOC, the ownership of a large mechanised craft brought in a high degree of prestige such as that attached to the owner of a four-wheel tractor in agrarian societies. The higher incomes earned from their use also allowed many of these craft owners to withdraw from active fishing, which carried low social status, especially in the predominantly Buddhist southern fishing societies. Even the term *marakkalahe* is not used anymore and the skippers are often called captains.

It should be noted that good 'team work' is important in successful fishing operations and therefore craft owners are very keen to employ good and faithful crew workers. Since personal anonymity among agents in labour markets lend such markets unsuitable for employing crew workers, a craft owner may let his boat captain to select his own crew. It is probably under those circumstances that an additional payment of the owner-share is paid to the boat captain.

3.4.3 Relations between craft owners and crew labourers:

The relations between owners of fishing assets and crew labourers in traditional fishing communities during the pre-war period were characterised by patron-client type of relations. These relationships were well evident in beachseine fisheries⁷. Risk of falling into crises of subsistence on the part of crew workers and the various incentive problems associated with labour markets were found to be the major forces that led to the formation of such relations. Long-term labour attachment was quite common, which is a dominant feature of patron-client type of relations. Moreover, strong kinship links between craft owners and crew workers have also been often observed. Near perfect knowledge of ones own kinmen and the affective relations among them ensured the craft owners with a dependable and guaranteed labour supply, while this system of labour recruitment also guaranteed employment security to the crew workers.

3.4.3.1 Conflicts among employers and employees in modern fisheries (in the deep-sea sector):

Erosion of employer-employee relations:

The employer-employee relations have undergone tremendous changes along with market expansion, population growth and the advent of new technology. The crew labourers are no longer employed on a 'permanent' or 'long-term' basis and they are free to move from one employer to another at any time they wish, even during the peak season. Even indebtedness to a craft owner does not prevent a crew labourer from leaving him. The new owner may advance money to settle debts or the labourer may settle debts later as he earns. Apparently,

⁶ Amarasinghe O. (1988): "The impact of market penetration, technological change, and state intervention on production relations in maritime fishworkers communities: a case study of southern Sri Lanka' (unpublished Ph.D. thesis), FUNDP, Namur, Belgium. ⁷ Amarasinghe : 1988 (op.cit.)

a genuine labour market has emerged in which anonymous relations tend to prevail, the forces of supply and demand are at work and labour mobility is no more hindered by customary practices of personal attachment. The fact that labour has now become a commodity also means that the craft owners have an interest in extracting as much surplus as possible from labour.

Entry of outsiders:

The entry of 'outside' business interests into fisheries has accelerated the process of erosion of 'affective' relations between employers and employees. For the former, 'labour' is an input in production, the productivity of which should be maximised at a minimum of cost, to increase net profits from productive activities, while for the latter, maximum returns to their labour, is the goal. The entry of outsiders into the deep sea sector can be attributed to two causes. First, the returns to deep sea fishing appear to be sufficiently high to attract investors outside fisheries. Second, and most important, is the inability of many fishworkers to invest in the deep sea sector due to their poor access to the credit market. It is to the latter issue, the attention is focussed next.

Poor access to credit:

Credit is of significant importance in the acquisition of crafts and gear in all fisheries subsectors. Almost all fishworkers have obtained credit to acquire either crafts or gear. Due to the capital-bias nature of the new mechanised fishing technology, the higher the degree of mechanisation of fishing crafts, the higher is the average amount of credit obtained by craft owners. From his studies in the south of Sri Lanka, Amarasinghe⁸ revealed that, the average amount of credit obtained by craft owners for the acquisition of craft and accompanying gear was around Rs. 555,000 for MDOC, Rs. 79,900 for ODOC, Rs. 58,000 for FRP, Rs. 22,250 for MTC and Rs. 7,150 for NMTC. Credit represented 36 percent of the total investment cost in NMTC, while it represented 52 percent of that in MDOC⁹.

Empirical findings reveal that fishworkers have a preference for formal sources of credit due to the presence of a number of lending schemes designed by state banks, that enable them to acquire modern fishing crafts and gear¹⁰. Fishing assets are accepted as part of the collateral and the borrowers are usually asked to provide personal guarantees of income tax payers or government servants. However, when the loan amounts involved are large, the borrower is asked to provide additional collateral, such as mortgage of land, buildings, etc. The interest rates charged on the loans are low; around 21 percent (much lower than the interest rates that prevail in the informal sector). The contribution of state is highest (32%) in respect of credit provided to finance the acquisition of MDOCs while banks contribute almost nothing (0%) for the acquisition of traditional crafts¹¹.

For all fishworkers in general, cooperative lending (bank credit re-lent through cooperatives) scheme is usually the most attractive source of credit; contributing 27 percent to the average credit amount. The member-fishworkers can offer group guarantees as collateral and this

⁸ Amarasinghe O., W.A.G.Wanasinghe, S.P.M.Jayantha, A.W.Vishantha Malraj, A.Somasiri and Deepa Nishani. (2000): 'Market for Fisheries Credit; the functioning of the market for fixed capital in fishing communities in southern Sri Lanka', in O. Amarasinghe (ed.) Modernisation and Change in marine small-scale fisheries of southern Sri Lanka. (forthcoming). O. Amarasinghe (ed.) Modernisation and Change in marine small-scale fisheries of southern Sri Lanka. (forthcoming). O. Amarasinghe (ed.) Modernisation and Change in marine small-scale fisheries of southern Sri Lanka.

^{ို့}See table 15

¹⁰ ibid.

¹¹ See table 16

helped some of the poorer categories, who faced difficulties in securing personal guarantees of income tax payers or government servants, to have access to formal credit. However, for reasons that will be outlined later, the fisheries cooperative movement is on the verge of collapse today.

The importance of informal sources of credit is most noticed in respect of credit obtained for the purchase of traditional crafts and small-mechanised crafts, both of which involved moderate amounts of capital. This has to be understood in the light of the relatively collateral-poor status of fishworkers, compared to those who adopted MDOCs or ODOCs. Almost all types of craft owners borrow from fish merchants, who contribute about 22 percent to the average credit amount. Although a great variety of movable and immovable property are accepted as collateral by the moneylenders in the informal sector, interest rates they charge from owners of traditional crafts (about 210%) are as twice as high as those charged from owners of multi-day crafts (110%)¹². A fair degree of substitutability between collateral and interest exists and moneylenders usually charge relatively high interest rates from collateral-poor individuals. Nevertheless, the importance of the moneylender in the informal sector is quite low (contributing only 6% to the average credit amount). For their ability to obtain credit at zero interest rate without offering any tangible collateral, fishworkers often opt to borrow from fellow fishworkers and kin in the community at all possible occasions. However, the loan amounts that could be obtained are too small (accounting for only 9 percent of the average credit amount) compared to the size of all fixed capital needs.

Of the total fixed capital requirements of the craft owners, more than half is met from personal funds. Personal funds include all types of savings deposits in banks, other forms of accumulated wealth such as fishing assets, land, houses, durable consumer goods, etc. Quite a large number of craft owners are operating bank accounts, and therefore, savings deposits are becoming popular methods of accumulating wealth.

3.4.3.2 Credit and access to new technology:

Of all categories of craft owners, those engaged in traditional fishing activities have the least access to credit facilities extended by state-owned banks. In general, formal lending schemes appear to have a high bias towards asset-rich individuals probably due to the latter's ability to provide the required collateral at ease on the one hand and, their ability to use political influence on the other. Ganted that access to new technology is directly related to fishworkers's access to credit, the asset poor fishworkers in fishing societies are put at a serious disadvantage in adopting new technology due to their inability to offer collateral demanded by lenders. Although, the fisheries cooperatives offered them with opportunities of adopting the new technology, the issue of crafts through cooperatives under the state subsidy schemes is on the decline. About 75 percent of the owners of multi-day crafts today are non-fishing owners, of whom a sizeable number represent a class of businessmen who have no history of fishing. The shift of craft-owners from traditional to the ultra-modern sector therefore appears to be quite low.

¹² See table 17

3.4.3.3 Class formation: the asset owners and crew workers:

Today, it appears that employer-employee relations in the deep-sea sector are growing into a form of class struggle, increasing the tension between the two groups. In this process, the work conditions of the crew workers have deteriorated significantly, which is the issue in the sections to follow.

Work conditions:

Since traditional fishing operations were confined to a few hours or a day, the crew workers could have sufficient rest between fishing trips. Deep-sea fishing trips can last from around seven days up to 45 days. A significant portion of a deep-sea fishing trip is taken up by travelling to and from the fishing grounds. Hauling nets and lines can take between four and eight hours depending on the length of the net / number of hooks deployed. Once fishing begins, fishworkers claimed to work around the clock, setting nets, hauling nets, disposing of fish and setting nets once again, sleeping during the period the fishing gear is in the water. The period of leave a fishworker gains after time spent at sea varies considerably between boats. It appears that fishworkers working on bigger boats received proportionally less shore leave (2 - 6 days) between tours than fishworkers who work on smaller boats (2 - 3 days). Although fishworkers working on larger deep-sea boats spend up to three times as much time at sea, their leave entitlement is much the same as fishworkers who spend only ten days at sea. For many fishworkers, 'shore leave' involves working on the boat, repairing nets and for a skipper overseeing engine maintenance and repairs and thus does not equate fully with the notion of 'days off'.

Health at sea:

On board health issues are not a major concern of fishworkers engaged both in traditional and modern fishing units. This is almost certainly because serious physical injury at sea is not a common phenomenon. However, health concerns are more pronounced in deep sea fishing. Virtually all Sri Lanka's deep-sea fishing boats manually set and haul drift nets and long lines; as a rule, fishworkers do not come into contact with machinery whilst engaged in fishing¹³. Fishworkers are at risks of muscle strain, sprains, joint dislocations, cuts, bruising, etc. Fatigue is an increasingly important issue for some fishworkers; large drift nets (15 kms) and longer long lines (30 kms) can take over eight hours to haul. Fishworkers regularly suffer from minor illnesses such as headaches, stomach upsets and fevers whilst at sea. An important health issue of significant concern amongst fishworkers, is the high prevalence of skin diseases (i.e., open sores and cuts). Fishworkers blame these problems on insufficient onboard supplies of freshwater for bathing. On longer tours fishworkers claim that they are forced to bathe daily in salt water for periods of more than two weeks. Fishworkers also state that deep-sea fishing

¹³ This situation could change in the future if a recent recommendation to encourage the introduction of a small number of tuna long liners, equipped with mechanised line haulers, is pursued by Department of Fisheries and Aquatic Resources Development.

boats exhaust their supplies of freshwater quite fast, because the boats are spending more time at sea than the boat's design allows for.

