Sri Lanka
State of the Economy Report 2011

Chapter 8
Inclusive Growth and the Fishery Sector

by
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8. Inclusive Growth and the Fishery Sector

8.1 Introduction

Sri Lanka's fishery sector contributed 1.2 per cent to GDP in 2010 and 2 per cent of the country's total exports. Its contribution to economic well-being, however, is wider; it ensures food security by supplying 70 per cent of the animal protein requirement of the country, and provides a source of livelihood for many poor people who reside in the coastal belt of the country.[1] Available data suggest employment in fisheries to be 6.5 per cent of the country's total employment.[2] However, employment in the fishery sector is largely informal, and the majority of jobs involve small scale operations except for a few commercial operators with modern facilities. This makes fishery workers one of the most vulnerable groups in terms of economic, social and geographical dimensions in Sri Lanka.

> ***"Expansion of fish exports does not necessarily provide for inclusive growth in the context where benefits are limited to a few stakeholders in the upper levels of the export value chain"***

The high resource potential in the fishery sector and growing demand for its output has clear relevance for not only supporting Sri Lanka's overall growth objectives, but also its broader socio-economic developmental vision. Fishery sector developments hold the potential to improve the welfare of a large marginalized and vulnerable group in the country. As such, this Chapter aims to provide an overview of the fishery sector in terms of performance and employment outcomes, assess the ongoing and planned development activities within the sector, and examine ways of making the development activities more inclusive with appropriate policy suggestions.

8.2 Sri Lanka's Fishery Sector: An Overview

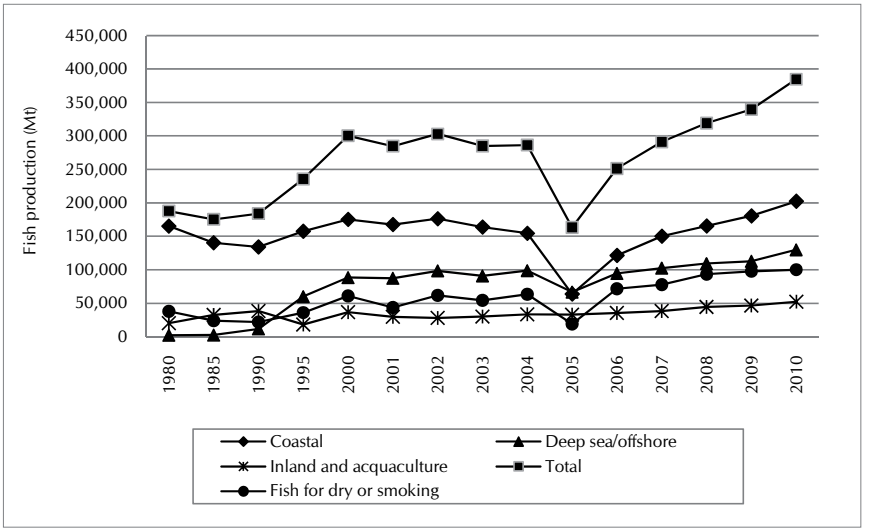
8.2.1 Fish Production

The contribution of the fishery sector to Sri Lanka's GDP has stagnated at around 1.2 per cent, despite a

[1] DCS, *Food Balance Sheet 2009*.

[2] Ministry of Fisheries and Aquatic Resources, *Fisheries Statistics 2010*.

Figure 8.1
Total National Fish Production by Sub-sector (1980-2010)



Source: Ministry of Fisheries and Aquatic Resources, Statistical Unit.

gradual increase in total fish production over the years (Figure 8.1). A drastic reduction in 2005 following the December 2004 tsunami disaster was followed by a sharp recovery in 2006. A decline in the rate of growth in fish production thereafter in 2007-09 reversed in 2010, largely as a result of the resumption of fishing activities in previously conflict-affected N&E of the country.

Table 8.1
Marine Fish Production by District

Fishery District	Marine Fish Production (MT)					Percentage Change in 2010 (%)
	2006	2007	2008	2009	2010	
Colombo	590	510	1,030	830	1,990	139.8
Negombo	29,070	5,710	37,820	37,490	28,250	-24.6
Kalutara	30,530	9,950	39,580	33,100	43,360	31.0
Galle	15,530	7,820	16,800	24,930	21,830	-12.4
Matàra	38,480	8,460	47,810	44,180	38,970	-11.8
Hambantota	15,590	0,990	20,850	20,990	20,170	-3.9
Kalmunai	11,490	2,810	15,050	16,260	16,380	0.7
Batticaloa	8,930	1,710	21,850	24,530	39,610	61.5
Trincomalee	6,270	8,150	17,980	27,690	36,250	30.9
Mulaittivu	850	360	260	-	1,360	
Kilinochchi	820	590	360	-	560	
Jaffna	11,220	5,130	6,830	13,080	20,890	59.7
Mannar	12,990	9,170	7,390	8,130	10,790	32.7
Puttalam	14,910	7,130	18,960	20,010	24,830	24.1
Chilaw	18,710	4,180	22,060	21,950	27,020	23.1
Total	215,980	52,670	274,630	293,170	332,260	13.3

Source: Ministry of Fisheries and Aquatic Resources, Statistical Unit.

