ASIA PACIFIC REGIONAL INITIATIVE ON TRADE, ECONOMIC GOVERNANCE, AND HUMAN DEVELOPMENT

Trade in Fisheries and Human Development
Country Case Study - India*

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Preface
Trade in Fisheries and Human Development

The UNDP Asia Pacific Regional Initiative on Trade, Economic Governance and Human Development was conceived in 2000 in the aftermath of the collapse of the WTO Seattle Ministerial Conference which was unable to launch a new round of trade negotiations in the face of new initiatives by developing nations. The fundamental motivation is that multilateral rules should craft globalization, so that it provides real benefits for poor people, rather than exclude them. To this end, the Asia Trade Initiative is striving to advance human development in the region by promoting greater understanding on its interface with trade issues. This involves conducting comprehensive analyses of the far-reaching impacts of trade agreements on the ability of developing countries to shape national human development outcomes. By facilitating debates among governments and civil society, and introducing human development considerations into the national and regional debates on trade issues, it is hoped to strengthen the capacities of the weaker and more vulnerable stakeholders to defend and articulate their interests. The main objective, thus, is that human development considerations be more fully taken into account in negotiating positions and in the ensuing trade agreements.

The Asia Trade Initiative became operational in the second semester of 2002. Its first step was to provide more substance to the link between trade and human development by conducting studies at the country level and drawing these together in synthesis documents, "Technical Support Documents" (TSDs). The subjects selected for study are those items on the Doha Development Agenda, where any new international commitments or intensification of multilateral disciplines could affect the human development, for better or for worse, of many poorer and more vulnerable people in Asia. Another criterion has been the existence of parallel efforts in UN bodies aimed at human development goals. The TSDs have been prepared in a consultative manner with reliance on specific grassroots evidence. A conscientious effort is made to examine the impact of possible outcomes of trade negotiations on the broad human development objectives of empowerment, equity, productivity, sustainability to ultimately expand people's choices, and their capabilities to lead the kind of life they have reason to choose and value.

Fisheries is one of our priority topics in the first phase because of its importance to Asian economies in a number of ways. The countries selected for the TSD on Fisheries are Vietnam, Thailand, and India. A summary of key observations from a human development perspective are highlighted as follows:

- ***Fishing contributes to empowerment by being a major source of food, employment, incomes, and a way of life**. Asian countries produce more than half of the world's fish. It is a source of nutrition, and a way of life to many poor people in Asia. The fisheries sector offers employment to over 25 million people, and exports account for nearly a quarter of the global volume. In developing countries in Asia, most of the fishing communities are small-scale (80%), fishing mostly in coastal areas and using small fishing vessels of less than 5 gross ton. Rapid developments in fisheries trade have resulted in over fishing that has adversely affected small-scale fishermen most of whom are entirely dependent on fisheries for livelihood. In India, almost the entire fish production is small-scale. Small-scale fishermen are considered "poor" and mostly live in fishing communities along the coastlines, with substandard infrastructures. In Vietnam, 80% of the coastal communities rely in some way on fisheries for income, but their livelihoods are vulnerable to weather, typhoons, and migration of fish species, making the 3 million or so professional fishers some of the poorest of the poor. Because of declining catches, 30-40% of fishing communes cannot meet their basic needs during off-season. In Thailand, while around 80 percent of the fishermen are small-scale, they contribute about 20 percent of the total catch. Thai fisheries sector is relatively more*

mechanized and commercialized, but consequent resource depletion has reduced the net returns for coastal small-scale fishers.

- ***Pattern of ownership of vessels has equity implications**. The Asian countries studied do not have major distant water fleets, and their fisheries sector is not heavily commercialized. Most vessels lack communication, buoy and navigational security facilities; most are powered with small-capacity engines, and fishing is usually near-shore with their travelling time and their catches limited by the size of vessels. Most of the small-scale fishermen thus engage in day-to-day fishing, usually working as share-owners in nearby waters, and relying on borrowed financing. Small scale fishing contributes to an equitable distribution of resources while being a source of food and casual employment. Most do not own their own boats and instead work as crew. Many poor fishers also do not have access to agricultural land, credit, and capital equipment, and the open seas offer an opportunity to the marginalized. But resource depletion as a result of commercial exploitation has hit the poor hardest. More than half of marine catches are usually from otter-board trawl followed by purse seine, pair trawl, and anchovy purse seine, all used as commercial-scale fishing gears, while anchovy purse seines are used in both commercial and small-scale fishing. Definition of "small-scale fisheries" also affects classification -- in India, fishers using vessels not longer than 20 meters are considered small scale which meant that only 1% of total catch volume came from vessels above that length.*

- ***Productive fish exporters are successfully competing in world markets**. Fisheries and aquaculture are both growing export-oriented sectors in parts of Asia, bringing in an increasing share of GNP. Export of shrimps is growing the fastest, and the linking of aqua-culture to export markets has encouraged diversification of exportable species, and a shift from generalized fishing to targeting of key species. Vietnam's export of aquatic products has exceeded 2 billion US dollars in 2002, up by nearly 45% from 2000. In India, export of frozen shrimp accounts for over 60% of total fisheries export receipts exceeding US$ 1.2 billion; seafood is considered the most important primary product exports, earning almost 3% of foreign exchange. In Thailand, fisheries bring in close to US$ 5 billion annually, which is 4% of its GDP. While farmers are responding to global demands, they still lack local capacities to deal with food safety and other process-related impediments. Most of the Asian fishing countries have not developed their offshore fishing capacity, letting their resources remain untapped in their EEZ (exclusive economic zones). Nevertheless, this has not attracted developed-country distant water fishing fleets to sign agreements with Asian countries, for there are no bilateral or multilateral agreements on fisheries between the countries we have studied and the rest, except one where agreements exist on transfer of fishing technology.*

- ***Global trade barriers and practices constrain market access opportunities**. Average tariff on fish products in major markets (relatively higher in the EU and China than USA and Japan) is not significantly higher than the average of 6% for manufactured products, but certain products face peak rates, and tariff escalation hinders export of processed fish products. It is worth noting that the fish sector is not covered by the WTO Agreement on Agriculture although it does not have the characteristics of an industrial sector either. In the Uruguay Round, some developed countries attempted to exchange access to their markets for fish products for access for their fishing fleets to the territorial waters of developing countries. This was not accepted and there was little tariff liberalization. The unique characteristics of fisheries has led to proposals to deal with the fish sector in a separate agreement. Access to world markets has provided small fishermen with an opportunity to benefit from globalisation, but this has often been frustrated by trade barriers, such as anti-dumping measures, and other regulations.*

- ***Highly strict sanitary and environmental concerns act as a non-tariff barrier***. *Sanitary and environmental issues that appear alternately as food-safety, as well as eco-labeling requirements have acted as non-tariff barriers. EU, for example, has adopted a policy of "zero tolerance" to fish products containing residual antibiotics chloramphenicol (CAP). The standard set has been strict enough to lead to a radical plummeting of shrimp exports to the EU from major Asian exporters like India and Thailand, affecting livelihoods of thousands. Advances in the technology of seafood analyses have been made to the point that pesticide and pharmaceutical residues can often be detected at the parts per billion (ppb), and in some cases, at the parts per trillion (ppt) levels. When zero tolerances are established based on the ability of a test to detect parts per million, the increase in sensitivity to ppb or ppt can turn a "safe" product to an "unsafe" one. Regulations that draw on HACCP (Hazard Analysis Critical Control Point) have made fish inspection programmes tough; absence of such food safety guidelines at home means that standards of the richest importing markets -- EU, US and Japan are applied to imports from poorer exporters. Labeling is another non-tariff measure that can be a trade barrier. Complications in labeling requirements can increase the cost of exports.*

- ***Sustainability of fish stock and prevention of degradation of marine resources is a major environmental concern***. *About two thirds of commercially valuable fish species spend the first stages of their life in coastal waters. With 90% of small fishers relying on coastal resources, pressure on coastal fishing grounds has increased. New technologies such as trawlers have also had serious impacts, as have the use of explosives and chemicals such as potassium and cyanide. While artisanal fishing is generally more sustainable, produces less waste, and is less damaging to the environment, use of explosives, fine mesh nets, high intensity lights and other destructive practices will need to be curbed. Similarly undesirable is problems of pollution from vessels. The solution could be to encourage off-shore fishing, for which there is tremendous scope in Asia, but small fishers cannot afford sophisticated vessels. This dilemma ought to be addressed by the state through long term credit programs, appropriate fishing technology, and education about environment protection.*

- ***Management of a natural common resource poses challenges and opportunities, especially for poor coastal communities***. *Fish is a natural common resource and, even without a system of management, people are likely to engage in fishing activity as long as their revenues are greater than their costs. However, in the absence of efficient regulation and management, the rent from fisheries is dissipated. Fish prices have increasingly been determined by importers in the US, EU, and Japan. High fish prices and low fish costs leave a large profit margin for fishermen, which induces increased investment in the fishing sector. This has led to over-fishing and degradation of resources. Traditionally, the fisheries sector in Asia has relied on a coastal community-based regime of fisheries management. Coastal dwellers are usually considered better-informed on fishery resources, local fishing practices, and on the interrelations among the various species. However, lack of ownership poses a serious constraint on effective fisheries management. Since fishery resources are considered a common good, people tend to make maximal use of their access without much concern for conservation, since restraint in utilization today cannot guarantee increased future utilization. National fisheries management institutions and policies have also been inadequate. In developing countries, the fisheries administration is fragmented, with responsibility divided among such an array of actors (In India, around 11 ministries across the central and state governments) that any sectoral coherence in policy is very difficult to secure. There is usually no clear policy to address the problem of over-capacity. Despite problems with management, states realize that focus on group organization for responsible fishing and marketing as well as for the adoption of appropriate technology*

is the way forward. Collaboration among relevant agencies in fisheries management has aimed at enhancing community participation and organization as a basis for the development of community-based fisheries management regimes among coastal communities. This is also expected to lessen conflicts in coastal-resource utilization.