Safety concerns in multi-day boats:

A technical assessment of multi-day boat design and construction practices in Sri Lanka by Oeyvind Gulbrandsen¹⁴ (an FAO consultant and naval architect) has indicated that the present-day crafts have an extreme barge like shape to maximize the fish holding capacity and the fuel space for a given length of the craft which may have adverse influence on the craft's stability. This report also indicated that, multi-day boats built by one of the major national boatyards did not meet international standards. According to boat managers, this would have added another 40% to the cost of a hull, putting boats beyond the reach of would be boat owners. Lack of thoroughness on the part of Fisheries Department's Chief Marine Engineer, with respect to the designs, details of construction and stability calculations, has also been indicated. With regard to stability of locally built boats, it has been noted that current procedures for incline tests did not take account of the worst possible scenario - where a boat returns to port with a poor catch, empty fuel and water tanks and wet nets piled on top of the deck. Clearly defined rules and regulations for the construction and testing of FRP fishing boats are needed, Gulbrandsen concludes. The above assessment report also indicates that many of the multi-day boats currently operating do not meet recognised international safety standards. Multi-day fishing boats are not equipped with on board safety devices such as life jackets, flares and inflatable rafts.

Threats of hazards at sea:

The Monitoring, Control and Surveillance Division of the MFARD is involved in proper management of activities in the EEZ of the country. Air and sea rescue programmes are also to be undertaken by this division. In the implementation of their programmes, eight radio communication centres have been established, with the main centre in Colombo. Moreover, regional communication centres have been set up at Hambantota, Devinuwara, Galle, Beruwala, Negombo, Wennappuwa and Kalpitiya. The recently recruited army of coastal guards (*samudra balakaya*) are supposed to carry out rescue operations, among other things. About five crafts for rescue operations are to be imported to facilitate the coastal guards in carrying out their tasks. However, at present, the activities of the MSC division still remain at low ebb.

Private insurance agencies are unlikely to emerge to provide insurance for fishing-related risks due to problems of *moral hazard* and *adverse selection*. *Moral hazard* problems arise due to incentives provided to the insuree, to take less care of contingencies that give rise to claims. For example, a boat captain who has insured his craft has an incentive not to use his full labour efforts and skills in manoeuvring the craft and, a craft damage may result due to bad management, for which he will make a claim for indemnities. *Adverse selection* problems arise when the insurer is unable to distinguish between honest and dishonest agents demanding insurance and, therefore, is forced offer all the same insurance. It was

¹⁴. Gulbrandsen O. (1998) Marine Fisheries Development -Tuna Longliners , FAO Bangkok
expected that subsidised state insurance schemes would adequately cope with the insurance and credit needs of fishworkers. But, these schemes too failed due to the same insurance problems. In order to minimise problems arising out of informational asymmetries between insurers and insurees, certain strict conditions were included in the insurance contracts and premia were set high to make allowance for increased cost of information collection. This reduced the utility of insurance to the insured. Today, craft owners are not much interested in the insurance schemes operated by the state insurance corporations. Although a large number of fishworkers contribute to formal insurance schemes at the purchase of crafts, many of them withdraw from them after the initial premia are paid. Studies carried out in a number of fishing villages in the South of Sri Lanka¹⁵ revealed that, indemnity payments received by craft owners from formal agencies accounted for less than 30 percent of the total repair and replacement expenses incurred on the affected fishing assets (the rest being secured through credit). Long delays in indemnity payments and high premia were the major complains made by fishworkers against state insurance agencies. It is well evident that credit performs both a credit function and an insurance function under these circumstances.

The above imperfections in the insurance market and the withdrawal of craft owners from the existing schemes increase the risk of life to fishworkers, unless they are covered by any personal insurance scheme. The need for the latter is urgently felt in the deep-sea sub-sector.

Threat of arrest at sea:

The major staefy at sea issues that repeatedly arises in discussions with fishworkers is that of the threat of capture, of arrest or conflict at sea. Almost every month five to ten Sri Lankan deep-sea fishing boats are arrested and detained for alleged illegal fishing. Fishworkers are detained for periods ranging from four weeks to over 12 months, depending on the charges levied against the boat, by the authorities. Figures from the Department of Fisheries and Aquatic Resources Development for the five years spanning 1993-97 indicate that more than 1,300 Sri Lankan deep-sea fishing boats were arrested by neighbouring countries on charges of alleged illegal fishing. Although the MFARD had negotiated an agreement with the Maldivian Government in 1999, which allows Sri Lankan boats to pass through Maldivian territorial waters on their way to international waters, it is unlikely to negate the continuing arrest of Sri Lankan deep-sea fishing boats, which are engaged in illegal fishing.

Many a boat owners, who are outsiders and, therefore, have no concern for their crew workers other than extracting the highest returns from their labour and they often turn a blind eye to incidences of arrest of crew workers. Their main concern, under such circumstances, is to get the boat released, but not the crew. Under such situations, the members of affected families usually inform the DFEO, who is the local authority of the MFARD. But, the MFARD does not have a special division that could cope effectively with such requests.

15

¹⁵ Amarasinghe O., W.A.G. Wanasinghe and S.P.M. Jayantha. (2000): 'Risk and Uncertainties and their management: Fisheries Insurance', in O. Amarasinghe (ed.) *Modernisation and Change in marine small-scale fisheries of southern Sri Lanka*. (fortheoming).

Income derived from fishing by a fishworker can be considered as the share of the value of the catch proceeds that accrue to fishing labour. Unlike in many other productive activities, where labour is paid a wage, the fishworkers receive a share of the catch. In the system of catch-sharing, operational capital expenditure on the fishing trip is deducted first from the trip's total proceeds and the rest is then divided between the owner (payment for capital) and the crew workers (payment for labour). In general, it is evident that the owner's share is higher for mechanised crafts than for traditional crafts due to the high degree of capital intensity of these crafts. In a very broad sense, capital and labour receive equal shares in mechanised fishing $(50:50)^{16}$, where as in traditional fishing, the respective shares are 1/3 and 2/3. However, in the distribution of proceeds in deep-sea fishing, the owners and crew shares are 60 and 40 respectively, if the catch is auctioned on the beach (which is usually the case the western province). The 50:50 sharing system applies when catches are handed over to merchants who are paid a marketing commission for their services. In order to exploit diverse fish resources, fishworkers use different techniques of fishing which require varying capital commitments on the part of the craft owners. For example, in areas where small mechanised crafts employ purse seining technique, the fixed costs of the fishing units are higher and, therefore, the craft owner's share of the catch proceeds is likely to be higher.

Quite recently, with the use of large multi-day boats (more than 50 feet in length) for deep-sea fishing, craft owners have adopted a method of paying wages to crew workers. Although wage contracts are likely to be more attractive to crew workers under the condition of highly fluctuating catches, they may prefer share contracts in highly productive deep sea fishing, in which, the catches are high and subject to low fluctuations. Wage contracts under such conditions would prevent the crew workers benefiting from large catches, but would enable the craft owners to increase their share of the value of the catch. Although, fishworkers generally object to this practice, whether they will be in a position to effectively bargain with craft owners will depend on their strength as a group.

There has also been a recent move by owners of multi-day crafts to change the catchsharing system from 50:50 to 60:40, even when catches are handed over to merchants. Loss of employment was reported by a number of fishworkers in Dondra, who tried to organise fellow fishworkers against this move. This matter still remains unsettled and the requests have been made to the MFARD by fishworker organisations recommending a 50:50 sharing system.

Labour mobility:

Mobility of labour, like any other factor of production, is an important phenomenon in the efficient allocation of resources in a particular sector. The ability of labour to move from 'less productive' to 'more productive' production regimes ensure better allocation

¹⁶ See figure 5

of labour and higher returns to labour. The opportunities available to fishworkers to move from one resource area to the other, among different technological and employment categories appears to be an important factor influencing their livelihood because fish abundance is heavily dependent on weather conditions. Such mobility during lean seasons will earn them supplementary incomes that perform the function of stabilising inter-temporal flows of fishing income.

The possibility that exist for migration into more productive areas during lean months, was already discussed. The other possibility is for fishworkers in this sub-sector to take up employment in mechanised crafts during the monsoon time (*warakana*). This has been facilitated by increased work opportunities available in the mechanised sector during this period and the low degree of labour skills required for fishing operations. However, movement of fishworkers in the opposite direction does not usually take place.

Movement of fishworkers, especially those engaged in traditional fishing activities, among different employment categories is also evident. This is most noticeable in the south of Sri Lanka. Fishing in lakes, and coir-rope making are two important activities carried out by traditional fishermen living in Habaraduwa and Ahangama areas of the Galle district while fishermen in Kirinda of the Hambantota district engage themselves in agriculture and animal husbandry (goat and cattle keeping). Fish drying is another income generating activity taken up by fishworkers in the Puttalam district (mainly in the Kalpitiya area) and, quite surprisingly, this activity is hardly popular among the southerners (except in few locations such as the Kottegoda area of the Matara district), although opportunities exist. Fishworkers estimate the total number engaged in fish drying in the whole island to be about 5% of the total fishworker population.

It is increasingly evident in the mechanised sector that the average period of association of a crewman with his craft owner is getting shorter, revealing a high degree of mobility of crew labourers. The crew labourers enjoy a high degree of freedom in leaving a craft owner, to take up employment in a more productive crafts, no matter whether he is indebted to the owner or not. Either the new owner may pay back debts, or the crew worker may settle debts as he earns. However, this may usually happen only under the condition of the demand for labour exceeding the supply. If the reverse is true, a craft owner may expel a crew labourer whenever he wishes, because no work agreement is signed by the parties concerned in the recruitment of crew labourers to a craft. The latter incident is more pervasive in Sri Lanka, than the former.