8.2.2 Fishery Sub-sectors

Sri Lanka's fishery sector can be divided into three sub-sectors based on the diversity of resource base, spatial differences where fishing is taking place, and types of craft and methods used for fishing - i.e., coastal, offshore and inland fisheries and Aquaculture.

Coastal fishing: Coastal fishing takes place within the continental shelf and is largely a small scale industry, characterized by multi-species and multi-gear fishing. Except multi-day boats and inland oru, all other boats are used in coastal fishing (Table 8.2). The sub-sector caters mainly to the local market, except where a small proportion of catch received by one-day boats (IDAY) go to the export market. Despite the continued dominance of coastal fishing, its share in total fish production declined until 2007. From 2008, coastal fish production began to rise once again due to the relaxation of restrictions on fishing and various fishery development activities under the N&E development programmes. In 2010, the sub-sector contributed 52.5 per cent of total national fish production.

As evident from Table 8.1, marine fish production (both coastal and offshore) has increased significantly in the N&E districts in 2010 - by 62 per cent in Batticaloa, by 60 per cent in Jaffna, by 33 per cent in Mannar and by 31 per cent in Trincomalee. In addition, Kalutara, Puttalam and Chilaw also recorded increases in the range of 20-30 per cent. However, significant declines in fish production in major fishing areas such as Negombo, Galle, Matara and Hambantota are also observed, perhaps owing to migration of fishers back to own areas in the N&E.

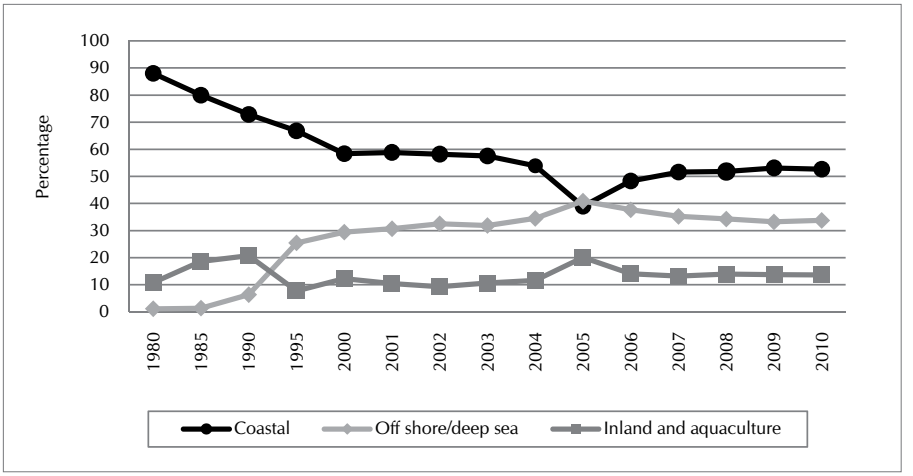
Table 8.2
Changes in Total Fishing Fleet

Year	Inboard Engines		Outboard Engines		Traditional including NBSB	Inland Oru NTRB	Total Fishing Craft (Oru/Tubes)
	IMUL	IDAY	OFRP	MTRB			
1995	1,639	1,357	8,564	1,060	31,169	14,649	3,900
1999	1,419	1,275	8,623	1,274	32,091	14,900	4,600
2000	1,430	1,170	8,690	1,205	32,295	15,100	4,700
2001	1,572	993	8,744	640	32,349	15,200	5,200
2002	1,614	1,112	9,033	776	33,735	15,600	5,600
2003	1,530	1,486	11,020	618	35,494	15,040	5,800
2004	1,581	1,493	11,559	674	36,567	15,260	6,000
2005	1,328	1,164	11,010	1,660	36,101	14,739	6,200
2006	2,394	907	13,860	1,842	41,850	16,347	6,500
2007	2,460	1,060	15,200	1,680	43,640	16,640	6,600
2008	2,809	1,140	15,847	1,959	46,103	17,178	7,170
2009	2,934	958	17,193	2,126	49,014	18,243	7,560
2010	3,341	1,177	18,770	2,680	53,148	19,190	7,990

Notes: IMUL = In-board multi-day boats, IDAY = In-board one-day boats, ORFP = Out-board engine fibreglass reinforced boats, MTRB = Motorized traditional boats, NTRB = Non-motorized traditional boats, NBSB = Beach seine boats.

Source : Ministry of Fisheries and Aquatic Resources, Statistical Unit.

Figure 8.2
National Fish Production (1980-2010)



Source: Ministry of Fisheries and Aquatic Resources, Statistical Unit.