- ***Asian fishers could gain from greater coherence between trade rules and multilateral environmental agreements (MEAs) and other environmental standards**. There are over 200 MEAs, of which 20 are related to trade, such as CITES, the Ramsar Convention on Wetlands, the Rome Consensus, Montreal Protocol, CBD, the FAO Code for responsible fisheries, etc. These are targeted at conservation through trade measures. However, trade restrictions imposed under MEAs may not be consistent with WTO trade rules on most-favored-nation, national treatment, and prohibition of quotas, as articulated in Articles I, III, and XI respectively of GATT. Similarly WTO agreements on TBT (technical barriers to trade) and SPS also restrict use of environmental standards as non-tariff barriers. Nevertheless, the environmental aspect of process and production methods (PPMs) has long been a subject of debate; eco-labeling (like Fish Forever) allows buyers' preference. In the label, information on process and production are given, and buyers decide voluntarily whether they wish to act against the relevant environmental impact. However, requirements on eco-labeling can be complicated and varies among importers. Non-transparency and difference in capability in environmental technology can lead to trade barriers. The down side of this, from a human development perspective, is that small scale community fisheries may not have the resources to upgrade their standards to attain approval from issuers of credible certificates, for returns may not justify investment.*

- ***The market-failure to reflect true value of fisheries is exacerbated by use of subsidies**. The market mechanism fails to reflect the true value of fisheries resources as fish prices are usually determined by buyers whose paying high prices induces increased resource exploitation. While setting their prices, fishermen do not take into account the cost of resource rent for their fishing, and only account for their fishing costs. Fisheries subsidies (mostly found in the harvesting sector) can lower the cost of such fishing, which can then lead to overexploitation. While a significant number of subsidies can be found in the fisheries sectors of developed countries, very few subsidies are used in fisheries in developing countries. As market fails in reflecting true value of fisheries resources, subsidies have an adverse impact, as can be seen from the experience of developed countries (although there is lack of evidence on the negative impact of subsidies used by developed countries in the specific territories of Asian countries where small-scale fisheries is pervasive). Developing countries, however, still require assistance ("non-actionable" subsidies) in enhancing their capability in fisheries-resource management. But at the same time, existence of perverse incentives which lend themselves to abuse, to the detriment of poorer fishers, need to be corrected.*

- ***WTO can offer relief to specific problems**. Actions for and against antidumping and countervailing duties, as well as other forms of trade disputes can be legitimately contested in the WTO's dispute settlement mechanism, as have major Asian countries done against bigger trading partners in recent years as active complainants. Countries not yet WTO members are unable to defend themselves against arbitrary protective actions, as illustrated by Vietnam's special case of catfish exports to the US -- the decision as to the labelling of catfish and the non–market economy (NME) criteria used by the US against Vietnam could likely have been successfully challenged in the WTO. Vietnamese exporters are competitive because of geographic attributes of the Mekong delta, low labor costs, and accumulated traditional knowledge, and that there are no state subsidies involved. Overall, the case demonstrates the*

need for more stringent multilateral rules and special and differential treatment in the form of meaningful thresholds to protect small developing country exporters and new entrants to the market from trade harassment. Similarly, the WTO Agreement on Subsidies and Countervailing Measures (ASCM) can allow poor Asian countries to use subsidies to promote development goals, if their per capita GNP is less than USD 1,000 (Annex VII of this Agreement). These countries could also have recourse to the WTO in the SPS (sanitary and phyto-sanitary) cases.

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Technical Support Document (TSD) on Fisheries: India

Sebastian Mathew[1]

1. Fisheries and Human Development in India

According to the United Nations Development Programme (UNDP) Human Development index, India stands 124th among the world community and it has 44.2 per cent of the population living below the income poverty line of $1 a day, including a significant proportion of fishing communities. India has a coastal population of 370 million people, or 36 per cent of the country's total population (DOD 2002) and about 6.7 million people dependent on fisheries for a livelihood (Government of India 2001a). This includes roughly 725, 000 full-time, and an equal number of part-time, fishermen engaged in fishing operations and over one million people engaged in pre- and post-harvest activities. Inadequate access to education, health facilities, and safe drinking water make fishing communities one of the poorest from a human development perspective. Sandy and rocky terrain, brackishwater wetlands and shortage of water for irrigation, make marine and estuarine fisheries an important source--and often the only source --of livelihood for poor coastal fishing communities. Fisheries and aquaculture are thus an important source of employment, income, and food security, along the seaboard of rural India.

While 48 per cent of full-time fishermen are on the East Coast of India, 35 per cent are on the West Coast, and the remaining 17 per cent are spread over other states and union territories. There are also about 300,000 people employed directly in the shrimp aquaculture sector and about 700,000 people in ancillary units (AAI 2002). Traditionally, fishing was a caste-specific activity with limited integration into the market economy due to its perishable nature, transport bottlenecks and vegetarianism among the Indian people. The fisheries have been marked by greater diversity of craft and gear in harmony with seasonal availability of fisheries resources and a rich traditional ecological knowledge about fish behaviour and habitats.

With greater integration of fisheries into the market economy as a result of technological changes in production, processing and marketing, and the intervention of the modern state in fisheries development, the common property regimes in fisheries were almost wiped out. In the absence of any entry restriction, capitalization of fisheries has contributed to phenomenal increase in fishing capacity, expansion of fishing space, and

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an increase in fish supply, with mixed implications for the well being of fishing communities.

While, on the one hand, there is apparent prosperity in several fishing communities because of increasing fish production and market value, there is, on the other hand, poverty among fishers who have smaller or no capital base. With greater integration into the domestic and world market, the artisanal and small-scale fisheries are becoming more dualistic in nature. A fraction of fishing communities now owns and operates sophisticated fishing units, while the majority toil away, either earning their livelihood as workers, or leading a hand-to-mouth existence, operating rudimentary fishing units, with very small marketable surplus.

2. Overview of Fisheries Policies

2.1 Current Status of Fisheries and Role of Small-scale Fisheries

India has a seaboard of 6074 km. of mainland and 2044 km of island and rock territories, and an exclusive economic zone (EEZ) of over 2 million square km.It has a large, unestimated area under aquaculture besides 191,000 km of rivers and canals (Government of India 2001a). In 1998-99, fisheries contributed about US$4,600 million, which is about 1.38 per cent of the GDP of India at current prices (Government of India 2001b). There are about 280,000 fishing craft in India in the marine sector (Government of India 2001b) and the gross investment in fishing equipment is estimated to be Rs. 80,000 million or US$1,700 million at 2002 prices (Vivekanandan, E. 2002).

2.1.1 Fish Production in India

What sustains fisheries as an important source of employment, income and food security is India is its high level of fish production. It is currently the fourth largest fish producer in the world after China, Peru and Japan. From 1951 to 2001 India's fish production increased eight-fold -- from 700,000 tonnes in 1951 to 5.7 million tonnes in 2000-2001, when it accounted for over 4.39 per cent of the world's total fish production. In the realms of food production, the rate of growth of Indian fish production is second only to that of wheat.

Indian fish production comprises more or less equal quantities originating from marine and inland fisheries, including aquaculture (See Table 1). While more than half the freshwater fish production originated from states on the eastern seaboard, 70 per cent of the marine fish production came from the western seaboard. The marine fish production of 2.81 million tonnes in 2000-01 originated mainly from about 44 species groups, of which 10 accounted for half the production[2]. Over 70 per cent of the freshwater fish production of 2.84 million tonnes in 2000-2001 came mainly from carp species. The

[2] According to the ICLARM FishBase, in India about 263 species out of the 1 000 marine and brackish water fishes identified are commercially significant. The same source mentions India culturing about 34 species of fish.

remaining 30 per cent originated from inland capture fisheries, which mainly comprised species of catfish. Inland waters are estimated to have an additional potential of 1.6 million tonnes and the EEZ is estimated to have a further 'potential' of over one million tonnes, although the fisheries potential of the EEZ is bound to be less than what it is estimated to be since the current level of fish production of the coastal fishing fleet from the EEZ goes unrecorded (Government of India, 2001 b).

Significant increase in shrimp production from aquaculture has been an important development since the 1990s. In 2001-2002, 50 per cent of the total shrimp aquaculture production of India came from Andhra Pradesh alone, followed by West Bengal (26 per cent), Orissa (9 per cent), and Kerala and Tamil Nadu (5 per cent each) (MPEDA 2002). The total area under shrimp aquaculture in 2002 according to the Aquaculture Authority of India (AAI) is 157,000 hectares (1570 sq. km)--which is about 11 per cent of total brackishwater area of 14,370 sq km in the country and 13 per cent of the area identified for brackishwater shrimp culture by the Government of India. Most of the farms are small, according to AAI.

Since there are no studies on income distribution in Indian fisheries and aquaculture, it is difficult to discuss how much of the benefits of increasing fish production and value of fish output actually translate into human development of fishing communities. Lack of access to education, drinking water and health facilities still beleaguer India's coastal fishing communities. Mobility of fishers from fishing to alternative forms of employment also seems to be very limited due to lack of education and income poverty.

2.1.2 Small-scale Fisheries in India

Even though the size of the Indian fishing vessels, in general, range from 5 m OAL (length overall) to 30 m OAL, most of the fishing vessels are below 20 m OAL Fishing vessels of this category would qualify to be called ‘small-scale’ and this would include all fishing methods that are employed by these vessels including trawling, purse-seining, gill-netting and long-lining. Thus, small-scale fisheries contribute almost the entire fish production of India. Bottom trawling (including mini trawls) and purse-seining (including mini-purse-seines or ring seines) catch disproportionate quantity of juveniles due to the use of mesh size below the legal limits, and, therefore, are the most destructive gear types. Bottom trawling also leads to excessive removal of by-catch and destructive impact on the seabed by changing the benthic biotic structures (Vivekanandan, E. 2002). In comparison, gillnets and longlines are relatively more selective fishing methods. The category of small-scale fishing vessels below 20 m thus includes active and passive, destructive and selective fishing gear and practices. Depending on the context, its diversity demands a differentiated approach to small-scale fisheries at the policy level.

Over 60 per cent of Indian fishing vessels are un-powered and most of them operate from the East Coast of India. The eastern seaboard thus has the largest number of un-powered fishing vessels and the largest population engaged in fishing. These are the poorest among the Indian fishing communities. The remaining 40 per cent of fishing vessels comprise motorized (with outboard motors) and mechanized fishing vessels (with inboard engines).

There were 30,979 trawlers ranging from 9 to 17 m overall length (OAL) in 1998 with engine horsepower ranging from 40 to 150 (Vivekanandan, E. 2002). There are about 60 offshore steel trawlers operating at present of 17 to 30 m OAL with 150 to 400 hp (horse power) engine. Although only 45 per cent of the total number of fishing vessels and 35 per cent of the total active fishers' population are on the western seaboard, over 60 per cent of the motorized fishing vessels and 55 per cent of mechanized fishing vessels are located there, and they harvest 70 per cent of the marine fish production of India (Vivekanandan, E. 2002).

Most of the marine fishing vessels, especially with increasing motorization and mechanization of fishing vessels, operate from about 2000 landing centres, which are equally distributed between the eastern and western seaboards of India. Most of the marine fish production, however, is landed in about 200 fish landing centres, including major and minor fishing harbours. There are currently five major fishing harbours (four of them on the eastern seaboard), 29 minor fishing harbours (more or less equally distributed between seaboards), and 130 fish landing centres. There are further 15 minor harbours and 28 fish landing centres under construction, mostly on the western seaboard.

While 25 per cent of India's marine fish production originates from fishing units using non-trawl gears and outboard motors, about 50 per cent originate from bottom trawling. 9 per cent of the total marine fish production originate from unpowered fishing unit and a negligible one per cent from vessels above 20 m OAL. Small-scale fishing units are thus the mainstay of Indian marine fisheries.

2.1.3 Indian Fisheries: Consumption of Fish in India

The consumption of fish contributes to human development in two ways: one, by providing an income to fishers and fishworkers and, two, by providing cheaper and essential protein for physical well-being. In spite of the fact that only less than two-third of India's population consumes fish, increase in fish production since the First Five Year Plan has been a result of growing demand for fish. Over 70 per cent of total fish production of India are sold fresh in the domestic market, about 11 per cent are dried or salted, and about 6 per cent are converted to fishmeal (Government of India 2001a). Although consumption of fish is not uniform across the country, fish is an important source of animal protein in India, especially among income poor groups.

What are the salient aspects of fish consumption in India? According to Government of India National Sample Survey India (NSS), 55th Round (1999-2000) the annual per capita consumption of fish in India is 2.58 kg[3] (Government of India 2001d). State-wise, the highest annual per capita consumption of fish is in Lakshadweep (38.58 kg), followed by Goa (24.96 kg)), Kerala (21.78 kg), Arunachal Pradesh (20,22 kg) and Andaman and

[3] It is not clear from NSS data if this figure is the wet weight equivalent or not. It is surmised here that the NSS estimate does not convert dried/salted into wet weight equivalent and that the wet weight equivalent would, therefore, be higher than 2.58 kg since dried/salted fish is an important source of animal protein for the poor in the southern states of Tamil Nadu and Kerala and the northeastern states.