3.4.3.4 The government intervention in improving working conditions and security of fishworkers:

In March 1999 the Ministry of Fisheries and Aquatic Resources Development appointed a Committee to investigate the terms and conditions of employment of the crew of fishing boats, with a view to improving them. This committee made several recommendations including, a. the establishment of a common fund (4% of the earnings of crew labourers and 6% of the earnings of owner) providing the required security to crew labourers, b. compulsory craft and fishworker insurance, c. fixed income sharing practices for different

fishing activities (50:50 sharing for mechanised crafts and beachseines and, 2/3:1/3 sharing for traditional crafts), d. service agreement between owners of asset owners and crew labourers for a specified period of time, e. training of fisherworkers and issue of certificates of training to them, f. establish ways and means of assisting fishworkers who become victims of natural or unnatural disasters, g. medical attention for crew labourers, h. standards and compulsory facilities for mechanised crafts, i. reasonable period of rest for fishworkers, j. fisheries reconciliation boards to settle disputes, k. auctioning of fish landings, 1. actions against the use of banned fishing gear, and m. protecting traditional fishing technologies, such as beachseining. These recommendations are yet to be implemented.

As a means of helping the fishworkers when they are disabled or when they withdraw from fishing at old age, the Government introduced a fishworkers's pension scheme in 1994. About 36,170 fishworkers contributed to this scheme in 1998 (approximately 32 percent of the total fishworkers population in the country). The contribution of the government (payments) to this scheme in the same year amounted to Rs. 67.5 million, while fishworkers's contributions amounted to Rs. 19.5 million.

3.5 Conflicts with fish merchants

3.5.1 The product market:

Due to the differences in the unit value of fish varieties, different consumer preference for them, distance between the consumers and the producers, and the risks involved in marketing, etc. several marketing channels have emerged consisting of specialised middlemen who are usually called maalu mudalali (fish merchants). The state marketing agency, the Ceylon Fisheries Corporation, handles only 1.47 percent of the country's total landings¹⁷.

Three methods of selling fish are found in Sri Lanka: auctioning, haggling and direct hand over. About 75% of all fish sold in the interior of Sri Lanka consist of fish bought at auctions¹⁸. This method of selling is more common for fish landed by small mechanised and non-mechanised crafts and to a lesser extent for fish landed by large mechanised crafts. Haggling is common in the marketing of catches from small mechanised crafts and traditional crafts. It is a system of fish selling where the producer and the buyer directly confront each other and negotiates a price. Fish is usually sold by 'piece' and merchants bid for price per fish. Because removal of fish is time consuming, there is ample time for the fishworkers to haggle with a considerable number of merchants until a suitable price is arrived. This paves way for sequential sale of fish, for which auctioning does not fit. Direct handing over of catches to merchants is more common with catches landed by large mechanised crafts. The most common practice of catch disposal is handing over of catches to particular mudalali by craftowners who are 'tied' to them. Mudalali lend money to craft

 ¹⁷ NARA : 1999 (op.cit.)
 ¹⁸ Femando S. (1985): 'Costs and profitability of small-scale fisheries in Sri Lanka, in T. Panayotou (ed.), Small-scale Fisheries in Asia-Socio-economic Analysis
 ¹⁸ Femando S. (1985): 'Costs and profitability of small-scale fisheries in Sri Lanka, in T. Panayotou (ed.), Small-scale Fisheries in Asia-Socio-economic Analysis

owners for various purposes and craft owners in return, promise to hand over all their future catches to these lender-merchants. The catch is simply handed over to a *mudalali* who weighs the catch and only the type and weight of fish are noted down by both parties. No price is discussed. These *mudalali* who are assemblers in their function send fish to commission agents/wholesalers in urban markets, who in turn sell to wholesalers/retailers. The commission agents usually charge about 10% of the total value of fish handled as the return for their services and remit the proceeds back to *mudalali*. The price of fish depends on its supply to the urban centres. The assemblers usually charge a 10% commission from the producers for the marketing functions they perform (which amounts to the difference between what the *mudalali* receives from the commission agent/wholesaler for each unit weight of fish and what he pays the producer). Payments are made to fishworkers at weekly intervals (for day boats).

Neither auction nor haggling take place in the marketing of export fish varieties like shrimp and lobster. They are either sold to the *mudalali* who act as agents of lobster exporting firms, or sold directly to the latter who have located their purchasing centres in many fishing villages.

3.5.2 The rationale of boat-tying:

Generally *mudalali* are eager to secure access to a large and guaranteed supply of fish, which leads to stiff competition among them for a higher 'market share'. One obvious way to ensure this is to buy their supplies forward. In the absence of any organised forward market for fish, one way of forward contracting is to link up credit with marketing relations by providing loans to craft owners on latter's promise to hand over all future fish catches. Credit provided by *mudalali* helps craft owners to insure against various risks and uncertainties confronted by them or to finance expenditures. In its simplest meaning, a tiedboat owner is one who has pledged to dispose all his future catches through a *mudalali* for borrowing from him. For craft owners, credit provided by fish merchants perform both a credit function and an insurance function, under the condition of imperfectly developed credit and insurance markets.

Fishworkers claim that *mudalali* often resort to underreporting of wholesale prices. Although not explicitly stated, it is quite evident that the difference between the wholesale price (reported by the *mudalali*) and the price paid to the producer is made up of a marketing commission and an interest charge on loans granted to the producer. Moreover, payments made to producers at weekly intervals meant that the latter had to borrow from the merchants to meet their consumption needs and this increased the dependence of the producers on fish merchants. In fact, what was granted to producers as consumption credit was borrowers' own money.

Recent developments:

Direct handing over of catches to lender-merchants was the most dominant mode of catch disposal for fish landings of large crafts in many fishing villages in the 1970's and the first half of 1980's. Most of the *mudalali* involved in 'boat-tying' arrangements were the local

19

fish merchants. However, recent studies in the southern coastal communities¹⁹ reveal that the fish auctioning system is gaining popularity among owners of large mechanised crafts. Today, more than 50 percent of the landings of large mechanised crafts are auctioned. The question arises as to what has led to the above changes in the fish marketing system. One can identify three such forces²⁰.

i. Extension of institutional credit to small-scale fisheries Several institutional credit schemes were introduced by the two state-owned banks to enable fishworkers to acquire fishing crafts and gear.

ii. Introduction of multi-day crafts.

The movements of MDOCs, which often fish in international waters, are uncertain, giving rise to problems in marketing the catches. When an MDOC lands it's catch, there is no assurance that there would be a sufficient number of assemblers on the beach to bid for their catches. This prompted many craft owners to vertically integrate their production activities with marketing activities, by acquiring insulated fish vans and transporting their catches to commission gents in large urban centres. This was facilitated to a significant extent by the increased availability of institutional credit for investments in fish marketing. This helped the craft owners to cut down marketing costs (saving on 'unfair' charges levied by assemblers) and narrowing down the informational gap (because they had perfect information about the market situation) which enabled them to obtain better prices for their fish. Moreover, they were often requested by fishworkers operating ODOCs to undertake transportation of their catches too, which again weakened the role of the assembling agent.

iii. Increased reliance on self insurance.

One way out of exploitative boat-tying arrangements is for a fishworker to resort to 'self insurance'. The rate of saving among fishworkers appears to be on the rise. The expansion of the activities of the private commercial banks and their branch network, to serve a larger population with varying needs, must have had a positive influence on the rate of savings among fishworkers.

All factors noticed above led to several changes in fish marketing arrangements in the marine small-scale communities. Since competition leads to efficiency, increased competition among traders would have increased the efficiency of fish marketing as well.

New tying arrangements between owners of MDOC's and commission agents in large urban markets have emerged recently. Commission agents, especially those operating in Colombo, have granted credit to large numbers of craft owners to acquire deep sea crafts. As for craft owners, they find the present tying arrangements 'less exploitative' than those with beach assemblers due to several reasons. Since craft owners are directly related to the wholesale market, *mudalali* can not under-report prices. Increasing the market commission is also a limited prospect because craft owners, who are equipped with fish transport vehicles, are highly mobile and, therefore, they are able to move to alternative commission agents. Very few modes of sanction are available to commission agents to take action against craft owners who resort to such moves. On the part of the lender-commission agent, he has no

¹⁹ Amarasinghe O., P.H.M. Dharmasena & Athula Wickramakaluthota, (2000): 'Marketing of fish and the role of the fish merchant in the south of Sri Lanka, in ²⁰ Amarasinghe O., P.H.M. Dharmasena & Athula Wickramakaluthota (op.cit.)

interest in extracting his returns to a level that would harm his relations with the borrower because it would increase moral hazard problems. These problems are likely to be greater due to the wide geographical distance that exists between agents.

The continued existence of tying arrangements in the non-mechanised sub-sector:

The process of disintegration of boat-tying arrangements described above did not take place in traditional fisheries (the non-mechanised sector). The fact that fishworkers in this sector have poor access to formal credit means that their dependence on fish merchants is continued. Moreover, fishing incomes are just sufficient for them to meet the household subsistence requirements. In fact, many of the fishworkers in this sector are engaged in other income generating activities to supplement fishing incomes. Therefore, one can not expect them to accumulate sufficient amount of wealth to be invested in productive assets: fishing crafts and gear. Not only their poor creditworthiness denied them access to the new technology, but also access to the competitive product market.

3.6 Conflicts with other resource users:

Limestone mining by outsiders is an activity that directly affect the livelihood of fishworkers depending on near-coastal fish resources, which is most pervasive in the Hikkaduwa area of southern Sri Lanka. Although this activity has been banned, it is being carried out on an extensive scale. Fishworkers claim that the ban on limestone mining is not being strictly enforced and that, the police often ignore prosecuting those who violate the rules.

The impact of the tourist industry is mostly felt in the coastal areas, affecting the livelihood of fishworkers. Acquisition of beaches for construction of tourist hotels has led to considerable losses of traditional grounds for craft anchorage and beachseine operations. Although the expanding tourist industry generates non-fishery positive externalities, it is doubtful whether the affected fishworkers are able to reap a good portion of such benefits.

Pollution issues:

Issues of pollution have also given rise to increasing disputes among groups of fish workers, especially between those exploiting near-coastal fish resources using traditional crafts and the owners of large mechanised crafts. Release of engine oil into the sea at anchorage points and harbours has become a major source of pollution of near-shore waters in the country, although the craft owners are not supposed to discharge engine oil in that manner. Fishworkers claim that this practice results in the death of many species of marine flora and fauna. In Negombo for example, engine oil discharged from large mechanised crafts (anchored at the tip of the Negombo lagoon) is causing serious damages to the marine life in the lagoon and smell of kerosene in tish and loss of fish quality has been reported by lagoon fishermen. Dumping of non-consumable fish parts into the sea by large crafts has also been reported.