A few studies prior to the 2004 tsunami found that coastal resources in Sri Lanka have reached their optimum level of exploitation.[3] However, post-tsunami rehabilitation efforts resulted in increasing the country's fishing fleet, making coastal fishing very competitive. Rising pressure on coastal fishing has led to comparatively low fish catches in most areas. Thus, apart from the Northern Province where coastal fishing was not very significant over the years, further expansion is not possible. However, expansion of coastal fishing even in the Northern districts such as Jaffna, Kilinochchi, and Mannar has become problematic due to conflicts with Indian fishermen in the Palk Bay. Since Sri Lanka had not been practising coastal fishing in these areas due to the conflict, South Indian fishermen have taken undue advantage to fish in Sri Lankan waters. The practice of Indian fishermen crossing the boundary line and poaching shrimp resources that are abundant on the Sri Lankan side of the Bay with the use of large scale destructive trawlers, has negative implications not only on the sustainability of fishery resources, but also on damages to local fishing vessels and gear.

Offshore fishing: Offshore/deep sea fishing - the most dynamic sub-sector showing a steady growth over the years - is the second largest sub-sector, and is mainly focused on export markets (Figure 8.2). Offshore fishing is taking place outside the continental shelf and beyond, extending to the edge of the Exclusive Economic Zone (EEZ) with the use of multi-day boats (IMUL). Compared to 2004, the number of multi-day boats has doubled by 2010 (see Table 8.2). The contribution of the sub-sector to total national fish production was 39 per cent in 2010.

Deep sea fishing is the main sub-sector which contributes to exports. About 14-19 per cent of deep sea fish production and 6-7 per cent of marine fish production are exported. Fish exports have experienced a slight decline over the past two years due to the global

[3] Dayaratne, P., M. M. Gunaratne and Alwis, 1995, "Fish Resources and Fisheries in a Tropical Lagoon System in Sri Lanka, *AMBIO,* Vol. 24, pp. 402-16; Wijayaratne, B., 2001, "Coastal Fisheries in Sri Lanka: Some Recommendations for Future Management", Ministry of Fisheries and Aquatic Resources Development, Sri Lanka.

economic downturn and loss of GSP-plus benefits to the EU. Despite the potential for further expansion of production, heavy initial investment to buy new multi-day boats and high operational and maintenance costs are deterrents to the average fisher folk. Many of the existing multi-days boats are also not equipped with modern advanced technology to assure high quality of fish and efficient use of fuel. Improved new technology is necessary to increase productivity as well as quality of fish. However, such improvisations are not possible with some existing boats.

Inland fisheries and aquaculture: Inland fisheries and aquaculture is the smallest sub-sector, contributing around 13-14 per cent of fish production. It has vast potential for expansion owing to availability of inland water bodies throughout the country. This sub-sector comprises capture fisheries and culture fisheries. Capture fisheries are mainly carried out in major irrigation, minor irrigation and seasonal tanks spread across the country. In 2010, Matara and Kalutara districts recorded 33 and 25 per cent growth, respectively, in inland fish production while Mannar, Kurunegala, and Moneragala also fared well (Table 8.3).

Ornamental fish is also one of the growing sectors coming under inland fisheries, which shows significant potential in the export markets where Sri Lanka already holds 3-4 per cent of the global market share.

Table 8.3
Inland Fish Production by Districts

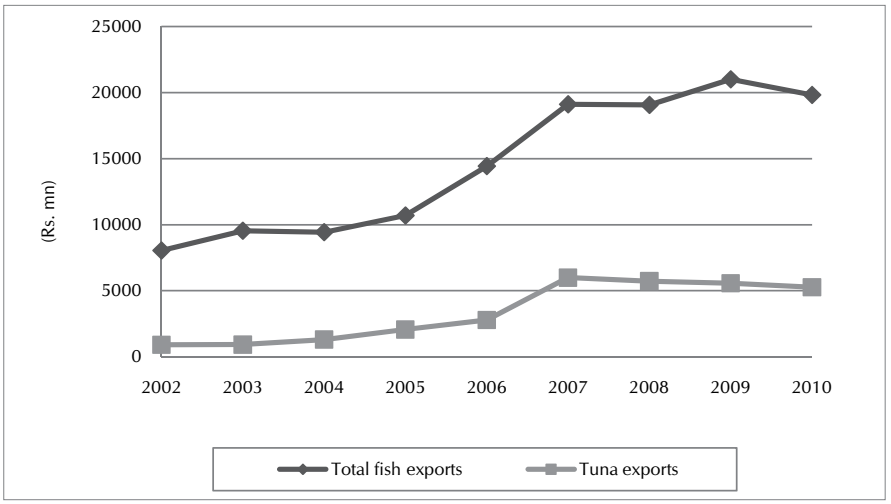
District	Inland Fish Production			Percentage Change in 2010 (%)
	2008	2009	2010	
Colombo	120	110	120	9
Gampaha	210	180	190	6
Kalutara	60	80	100	25
Kandy	270	290	320	10
Matale	520	640	720	13
Nuwara Eliya	100	90	90	0
Galle	50	50	60	20
Matara	20	30	40	33
Hambantota	3,270	2,720	3,280	21
Jaffna	60	70	80	14
Mannar	320	180	220	22
Vavuniya	260	420	490	17
Mulaittivu	n.a.	n.a.	10	
Kilinochchi	n.a.	n.a.	10	
Batticaloa	1,750	1,680	1,640	-2
Ampara	5,240	5,430	6,140	13
Trincomalee	1,650	1,720	1,840	7
Kurunegala	4,190	3,590	4,390	22
Puttalam	5,290	5,290	5,820	10
Anuradhapura	9,680	10,770	11,920	11
Polonnaruwa	7,320	7,280	7,950	9
Badulla	960	1,140	1,240	9
Monaragala	1,910	2,460	2,950	20
Ratnapura	1,210	2,320	2,770	19
Kegalle	30	20	20	0
Total	**44,490**	**46,560**	**52,410**	**13**