Nicobar Islands (14.28 kg). At a disaggregated level, per capita consumption of fish is low in high fish producing states except Kerala and West Bengal and the island territories (See Table 2). What the NSS data seem to suggest is that there is no clear correlation between poverty and fish consumption even in poor States with high levels of fish production. Even in Orissa, the poorest State of India, the per capita consumption of fish is almost half the per capita availability. Also in poor States like Maharashtra and Uttar Pradesh, the per capita consumption of fish is low in comparison with fish availability. West Bengal, the biggest fish producer, consumes only 40 per cent of its fish production in spite of being a State with large fish eating population. The most striking anomaly is Gujarat, the State with the highest marine fish production in the country, where the per capita consumption is at a meagre 0.36 kg per year.

Clearly, the association between fish production and consumption is a complex one. While coastal States like Gujarat, Maharashtra, Andhra Pradesh and Tamil Nadu report high levels of fish production, the fish consumption levels are low perhaps due to religious beliefs in favour of vegetarian food habits. The Christian populations of Goa, Kerala and Arunachal Pradesh, arguably have a role in higher levels of fish consumption in these States since Christianity, in general, does not proscribe fish consumption. In addition to abundant supply of fish protein, higher level of fish consumption in Lakshadweep and Andaman and Nicobar Islands perhaps is due to shortage of meat in these island territories. Kerala appears to be a unique case in the whole of India. Not only Kerala consumes all its fish production (less what is exported) it also imports fish from other States of India and appears to be the single largest market for fish in the country.

2.1.4 Indian Fisheries: Seafood Exports of India

In terms of overall merchandise production and trade the global share of developing countries is rather small. While the share of developing countries in global merchandise exports was 37.5 per cent in 2001 (WTO 2002e), their share in global fish exports was over 50 per cent. Globally, fish has become a highly traded commodity, with more than one-third of total fisheries product being traded internationally in foreign markets. According to Food and Agriculture Organization of the United Nations (FAO), in several developing countries net earnings from seafood exports are more than the combined earnings from coffee, cocoa and rubber exports.

Indian seafood exports are less than the global average, with about 12 per cent of its total fish production (wet weight equivalent) entering world trade. As a share of the marine fish production it is about 25 per cent of the total marine fish production. In the Indian context, it is significant to notice that the domestic market consumes almost the entire freshwater fish production, except trout from the coldwater fisheries in the Himalayas that is exported.

From a human development of view, it has been demonstrated that seafood exports can contribute to higher procurement price of fish and a better income for fishers (Mathew

1986). In fact, income from sale of exportable species is an important component of income of coastal fishers.

Fisheries is not only a source of employment, income and food security, but it is also an important source of foreign exchange in India. Among India's primary product exports, marine products are the most significant commodity group. In terms of overall exports, seafood is India's 10th largest accounting for 2.7 per cent of total export earnings in 2001. In terms of net exports, it is the third largest after textiles and cotton. It is significant considering that India's share of merchandise exports is only 0.7 per cent of the world total. The export earnings from seafood stood at US$ 1,200 million in 2001-02 after peaking at US$1,416 million in 2000-01 (Ministry of Commerce and Industry 2002). Among the seafood exporting countries Indian exports stood 17th in terms of quantity and 12th in terms of value (2000 figures).

While two-third of the seafood exports in value terms are accounted for by brackish water aquaculture, two-third of the quantity exported originated from marine capture fisheries. India exports to over 100 countries and imports small quantities of fish and fish products from over 20 countries. In the year 2000-2001, India recorded the highest-ever exports both in terms of quantity and value. 440,473 tonnes of seafood were exported valued US$1,420 million. In value terms Japan accounted for the largest share of India's exports (about 40 per cent), followed by the US (18 per cent) and the EU (16 per cent). In quantity terms the largest exports were to the Peoples Republic of China (42 per cent), followed by EU and Japan (16 per cent each) and the United States (10 per cent) (See Table 3).

Although the total number of seafood commodities that were exported from India has increased from about 18 in 1976 to 68 in 2000-2001, the bulk of exports were frozen forms of finfish (48 per cent), shrimp (25 per cent) and cephalopods (9 per cent). There were, however, some major reversals in 2001-02. The share of Chinese market in quantity terms fell from 42 to 32 per cent in 2001-02. In value terms, Japan slid from 40 to 31 per cent in 2001-02. However, there were some positive changes in the market. The US and EU increased their share to 24 per cent and 19 per cent respectively; South East Asia also increased its share from 7 per cent in 2000-2001 to 9 per cent in 2001-2002. While Asia accounted for 60 per cent of quantity and 50 per cent of value, Japan, US and EU accounted for 47 per cent of quantity and 74 per cent of value. A new addition to India's basket of seafood exports is trout from coldwater fisheries in the Himalayas (MPEDA 2002).

In terms of export value, frozen shrimp accounted for 70 per cent of the total, thus maintaining a long-term trend. In a significant break from the past, shrimp aquaculture contributed the largest share of shrimp exports both in terms of quantity and value (59 per cent of quantity and 86 per cent of value) (MPEDA 2002). Of the total seafood exports of India in 2000-01 from capture and culture fisheries, aquaculture contributed the largest share in terms of value, and capture fisheries, the largest share in terms of quantity. Shrimp aquaculture contributed US$850 million-- an unprecedented 60 per cent of the total export value-- thus emerging as the most important seafood export from India, and capture fisheries contributed 75 per cent of the quantity exported. The annual export

revenue per hectare from shrimp aquaculture was US$5,400 (at 2000 prices) with an average yield of 724 kg wet weight per hectare.

The emergence of aquaculture shrimp as the most significant export commodity is bound to have serious implications for marine capture fisheries. It will have its greatest impact on shrimp trawl fisheries, by depressing the price of wild harvested shrimp (excluding gravid females, used as brood stocks in aquaculture). Declining revenue from shrimp fisheries have forced many trawlers to switch over to high open bottom trawls, which catch all species of fish in the entire water column, which, in turn, denies non-trawl gear groups access to their traditional fisheries resources. The collection of shrimp fry from the wild also has significant impact on marine biodiversity. This can reduce recruitment in fish stocks since the process of separating shrimp fry from fish fry can lead to high mortality of marine fish larvae. The cascade effect of shrimp aquaculture on coastal fishing fisheries and fishing communities are yet to be looked into in any systematic fashion.

2.2 Fisheries Policies in India

The responsibility for fisheries and marine habitat is spread over several agencies and Ministries at the State and Union Government levels. Fish production from the EEZ (or 'deep sea', as it s referred to in India), major fishing harbours, fishing vessel industry, seafood export trade, and marine and inland research and training are on List I, or Union List, of the Seventh Schedule of *The Constitution of India*. These are the responsibility of the Union Government. The Indian Parliament has exclusive power to make laws with respect to any of the matters enumerated in List I. Items under List 1 are dealt with by several agencies.

The Ministry of Agriculture is responsible for fisheries in the EEZ, survey and assessment of fisheries resources, in addition to research, training and extension. Ministry of Shipping is in charge of fishing vessel industry and fishing harbours. The Coast Guard under the Ministry of Defence is responsible for regulation of fishing by foreign vessels and for preventing marine pollution from ships. The Coast Guard also has a mandate to protect endangered marine species under the Wildlife Protection Act 1972. The Ministry of Food Processing deals with fish processing, and the Ministry of Commerce and Industry and the Marine Products Export Development Authority (MPEDA) deal with seafood exports.

Inland fisheries, aquaculture, and marine fisheries in the territorial waters —the marine space up to 12 nautical miles (22 km) from the baseline—is on List II, or State List, which is under the jurisdiction of the State Governments. The Legislature of any Indian State has exclusive power to make laws with respect to any of the matters listed under List II. The Union Government, however, also advises States on enactment of legislation for fisheries under their jurisdiction. A good example is the Marine Fishing Regulation Act, which was adapted by all maritime States, from a Bill that the Union Government had prepared and circulated in 1979. All fisheries and mariculture within the territorial limit and aquaculture are the responsibility of State fisheries departments. However, there

are several Central Government schemes for fish production and fishers' welfare that are implemented by the State fisheries departments.

Other areas related to fisheries, viz., the protection of wild animals and forests, including endangered species of wild fauna (e.g. whale shark, marine turtles, several species of bivalves) and flora (e.g. mangroves), protection of coastal zone and marine biodiversity, and prevention of land-based sources of pollution are on List III, or Concurrent List of the Seventh Schedule, a responsibility of both the Union and the State Governments. The List III also includes all ports other than major fishing harbours. Both the Indian Parliament and the Legislature of any State have power to make laws with respect to the items in List III. The Ministry of Environment and Forests (MoEF) at the national level and the Department of Forests at the State level are responsible for the protection of wild animals and forests, and marine biodiversity. Minor fishing ports are under the Ministry of Shipping at the Centre, and under the port departments at the State.

In a marked difference with the Fisheries departments at the State and Union levels, the MoEF also looks into coastal habitat protection issues. It is the national focal point for the 1972 Wetland Convention called the Ramsar Convention; the 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, or the Washington Convention), which applies to marine turtles and whale shark in the Indian waters; the 1979 Convention on the Conservation of Migratory Species of Wild Animals (CMS or Bonn Convention), which applies to species of marine turtles and shark species in the Indian waters, and the 1992 Convention on Biological Diversity (CBD), which has a marine biological diversity component called the Jakarta Mandate. The MoEF is also the nodal agency for the United Nations Environment Programme (UNEP) and in all MEAs negotiated under the auspices of the UNEP, MoEF represents India.

While the Ministry of External Affairs is responsible for negotiations on the Law of the Sea matters, including the 1995 UN Fish Stocks Agreement, the Department of Ocean Development is the nodal agency for implementing the provisions of the 1982 United Nations Convention on the Law of the Sea (1982 Convention). Protection and preservation of the marine environment is an integral part of the 1982 Convention. Measures to prevent, reduce and control pollution of the marine environment include (Article 194) measures "to protect and preserve rare and fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life". The Article 194 provides the crucial link between fisheries and other multilateral environmental agreements (MEAs) like Ramsar Convention, CMS, CITES and CBD.

There are other Ministries who deal with activities that have an impact on the marine habitat and fisheries. These are the Ministry of Water Resources (erosion-related issues) and the Ministry of Tourism.

The Department of Ocean Development (DOD), under the Minister of Ocean Development, is now in the process of setting up a high powered committee in the form of an Ocean Resources Commission, which will interface with scientific organizations and policy-making departments. It will (a) draft policies and guidelines for Government

on matters related to ocean and ocean resources; (b) act as a nodal agency to recommend legislation in consultation with concerned Ministries on all aspects related to Ocean; and (c) recommend adoption/ratification of recommendations and conventions of international agencies in ocean sector in consultation with other concerned Ministries (DOD 2002).

The 2001 *Report of the Working Group on Fisheries for the Tenth Five Year Plan* of India's Planning Commission, gives an idea about India's fisheries policy for the Tenth Plan. The Working Group Reports have significant influence on fisheries policy. The Report, while recognizing the problems of overfishing in Indian waters in the territorial sea, emphasizes the need to introduce "principles of scientific fisheries management" (Government of India 2001b). It attributes "depletion, economic waste and conflicts among user groups" in coastal waters to the open access nature of Indian fisheries and advocates an immediate adoption of a community-based and participatory approach to complement scientific fisheries management. It also draws attention to the 1997 National-Level Review Committee on fishing fleet, which taking into account the problem of overcapacity had recommended zero fishing fleet growth for vessels between 8 to 15 m OAL. The Report also discusses the need to diversify existing trawler fleet in the territorial waters into the EEZ as a management option. However, the Working Group makes no proposal for financial provision for fisheries management under the Tenth Plan (2002-2007).