Small-scale shrimp farms in the Puttalam district are too causing numerous environmental damages such as the extensive clearing of mangrove stands, release of pond water into the

environment causing increased salinity in wells and nearby waterways. Reduction of fish catches in coastal and lagoon waters and loss of sources of drinking water and firewood is causing an annual environmental damage of about Rs. 112,250.00 per every hectare of shrimp farms in the Puttalam district²¹.

With the development of eco-tourism in lagoons and estuaries, large numbers of mechanised crafts are involved in taking tourists for sight seeing and many fishworkers report erosion of banks and disturbance of aquatic life²².

Coastal and lagoon fishermen also complain of the increasing quantities of garbage dumped by municipal and urban councils and the growing numbers of factories and other commercial concerns. Polythene appears to be the most polluting component of such garbage.

3.7 Conflicts with the state:

Conflicts with state arise in respect of the issue of crafts and gear under the subsidy schemes operated by the MFARD. In the past, such state help was mostly channelled through fisheries cooperatives. However, today, crafts and engine issues under the subsidy schemes are made through the political clientele system²³. Fishworkers believe that, the process of affording preferential treatment to politically powerful individuals resulted in the entry of outside businessmen into fisheries, which was well evident in the deep sea sub-sector.

Another source of conflict with the state is the restrictions imposed on fishing in certain areas in Northern and the Eastern coastal regions by the state as security measures. The accelerating war between the Tamil separatist organisation, the LTTE, and the government troops in these districts has caused severe hardships to fishworkers. Fish landings in these districts have declined considerably and the fishworkers are undergoing tremendous hardships. No compensation has been paid to them for loss of employment opportunities and they are unable to move into the southern and western coastal areas for fear of harassment by the Sinhalese resident population.

Nevertheless, the Sri Lankan government has channelled huge amount of funds into the fisheries sector by way engine and craft issues under subsidy schemes, construction, operation and maintenance of fishery harbours, fisheries research, fisheries credit, fish marketing and other supporting institutions. It is widely accepted among fishworkers that the state has played a commendable role in the development of Sri Lankan fisheries and, therefore, fishworkers rarely show any hostility towards state officials.

²¹ See Liyanage R. (1997), 'Extended Benefit-Cost Analysis of Shrimp Farming Projects', Dissertation submitted to the Dept. of Agric.
 ²² Madu Ganga of southern Sri Lanka is a good example of such impacts.

 ²³ Amarasinghe O. (1995); "Political Clientelism and Underdevelopment", Rohana, Vol. 5, pp.112-134

3.8 Social Mobilisation:

3.8.1 Fisheries Cooperatives:

The modern cooperative movement in Sri Lanka had its beginning after 1912 with the emergence of rural credit societies. History of fisheries cooperative proper dates back to early 1940's. During the period 1941-1947, there was a total of around 49 fisheries cooperatives and they were of several kinds: the one similarity among them being the requirement that the catch was sold by the society on behalf of the members. Even at the infant stages of development of fisheries cooperatives, loans were issued to cooperatives to meet the credit needs of the membership, especially to enable them to adopt mechanised fishing. Most of the issues of 3.5 ton day boats with inboard engine (ODOC) were made through fisheries cooperatives with a 50% subsidy.

Political changes in the country have had its impact on the fisheries cooperative movement to a significant extent. Channelling of credit, subsidies, craft and gear through cooperatives followed a highly fluctuating trend along with shifts of political power from one party to the other. Most of the fisheries cooperatives in the past were hastily formed soon after general elections, and the office bearers usually consisted of persons having close association with the political party in power. The politicians then channelled the limited goods through the political clientele system²⁴. Once the priviledged individuals had access to expensive crafts and gear, the cooperatives collapsed.

As noted in a previous section, of a total of 824 fisheries cooperatives registered today, only 428 are considered as active²⁵. Poor management of cooperatives are usually attributed to lack of interest among office bearers, lack of training of personnel in business management, lack of awareness of among members of principals of cooperation, political interventions, poor loan recovery rates, etc. The total membership in all societies (active and defunct) is 97,788 persons, which is roughly about a fifth of the total fishing population. In June 1994, the Ministry of Fisheries and Aquatic Resources Development (MFARD) decided not to channel subsidies through the cooperatives but to grant them to individual applicants. This had serious repercussions on the functioning of the cooperatives and many fishworkers who had already obtained loans from fisheries cooperatives stopped repaying their loans. Cooperative officials claimed that this change in policy led to the collapse of many cooperatives. The MFARD appointed a special committee (Committee for Rehabilitation and Development of Fisheries Cooperatives) in 1995 to study the present status of fishery cooperatives and to make recommendations as to how they could be reorganised to meet the varying needs of fishworkers. Among other things, this committee recommended granting of subsidies to fishworkers through the cooperatives and several changes are likely to take place in this sphere.

3.8.2 Non-Governmental Organisations (NGO's)

²¹ Amarasinghe O.; 1995 (op.cit)

²⁵ Ministry of Fisheries & Aquatic Resources Development, information obtained from statistical division, 2000

A number of non-governmental organisations (NGOs) and foreign-funded projects are engaged in mobilising fishworkers with the objective of improving their living standards. Some of these NGO's and projects provide technical assistance to fishworkers; financing craft and gear, providing for training needs, providing funds and the necessary know-how to fisher women (to get engaged in various productive activities), operating pre-schools for fisher children, etc.²⁶, while others are involved in organising fishworkers into trade unions²⁷, to provide them with the necessary strength and bargaining power against their employees and the authorities. Many of the former type of NGOs are closely collaborating with fisheries officials. Yet, what is surprising is the lack of coordination of activities among the NGO's. Same type of activities are undertaken by different NGO's, but at different locations. No directory of fisheries-related NGO's exists. Those which are operative in a particular locality may know each other, but anonymity among NGO's remain quite high, especially in the Negombo area, which is popular for its high fisheries productivity and experienced and able fishworker population. A list of fisheries-related NGO's based in the Southern and Western Provinces are provided in annex ...

It is of paramount importance for the NGO's to meet on a common platform, to plan out strategies of improving fishworkers welfare more effectively. Such a common arena will allow each other to exchange ideas, learn from the other, technology transfer among regions, and to organise fishworkers of common interests into regional or national-level fishworker associations having more bargaining power. Moreover, such an ineteraction among NGOs will ensure better utilisation of their own funds, minimising wastage.

Fishworkers' Unions:

Two active fishworker unions were identified, namely, the United Fishermen's and Fishworkers' Congress (which is based in Colombo) and the National Union of Fishermen (which is based in Negombo and Dodanduwa in Galle). Although, fishermen's unions appear to be quite active in organising fishworkers, the total membership of both unions is around 1500 persons; a mere 1.3% of the total number of active fishermen.

Both the United Fishermen's and Fishworkers Congress and the National Union of Fishermen, made recommendations to the committee appointed by the MFARD to investigate the terms and conditions of employment of the crew of fishing boats. These recommendations were made after in depth studies and their efforts have contributed heavily in making appropriate and timely recommendations by the above committee²⁸.

Unfortunately, the two fishworkers unions mentioned above operate independently and conduct their own membership campaigns in their own way. The poor strength of the unions has resulted in failures and, in certain villages, fishworkers who had joined these unions have been severely punished by craft owners²⁹. The pace of growth of membership in

²⁶ Such as Small Fishers federation (Pambala), Sri Lanka Canada development Fund (Tangalle), Sewa Lanka Foundation (Hambantota), Fisheries Community Development and Resources Management Project (Tangalle), Womens Development Federation (Hambantota), Human Resources Development Organisation (Tangalle), etc.

For example, United Fishermen's and Fishworkers Congress (Colombo) and National Union of Fishermen (Negombo)
 See Annex 3.

²⁹ For example, crew members of multi-day crafts in Dondra, who had joined the National Union of Fishermen to fight against unfair income-distribution methods practised by craft owners, were expelled from their respective employment.

fishworker unions appears to be very slow. It is evident that, what is required is a union of fishermen at the national level with a large membership.

3.9 Summary:

All fishworker categories have not equally benefited from the process of modernisation of fisheries and, new opportunities in resource exploitation, has also given rise to conflicts among resource users. In the coastal fisheries, conflicts among fishworkers using different technological categories and those using legal and illegal methods of fishing are well evident. Exploitation of coastal fish resources by offshore and deep-sea crafts is another source of conflict among resource users. Traditional institutional forms controlling entry into fisheries and managing common property resources, have disintegrated under the forces of market penetration, national integration, technological change, etc. Although, various ordinances and acts have made sufficient provisions to prohibit the use of destructive fishing gear, to establish various bodies to settle disputes and to establish fisheries resources management committees, the implementation of many of the regulations concerning the use of certain types of gear, fishing techniques, etc. remain very weak. No proper management division has been established at the MFARD.

Conflicts among migratory fishworkers are also evident. But such conflicts are now on the decline due to the smaller numbers of fishworkers opting to migrate popular migratory villages in the south-eastern and eastern districts, which are hardly hit by escalating civil disturbances. However, land based conflicts among resident fishworkers in the southern and western districts and those who have migrated from trouble-stricken areas in the eastern districts are on the rise.

Relations between asset owners and crew workers have undergone significant changes. The patron-client type of relations that existed between asset owners and crew workers in traditional fisheries have given way to new relations where personal anonymity among agents remain high. Entry of outsiders into fisheries is a major cause of erosion of employer-employee relations, especially in the deep-sea sector. Fishworkers' access to credit to acquire modern technology is poor. Even the formal sources of credit have a bias towards asset-rich individuals. Therefore, in the ultra-modern sector, many fishworkers now work under employers, who are not members of the community.

The formation of two classes, the asset owners and crew workers is evident, who are in direct opposition to each other. In this process of class formation, the status of the crew workers have deteriorated. They get few days of shore leave. Fatigue and skin diseases from inadequate health care on board, are causing serious health problems. Bad design standards and lack of life saving equipment pose threats to fishworkers' safety. Craft owners hardly insure their crafts or crew, giving rise threats of hazards at sea. Another important issue is the threat of arrest, when crafts fish in other's territories, which is becoming a common practice. The craft owners are even attempting at changing the catch-sharing system in their favour, which will further deteriorate the status of the crew workers. In order to remedy the deteriorating status of the crew workers in the deep-sea sector, the government intends implementing recommendations made by a committee

appointed by the Minister of Fisheries to look into the terms and conditions of employment of the crew of fishing boats. The Fishermen's Pension scheme introduced in 1994 too is supposed to provide the fishworkers with old age security.