Source: Ministry of Fisheries and Aquatic Resources, Statistical Unit.

8.2.3 Fish Exports and Imports

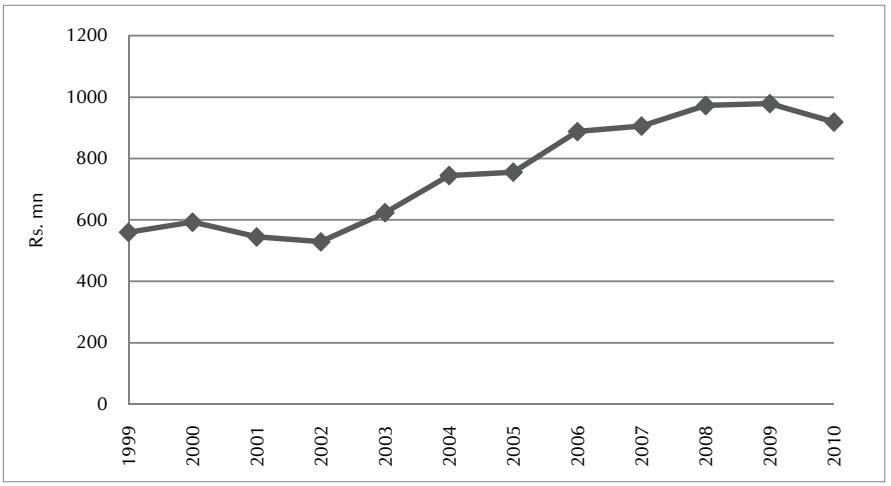
There had been a gradual increase of total fish exports from early 2000 to 2005. From 2005, fish export earnings increased at a higher rate due to the GSP-plus scheme which enabled better access to the EU market.[4] However, earnings from fish exports declined slightly in 2009 with a further drop in 2010 (Figure 8.3). This may be due to the loss of GSP-plus benefits to the EU market, as well as the lower demand arising from the global economic downturn. A steady growth in ornamental fish exports also saw a slight reversal in 2010 (Figure 8.4).

Figure 8.3
Fish Exports (2002-2010)



Source: Ministry of Fisheries and Aquatic Resources, Statistical Unit.

Figure 8.4
Ornamental Fish Exports (1999-2010)



Source: Ministry of Fisheries and Aquatic Resources, Statistical Unit.

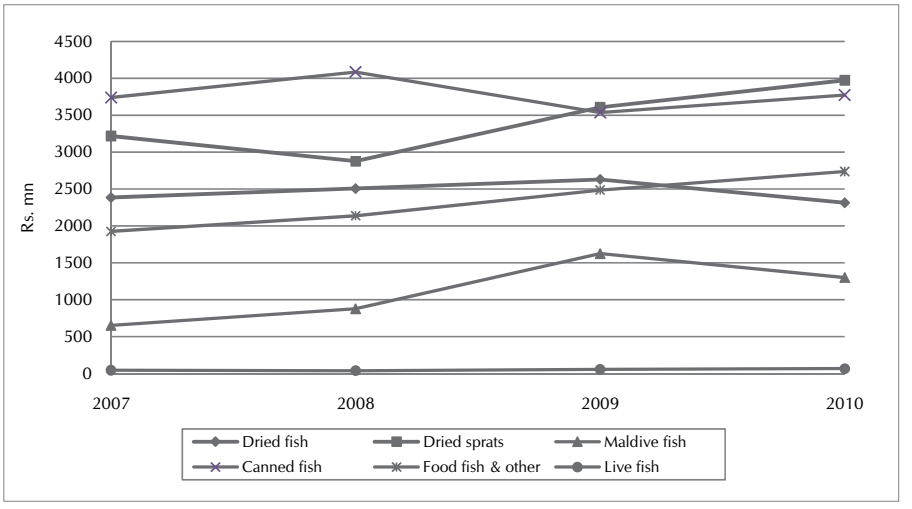
[4] Tuna is the major contributor to Sri Lankan fish exports, with the EU being the main importer. In 2007, the largest share of Sri Lankan tuna was imported by the UK (41 per cent), followed by France (17 per cent), the Netherlands (9 per cent) and Germany (6 per cent).

It is also noteworthy that Sri Lanka imports a considerable amount of fish from other countries such as the Maldives, mainly to fulfill unmet domestic demand. Dried sprat and dried fish are the main fish imports followed by canned fish (Figure 8.5).