2.2.1 Fisheries Legislation in India

The only Indian legislation, which talks about “undertaking measures for the conservation and management of offshore and deep-sea fisheries”, is the Marine Products Export Development Authority Act, 1972 [Section 9(2)(a)]. It also has a provision to meet the costs of conservation and management of waters beyond the territorial sea from the Marine Products Export Development Fund [Section 17.2 (c)]. MPEDA, however, has never invoked this legal provision.

The Territorial Waters, Continental Shelf, Exclusive Economic Zone and other Maritime Zones Act, 1976 of India recognizes [Section 7 Para (4) (a)] the sovereign rights to conservation and management of living resources in the Indian EEZ in addition to their exploration and exploitation. Section 15 (c) further gives power to the Central Government to make rules, *inter alia*, for conservation and management of the living resources of the EEZ and Section 15 (e) for the protection of the marine environment. The basic fisheries legislation that followed this Act, *viz.*, the Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Act, 1981 and the Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Rules, 1982, however, do not make any mention of conservation and management.

The fisheries within the territorial limits are managed under the Marine Fishing Regulation Act (MFRA) of the maritime States of India. The Act is based on a model piece of legislation prepared by the Ministry of Agriculture, Government of India, in 1979, in response to demand from fishers operating un-powered fishing vessels to protect their fishing space and equipment from bottom trawlers. It was drawn up at a time when

there were tremendous conflicts between the two sub-sectors over access to fishing space and resources, sometimes even leading to destruction of life and property (Kurien, J and Mathew, S.1982).

The main emphasis of MFRA is on regulating fishing vessels in the12-mile territorial sea mainly to protect the interests of fishermen on board traditional fishing vessels. Thus the Act has been mainly used for the purpose of maintaining law and order at sea. The most significant drawback in the legal system for marine fisheries in territorial waters is that, in spite of resources being overfished, there are no entry restriction into marine fisheries, nor are there any programmes to retire fishing fleet, especially old fishing vessels, or to take effective and deterrent legal action against fishing vessels that violate fishing regulations. Also, there are no legal mechanisms to address inter-State movement of fishing vessels or problems arising from such movement.

2.2.2 Deep Sea Fishing Policy of India

Unlike many other developing countries, India has never signed any fisheries agreement with distant water fishing nations. The emphasis of Indian fisheries policies since the declaration of its EEZ in 1976 was to develop its fishing capacity in the 'deep sea' or EEZ through a series of joint ventures (Government of India 1982). While this approach had little success, the coastal fleet has significantly diversified its fishing operations into the EEZ waters since the early-1990s without any formal policy backing. There is, however, no effective mechanism still to ascertain, for example, how much of the Indian fish production originates from the territorial waters and how much from the EEZ. Yet 99 per cent of the marine fish production is believed to originate from the territorial sea. This is because irrespective of where the fish are actually caught, fish landings of all fishing vessels that are not registered as deep sea fishing vessels are treated as fish originating from the territorial waters. The deep-sea fish production for several years has been given as 30,000 tonnes since the practice is to record as deep sea fish production only the catch of vessels registered as deep sea fishing vessels. Significant fish landings from the EEZ of thousands of fishing vessels below 20 m OAL operating from about 200 minor fishing harbours and fish landing centres continue to be recorded, wrongly, as fish production from the territorial waters. Similarly, fish that deep sea fishing vessels catch illegally in the territorial waters gets recorded as deep sea fish production.

The policy approach to deep sea fishing or fishing in the EEZ is on increasing fish production through further exploitation, ostensibly, due to fear of land-locked countries like Nepal and Bhutan staking a claim to the "surplus" fisheries resources of the Indian EEZ under Article 69.1 of 1982 Convention (Government of India 2002b). Introduction of 'new generation' fishing vessels is also considered for the EEZ. For the first time ever, so it seems, India also expresses an interest in exploiting fisheries resources beyond its EEZ (Government of India 2002b).

The Government of India announced the first joint venture policy for deep sea fisheries as part of its selective foreign investment policy in 100 per cent export-oriented industries in 1977. This also included a charter policy. An equity participation up to 40 per cent was

permitted. The policy also allowed for limited employment of trained foreign nationals as engineers, fishing technicians and fleet managers. There was, however, an obligation to train Indian fishermen under the foreign technicians. The joint venture companies were to register in India and to fly the Indian flag and the charter vessels were to fly the flag of their country of registration. Remittance of profits and dividends, and repatriation of investments were permitted. The policy, however, had few takers.

In 1981 Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Act came into force. From the same year, various efforts have been made to encourage chartering of fishing trawlers. A Deep Sea Fishing Policy highlighting joint ventures was adopted in 1986, which was subsequently revised in 1991 to allow foreign equity participation up to 51 per cent, which was inconsistent with the Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Act, 1981 that required not less than 60 per cent of the share capital to be held by the Indian citizens. The deep sea fishing policy also allowed long-term lease of fishing vessels as well as 'test fishing' to establish the commercial viability of a fishery before setting up joint ventures.

The Cabinet Committee on Economic Affairs rescinded the 1991 Deep Sea Fishing Policy on 27 September 1996 at the recommendation of the High Level Committee to Review the 1991 Policy under the chairmanship of P.Murari, Former Secretary, Government of India, in response to a national strike under the auspices of the National Fishworkers' Forum (NFF). NFF and other sections of the fishing industry were concerned about the potential impact of deep sea fishing vessels under joint venture scheme, on domestic fishing fleet, especially the small-scale fisheries operating from the maritime States of India. Moreover, the NFF demanded that the small-scale fishers should be given greater access to the EEZ waters and that they should be trained to access under-exploited resources of the EEZ.

On 1 November 2002, six years after a decision was taken to cancel the 1991 Deep Sea Fishing Policy a new set of guidelines for deep sea fishing has been announced. The guidelines are for the conduct of fishing operations in the Indian EEZ, particularly to increase fishing effort to exploit India's "untapped" marine fisheries resources. They apply to fishing operations in the EEZ by all vessels— registered as partnership, private and public limited companies and Corporations— flying Indian flag.

If under the previous deep sea fishing policy regimes the emphasis was on the mode of acquisition of fishing vessels under charter arrangements and joint ventures, the new set of guidelines focuses on registration status of fishing vessels. Since the vessels are acquired on a deferred payment basis, the acquisition, strictly speaking, is tantamount to a joint venture. Also, new Indian legislation for foreign investment does not prevent a 100 per cent foreign-owned company from being registered as an Indian company in fisheries. However, the Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Act, 1981 still defines an Indian fishing vessel as any vessel, which is owned by a company in which not less than 60 per cent share capital is held by the citizens of India.

The new guidelines do not give any hint of the potential benefits to the country from inviting foreign fishing vessels that are not required to land their catch in Indian ports, pay any licence fee, and train any Indian crew. In this sense, the potential benefits to the Indian fishing economy from these Guidelines appear to be less than even the most exploitative fisheries agreement between coastal States and distant water fishing nations.

2.2.3 Aquaculture Policies in India

In aquaculture, while the emphasis in freshwater aquaculture is on intensive aquaculture on a "factory-farm basis", the emphasis in brackishwater aquaculture -- based on the Southeast Asian model-- is on environmentally non-degradable and socially acceptable farming practices, within the carrying capacity of the coastal ecosystem. The Aquaculture Authority of India-- set up in 1997 under the Environment (Protection) Act 1986 -- following a Supreme Court Judgement in December 1996, regulates shrimp farming operations in Indian coastal regulation zone and it is in the process of implementing a 'precautionary approach' and a 'polluter pays principle' in shrimp aquaculture regulation.

2.2.4 Fisheries Management Measures in India

The fisheries conservation and management measures, although not explicitly acknowledged as such, are mainly confined to technical management measures like minimum mesh size, closed area/seasons, and prohibitions on catching certain species and listing species that cannot be exported below a minimum size. With the exception of closed area/season, and prohibition on catching certain species, other measures, however, are not effectively implemented. Measures that have mainly to do with minimising inter-gear conflicts are implemented to a significant extent. In Goa and Karnataka on the West Coast and Tamil Nadu and Orissa on the East Coast, a distance of 5 km is reserved for the traditional craft, including the motorized ones. Similarly, in Kerala and Andhra Pradesh a distance of 10 km is reserved for the traditional craft. In Maharashtra alone the traditional craft zone is based on depth (up to 18 m depth). In West Bengal and all the Union Territories, however, there are no reserved zones for the traditional craft. A proposal to introduce uniform ban on fishing during the monsoon season, across all fishing sub-sectors is also being considered from the point of view of conserving fisheries resources. So far, there is no concrete initiative to adopt a comprehensive fisheries management plan.

While the fisheries departments are mainly engaged in fisheries development policies, the MoEF slowly, but steadily, is introducing *in situ* wildlife protection and fisheries management measures that have implications for the life and livelihood of fishworkers. Following the shrimp-turtle dispute with the US at WTO, in 2001 ten species of shark and ray and nine species of molluscs, all sea horses, giant grouper, five species each of coral and sea cucumbers, sponges and molluscs, have been brought under the ambit of the Indian Wildlife Protection Act of 1972. Although these measures are better implemented, they do not adequately take into account the interests of fishing communities who are dependent on fisheries for their livelihood. This is best illustrated in Orissa, India, which

has the biggest nesting site for olive ridley, one of the protected species of marine turtles (see below, the box on CITES and shrimp-turtle dispute).

3. Identification of Trade Barriers

3.1 Tariff Measures

According to the export-import Policy 2002-2007 of India, all marine products, with a few exceptions, under the Wildlife Protection Act 1972, can be exported free subject to pre-shipment quality inspection. 90 per cent of Indian seafood exports comprise frozen fish, shrimp and cephalopod. The average tariff rate in Japan, the biggest Indian seafood market, is 4.1 per cent. US, the second biggest market for Indian seafood, has just a nominal 1 per cent tariff duty. EU, the third biggest importer, has an average tariff duty of 10.2 per cent, followed by China, the fourth biggest, which has a bound tariff rate of 18 per cent. The EU, Japan and US extend preferential tariff treatment under Generalised System of Preferences (GSP) to Indian products including seafood. In general, tariff measures are not seen as a trade barrier by the Indian seafood industry to the US and Japanese markets. However, it is seen as a barrier to access some of the markets in developing countries, including China, as well as the EU market.

3.2 Non-tariff Measures

3.2.1 Food Safety Standards

While tariffs are more a problem in relation to accessing seafood markets in EU and developing countries, non-tariff measures have emerged as a significant bottleneck in accessing markets of rich countries. Processors who export to EU and US markets in particular need to either cost-effectively comply with import regulations or face costly rejections. These standards vary from one market to another. In the US, for example, histamine in canned sardines, mackerel and anchovies should not exceed 50 parts per million (ppm). However, in the EU, up to 150 ppm of histamine in canned fish is permitted.

The regulatory approaches used in the US, EU and other markets have changed quite significantly since the creation of free trade blocks and the WTO. The EU requires fish imported from a foreign processor to be accompanied by a certificate from an authorized national agency (In India's case it is the Export Inspection Agency under the Ministry of Commerce and Industry, Government of India), and it reserves the right to inspect the regulatory process and to decertify a national agency until remedial action is taken. In the case of US, the individual exporter has to demonstrate an understanding and ability to produce seafood according to US regulations.