Conflicts are also observed in the product market; between fishworkers and fish merchants. The former borrow from local fish merchants against the promise of handing over all their future catches to the lender-merchant. This gives rise to the popular 'boat-tying' arrangements. The merchants resort to extracting higher surpluses from their tied fishworkers by under-reporting market prices, giving rise to increased tension between the two groups.

Fishworkers are often in conflict with other resource users, such as those engage in limestone mining in near coastal waters. Expanding hotel trade has also led to loss of beaching points for crafts and increased rate of pollution of coastal areas. Shrimp farming, release of municipal wastes and engine oil from crafts, are causing serious reductions in fish resources in lagoons.

Although the State has always been in the forefront of fisheries development in Sri Lanka, fishworkers are in conflict with the state on two issues; the termination of channelling subsidies through fisheries cooperatives and the restrictions imposed on fishing in the northern and eastern districts.

The fisheries cooperative movement spearheaded the process of mobilisation of fishworkers. However, with the implementation of state-sponsored credit and subsidy schemes, many fisheries cooperatives were hastily-formed to receive such help, but were managed badly subsequently. The cooperative movement in fisheries, remain at a very poor state and, restructuring of the fisheries cooperatives has been recommended by a special ministerial committee. In order to improve the living standards of the fishworkers and to contribute to the development of fisheries, an array of NGOs have emerged. A common platform has not been formed for them to interact, learn from each other and to work with each other, to make their contributions more effective. The same is true with fishworker unions. Although their contribution towards designing terms and conditions of employment in deep-sea crafts is commendable, their total membership remain extremely low.

Chapter 4. Conclusions and Recommendations:

1

Sri Lanka has achieved very high levels of growth in fish production; recording a 10 fold increase during the second half of the last century. The state played a very important role in this process of growth by introducing modern crafts, gear and fishing techniques and, providing the necessary infrastructure to enable fishworkers to adopt the new innovations. A large amount of subsidies were channelled into the fisheries sector and several bank credit schemes were designed to help the collateral-poor fishworker. An array of fishery-support institutions were established with a view to undertake research, development and management of fisheries resources. This process of growth is characterised not only by increased fish production, but also by mechanisation of the fishing fleet up to 50 percent, increased exploitation of previously under-exploited resources, expansion of markets and marketing facilities and also by several important changes in the relations between diverse technological and employment categories.

If the objective pursued is to achieve high levels of fisheries development, then growth indicators will tell only part of the story. The more important questions in this respect would be: 'Has increased growth in the fisheries sector resulted in increased living standards of all categories of fishworkers? Have efficiency gains been accompanied by equity gains? Do fishworkers feel that they are better off now? What changes have taken place in social relations of production? etc.'. This study attempted at answering most of these questions and the conclusions and recommendations of this study are enumerated below.

4.1 Conclusions:

- 1. Fishworkers in the mechanised sector earn incomes well above their counterparts in the non-mechanised sector and those earned by other occupational categories in the unorganised sector. Incomes of asset owners are higher than those earned by crew workers. Of the latter category, highest incomes are earned by those engaged in multi-day crafts. These differences in incomes are also reflected in their standard of living. Fishworkers in the mechanised sector enjoy living standards above those enjoyed by the average Sri Lankan citizen, while the opposite is true for fishworkers in the non-mechanised sector, showing the generally poverty of the latter category.
- 2. The mechanisation drive, characterised by the introduction of modern crafts, gear and techniques, has paid off well; both production and productivity have increased. This process has also led to a shift in emphasis on resources: from the overcrowded coastal resources, to the previously under-exploited offshore and deep-sea resources.
- 3. The existence of various technological complementarities between mechanised and traditional crafts, the advantage of traditional crafts over the mechanised

crafts in the exploitation of particular fish resources, and the state issues of fibre glass canoes under the 90 percent subsidy scheme, etc. all ensure the persistence of traditional fishing activities. Those who find their access to new technology difficult, fall back on this sub-sector.

- 4. The state has played a very important role in the modernisation of Sri Lankan fisheries, by channelling large amounts of subsidies and subsidised credit into this sector and building up the necessary infrastructure. Today, state help is mainly extended to the deep sea sector. However, such policy changes have not been accompanied by proper assessment of the availability and rates of exploitation of resources. In a situation where the state of fishery resources are not properly known, there exist a danger of over-investment or under-investment affecting the sustainability of resources and the livelihood of fishworkers. Proper assessment of the state of fisheries growth and development in Sri Lanka.
- 5. With the advent of ultra-modern technology, accompanied by longer fishing trips, the fisher women are burdened with a host of household responsibilities. The important role they played in fishing, marketing, input supplying etc., that was evident in the catholic fishworker communities, is on the decline. Due to the long absence of their husbands from home, some of the functions earlier performed by men have been taken over by women; financial management, meeting social obligations, maintaining social relations, resolving health issues in the family, etc.
- 6. With the entry of outsiders into fisheries and the growing personal anonymity among agents, the traditional norms and values that guaranteed harmony among different groups of fishworkers and that guaranteed sustainability of resources have lost their effectiveness. Two of the major issues in coastal fisheries in this regard are, the use of destructive fishing methods and, the exploitation of coastal resources by the offshore crafts. Conflict resolution mechanisms and law enforcement in this regard is very weak and, those who break the law, often escape punishment.
- 7. The new fish-catching technology is highly capital-biased. The asset-poor fishworker's access to new technology depends on his access to fisheries credit. Due to their inability to provide the required collateral, their inability to use political influence and the bias of the credit schemes towards the asset-rich individuals wanting to adopt ultra-modern technology, many of the fishermen engaged in traditional fishing activities were unable to adopt the new technology.
- 8. Fishworkers' poor access to credit has also forced them to borrow from fish merchants and become 'tied' to them Through under-reporting of market prices they are being exploited by the fish merchants. This is especially true in the coastal fisheries sub-sector.

2

3

- 9. With the entry of outside business interests into fisheries, especially in the deep sea sector, employers and employees often appear as two classes who are in direct opposition to each other in terms of their interests. A labour market is emerging, with a high degree of personal anonymity among agents. Work conditions of fishworkers and measures adopted to ensure their safety have deteriorated. The imperfections in the insurance market have also increased the risk of life at sea. This situation is likely to be worsened with the increased entry of 'outsiders' into the ultra-modern deep-sea sub-sector and the increased rate of unemployment in fishing communities.
- 10. The MCS systems implemented by the state is hardly adequate to cope with the risk of sea hazards confronted by fishworkers. Rescue operations can not be handled until proper crafts for rescue operations are obtained. The large numbers of coastal guards are hardly involved in rescue operations. Even effective intervention by them in prosecuting those involved in illegal and disastrous fishing methods are hardly noted.
- 11. Expanding tourist hotel trade along the coastline has affected the fishworkers adversely, resulting in loss of craft beaching points and areas of seine operations (*padu*). Moreover, release of oil into the sea by mechanised crafts has resulted in loss of flora and fauna in near coastal waters, lagoons and estuaries. Hardly any effective action has been taken by the state to prevent such activities.
- 12. Fisheries cooperatives have always been in the forefront of the process of mobilisation of fishworkers. Credit and subsidies reached the asset-poor fishworker mainly through the system of fisheries cooperation. However, due to mismanagement and political intervention, the fisheries cooperative movement collapsed and today, they remain in a dormant state. No subsidies are now channelled through fisheries cooperatives.
- 13. A number of NGO's, including two major fishworker unions are involved in mobilising fishworkers, they remain restricted both in their membership, area of operation and activities. Most of these NGOs are working in isolation and no proper forum is available for them to meet, interact and learn from each other.

4.2 Recommendations:

For the attention of the MFARD:

- 1. Fisheries cooperatives should be restructured to make them purely fishworkers' organisations. In this regard, recommendations made in 1995 by the Fisheries Cooperative Rehabilitation and Development Committee should receive immediate attention of the policy makers. Subsidies should only be channeled through fisheries cooperatives to reach the needy fishworkers.
- 2. A Fisheries Management Division should be established in the MFARD to look into all fisheries management problems and, the MCS division can be a part of it. Disputes among various resource users should be settled by a committee consisting of trained fisheries personnel, members of local authorities and fishworker organisations and, political intervention in settling disputes should be prevented. Moreover, this division may undertake zoning of fisheries resource areas and decide on the type of fishing units to be operated in each zone.
- 3. The coastal guards (*Samudra Balakaya*) should be provided with suitable crafts for rescue operations and the necessary power to prosecute those who use illegal fishing methods. Proper coordination of activities of the coastal guards, fisheries inspectors and the police is of paramount importance in taking effective measures against those who violate the law.
- 4. Urgent attention should be paid to the implementation of recommendations made by the committee appointed by the MFARD to look into the terms and conditions of employment of deep-sea fishworkers. However, decisions concerning catch-sharing methods should be based on proper assessment of returns to factors of production in fishing operations (a task for NARA). Standards for multi-day boat designs should also be introduced.
- 5. MCS division of the MFARD should negotiate with similar institutions in other countries to establish effective communication networks concerning arrests of fishworkers (for illegally fishing in foreign waters) by foreign countries. Such information should be passed on to the families of affected parties at the earliest possible occasion. The MSC division could also play the role of a mediator in resolving such problems.
- 6. A law prohibiting the release of oil into the sea by mechanised crafts should be introduced and effectively enforced, to prevent further damage to flora and fauna in near coastal waters and in lagoons.

7. Before granting approval for constructions along the coast, the Coast Conservation Department should consult local fishworker organisations to find out the impact of such constructions on fishing activities. If fishing is found to be adversely affected suitable remedies should be granted to the fishworkers confronting such problems.

For the attention of NARA:

- 8. Steps should be taken to assess resource status and exploitation rates in coastal, offshore and deep-sea sub sectors. This will help the MFARD to design credit and subsidy schemes that would lead to a shift of fishing effort from over-exploited resources to under-exploited resources.
- 9. Estimation of profitability parameters that include, among other things, returns to factors of production, is urgently needed to decide on a catch-sharing system for deep-sea fishing operations.
- 10. Research work should be undertaken to find out the impact of using scuba diving technique in harvesting chank, lobster and ornamental fish, especially in respect of the impact of different rates of exploitation on the populations and the adverse impact on other marine life dwelling on rock surfaces and rock crevices.