8.2.4 Productivity in the Fishery Sector

Available data suggests that the labour productivity in the marine fishery sector has been declining over the years (Table 8.4). Labour productivity in inland and aquaculture fisheries is recorded as 1.6 mt. in 2007.[5] Sri Lanka's fishery industry lags behind countries such as Japan and Thailand. For instance, productivity per area in Thailand in 2004 (5,600 kg per sq. km.),[6] is found to be several times higher than that of Sri Lanka (472 kg per sq.km.). In addition, labour productivity in Thailand is seven times higher than that of Sri Lanka. Apart from very low productivity, per capita fish consumption is also well below that of Thailand and Japan.

Figure 8.5
Fish Imports (2007-2010)



Source: Ministry of Fisheries and Aquatic Resources, Statistical Unit.

Table 8.4
Labour Productivity in Marine Fisheries

Year	Marine Fish Production (Mt)	No. of Active Fishers	Productivity/ Labour
2004	253,190	151804	1.7
2008	274,630	167370	1.6
2010	332,260	222740	1.5

Source: Ministry of Fisheries and Aquatic Resources, Statistical Unit.

[5] Ministry of Fisheries and Aquatic Resources, 2007, *Fisheries Statistics*.

[6] Ministry of Fisheries and Aquatic Resources, 2007, *Ten Year Development Policy Framework of the Fisheries and Aquatic Resources Sector (2007-2016)*.

8.2.5 Employment in the Fishery Sector

The fishery sector provides livelihood for people living in the coastal belt, and around the irrigation tanks and reservoirs in the Dry Zone. Active fishers in the marine sector were recorded as 222,740 in 2010, while the total marine fishing household population was recorded as 825,200 in 2010.[7]

Most of fishing activities are carried out by self-employed/own account workers, employing labourers or low skilled workers. Therefore, the workforce is mostly informal and dominated by small scale operators, except for some employees who work for exporters. Fishing activities are mostly seasonal whereby some fishers, workers and service related employees do not find employment throughout the year. Part-time employment is also to be found among fishers. By contrast, formal employment in the fishery sector is limited mainly to 5,000 public sector employees working in six state institutions that provide support services to the industry under the purview of the Ministry of Fisheries and Aquatic Resources (MFAR), and employees who work for exporters.

8.2.6 Socio-economic Conditions in Different Segments of the Fishery Sector[8]

Coastal and offshore sub-sectors (collectively called marine fisheries) are inter-linked as both primarily supply the local market, while 6-7 per cent of marine fish production goes to export markets. As offshore fishing is the most dynamic sub-sector that contributes mostly to exports, fish exporters are in the uppermost segment of the marine value chain. The main actors in the value chain to export markets are exporters/processors, sub-contractors of fish exporters, multi-day boat owners and some one-day boat owners and crew members. Amongst them, significant disparities in socio-economic levels are to be found.

Exporters and processors: Most of the processors are also exporters, and some process the products of other exporters who do not have sufficient capacity. In general, processors have contractual agreements with multi-day boat owners and sub-contractors and tend to purchase only their products, provided that quality standards are met. In certain cases, processors use their own multi-day boats while others have joint ventures with foreign companies who own large vessels. The expansion of fish exports has benefited this group, allowing them to gain ownership of productive assets such as new multi-day boats, good housing, land, etc.

The number of fishery processing and export establishments increased from 12 in 2002 to 34 in 2009, where three tuna exporters alone account for about 80 per cent of total exports. The larger exporters are estimated to earn about US$ 0.5 profit per kg. of fish. Some of the exporters have been able to invest in new technologies - such as -850c freezing technology and state-of-the-art factories with temperature controlled rooms - which enhance the quality of fish. In addition, some have been able to diversify their business portfolio by vertical integration (production of ice, packing materials, feed for prawns, etc.), invest in improving workforce skills by training them in-house and overseas, etc. Almost all tuna exporters have expanded their production and export capacities over the years.

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[7] Ministry of Fisheries and Aquatic Resources, Statistical Unit.

[8] This section is based on information collected through stakeholder consultations conducted in different areas of Negombo. See IPS, 2010, "Trade Poverty Nexus in the Sri Lankan Fisheries Sector", a report prepared for the United Nations Industrial Development Organization (UNIDO).

Large exporting companies employ about 200-300, while smaller companies employ about 10-30. The managerial, supervisory and office staff form about 15 per cent of the workforce while the rest are mostly unskilled workers. The need to maintain hygienic conditions in the factory, process water quality and product quality as per the required EU standards has enabled many graduates and diploma holders to gain employment in these factories with starting remunerations in the range of Rs. 30-40,000 per month, while the average salary of an unskilled worker is about Rs. 15,000 per month. Permanent staff benefit from many welfare facilities and other forms of financial gain, whereby factory employees in the sector appear to be better off as compared to other factory employees in the locality. Remuneration and welfare facilities have enabled workers to secure a reasonable livelihood. Consequently, it has allowed them to invest in land, businesses or build new houses.