Advances in the technology of seafood analyses have been made to the point that pesticide and pharmaceutical residues can often be detected at the parts per billion (ppb), and in some cases, at the parts per trillion (ppt) levels. When zero tolerances are established based on the ability of a test to detect parts per million, the increase in

sensitivity to ppb or ppt can turn a "safe" product to an unsafe one (Humpal, D. and Guenette, P 2000). The high performance liquid chromatography (HPLC) method, for example, now being used for the detection of antibiotic residues up to ppb level in the EU, has affected the export of farmed shrimp from several developing countries, including India, into the EU market. The EU laboratories, using this method, are now equipped to detect traces of chloramphenicol at 0.3 ppb and nitrofuran at 1 ppb levels. According to the Seafood Exporters Association of India (SEAI), since February 2002, there were several cases of rejection of Indian shrimp imports in the EU market on account of detecting traces of prohibited carcinogenic antibiotics like nitrofuran and chloramphenicol as well as other bacterial inhibitors like amino-glycosides and macrolides (communication from SEAI).

The seafood Hazard Analysis and Critical Control Point (HACCP) law has been fully enforced from December 1999 in the US and it is also part of the EU food safety standard. In December 2000, EU introduced residue-monitoring requirements for veterinary medicines in fisheries products from third countries. In March 2001 it further introduced requirements for monitoring heavy metal contamination in a wide range of foods including fish products. Following the EU requirements, on 17 August 2001 India issued a notification specifying the limits for various antibiotics, pesticide and heavy metal residues in seafood products (ITN 2002).

International Organization of Standardization (ISO) 9000, is recognized under the Export-Import Policy of Government of India. Firms, including seafood firms, enjoy certain privileges if they are ISO 9000 firms. Under the 1997-2002 Export-Import Policy, Government of India, exporters with ISO 9000 were given special import licence (SIL) up to 5 per cent of f.o.b. value. Certification against ISO 9000 is beginning to emerge as a major industry in India. There are many auditors with experience in assessment of quality management against ISO 9000, and the certifiers in India with the highest credibility in the international market are those under multinational companies.

3.2.2 Costs and Benefits of Food Safety Standards

HACCP approaches and trace-back provisions increase costs of consultants, personnel, record keeping and training. Processors of fish are expected to develop and implement a verifiable HACCP plan. For a HACCP plan to work the individual processor must already have a plant and operation that meet Good Manufacturing Practice (Humpal, D. and Guenette, P 2000). Equipment costs are also high. The instrument for HPLC analysis, for example, costs US$220,000 per unit (2002 prices). The ISO 9000 requirements, especially ISO 9002 for fish processing plants, also add costs to operations.

The unit value realisation of shrimp per kg has gone up from US$1 in 1961 to US$5 in 1982, and further to US$9 in 2001, and it later declined to US$7 in 2002. Although there are no estimates to our knowledge of costs of compliance with food safety standards, from the reaction of the industry and the demands made from the US and EU market, it seems quite plausible that these costs are rising. There are no estimates on net unit value realisation on seafood exports. In all likelihood, it is bound to have declined with the

onset of certification requirements in the 1990s. Rising compliance costs in the face of recent declining unit value will be matter of concern to the seafood export industry.

3.2.3 Food Safety Standards and Small-scale Fisheries

From a small-scale fisheries perspective, in addition to the cost aspects, one of the main problems in adopting a HACCP plan would be the difficulty in implementing such a plan at the level of fish catch, especially for beach landing fishing units like *kattumaram* and canoes. According to EU and US standards, fish is to be stored in ice or in frozen storage as soon as it is harvested. Storage of fish in iceboxes would be difficult on board traditional fishing craft like *kattumaram*, which is made of lashed logs. Yet, many *kattumaram* using long lining and bottom set gillnets are in the process of catching fish for the export market. Strict implementation of HACCP plans could result in small producers using such fishing craft being excluded from the export market.

On reaching the fishing harbour or landing centre, traditional fishers are expected to handle fish for export market without exposing them to the beach-sand under fish handling standards of import markets. Many of the fishing villages that harvest fish, shrimp and cephalopods for the export market, have only the beach for landing their catch and it would be difficult for them to comply with a HACCP plan unless they invest in iceboxes and maintain them in a hygienic manner. Instead of a one- size-fits-all approach, there is need to develop different standards for different situations so that benefits of global trade can be shared by all. Moreover, a significant bottleneck in maintaining better hygiene standards in fish landing centres all over India is the shortage of potable water.

3.2.4 Equivalence of Sanitary and Phytosanitary Standards

Under Article 4 of Agreement on Sanitary and Phytosanitary Measures, members are in the process of bilateral determination of the equivalence of sanitary and phytosanitary regulations and regulatory processes between importing and exporting nations (Humpal, D. and Guenette, P 2000). While the international standards of US, EU and Japan are more an extension of their domestic standards, such standards in India are exclusively applied to its export market. India, for example, does not have any quality standard for seafood for its own domestic consumers. Given the situation, establishing equivalent standards are only to the extent of helping the domestic seafood export industry to meet the quality standard of the import markets. Therefore, how far the equivalent standards can be meaningful is moot as long as there are no domestic standards for seafood safety. It is important that such standards are developed for the domestic market so that the distinction between fish handled with gum boots and rubber gloves and bare feet and naked hands can come to an end.

Since the EU and the US have evidently adopted non-tariff measures to regulate supply to their domestic market, countries that would like to maintain, or increase, their market access will have to comply with changing standards, however difficult that process might be. The 'Big Three'--EU, US and Japan--expect exporting countries to adopt food safety

standards that match their own. In the absence of voluntary good management practices in the seafood processing and export industry, and lack of national standards for food safety in India, the standards originating from import markets are bound to dictate terms to the national seafood export industry. The best bet would be to develop effective and enforceable national food safety standards and to establish their equivalence with those prevailing in import markets.

4. Examination of Trade and Environment Issues

4.1 Multilateral Environmental Agreements and Fisheries

A consensus definition of a multilateral environmental agreement (MEA) by all WTO members still does not exist. European Communities define an MEA as any legally-binding instrument to protect the environment, and which is relevant to sub-paragraphs (b) and (g) and the headnote of GATT Article XX (WTO 2002c)[4]. MEAs containing potential trade measures in fisheries and aquaculture include, the 1972 Wetland Convention called the Ramsar Convention; the1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the 1980 Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR), the 1992 Convention on Biological Diversity (CBD) and the 1995 UN Fish Stocks Agreement (WTO 2001).

India is a member of the Indian Ocean Tuna Commission (IOTC), which, possibly, is in the process of adopting trade-related measures, similar to the measures adopted by the International Commission for the Conservation of Atlantic Tunas (ICCAT), for the protection of big-eye tuna resources from illegal, unreported and unregulated (IUU) fishing vessels. Japan has been proposing such measures, citing ICCAT as an example, since 2001. India is also a member of CCAMLR. However, as a country involved only in research, India has no obligation towards the fisheries management measures of CCAMLR, which has adopted an ecosystem approach to fisheries management in waters under its jurisdiction. India is yet to ratify the UN Fish Stocks Agreement. Once it ratifies there would be trade obligations at least in relation to tuna and shark resources that migrate into the Indian EEZ.

4.1.1 Ramsar Convention and India

In the last five years especially following the Brisbane Conference of Parties (COP) of the Ramsar Convention, the MoEF has taken note of the need to formulate what is called the wetland management plan for designated wetlands. The corpus of environmental laws does not extend exclusive protection to wetlands as distinct ecosystems (although the country has international obligations under an ecosystem-specific Convention).

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[4] Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures:

(b) necessary to protect human, animal or plant life or health;

(g)relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption;

Government of India is now in the process of developing a National Wetland Policy by the year 2005 to implement the provisions of the Ramsar Convention (Panini 1998; Ramsar 2002).

In its written submission to the Eighth Meeting of the COP of the Ramsar Convention in Valencia, Spain, 2002, Government of India made reference to the 1991 Coastal Zone Regulation Notification under the provisions of the Environment (Protection) Act, 1986, India. It has cited this notification as of great importance for conservation and wise use of coastal wetlands. Economic evaluation of full range of services, benefits and functions of wetlands is to be prepared as part of impact assessments and to support planning decisions that might impact on wetlands. Such studies would be used for resource development and management of wetlands and sustainable resource utilization. The Government of India is considering integrating wetland management with overall development planning and resource management by 2005. It would also encourage private sector to apply Wise Use Guidelines to development projects affecting wetlands and also to identify and remove perverse incentives.

4.1.2 Convention on Biological Diversity and India

India became a party to the CBD on 18 Feb 1994. The Jakarta Mandate on Marine and Coastal Biological diversity was adopted in 1995. It has a component on fisheries in the coastal areas. The Convention, to assist the implementation of Jakarta Mandate at various levels, has adopted a programme in 1998 on integrated marine and coastal area management, the sustainable use of living resources, protected areas, mariculture and alien species. In its Second National Report to the Convention on Biological Diversity, India has indicated high priority to the implementation of the work programme on Marine and Coastal Biological diversity (Government of India 2001c). India has also started an All India Co-ordinated Project for Conservation and Management of Coastal and Marine Biodiversity in 1999-2000. It has also started a coral reef monitoring programme.

CITES, Shrimp-Turtle Dispute and Indian fishworkers

The shrimp-turtle dispute at the World Trade Organization (WTO) between the United States and several Asian countries is the first case that involved an MEA (EU 2001). All species of sea turtles are included in Appendix I of the 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). This means that they are considered as species threatened with extinction and no international trade is permitted in these species. They also appear on the Red Data List of threatened species of the International Union for the Conservation of Nature (IUCN).

In 1996 the US made it mandatory for shrimp to be harvested with turtle excluder devices (TEDs), to be eligible to export to the US market. India was one of the affected countries. Instead of attempting to make TEDs mandatory, India declared Gahirmatha, the largest known olive ridley turtle rookery in the world, as a Marine (Wildlife) Sanctuary in 1997, under the Wildlife Protection Act of India, 1972. Fishing activities were also banned in the sanctuary. The Fisheries Department of Orissa, the State where Gahirmatha is located, followed with a Notification in the

same year prohibiting all fishing within the seaward radius of 20 km from Gahirmatha area round the year to protect olive ridleys. With the same intent, another Notification was issued prohibiting all fishing to a seaward distance of 20 km from the high tide line around Devi and Rushikulya river mouth, two other nesting sites in Orissa. Both powered and unpowered fishing vessels are kept out.

Not only bottom trawls but all fishing activities, including artisanal fishing that involved only manual retrieval of nets have been banned from the closed areas, although US turtle protection measures required the exporting country only to have a TED programme. So far, ironically, no requirement for TEDs has been enacted. It is significant that while a 3-nautical mile zone is reserved for non-mechanized traditional fishing crafts under the Orissa Marine Fishing Regulation Act, 1982, no such provisions are made under the closed areas declared for sea turtle protection.

According to Mr. Tarun Patnaik, President, Orissa Fish Producers Association, the closed areas around Gahirmatha, Devi and Rushikulya, about 1,200 sq km would constitute 50 per cent of the territorial waters adjacent to Orissa coast. These closed areas are believed to deprive the fishing industry of 2,000 tonnes of shrimp, about 50 per cent of the total marine shrimp production of Orissa. It is also believed to affect the catch potential of species like pomfret, ribbonfish, cuttlefish, sole and croaker, fish varieties with good consumer demand both in the export as well as the domestic market.