For the attention of local fishworker organisations:

- 11. Increased attention should be focussed at mobilising fisher women to take up new challenges in life. Awareness and training campaigns could be organised to provide them with skills required for effective financial management, childcare, home gardening, agriculture, and fish culture. Savings associations of fisher women will improve the financial security of their families. Pre-schools for fisher children is another important need, that should receive the attention of fishworker organisations.
- 12. Every step is to be taken to bring all fishworker unions under an umbrella of a 'national fishworkers' federation' to provide strength to individual unions.
- 13. All fisheries-related NGO's should be provided with a platform to interact and to learn from each other. This will also pave way for the formation of nation-wide networks giving more strength to indivdual organisations. An initial workshop organised with the partcipation of all fisheries-related NGO's is recommended to provide the initial stimulus for such an interaction.

5

For the attention of international fishworker organisations:

.

- 14. Help is to be extended to fishworkers, especially those who did not benefit from modern technology, by way of 'technology transfer'. Technology that do not demand heavy capital outlay but are efficient, can be introduced from other countries, especially into coastal fisheries.
- 15. Facilities for training and learning from others, could be provided to local fishworkers by exploiting international networks of fishworkers.
- 16. Financial assistance and expertise should be provided to conduct a few workshops with the aim of bringing all fisheries-related NGO's together, to enable them to effectively interact with each other and to form national-wide networks. This will enable these NGOs to organise their work better and to put their funds into more efficient use, avoiding duplication of work and wastage. Efforts could also be made to link local fishworker organisations with international organisations of similar interests.



Figure 1. Exclusive Economic Zone – Sri Lanka

Year	Marine (MT.)	Inland (MT)	Total (MT)
1952	25 124	-	25.124
1953	24 361	-	24 361
1954	28333	-	28,301
1955	30.103	-	30,103
1956	38,880	-	38,880
1957	37 205	-	37,205
1958	39.600	-	39,600
1959	44 392	-	44 392
1960	48.743	3.404	52 147
1961	55.847	3.404	59.251
1962	77.005	3.922	80.927
1963	83.707	4.439	88,146
1964	88.223	5.537	93,760
1965	85.346	7.578	92.924
1966	90,479	9.334	99.813
1967	107,140	10,059	117,199
1968	127,060	8,723	135,783
1969	123,048	8,202	131,250
1970	89,845	8,296	98,141
1971	77,065	8,164	85,229
1972	93,274	8,438	101,712
1973	93,697	7,005	100,702
1974	103,035	7,660	110,695
1975	115,833	13,307	129,140
1976	123,348	12,540	135,888
1977	125,698	13,068	138,766
1978	139,841	16,738	156,579
1979	150,950	17,425	168,375
1980	167,412	20,266	187,678
1981	177,253	29,590	206,843
1982	183,665	33,323	216,988
1983	184,738	36,068	220,806
1984	137,469	31,882	169,351
1985	142,666	32.743	175,409
1986	147.666	35.390	183,056
1987	153.537	36,465	190,002
1988	159,524	38,012	197,536
1989	165,566	39,721	205,287
1990	145,798	17,866	163,664
1991	174,231	23.832	198,063
1992	185,168	21,000	206,168
1993	202,900	18,000	220,900
1994	212,000	12,000	224,000
1995	217,500	20,000	237,500
1996	206,300	22,250	228,550
1997	214,750	27.250	242.000
1998	230,200	29,900	260,100

Table 1 Fish Production in Sri Lanka 1950-1998

Sources: Goonewardena T. P. (1980), 'A survey of some of Sri Lanka's state-aided development programmes in the fisheries sector, Marga Institute Doc. SEM/100/80, Colombo; Ministry of Fisheries, Fisheries Administration report 1986: Amarasinghe O., 1988 (op.cit.); NARA 1998, 1999 (op.cit).

Year	Fish Production ¹ (in '000 MT)	Total Fish Supply ² (in '000 MT)	Per Capita Fish Consumption(Kg / year)
1958	40	143	15.66
1965	93	163	14.91
1972	102	185	14.51
1973	101	146	11.16
1974	111	146	10.91
1975	129	158	11.84
1976	136	149	10.70
1977	139	145	10.00
1978	157	163	11.40
1979	168	181	13.00
1980	188	208	14.80
1981	207	211	14.30
1982	217	234	14.60
1983	221	235	21.34
1984	169	210	13.46
1985	175	222	14.02
1986	183	212	13.51
1987	190	226	13.81
1988	198	232	14.00
1989	205	244	14.52
1990	177	212	12.48
1991	198	243	14.10
1992	206	257	14.78
1993	221	268	15.21
1994	224	279	15.61
1995	238	299	16.70
1996	229	288	15.60
1997	242	310	16.60
1998	260	319	16.90

Table: 2 Per Capita Consumption of Fish in Sri Lanka (1958, 1965 and 1972-1996)

Sources: 1 Total of marine and inland fish production

.

2 Local fish production + imports - exports

Source: Central Bank of Sri Lanka, Annual Reports, 1991, 1990. 1995: Department of Census and Statistics, Statistical Handbook, 1980, 1990, 1995; Soysa 1981: Ministry of Fisheries, National Fisheries Development Plan. 1995-2000, Colombo: Sri Lanka Customs (information quoted in Annual Report 1995 of Central Bank, 1995).

Year	Total Exports	Exports of Fish	Fish exports as a
	(Rs. million)	(Rs. million)	percentage of total
			exports
1985	36,207	453.11	1.25
1986	34,072	608.48	1.80
1987	41,133	575.93	1.40
1988	46,928	824.41	1.76
1989	56,175	1,137.19	2.02
1990	79,481	883.00	1.05
1991	84,378	766.8	1.01
1992	110,052	1,480.62	1.20
1993	138,175	2,142.00	1.55
1994	158,554	3,175.92	1.90
1995	195,116	3,771.89	1.93
1996	226,801	4,297.18	1.89
1997	274,193	4,409.69	1.60
1998	310,398	6,750.53	2.17

Table 3: Exports of fish and fish products and total exports 1985-1998

Sources: Sri LankaCustoms (op.cit.), Sri Lanka; Central Bank of Sri Lanka-Economic & Social Statistics of Sri Lanka 1993-95; Central Bank of Sri Lanka-annual report-1987-1995 and Review of the Economy-1985; Ministry of Fisheries, Fisheries Administration Report 1994; NARA 1999 (op.cit.)

Year	Total Imports (Rs. M)	Fish Imports (Rs. M)	Fish Imports as a percentage of Total Imports
1983	45,558	351	0.77
1984	47,541	623	1.31
1985	54,049	754	1.4
1986	54,559	838	1.54
1987	60,528	953	1.57
1988	71,030	1,136	1.60
1989	80,225	1,320	1.64
1990	107,729	1,739	1.61
1991	126,643	2,090	1.65
1992	153,555	2,447	1.59
1993	193,550	2,456	1.27
1994	235,576	2,956	1.25
1995	244,323	3,369	1.38
1996	277,897	3,686	1.22
1997	330,732	3.678	1.11
1998	369.014	4,332	1.17

Table 4: Fish imports and total imports (1983-1998)

Sources: Sri Lanka Customs (op.cit.); Central Bank of Sri Lanka, Annual Reports, 1995 & 1998; NARA 1999 (op.cit.).

	Marine sector	Inland sector	Total
Fishing population	461.738	58.500	520.238
Active fishermen Population	98.444	12.891	111.335
No.of people indirectly occupied	16,000	6.000	22.000
No. of fishing households	87,808	11,920	99.728
No. of fishing villages	1.050	1.289	2.339

Table 5. Fishing Villages and Fishing Populations in Sri Lanka - 1989

Sources: Ministry of Fisheries and Aquatic Resources Development, Fisheries Asdministration reports -1989,1990 & 1995; NARA . Sri Lanka Fisheries Year Book, 1998, 1999.

Table 6 Monthly incomes of fishworkers, among different technological categories

Type of craft	Mean monthly	Monthly income
	income of a	of an asset owner
	fisherman (Rs.)	(Rs.)
MDOC	8653.797	12,511.00
ODOC	4740.625	10.238.00
FRP	4692.442	6,120.00
MTC	3918.534	5.709.00
NMTC	2694.231	422.00

Source: Amarasinghe O. (2000): 'Modernisation and Living Standards of Fishworkers' in. O. Amarasinghe (2000) (op.cit.)

Table 7.1 Type of houses of craft owners in 6 fishing villages in the south of Sri Lanka

Type of House (Roof Type)	Balapitiya	Hikkaduwa	Mirissa	Dondra	k udawella	Kirinda	
MDOC				Donara	·····		All villages
-Thatched with mud walls -Thatched with brick walls			-		-	1(14.3)	1(1)
-Tiled/asbestos roof	8 (87.5)	12(100.0)	11(100.0)	34(100.0)	22(100.0)	4(57.1)	2(1) 91(97)
ODOC						(2.11)	(7)
-Thatched with mud walls -Thatched with brick walls -Tiled/asbestos roof	- - 2(100.0)	- - 11(100.0)	- 1(7.7) 12(92.3)		- 2(11.8) 15(88.2)		0(0) 3(6) 48(94)
FRP -Thatched with mud walls -Thatched with brick walls -Tiled/asbestos roof	2(11.1) 16(88.9)	1(7.7) 5(38.5) 7(53.8)	1(7.7)	I(6.3) I5(93.8)	9(34.6) 17(65.4)	3(15.0) 17(85.0)	2(2) 20(19) 84(79)
MTC -Thatched with mud walls -Thatched with brick walls -Tiled/asbestos roof	- - 7(100.0)	- 1(11.1) 8(88.9)	1(12.5) - 7(87.5)		- 10(41.7) 14(58.3)	- 16(100.0)	1(1) 11(14) 68(85)
NMTC -Thatched with mud walls -Thatched with brick walls -Tiled/asbestos roof	6(30.0) 14(70.0)	- - 7(100.0)	1(9.9) 3(27.3) 7(63.6)	- 1(7.1) 13(92.9)	8(57.1) 6(42.9)	2(25.0)	3(4) 18(24) 53(72)
All categories -Thatched with mud walls -Thatched with brick walls -Tiled/asbestos roof	8(15) 47(85)	1(2) 6(12) 45(86)	3(5) 4(7) 49(88)	2(2) 83(98)	- 30(30) 73(70)	3(6) 5(9) 46(85)	7(2) 54(13) 344(85)

Table 7.2 Types of houses - Sri Lanka

Type of roofing material and walls	Percentage of housing units (1996)
Cadjan and Palmyrah leaf thatched houses	17
Tiled/asbestos/zinc roof houses	81

Source: Amarasinghe O. (2000): 'Modernisation and Living Standards of Fishworkers' in O. Amarasinghe (2000) (op.cit.)