Sub-contractors: The sub-contractors of fish exporters who buy fish from boats and sell them to exporters are also a group who earn profit by providing services such as credit to boat owners and transport facilities for exporters. This group has minimum income volatility compared to exporters, as price fluctuations or any other shocks in the global market can be absorbed in the high margin of Rs. 150-250 per kg. of tuna that they maintain. Most of them are wealthy private individuals with some even having ownership of multi-day boats and freezer trucks.

Multi-day boat owners: Multi-day boat owners for whom fishing is the main livelihood are usually a more educated and wealthier group as compared to other fishermen. Some boat owners engage in fish trade and transport as well. They have been in the business for about 8-10 years or more, and have access to very good living conditions.

Multi-day boat owners are thus wealthier in comparison to other fishermen who contribute to domestic fish production using outboard engine fiberglass reinforced boats (ORFP) or other small boats and canoes which are larger in numbers. In real terms, the total income gained from each trip is about Rs. 1.5 million. The income gained can vary drastically depending on the fish catch, price fluctuations and increase of fuel cost, bait, etc. Further, the reduction of Sri Lankan fish exports due to the global economic downturn and removal of GSP-plus has had a greater impact on multi-day boat owners than on exporters, as the latter pass on the loss margin to boat owners by reducing the purchasing price of fish from boat owners and sub-contractors. Thus, new multi-day boat owners find it more difficult to be competitive due to fluctuations of fish catches and prices, in contrast to multi-day boat owners who have been in the business for many years and who have been able save and invest in new boats and other assets.

There are some socio-economic constraints faced by this category of fishers. The categorization as fishermen by profession often means that obtaining admission to leading state schools for their children can be difficult, whereby children are mostly educated at private schools. By contrast, public and private health care services are readily available in these areas and some boat owners can afford to make use of private healthcare facilities.

Multi-day crew members: The multi-day boat owners usually employ 5-6 crew members per boat to work in the sea. However, income volatility in the multi-day boat crew income is apparent as the profit gained from offshore fishing has been declining over the years, due to high operational cost (fuel, ice, water, food, bait, fishing equipment, etc.)

and decrease of fish prices due to competition with foreign vessels and other external shocks. In most cases, the multi-day boat owners bear the total fixed cost and total operational/variable cost of the fishing trip. The profit earned by each trip is shared amongst the crew members according to their own informal arrangements. Some multi-day boat owners typically take 60 per cent of the total profit and 10 per cent is provided to the skipper. The rest is shared among the other 5 crew members.

Expansion of the fish trade has led to an increase in multi-day boats, with an increase in employment of about 18,000 as crew members, especially at unskilled levels. However, these are informal job opportunities, limited only for the fishing days/season. Incomes tend to be highly variable due to fluctuations in fish catches and changes in prices (with payments settled at the end of each trip). This is, therefore, not a regular income source and only those who have developed saving habits have been able to secure finances and build houses, invest in boats, educate children and retain savings to cope with risks such as natural disasters or sicknesses. Some multi-day owners pay their crew members during the months when fishing is not undertaken or provide loans to be deducted during the fishing season. According to boat owners, around 50 per cent of their crew members are capable of managing their finances.

Usually, crew members are young or middle aged people who are strong enough to undertake fishing in the offshore/deep sea which is often a cumbersome and difficult job. As they grow older, and physical strength to undertake such activities deplete, they are exposed to hardships in the absence of social welfare schemes for fishing communities. Most boat owners obtain insurance cover for crew members due to high risks involved in multi-day fishing. However, the compensation payments are comparatively low since the premium paid by the owners is also low.

In terms of education for children, crew members face similar problems as that of multi-day boat owners. However, private schools are not as readily accessible. Except for membership in some fishery cooperatives, crew members are not well organized and are not strong enough to present their grievances unlike multi-day boats owners. Nonetheless, multi-day crew earn about six-fold income relative to a traditional crew member. The total income of a crew member of an OFRP out-board boat was similar to that of in-board one-day boat.

Other boat owners and crew members: The coastal fishermen and one-day boat owners depend on their daily fish catch as income, which is always variable. The daily fish catch includes both large and small pelagic fish. The large pelagic types such as tuna caught with gillnets often get damaged, leaving fishermen at a disadvantage as quality concerns means they will not fetch high prices offered by processors. Hence, the catch has to be sold in the domestic market. Further, due to lack of appropriate facilities for storage and preservation, losses are incurred through spoilage of the fish catch. Crew members who work for coastal boats earn very low incomes compared to those who work for multi-day boats.

Employees at supporting services: Employment for unskilled workers providing support services - such as ice plants, transport agents, boat repair, dried fish making, wholesale and retail fish trade and other ancillary services - have also been generated, but are informal in nature and characterized by low wages. These employees can be considered as those who live just above poverty, with the risk falling below the poverty line being very high.