The closed area in Gahirmatha alone is believed to affect the livelihood of 2,000 fishers in artisanal fisheries, about 7,000 fishers in mechanized gillnetting and about 2,000 people dependent on bottom trawling. In Devi, about 2,000 workers on board bottom trawlers are affected by the closed season and in Rushikulya, about 10,000 artisanal fishers are affected by the closed area/season to protect sea turtles. For Orissa, Mr. Patnaik estimates a potential loss of Rs. 1,000 million (about US$22 million at 2001 prices) to the fishing industry as a result of sea turtle conservation programmes. On the whole, between 40,000 to 50,000 fishworkers and fishing vessel operators have been affected in Orissa as a result of sea turtle conservation programmes, according to Mr. Patnaik.

In a state with 48 per cent people living below the poverty line (annual income of US$300), and with marine fishers having an annual per capita income of less than US$200, the potential loss of livelihood opportunities as a result of losing access to fishing grounds seems quite alarming. Instead of having a no-take zone within a 20 km radius of Gahirmatha, Devi and Rushikulya, gears, except bottom trawls, could be allowed round the year. A comprehensive programme not only to address aspects arising from incidental take of sea turtles, but also aspects of turtle mortality arising from artificial illumination along the seaboard, and predation of nests (Pandav et al. 1998) should be adopted. Such a programme should also be shown to be effectively implemented and contributing to minimize turtle mortality. Appropriate marking of turtle aggregations at sea by the use of illuminated floats and flags, perhaps would serve the purpose of turtle protection better than declaring a marine reserve. Such a measure would also help artisanal fishers to access their rich shrimp fishing grounds using trammel nets with minimum turtle interaction and with no turtle mortality. Training programmes for fishers in handling entrapped comatose turtles would also help turtle conservation better than a marine reserve. Rather than exclusive turtle conservation programmes, measures that would allow for turtle conservation with minimum disruption to artisanal fishing should be adopted to find a suitable meeting ground between conservation of turtles and livelihood interests of poor fishing communities.

4.1.3 Impact of MEAs on Indian Fish Trade

Although there have been significant impacts on the fishing industry as a result of turtle protection measures there does not seem to be any significant impact on the exports of India as a result of MEAs. There is no decline in Indian exports of shrimp to the US market as a result of effective compliance with the US turtle conservation programmes. However, it is quite likely that, in future, MEAs might play a major role in the seafood exports of India if MEA obligations are to be met to maintain market access. In fact, fish trade is fast emerging as an area with potential conflicts between MEA obligations and trade rules.

4.2 Ecolabelling

EU is in favour of ecolabelling schemes and Japan also believes in restricting fish supply to their market that originates from poorly managed fish stocks. It is already implementing this approach in relation to supply of tuna to the most lucrative *sashimi* tuna market in Japan in collaboration with the tuna fishing industry (Harada 2002). The purpose of this certification is to prevent IUU, or flags of convenience, fishing vessels from accessing the Japanese market. The US also has no reservation about ecolabelling and certification schemes. To what extent ecolabels come under the purview of the Agreement on Technical Barriers to Trade is being debated but there does not seem to be any clarity yet.

4.2.1 Marine Stewardship Council

Several concerns about the implications of voluntary ecolabelling for the artisanal and small-scale fisheries in developing countries have been expressed, particularly in the context of the ecolabelling programme in fisheries, viz., the Marine Stewardship Council (MSC), which was established in 1997 (ICSF 1998). In the history of MSC from 1997 to 2002, for example, there are no fisheries from developing countries that have been certified, although there are potential candidates for MSC certification from developing countries including a couple of village-specific crab, mackerel and sardine fisheries from Tuticorin, Tamil Nadu, India.

In MSC certification, an individual fisher or her fishing unit cannot be certified since the label is not to prove the environmental quality inherent in fish, or to establish the selectivity of her fishing method. Ecolabelling of a fishery like the MSC scheme is rather unique because it is akin to an ecolabel for an industry and not the firm. Unless all participant fishing units collaborate, it is impossible to certify a fishery under the MSC scheme. In a county where one company controls an entire fishery or one type of fishery dominates entire fish production, perhaps there is sense in going for an ecolabelling scheme. It can also work in situations where all fishers agree to cooperate in fisheries management, subject to a code of conduct, which they strictly adhere to. In most of the fisheries in developing countries, where there are no rules of entry or exit from a fishery, it may be difficult to expect such labelling schemes to find certifiable fisheries.

4.2.2 Ecolabelling and Developing Countries

There are several concerns about ecolabelling in developing countries. Firstly, there is a fear of losing access to market if ecolabelled fish and fish products gain greater preference in import markets. Secondly, there is worry about the affordability of costs associated with adjusting fisheries to comply with ecolabelling standards, and about costs of certification and chain of custody and whether or not the market, if they go for certification, can adequately compensate their higher costs. Thirdly, there is apprehension that fishers in the small-scale artisanal sector would lose their autonomy if they have to comply with standards that are developed and applied by external agencies to their fish exports without taking into account the specific aspects of their fisheries. Fourthly, there are doubts about the practicability of ecolabelling in multi-species, multi-gear fisheries since the unit of certification is the fishery in its entirety. An ecolabelling scheme requires co-operation between all gear groups targeting the same fishery to benefit from certification. There is uncertainty if such cooperation can be expected at all from the industry. In fact, one of the main problems in Asian fisheries, for example, is the conflict between bottom trawlers and other small-scale passive gear groups who compete for the same space and resource. It is too premature to expect these gear groups to collaborate in pursuit of an ecolabel.

Except in a few homogenous fisheries like the hake fisheries of Namibia or the tuna fisheries of Maldives, it is difficult to imagine how voluntary ecolabelling will be practicable in the developing world, given their poor state of fisheries management. To qualify for an ecolabel, a well-managed fishery is required, to begin with, and that too, within the framework of a certification scheme under an external agency. The perceived price advantage of an ecolabel like 'Fish for Ever' of MSC is, therefore, a reward--and not an incentive, as commonly understood-- for managing the fishery in question. In several developing countries, financial assistance is offered to initiate the pre-certification process for MSC ecolabel to fishing communities by the WWF and environmental foundations. This is partly out of their own desire, as well as that of MSC, to show that certification of a fishery is not confined only to rich countries. The lobster fishers of Ceara, Brazil, supported by a private foundation, applied for pre-certification, however, the pre-assessment showed that certification was not possible in the short term since the fishery was in a bad condition (Scharer 2001). "To prepare a fishery for a "real" MSC certification", Scharer observed, "would need time and resources that community fisheries don't have, while the returns would not justify the investment" (Scharer 2001).

4.3 Certification Programmes

As a precursor to ecolabelling schemes, catch certification based on sustainability criteria and a management plan by national or State-level fisheries authorities, together with fishworker organizations and the scientific community looks like a viable option in developing countries like India. Rather than certifying that the fish is originating from sustainable fisheries as under ecolabelling schemes, catch certification would only confine to stating that the fish has originated from a fishery that has a management plan and by using selective fishing gear and techniques. This could, at a future convenient date, be upgraded to an ecolabelling scheme. However, how far the US and EU markets

would accept such certification from developing countries' themselves is debatable. There could also be a possible scenario of too many certification programmes, which could then result in import markets insisting on particular procedures and processes, or third party certification. Moreover, the consumers might insist on a certification programme that reflects their values on ecology and sustainable fisheries, rather than those of export markets.

In this context, the ISO 14000 approach, which focuses on an individual firm developing an appropriate Environmental Management System (EMS) with registered environmental systems managers, seems to be suited to the fishing industry. Fisheries cooperatives, for example, could make these managers available to their membership at a reasonable cost. The EMS would be specific to a firm/industry/fishery and follow appropriate ISO guidelines that would provide the basis for its development and implementation (Sproul, J.T. u.d). Currently, there is no ISO Technical Committee on fisheries. Academics, industry and government representatives could be involved in establishing such a Committee, which could work towards establishing an international "ecolabel" protocol for cross-boundary standardization of the procedure for defensible EMS documentation and to avoid non-tariff barriers (Sproul, J.T. ud).

It may not be difficult to foresee a time when EU, Japan and the US will be insisting on proof that the fishery that has produced a particular product for their import market has at least a management plan. The challenge for developing countries, including India, which supply 50 per cent of fish that enters world trade, would be to how best, and how fast, to develop standards for sustainable harvest of fisheries resources, food safety and better living conditions for fishworkers. Many of the craft-gear combinations used in fisheries, particularly in small-scale fisheries, are with smaller ecological footprints and, if better managed, they can be very sustainable.

5. Fishing Subsidies and Agreement on Subsidies and Countervailing Measures

There are several ongoing attempts to assess the quantum of fisheries subsidies in India. Subsidies to the fisheries sector are believed to be small and the incidence of subsidies are expected to be less than the five per cent threshold for presuming "serious prejudice" under the now lapsed Article 6.1 of the SCM Agreement.

The Doha Round of WTO, November 2001, speaks of negotiations "to clarify and improve WTO disciplines on fisheries subsidies, taking into account the importance of this sector to developing countries". It also took note of specific subsidies in "achieving legitimate development goals" and the demand from developing countries to treat their technology research and development funding, production diversification and development, and implementation of environmentally sound methods of production, as non-actionable subsidies.

5.1 Fishing Subsidies in India

Within the framework of the SCM Agreement, only export subsidies are to be treated as prohibited ones. Even if we treat the entire annual budget of Marine Products Export Development Authority as a prohibited subsidy, which may not be the case if we do a careful analysis of all their schemes[5], it amounts to less than half per cent of the annual seafood export value.

Even though fisheries subsidies are small, from an overcapacity and overfishing point of view, their role is to be better recognized in India. Fuel subsidies in terms of tax revenue foregone are extended in several Indian States to the fishing industry and it has become an important consideration for trawler operators to decide whether or not to undertake a particular fishing trip. Also, the criteria for subsidy schemes are often based on political, not legitimate social, considerations.

There are instances of misuse of subsidy schemes by fishermen themselves. The vessel owner would sell his fuel quota illegally in the open market and he would buy fuel for his fishing operation from the open market. The net benefit in such a transaction is in favour of the owner since the fuel quota is in his name, whereas the operational costs of fishing are collectively shared between the owner and crew. The owner thus privatises his benefits by exclusively enjoying the proceeds of the sale of his fuel quota in the open market, and socialises his costs since running costs of a fishing operation, including costs of fuel, are shared among the owner/s and workers and treated as common expense. In this case, the owner of the fishing vessel is only partially bearing the burden of costs of fishing operation.

Under the SCM Agreement perhaps the most important aspect to consider in relation to fisheries subsidies in the Indian context -- arguably in developing countries in general -- is revenue foregone, rather than government financial transfer. Irrespective of the nature of the fisheries, whether or not targeting high-value-low-volume, or low-value-high-volume fisheries, there are no fee either to enter the fishery or to access fisheries resources, both for the rich and poor fishers. A mechanism to generate revenue by taxing fish exports, or high value shrimp fisheries and aquaculture, should be considered. At least one or two per cent of the landed value of fisheries, based on ownership pattern of fishing assets, should be appropriated through user fees.