Table 8 Presence of pipe-borne water supply in craftowner households in 6 fishing villages in the south of Sri Lanka

Fishing Village	NMTC	MTC	FRP	ODOC	MDOC	All craft owners
Balapitiya	4	4	12	2	5	27
	(20.0)	(57.1)	(66.7)	(100.0)	(62.5)	(49.0)
Hikkaduwa	1	4	2	8	9	24
	(14.3)	(44.4)	(15.4)	(72.7)	(75.0)	(46.0)
Mirissa	0	0	0	3	1	4
				(23.1)	(9.1)	(7.1)
Dondra	5	14	14	4	30	67
	(35.7)	(87.5)	(87.5)	(80.0)	(91.2)	(79.0)
Kudawella	0	5	9	6	16	36
		(20.8)	(34.6)	(35.3)	(72.7)	(35.0)
Kirinda	0	4	2	2	1	9
		(25.0)	(10.0)	(66.7)	(14.3)	(17.0)
TOTAL	10	31	39	25	62	167
Total No. of	74	80	106	51	94	405
households						
Households not						
having own source of	13.5%	38.8%	36.8%	49.0%	66.0%	41.0%
water as a percentage						
of total no. of						
households						

Given in parentheses are percentages

Source: Amarasinghe O. (2000): (op.cit.).

Table 9	Availability	ofel	ectricity	at	crafte	owner	hou	iseh	olds	in	6	fishing	villages	s in	the
				sol	Ithern	Sri L	ank	a							

Fishing Village	NMTC	MTC	FRP	ODOC.	MDOC	MDOC
Balapitiya	12	7	17	2	7	45
	(60,0)	(100.0)	(94.1)	(100.0)	(87.5)	(82.0)
Hikkaduwa	5	8	8	11	11	-43
	(71.4)	(88.9)	(61.5)	(100.0)	(91.7)	(83.0)
Mirissa	6	5	10	12	11	-11
	(54.5)	(62.5)	(76.9)	(92.3)	(100.0)	(79.0)
Dondra	10	16 (100.0)	15	5	.3.2	78
	(71.4)		(93.8)	(100.0)	(94.1)	(92.0)
Kudawella	6	12	20	14	22	7.4
	(42.9)	(50.0)	(76.9)	(82.4)	(100.0)	(72.0)
Kirinda	5		13	3	5	37
	(62.5)	(68.8)	(65.0)	(100.0)	(71.4)	(69.0)
TOTAL	44	59	83	47	88	321
Total No. of	74	80	106	51	94	405
households						
Households not	1	1				
having electricity	59.0%	74.0%	78.0%	92.0%	94.0%	79.3%
supply as a						
percentage of total no.						
of households						
Households having ele	ctricity suppl	y as a percentage of	of total no. of h	ouseholds in		
SRI LANKA = 54.8%	0 *					

Given in parentheses are percentages

Source: Amarasinghe O. (2000 (op.cit.).

Table 10.1 Sanitary facilities (types of latrines) in craft-owner housing units in 6 fishing villages in Southern Sri Lanka

Type of Latrine	Balapitiya	Hikkaduwa	Mirissa	Dondra	Kudawella	Kirinda	All villages
MDOC							
-No toilet	-	-	-	-	-	-	-
-Pit	-	-	-	-	-	1(14.3)	1(1.1)
-Flush	5(62.5)	11(91.7)	9(81.8)	32(94.1)	21(95.5)	5(71.4)	83(88.3)
-Commode	3(37.5)	1(8.3)	2(18.2)	2(5.9)	1(4.5)	1(14.3)	10(10.6)
ODOC							
-Openair	-	-	-	-	-	-	-
-Pit	-	-	-	-	-	-	-
-Flush	2(100.0)	11(100.0)	11(84.6)	5(100.0)	17(100.0)	3(100.0)	49(96.1)
-Commode	-	-	2(15.4)	-	-	-	2(3.9)
FRP							
-Openair	-	1(7.7)	·	-	-	-	1(1.0)
-Pit	-	3(23.1)	2(15.4)	-	-	4(20.0)	9(8.5)
-Flush	17(94.4)	9(69.2)	11(84.6)	16(100.0)	26(100.0)	15(75.0)	94(88.7)
-Commode	1(5.6)	-		-	-	1(5.0)	2(1.9)
MTC							
-Openair	1(14.3)	-	-	2(12.5)	-	-	3(3.8)
-Pit	-	1(11.1)	-	-	-	6(12.5)	3(3.8)
-Flush	6(85.7)	8(88.9)	8(100.0)	14(87.5)	24(100.0)	10(62.5)	74(92.5)
-Commode	-	-	-	-	-	-	-
NMTC							
-Openair	-	-	-	1(7.1)	-	-	1(1.4)
-Pit	8(40.0)	1(14.3)	4(36.7)	1(7.1)	-	3(37.5)	17(23.0)
-Flush	12(60.0)	6(85.7)	7(63.6)	12(85.7)	14(100.0)	5(62.5)	56(75.7)
-Commode	-	-	-	-	-	-	-
All craft owners							
-Openair	1(2.0)	1(2.0)	-	3(4.0)	-	-	5(1.2)
-Pit	8(15.0)	5(10.0)	6(11.0)	1(1.0)	-	14(26.0)	30(7.4)
-Flush	42(76.0)	45(86.0)	46(82.0)	79(93.0)	102(99.0)	38(70.0)	356(87.9)
-Commode	4(7.0)	1(2.0)	4(7.0)	2(2.0)	1(1.0)	2(4.0)	14(3.5)

Given in parentheses are percentages

Table 10.2 Sanitary facilities in housing units - Sri Lanka

	Type of Latrines	Percentage of population - Sri Lanka
	Housing units without having latrines	6.9 (in 1996)
	Housing units having water-sealed and flush toilets	63.4 (in 1994)
!		

Source: Amarasinghe O. (2000): (op.cit.).





Beachseine craft (Paru)

Outrigger Canoe (Oruwa)





Log Raft (Kattamaran)

Vallam



Figure 2. Popular Fishing Crafts of Sri Lanka

Figure 3 Techniques of fishing in southern Sri Lanka

Type of technique: *BEACHSEINING* Type of craft: *beachseine craft (paru)* Type of resource: *coastal* Type of fish: *shore seine varieties*

Type of bait: nil



Type of technique: *ROD AND LINE* Type of craft: *small outrigger canoe* Type of resource: *coastal* Type of fish: *groper(parawa), sear(thora), rock fish, etc* Type of bait: *live bait (squid)*





Type of technique: SMALL-MESHED GILL NETTING (hible net) Type of craft: both mechanised (small) and Non-mechanised crafts

Type of resource: *coastal* Type of fish: *herring*, *Bolla*, *anchovies*, *karalla* Type of bait: *nil*

Type of technique: HAND LINING

Type of craft: *both small-mechanised traditional crafts* Type of resource: *coastal & offshore* Type of fish: *parawa, rockfish, mullet, sear,et etc.* Type of bait: *herring, bolla, lagga, imbura, etc.*



Type of Technique: LARGE-MESHED GILL NETTING Type of craft: large and small mechanised crafts Type of resource: coastal, off-shore and deep sea Type of fish: skipjack (balaya), Yellow fin tuna (kelawalla), shark, marlene (koppara), etc. Type of bait: nil



Type of technique: *BOTTOM SET NETS* Type of craft: *mechanised crafts* Type of resource: *coastal and off-shore* Type of fish: *parawa, mullet, rock fish, etc.*

Type of bait: nil





Type of Technique: LONG LINING FOR YELLOW FIN (MARUWEL PANNAYA) Type of craft: large mechanised crafts Type of resource: off-shore & deep sea

Type of fish: yellow fin tuna, shark, marlene, spear fish, sail fish

Type of bait: herring, bolla, etc.

Type of Technique: BOTTOM SET LONG LINE

Type of craft: *both mechanised and traditional* Type of resource: *coastal and off-shore*. Type of fish: *rock fish, mullet, parawa, etc*

Type of bait: herring



Type of Technique: *SINGLE HOOK TROLLING* Type of craft: *both mechanised and traditional* Type of resource: *coastal, off-shore and deep sea* Type of fish: *yellow fin tuna, mackeral tuna, skip jack, Parawa* Type of bait: *artificial*



Type of Technique: MULTI HOOK TROLLING Type of craft: large mechanised crafts Type of resource: off-shore & deep sea

Type of fish: *as in single hook trolling* Type of bait: *artificial*



Type of technique: *CAST NET* Type of craft: *traditional craft & from shore* Type of resource: *coastal, lagoon and inland* Type of fish: *herring, lagga, udassa, parati, godava,*

Type of bait: nil



Type of technique: *PURSE SEINE* Type of craft: *mechanised crafts* Type of resource: *coastal & offshore* Type of tish: *frigade mackerel, bolla, karalla, anguluwa, etc.herring.etc.* Type of bait: *nil*

Type of Craft	Cost of Craft (Rs.)	Cost of Gear (Rs.)	Total cost
MDOC*	2.664,212	1.100,000	3.764,212
ODOC**	1,312,132	660,000	1,970,132
FRP***	175,145	245.000	420,145
MTC****	145,796	155.000	330,145
NMTC****	35,796	155,000	190,796

Table 11. Costs of crafts & accompanying gear (1999)

* 10.5 m with 50 hp engine

** 8.6 m FRP boat with 26 hp engine

*** 5.7 m FRP boat with 15 hp outboard motor

*** Traditional craft with 15 hp outboard motor

***** Traditional craft without sail

 $(Rs. 70 = 1 US \ \text{s: approx.})$

Source: adopted from NARA 1999 (op.cit)

Table 12. Average annual costs, revenues and profits associated with craft operations (during the year 1993 in Dondra,)

Type of	Fixed Cost	Variable Cost	Total Cost	Total	Gross Profit	Net Profit	Resource
Craft	(Rs.)	(Rs.)		Revenue			Rents
			(Rs.)	(Rs.)	(Rs.)	(Rs.)	(Rs.)
NMTC	4,517	11,670	16,187	21,249	9,579	5,062	273
MTC	20,387	125,151	145,538	215,040	89,889	69,502	24,058
FRP	23,557	130,513	154,070	227,563	97,050	73,493	29,944
ODOC	66,943	282,188	349,131	471,986	189,798	122,855	75,406
MDOC	195,547	626,513	822,060	972,190	345,677	150,130	102,631

Source: Amarasinghe O. (1997): 'The profitability of new fish catching technology', *Journal of Asian Fisheries Science*, Vol. 10 (2), pp. 102-1162000

Type of Craft	Return to Capital	Return to Labour
	(%)	(per 8 hour man-
		day*)
		(Rs.)
NMTC	1.80	134.27
MTC	33.41	607.63
FRP	30.95	830.25
ODOC	30.19	625.56
MDOC	18.00	877.42

Table 13 Return to Capital and labour in fishing (Dondra 1993)

*man-day = 8 hours of fishing labour

Source: Amarasinghe (op.cit.)