Thus, the socio-economic impacts of an expansion in fish trade can vary along the fishery export value chain with economic benefits, conditions and bargaining power being higher in the upper levels of the value chain, and less so in the lower levels. This suggests that expansion of fish exports can contribute to rising inequality amongst different stakeholders in the export value chain. Another noteworthy fact is that the uncertainty and vulnerability to changes in the global and local enabling environment is very high for actors at the lowest level of the value chain, while it is low for those in the upper levels.

Employees who work for actors in the upper level of the value chain - such as those employed by exporters - are less vulnerable to risks than those employed in the lower levels, such as crew members due to the informal nature of jobs. However, when the entire fishery sector is considered, the socio-economic conditions of the actors in the export value chain are higher than that of other coastal and inland fisheries. Therefore, it can be surmised that the expansion of fish trade has led to an improvement in socio-economic conditions of comparatively wealthy stakeholders in the fishery sector. However, trade expansion is unlikely to have a significant influence in improving the socio-economic conditions of the poorest and marginal sections of the fishery sector - such as small boat owners and their workers - except the creation of employment as casual workers in some export factories, and jobs to make dried fish out of factory rejects (offal).

8.3 Recent Development Activities

This section discusses ongoing and planned development activities in both marine and inland and aquaculture sectors.

8.3.1 Recent Developments in the Marine Fishery Sector

Development activities in the marine sector are mainly focused on improving economic infrastructure facilities. These include:

- Central Fish Market Complex: The complex, with a capacity to handle 500 tonnes of fish per day, has been constructed on 3.17 hectares of reclaimed marshy land along the main Katunayake airport expressway. The market consists of 148 wholesale stalls and 128 retail stalls, a 50 tonne flake ice plant, a vehicle park for 100 lorries and 500 motor cars, 3 cold rooms, and a waste water treatment unit. In addition, the complex has banks, a post office, shopping complex, Police post, restaurant and a quality control room.

- Dikowita Fishery Harbour: This is aimed to provide anchorage facilities for (400-500) multi-day boats, and to provide all other required harbour facilities such as building for cleaning and auctioning fish, cold stores and freezing facilities, ice plant, building for repairing nets, fresh water storage and distribution system, and fuel storage and distribution system. However, most of the boat owners find that there is room for further improvements to reduce the number of days that a boat is lined up to obtain fuel, water and other services.

- Restoration and development of fish landing centres with stakeholder participation has been done in some areas. In addition, development and construction of harbours will be done in Codbay and Valachchenai to provide berthing place for multi-day boats. Three large scale habours are

to be constructed in Gurunagar in Jaffna, Silavathura in Mannar and Gandara in Matara district.

Apart from improving physical infrastructure, the Ministry of Fisheries and Aquatic Resources (MFAR) has taken steps to improve financial infrastructure for the fishery sector. Access to finance has been one of the main problems that most of the fishers and boat owners have been facing over the years. As most of the fish exporters/processors are formally well established and own a portfolio of assets, they do not find it difficult to obtain loans from formal banks. However, the situation is different with both coastal and offshore boat owners, as well as crew members and individual fishers. Their access to the formal credit market is very limited due to lack of collateral assets like property, and are, therefore, dependent on informal credit mechanisms. Apart from the fact that fishery societies in certain areas provide credit facilities for their members, loans are obtained informally by stakeholders in the fishery value chain. Recently, the MFAR introduced a new loan scheme - mainly to facilitate high tech improvements in existing multi-day boats - which does not require guarantees for the fishery sector. The interest rate for these loans is 12 per cent, where the government pays 4 per cent and the borrower 8 per cent.

8.3.2 Developments in Inland Fisheries and Aquaculture

The National Aquaculture Development Authority (NAQDA) is the main provider of a range of services to improve inland fisheries and aquaculture. The services extend to three different livelihood areas: ornamental fish, prawn farming, and inland fisheries.

The NAQDA provides training facilities to start ornamental fish rearing or production of aquatic plants as a business in two fish breeding centres in Rambadagalle and Ginigathhena. These are in-house training programmes conducted at a nominal fee to provide practical knowledge and hands-on experience. In addition, it has established an Ornamental Fish Exchange Centre which provides information to small scale producers about both local and international buyers. The centre also displays samples of ornamental fish of small scale producers, so that large exporters can collect fish required for exports from small producers. The NAQDA also produces and sells quality breed stock for small scale ornamental fish producers, and provides technical support for large scale producers who themselves produce the required breed stock.

Monitoring and regulating shrimp/prawn farms and providing technical support through extension services are the main services provided by the NAQDA for the prawn industry. It maintains close contact with hatcheries and conducts regular checks of hatchery samples in order to assure the quality of post-larvae as a precautionary measure to minimize possible threat of disease such as White Spot Disease. In addition, NAQDA promotes best manufacturing procedures (BMP) prawn farms by creating awareness and providing information on crop calendar (to indicate when to undertake pond preparation, stocking, and harvesting in different areas).

Most prawn farms are located in the Puttalam area, whilst there are some initiatives to develop prawn farms in Batticaloa. A hatchery to produce post-larvae has been set up in Batticaloa under a private-public partnership. Initially, the programme intends to develop farms in 50 hectares to benefit 20 families, and will be extended to 70 hectares to benefit 27 families. In order to minimize negative environmental and other impacts, cluster shrimp farming will be promoted, where

farms are designed in such a way as to have a common inlet and outlet for the whole system.