Eliminating bad subsidies and targeting good subsidies for fisheries management and human development should be adopted at a regional level to prevent good policy regime of one country from being undermined by the bad policy regime of another. In the light of recent changes in legal regimes for foreign investment in India, it is possible for excess fishing capacity in other countries to end up in the Indian EEZ. Vessel buyback schemes with the intent of reducing domestic fishing capacity (e.g. South Korea and Taiwan)

[5] The MPEDA subsidies include assistance to diversify fishing operations, quality and health control, activities that contribute to improving fisheries resource management as well as to safety of seafood for direct human consumption.

could result in such fishing capacity ending up in Indian waters if subsidies are provided to vessel owners of distant water fishing nations to transfer their excess fishing capacity to Indian companies. They could effectively end up competing for the same fisheries resources with the domestic sector, mainly comprising fishing vessels below 20 m length. This can deny a level playing field to Indian fishing vessels and it could also give rise to fishing conflicts in the EEZ. There should also be protective measures within national legislation to prevent subsidised distant water fishing vessels from gaining unfair access to the national resources.

5. 2 Fishing Subsidies: Views of Coastal States

It has been argued by Australia, Chile, Ecuador, Iceland, New Zealand, Peru, the Philippines and the United States, a group of eight countries called the 'Friends of Fish', which later expanded to include 20 countries, including India – essentially coastal States with low levels of subsidies in their fisheries sector--that a separate sectoral negotiation on fisheries subsidies is warranted since SCM rules primarily address market distortions arising from subsidization and that these rules "do not adequately address other negative trade, environment and development impacts of fisheries subsidies, particularly the distinctive production distortions subsidies can cause in the fisheries sector"(WTO 2002a). They have further argued that the heterogeneous nature of fisheries products and the diffused nature of support to the sector make it harder to demonstrate the existence of market distortions of the kind envisaged by existing SCM disciplines (WTO 2002). They argue that improved WTO disciplines on subsidies are required. Environmental NGOs like World Wildlife Fund (WWF) support the position of the 'Friends of Fish' (WWF 2002).

5.3 Fishing Subsidies: Views of Distant Water Fishing Nations

Japan, which gives high levels of subsidies to its fishing industry, however, argues that no special disciplines are required for fisheries subsidies. The existing SCM discipline should be seen only within the framework of trade distortions and not as addressing distortions in access to productive resources arising from subsidies, Japan argues. It believes it is necessary to establish trade rules that contribute to sustainable fisheries by controlling overfishing that ignores the resource status, or fishing activities ignoring conservation and management rules. It further argues that all the factors that hamper sustainable use of resources including fisheries subsidies are to be examined in terms of resource conservation; and it is, therefore, not for improved WTO disciplines on subsidies. Rather than a special and separate treatment of fisheries subsidies Japan insists on discussing fisheries subsidies from the viewpoint of trade distortion as part of the overall clarification and improvement of the SCM Agreement (WTO 2002b). Other distant water fishing nations like Korea and EU have more or less similar positions (WTO 2002d).

The European Communities (EC), in a recent submission, argues that subsidies that encourage investment in fishing fleets not only work against the objective of achieving and maintaining fisheries resources at sustainable levels, they also produce negative economic effects in the fishing industry, and promote oversupply of capital by artificially reducing the costs and risks of investment. It is for considering capacity-enhancing

subsidies like those for fleet renewal and for the permanent transfer of fishing capacity to third countries, including under joint venture regimes, as *prohibited subsidies*. It defends subsidies for retraining of fishermen, earlier retirement schemes and diversification, improving safety, product quality or working conditions or to switch to more selective fishing techniques, for stopping fishing activities due to natural calamities, for scrapping of vessels and withdrawal of capacity, as *permitted* (non-actionable) subsidies. The EC, however, does not consider the WTO Negotiation Group on Rules as the appropriate forum to examine the question of interactions between fisheries subsidies and fisheries management regimes (EC 2003).

5.4 Possible Negotiation Position for India on Fishing Subsidies

It has been argued that in open access regimes with poor emphasis on fisheries management subsidies would exacerbate overfishing and overcapitalization problem. India is yet to have an effective fisheries management plan. Under new foreign investment regimes in India subsidized distant water fishing fleets could relocate legally to India and they could compete on unfavourable terms with the domestic fishing fleet. Such a situation could potentially have a domino effect on resource sustainability and the livelihood interests of small-scale fishworkers in the absence of effective monitoring, control and surveillance (MCS) mechanisms. From this perspective, it is advisable that India adopts a two-pronged approach: one, like other 'Friends of Fish', to argue for improved disciplines on subsidies, and, two, to make a strong case to make more effective special and differential treatment clause into the SCM Agreement. Simultaneously, India should start in earnest putting in place a fisheries management plan. Subsidies to the industry to adopt and implement such a plan should be defended as non-actionable subsidies. The EC position on non-actionable subsidies is also of relevance to developing countries like India since several of the proposed subsidies in this category can also be defended within the framework of special and differential treatment of developing countries.

6. Main actors in furthering the goal of sustainable fisheries and human development: National Fishworkers' Forum, India

Among various non-governmental organizations and trade unions championing the cause of sustainable fisheries and human development, the most significant one is the National Fishworkers' Forum (NFF), a national federation of independent State-level fishworker unions. Founded in 1979, NFF has successfully mobilized the traditional fishing communities against destructive bottom trawling, the 1991 joint venture policy, and coastal industrial shrimp aquaculture and other forms of coastal degradation like pollution and upstream dams (Kocherry, T. 1999).

One of the main planks of NFF strategy is to critically look at not only the impact of State intervention in fisheries, but also to look at the impact of all State interventions in natural resources-based industries that have an adverse impact on fisheries and fishing communities. The enactment of Marine Fishing Regulation Act by the coastal States, adoption of monsoon ban on bottom trawling, and the cancellation of 1991 Joint Venture policy, for example, were mainly the outcome of NFF campaigns. NFF believes in:

(a) basic needs approach, where the needs of the poor in fishing communities are addressed before embarking on profit-oriented fisheries; (b) recognition of traditional rights and respect for ecological knowledge of fishing communities; (c) adoption of participatory and ecologically sustainable fisheries development; and (d) exclusive promotion of domestic traditional, small-scale fisheries in the Indian EEZ.

NFF believes that globalization benefits the rich and powerful at the expense of the poor and by degrading natural resources of poorer countries and it is, therefore, opposed to free movement of capital. Globalization, it believes does not respect labour, environment and human rights. For the same reason, it is also against global institutions like the WTO. It is an active member of the National Alliance of People's Movements (NAPM), an alliance of 157 movements of dispossessed people "to counteract the process by which the powerful groups in society direct development for their own benefit" (Kocherry, T. 1999).

7. Conclusions and Recommendations

Although India has a highly complex fisheries, and a large population dependent on fisheries for employment, income and food security, the articulation of fish production, domestic fish trade and seafood exports in the Indian context is not all that complicated. As we have observed above, ten species groups account for 50 per cent of marine fish production. 70 per cent of freshwater aquaculture comprises carp species and almost the entire brackishwater aquaculture comprises shrimp. Bottom trawlers less than 16 m in length contribute to 50 per cent of the national marine fish production. The largest share of India's marine fish production originates from its territorial waters. Most of the fish landings in India are believed to be in 200 landing centres, and two-third of the national marine fish production is on the West Coast of India. Shrimp contributes to almost 90 per cent of seafood export value and shrimp production from aquaculture has recently emerged as the single largest contribution to the export market. The territorial waters are overfished and the EEZ is believed to have still unexploited fisheries potential. Freshwater aquaculture has emerged in a big way to meet local food security and it has begun to outstrip marine fish production. As far as the population of un-powered vessels and fishers dependent on fisheries are concerned, the East Coast of India has the largest concentration.

In spite of a tremendous growth in fish production, increasing fish price and greater export earnings, there are no studies at the national level, of fishworkers and fishing communities from a human development perspective. Issues like levels of deprivation in fishing communities, access to water sources and basic sanitation, the extent of education among boys and girls in fishing communities and the level of income poverty among fishers and fishworkers, are yet to be documented in the Indian context with the exception of Kerala (Kurien 1995). With increasing capitalization of fisheries, several craft-gear combinations are moving from a share system to a wage system. There is also large-scale migration of workers as wage labourers to the trawling industry from poor, non-fishing communities. Larger and larger share of fish production is contributed by over-efficient fishing methods like bottom trawling. The diversity of fishing gear-base is

also shrinking. The fast-paced economic changes in marine fisheries and aquaculture are also leading to erosion of traditional ecological knowledge in the realms of navigation and fishing skills. The implications of all such changes from a human development perspective are not known and they have to be looked into.

Marine fish catch over the recent years clearly demonstrates the limit to increasing fish production all over India, perhaps with the exception of the states of Orissa and West Bengal on the eastern seaboard, Lakshadweep islands in the Arabian Sea and Andaman and Nicobar Islands in the Bay of Bengal. As the Report of the Working Group on Fisheries for the Tenth Five Year Plan (2002-2007) has correctly observed, overfishing pressures and overcapacity as well as conflicts between different gear groups can be attributed to the open access nature of Indian fisheries. Urgent management measures are required to regulate entry into, and--more importantly-- to encourage exit from, marine fisheries, especially the most destructive trawl fisheries. In this context, it is important to establish secure access rights to fisheries resources or fishing space. Right now fisheries management measures in Indian marine fisheries do not have such provisions. In this context, the under-exploited fisheries resources of the EEZ and the fisheries resources off islands in the Arabian Sea and the Bay of Bengal could be prudently used to re-deploy some of the existing fleet subject to safety and sustainable fisheries considerations.

Current fisheries management measures are fragmented and fall within the mandate of several Ministries. The nodal Ministry responsible for fisheries development has no mandate on issues related to protection of fisheries habitat, including fishery-induced ones. It should be given full responsibility for all aspects related to fisheries management. This would also mean completely changing the current orientation of the Ministry of Agriculture, which is primarily focused on a development approach as understood at a time when fisheries resources were underexploited and fishing capacity was under-developed. This development approach has to become a subset of a management approach, which can perhaps return greater dividend in terms of better economic and social development of fishing communities and better access to safe and quality fish for the consumer.

Fisheries management have to go hand in hand with human development and measures towards this cannot be implemented without active co-operation from the fishing industry, trade unions and fishing communities. Almost all the active fishers of India belong to one fishing co-operative or the other. Legitimate fishery co-operatives should be revamped to take up participatory fisheries management measures within the framework of community-based property rights-regime. The community of owner-operators and workers who actually fish at sea should be given the right to a fishery subject to equity norms developed in a participatory manner (Government of Kerala 1997). The fish landing centres, minor and major fishing harbours are effective points to introduce *ex situ* fisheries management measures, including various types of cost-effective monitoring, control and surveillance systems.

Costs of introducing fisheries management measures could be met from a tax on production of high value species and from taxing fish exports, especially to the US, Japan

and the EU. In lieu of meeting the costs of fisheries management, seafood exporters should demand a reduction in tariffs on Indian seafood imports in EU and Japanese markets, where the average tariffs are 10.2 per cent and 4.1 per cent respectively. EU and Japan are already in the process of rewarding better fisheries management regimes in their seafood import markets. A one per cent tax on exports can fetch US$12 million per year at current levels of export revenue earnings, which could provide sufficient financial resources to introduce fisheries management measures. A verifiable environment management system, under the ISO 14000, can be adopted in marine fisheries and shrimp aquaculture to demonstrate effective fisheries and aquaculture management measures to the import markets. As long as fishmeal continues to be the main feed, and brood stock comes from the wild and post larvae are collected from the coastal waters, shrimp aquaculture should be treated as a subset of marine fisheries.

Given the pattern of fish production and consumption in India, market access is an important consideration for Indian fishers, aquaculture farmers and seafood exporters. Fishers certainly benefit from the export market because export varieties of fish generally command a higher price in India. Most fishing vessels have either a sharing arrangement between capital and labour or an incentive system for workers. The benefits of higher price of export species are, therefore, often shared between the owner operator and his crew.