Figure 4. Rate of adoption of new technology

Source: Amarasinghe O., & N. J. De S. Amarasinghe (2000); 'A general description of fisheries in Sri Lanka' in O. Amarasinghe (editor), Modernisation and Change in marine small-scale fisheries of southern Sri Lanka, (forthcoming)

Year	Cost of Subsidies	Year	Cost of Subsidies
	(Rs. million)		(Rs. million)
1973	0.90	1986	24.23
1974	0.24	1987	26.96
1975	1.03	1988	29.37
1976	3.41	1989	14.46
1977	0.99	1990	11.00
1978	12.56	1991	54.01
1979	38.80	1992	75.00
1980	55.93	1993	75.00
1981	33.64	1994	75.00
1982	23.37	1995	101.04
1983	13.54	1996	80.45
1984	13.81	1997	65.00
1985	11.04	1998	55.00

Table 14. Subsidies granted to fisheries; 1973-1988

Source: Amarasinghe O., & N. J. De S. Amarasinghe (op.cit.)

Table 15. Average amount of credit obtained from formal and informal sources, for the acquisition of crafts and gear

Type of craft owner	Average amount of credit obtained (Rs.)
MDOC	555.473
ODOC	79.038
FRP	58.555
MTC	22.253
NMTC	7.139

<u>Source</u>: Amarasinghe O., W.A.G.Wanasinghe, S.P.M.Jayantha, A.W.Vishantha Malraj. A.Somasiri and Deepa Nishani (2000): 'Market for Fisheries Credit; the functioning of the market for fixed capital in fishing communities in southern Sri Lanka', in O. Amarasinghe (ed.) *Modernisation and Change in marine small-scale fisheries of southern Sri Lanka*, (forthcoming).

Table 16. Contribution of different sources of credit to the average amount of credit obtained to purchase fishing crafts in southern Sri Lanka

Source of credit	Contribution to the average amount of credit obtained by craft owners for the acquisition of fishing					
	crafts (%)					
	MDOC	ODOC	FRP	MTC	NMTC	All crafts
State Banks	32	13	5	19	. 0	25
Fisheries	25	29	49	33	31	27
Coopeartives						
Department of	7	10	14	8	3	7
Fisheries						
Fish Merchant	21	7	9	24	17	22
Money Lender	6	6	8	0	24	6
Kin and Friends	6	28	14	13	20	9
other	3	7	1	3	6	4
	100	100	100	100	100	100

Source: Amarasinghe O., W.A.G. Wanasinghe, A.W. Vishantha Malraj, A. Somasiri and Deepa Nishani : 2000 (op.cit.)

Table 17 Mean rate of interest charged on loans lent by money lenders from different types of craft owners

Type of craft owner	Annual rate of interest on loans	
MDOC	110%	
ODOC	100%	
FRP	186%	
NMTC	210%	



Source: Amarasinghe O., W.A.G.Wanasinghe, A.W.Vishantha Malraj, A. Somasiri and Deepa Nishani : 2000 (op.cit.)

Figure 5 Catch-sharing system in small-mechanised crafts (southern Sri Lanka)

Annex. 1

Non-Governmental Organisations and Fisheries Cooperative Societies participating in the two workshops held in Matara (0n 1 April 2000) and Negombo (on 9th April 2000).

- 1. Dehigahalanda Fisheries Cooperative Society Limited, Gajaba Mawatha, Dehigahalanda, Hambantota.
- 2. Human Resources and Environmental Conservation Organisation, Magama, Kirinda & Chilaw Road, Pambala, Kakkapalliya.
- 3. Southern Fisheries Organisation, Galle Road, Degalla, Dodanduwa.
- 4. Human Resources Development Organisation, Seenimodera, Tangalle.
- 5. Fisheries Community Development and Resource Management Project, No. 8, Mihindu Mawatha, Tangalle.
- 6. Sisilasagama Fishries Cooperative Society Limited, 144/3, Sisilasagama, Hambantota.
- 7. Small Fishers Federation, Bandagiriya, Hambantota.
- 8. Womens Development Federation, Viharamahadevi Building, Matara Road, Hambantota.
- 9. Hambantota District Union of Fisheries Cooperatives, Tangalle.
- 10. Negombo South Fisheries Cooperative Society Limited, Near the Auction shed, Pitipana, Negombo.
- United Fishermens and Fishworkers Congress,
 15, S. Mahinda Mawatha, Rajamalwatte Road, Ratmalana.
- 12. Gampaha District Multi-day Boat Owners Cooperative Society Limited, No. 126/1, Basiawatte, Thalahena, Negombo.
- 13. National Union of Fishermen, Duwa, Negombo.
- 14. St. Anthony's Fisheries Cooperative Society Limited, Thoduwawa North, Thoduwawa.

- Janabodhi Kendraya,
 64, Chilaw Road, Negombo.
- National Fisheries Solidarity,
 85, Katuwapitiya Road, Negombo.

Annex 2.

Issues discussed at Group Discussion Sessions at the two workshops:

- 1. Who are fishworkers
 - 1.1 Types of fishworkers
- 2. Role of women in fisheries
- 3. The future of children of fishworkers
- 4. Alternative employment opportunities for fishworkers
- 5. Constraints for achieving increased fishworker welfare.
- 6. Environmental problems in the fisheries sector
 - 6.1 Pollution issues within the fisheries sector
 - 6.2 Impact of other sources of pollution on fisheries
- 7. Impact of technological change on small scale fisheries
 - 7.1 Were fishworkers engaged in traditional fisheries, able to reap the benefits The process of modernisation of fisheries?
- 8. Management of Fisheries Resources
 - 8.1 Are there traditional, institutional or legal methods of management?
 - 8.2 Do you propose any methods of resource management?
 - 8.3 What are the threats to high resource productivity?
- 9. Migration

Ż

- 9.1 To what extent do fishworkers migrate (among areas, technological categories and vocations)?
- 9.2 Is migration linked with fish migratory habits?
- 9.3 What conflicts arise among resident and migratory fishermen?
- 10. Technology
 - 10.1 What can you do to enable fishworkers to adopt new technology? (credit schemes, government policy, social mobilisation, etc.)
- 11. Terms and conditions of employment of fishworkers
 - 11.1 Working times
 - 11.2 Security of employment
 - 11.3 Safety
 - 11.4 Health
 - 11.5 Insurance & others
- 12. Types of fishing labour
 - 12.1 Skilled & unskilled labour
 - 12.2 Labour attachment
- 13. Fishworker organisations and their membership Problems and achievements
- 14. Conflicts within the fisheries sector
 - 14.1 Conflicts among users of coastal resources
 - 14.2 Conflicts with migratory fishermen
 - 14.3 Conflicts with fish merchants
 - 14.4 Conflicts among employers and employees
 - 14.5 Conflicts with other resource users
Annex 3.

In March 1999 the Ministry of Fisheries and Aquatic Resources Development appointed a Committee to investigate the terms and conditions of employment of the crew of fishing boats, with a view to improving them. Between October 1998 and April 1999 the United Fishermen's and Fishworkers' Congress conducted a survey with deep-sea fishworkers to investigate their labour conditions and develop recommendations which were later submitted to the Ministerial Committee on working conditions in the fishery sector. This committee recommended to take appropriate steps in respect of the following.

- i. to make a contract of employment, between a multi-day boat owner and each member of his or her crew, a requirement under Sri Lankan law.
- ii. to set up a Wages Board for fishworkers engaged on multi-day fishing boats.
- iii. to ensure that every multi-day boat is required by law to maintain a record of its fishing trips in the form of a Log Book.
- iv. to introduce a system of certification for Skippers.
- v. to introduce a law that would make it illegal for fishworkers to be engage in deepsea fishing without insurance covering their personal health and safety.
- vi. to modify the existing Compensation Act, to cover fishworkers.
- vii. to ensure that all fishing vessels with a hull length of equal to or greater than 32ft (9.68 m), propelled by inboard engine(s), are required by law to be equipped with Single Side Band (SSB) Radio (e.g., IC M710 and all fishing vessels with a hull length of equal to or greater than 34ft (10.28 m), propelled by inboard engine (s), are required by law to be equipped with both SSB Radios and Satellite navigation equipment.
- viii. to ensure that all fishing vessels with a hull length of equal to or greater than 28ft (8.47m), propelled by inboard engine (s), are required by law to carry one life jacket (buoyancy aid) for each crew member and be equipped with distress flares.
- ix. to ensure that all fishing vessels with a hull length of equal to or greater than 32ft (9.68m), propelled by inboard engine (s), are required by law to be equipped with a First Aid Kit.
- x. to introduce a system of certification in First Aid. A crew member on each departing multi-day boat should thereafter be required by law to hold a certificate of First Aid.
- xi. to ensure that multi-day boats are required by law to hold a valid Certificate of Seaworthiness. The certificate should be issued by recognised authority and be valued for one year.
- xii. to ensure that all newly constructed multi-day boats are sold with a Guarantee of Seaworthiness. The Guarantee must stipulate the time period during which the company accepts liability for the boat's seaworthiness.
- xiii. to ensure that all new or reconditioned marine engines are sold with a certification of reliability, guaranteeing the engine's performance for a minimum of one year.

ICSF	
FOR DIGITIZATION	
DATE: 12 11 2018	

36 pages