The NAQDA, in collaboration with MFAR, has also initiated efforts to introduce new aquaculture production systems such as sea farming. Some pilot progammes include cage culture (aquaculture production system where fish are held in floating cages/pens) in Negombo and Trincomalee districts to produce sea bass and milk fish which have very high economic value in the export market. Cage culture is promoted in both brackish water as well as fresh water. Pen culture is promoted in lagoons and tanks in Mannar district.

In the context of inland fisheries, the NAQDA has promoted capture fisheries in large, medium and small irrigation tanks. Some of the activities that have been carried out include creating awareness and importance of increasing productivity, implementation of regulations to reduce use of illegal nets, improving existing management practices, issuing licences based on availability of resources, introducing new fish breeds with high production, etc. Community based fishery societies have been established among those undertaking fishing in large/ medium and small irrigation tanks to manage and solve common problems. For example, societies operating in large and medium tanks have created a revolving fund by contributing Rs.10-20 per kg. of fish sold by each fisher. This fund has been used to buy new fingerlings after the harvest. In the case of small irrigation tanks, societies charge Rs. 20 per kg. of fish sold for improving management practices and invest on fingerlings. These village based fishery societies are organized into district level societies and have formed themselves into district federations. Such co-management arrangements have helped to increase inland fish production over the last few years.

There are also plans to promote capture fisheries in the Northern Province, and in newly built reservoirs in Embilipitiya, Moragahakanda, Welimada and Weheragala. The NAQDA has been making several efforts to increase fish seed production in order to increase inland fish production. The aim is to increase fish seed production in key breeding centres such as Dambulla (4.7 million), Uda Walawe (5 milllion), Iginiyagala (5 million) and Kalawewa (1 million), and promote community based fish seed production in 30 mini-hatcheries managed by the fisher community, by providing required technical support and supporting private individuals to maintain hatcheries and produce fish seed.

8.4 Conclusion and Way Forward

One of the key instruments for inclusive growth is the generation of productive employment. While Sri Lanka's fishery sector has been able to expand its exports over the years, it does not necessarily provide for inclusive growth in the context where the benefits are limited to only a few stakeholders in the upper level of the export value chain. On the other hand, the creation of employment alone will not allow for growth in the absence of productivity improvements. Labour productivity of fishers in the marine sector - the largest in terms of production as well as employment generation within the fishery sector - is far below potential. Productivity in the export-oriented offshore fishery sector is also low, due to reasons such as poor technology use, lack of capital, and poor post-harvest techniques. The coastal fishery sub-sector is the least productive, with large numbers of fishermen who have to compete with stakeholders in the export sector for certain support facilities such as ice and fuel. The sub-sector which represents mainly small scale self-employed/own account workers and informal employees are in casual employment lacking decent work conditions. By contrast, the smallest sub-

sector of inland fisheries and aquaculture has been growing steadily. Its development activities are more supportive of inclusive growth, although the sector employs a relatively small number compared to the marine sector.

As previously discussed, within the fishery sector, those employed in certain sub-sectors (and also within sectors) are better off than others in terms of income, assets owned, education access, etc. The main task is to identify means of increasing productivity of low productive and under-utilized sub-sectors. For example, offshore fishing can be expanded as there is more potential to increase fish production. Inland fisheries and aquaculture needs more investment to create employment in areas such as ornamental fish to meet rising demand. Most areas in coastal fishery are over-exploited with large numbers engaged in the sector living just above the poverty line. Therefore, dependence on coastal fishing has to be reduced by introducing skill development in alternative livelihood activities. If the focus is on productive employment, the coastal sector should receive considerable attention in development priorities. That, however, is not the actual situation at present.

The second strategy is to broaden access to economic opportunities. The MFAR has identified offshore fishing as a sub-sector to be promoted. There are plans to provide multi-day boats to fishermen. However, an average fisherman will not have equal access to such opportunities given issues of affordability, and such initiatives are likely to benefit the better-off. Access to networks plays a significant role in obtaining boats. Thus, a more prudent course would be to provide multi-day boats to well organized fishery cooperatives or fishery societies, where groups of actual fishers can own and maintain such assets collectively.

In this context, changes in fishery management systems from a 'top down' to a 'bottom-up' approach, where fishery stakeholders are also taken into management and decision making, is important. This is particularly so in enforcing rules; for example, the use of illegal fishing methods (use of trawlers in muddy areas, bottom long liners, use of dynamite, etc.) for short term increase of fish catch has risen with detrimental consequences on the long term sustainability of fishery resources. Capacity building programmes on the concept of fishery management to bring about changes in knowledge, attitude and skills of officials (towards co-management) is important. Empowerment of communities - by identifying and classifying available community based fishery organizations - in decision making, collective resource management, and conflict solution would help fishery authorities to manage fishery resources more successfully.