A two-tier marketing structure of freshwater and pelagic marine fish for the domestic market, and demersal fish for the export market, with minor exceptions, seem to serve the national goals of food security and foreign exchange earnings. The opposition to WTO, for example, from the National Fishworkers' Forum, not because they are opposed to international trade, but it arises from a legitimate feeling that the WTO disciplines primarily benefit the rich countries, and not the poor (NFF 2002).

Some of the HACCP measures are difficult for small-scale beach-based fishers to meet and hence they will not be in a position to access the international market. Similarly, unless the State invests on behalf of the industry in expensive quality control measures, high compliance costs with seafood safety standards could push out small processors and exporters from business. How best the benefits of tariff reductions compare with the costs of non-tariff measures should be looked into in the context of small producers and exporters of seafood. Being a highly sensitive item from the health and environment point of view, compliance costs of the seafood industry are bound to be quite high in relation to other durable exports from developing countries.

India should also cross-link adoption of effective fisheries management and habitat protection measures in their national waters to greater access to the export market for durable goods such as textiles and garments in the US and EU markets (Abrego, L.E., et al. 1999), especially if the citizens of these countries attach greater value to management of fisheries resources in India, and are, therefore, willing to indirectly pay for management measures through greater market access for goods in which India enjoy a comparative advantage.

Table 1: Indian Fisheries Production and Utilization for the period -1990-2000

India	PRODUCTION (in metric tons) [1]									UTILIZATION [2]				
	INLAND			MARINE										
Year	Capture	Aquaculture	Total Inland	Capture	Aquaculture*	Total Marine	Total Capture	Total Aquaculture	Total Fisheries	Marketing Fresh (%)	Frozen, cured and canning (%)	For fish meal and oil (%)	Population (in billion) [3]	Per capita food fish supply (kg)
1990	592,349	982,136	1,574,485	2,162,900	29,985	2,192,885	2,755,249	1,012,121	3,767,370	65.2	23.9	11		
1991	471,566	1,185,261	1,656,827	2,317,913	35,500	2,353,413	2,789,479	1,220,761	4,010,240	66.9	22.5	10.6	0.8460	4.5238
1992	373,287	1,348,644	1,721,931	2,430,333	40,000	2,470,333	2,803,620	1,388,644	4,192,264	67.1	21.5	11.3	0.8630	4.6272
1993	575,905	1,354,702	1,930,607	2,559,118	72,200	2,631,318	3,135,023	1,426,902	4,561,925	68.3	21.2	10.5	0.8800	4.9025
1994	552,874	1,436,628	1,989,502	2,665,350	91,168	2,756,518	3,218,224	1,527,796	4,746,020	68.6	20.7	10.8	0.8981	4.9297
1995	608,378	1,588,799	2,197,177	2,613,596	97,547	2,711,143	3,221,974	1,686,346	4,908,320	70.9	20	9	0.9160	5.0372
1996	633,425	1,688,330	2,321,755	2,762,227	95,161	2,857,388	3,395,652	1,783,491	5,179,143	72.7	20	7.2	0.9343	5.1307
1997	641,775	1,795,240	2,437,015	2,830,515	67,048	2,897,563	3,472,290	1,862,288	5,334,578	72	19.3	8.6	0.9530	5.1942
1998	692,439	1,821,506	2,513,945	2,629,501	80,661	2,710,162	3,321,940	1,902,167	5,224,107	73.7	18.5	7.8	0.9721	5.1002
1999	696,083	2,047,991	2,744,074	2,731,523	72,325	2,803,848	3,427,606	2,120,316	5,547,922				0.9915	5.2146
2000	796,714	2,041,048	2,837,762	2,752,489	54,024	2,806,513	3,549,203	2,095,072	5,644,275				1.0114	5.0724
2001**			2,845,832			2,810,510			5,656,342					

Source: # 1 FAO: Fishstat, 2000

#2 Handbook of Fisheries Statistics 2000, Government of India, Ministry of Agriculture

3 Census of India, www.censusindia.net

* includes Mariculture and Brackishwater aquaculture

** figures for 2001 from Agricultural Statistics at a Glance, 2002, http://agricoop.nic.in

Table 2: Fish Production and Consumption - India State wise for the year 2000-2001

States	Total Fish Production (2000 -2001) [1] (in tons) (percentage in parenthesis)			Population [2]	Per capita availability (in kg)	Percentage of fish eating population [3]	Per capita consumption (kg/year)[3]	Population Consuming fish	Quantity consumed in tons/year	%Share of consumption
	Marine	Inland	Total							
Andhra Pradesh	182,502	407,1860	589,688.00 (10.43)	79,495,645.27	7.42	22.75	1.56	18,085,259.30	28,213.00	1.78
Arunachal Pradesh	-	2,500	2,500.00 (0.04)	1,033,388.28	2.42	56.30	20.22	581,797.60	11,763.95	0.74
Assam	-	158,620	158,620.00 (2.80)	26,791,375.12	5.92	87.80	7.86	23,522,827.35	184,889.42	11.68
Bihar	-	222,160	222,160.00 (3.93)	103,241,610.10	2.15	43.75	1.86	45,168,204.42	84,012.86	5.31
Goa	67,328	4,240	71,568.00 (1.27)	1,398,229.36	51.18	94.55	24.96	1,322,025.86	32,997.77	2.08
Gujarat	620,474	40,261	660,735.00 (11.68)	49,376,488.27	13.38	6.15	0.36	3,036,654.03	1,093.20	0.07
Haryana	-	33,040	33,040.00 (0.58)	19,678,657.66	1.68	0.00		0.00	0.00	0.00
Himachal Pradesh	-	7,020	7,020.00 (0.12)	6,180,642.24	1.14	0.55	0.12	33,993.53	4.08	0.00
Jammu & Kashmir	-	17,510	17,510.00 (0.31)	9,226,002.34	1.90	2.10	0.12	193,746.05	23.25	0.00
Karnataka	175,906	127,468	303,374.00 (5.36)	53,760,317.35	5.64	12.75	1.50	6,854,440.46	10,281.66	0.65
Kerala	566,571	85,234	651,805.00 (11.52)	38,166,477.68	17.08	87.70	21.78	33,472,000.93	729,020.18	46.04
Madhya Pradesh	-	48,844	48,844.00 (0.86)	79,104,982.58	0.62	17.15	0.60	13,566,504.51	8,139.90	0.51
Maharashtra	402,838	123,266	526,104.00 (9.30)	94,351,985.65	5.58	24.15	1.50	22,786,004.54	34,179.01	2.16
Manipur	-	16,050	16,050.00 (0.28)	2,195,906.17	7.31	80.85	10.32	1,775,390.14	18,322.03	1.16
Meghalaya	-	6,179	6,179.00 (0.11)	2,121,355.41	2.91	74.35	4.02	1,577,227.74	6,340.46	0.40
Mizoram	-	2,860	2,860.00 (0.05)	824,451.07	3.47	34.70	2.04	286,084.52	583.61	0.04
Nagaland	-	5,500	5,500.00 (0.10)	1,445,745.30	3.80	73.20	4.56	1,058,285.56	4,825.78	0.30
Orissa	121,086	138,556	259,642.00 (4.59)	37,842,227.10	6.86	70.90	3.96	26,830,139.01	106,247.35	6.71
Punjab	-	52,000	52,000.00 (0.92)	24,242,617.72	2.14	0.00	0.00	0.00	0.00	0.00
Rajasthan	-	12,121	12,121.00 (0.21)	52,563,590.56	0.23	0.00	0.00	0.00	0.00	0.00
Sikkim	-	140.	140.00 (0.002)	485,829.64	0.29	13.10	0.42	63,643.68	26.73	0.00
Tamil Nadu	367,855	113,560.	481,415.00 (8.51)	66,767,041.90	7.21	35.05	2.10	23,401,848.18	49,143.88	3.10
Tripura	-	29,420.	29,420.00 (0.52)	3,295,630.06	8.93	96.40	10.80	3,176,987.38	34,311.46	2.17

Contd.

		Total Fish Production (2000 -2001) [1] (in tons) (percentage in parenthesis)			Population [2]	Per capita availability (in kg)	Percentage of fish eating population [3]	Per capita consumption (kg/year)[3]	Population Consuming fish	Quantity consumed in tons/year	%Share of consumption
Uttar Pradesh	-		208,286	208,286.00 (3.68)	166,278,037.08	1.25	11.40	0.54	18,955,696.23	10,236.08	0.65
West Bengal		181,000	879,230	1,060,230.00 (18.74)	81,372,182.38	13.03	49.90	5.34	40,604,719.01	216,829.20	13.69
Chattisgarh**			43,386	43,386.00 (0.77)						0.00	
Uttaranchal**			9,074	9,074.00 (0.16)						0.00	
Jharkhand**			43,600	43,600.00 (0.77)						0.00	
Union Territories											
A & N Islands		27,618	66	27,684.00 (0.49)	335,468.28	82.52	89.90	14.28	301,585.99	4,306.65	0.27
Chandigarh			82	82.00 (0.001)	767,387.24	0.11	4.10	0.48	31,462.88	15.10	0.00
D & N Haveli	-		43	43.00 (0.0007)	165,518.69	0.26	25.00	1.02	41,379.67	42.21	0.00
Daman & Diu		16,382	0.00	16,382.00 (0.29)	121,423.64	134.92	65.45	10.38	79,471.77	824.92	0.05
Delhi		0.00	3,980	3,980.00 (0.07)	11,260,300.77	0.35	3.70	1.44	416,631.13	599.95	0.04
Lakshadweep		12,000	0.00	12,000.00 (0.21)	61,804.31	194.16	88.85	38.58	54,913.13	2,118.55	0.13
Pondicherry		38,950	4,350	43,300.00 (0.77)	965,528.69	44.85	79.30	5.22	765,664.25	3,996.77	0.25
Deep Sea Fishing @		30,000		30,000.00 (0.53)						0.00	
India		2,810,510	2,845,832	5,656,342	1,014,917,847.91	5.57		2.58			

Note: Figures are Provisional.

** Figures from December 2000 to March 2001

Source: # 1) Agricultural Statistics at a Glance, 2002, http://agricoop.nic.in

2 Census of India, www.censusindia.net

3) Consumption of Some important Commodities in India (1999-2000) NSS 55th round, National Sample Survey Organisation, Government of India, July 2001(Report NO. 461 (55/1.0/4)

Table 3: Seafood Exports of India

(Quantity in MT, Value in Million US dollars)

Country/Region	2001-2002		2000-2001	
	Qty	Value	Qty	Value
Japan	64,905 (15.30)	383.07 (30.56)	68,983 (15.66)	562.75 (39.73)
USA	49,041 (11.55)	299.05 (23.85)	41,747 (9.47)	255.93 (18.07)
European Union	82,895 (19.52)	241.97 (19.30)	68,827 (15.62)	225.37 (15.91)
China	134,767 (31.74)	125.66 (10.02)	182,771 (41.49)	181.86 (12.84)
South East Asia	52,424 (12.35)	113.35 (9.04)	40,748 (9.25)	101.76 (7.18)
Middle East	19,159 (4.51)	38.10 (3.03)	17,236 (3.91)	41.39 (2.92)
Others	21,279 (5.01)	52.15 (4.16)	20,161 (4.57)	47.26 (3.33)
Total	424,470	1,253.35	440,473	1,416.32

(Percentage share in parenthesis)

Source: Marine Products Export Development Authority (MPEDA), Cochin, India

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List of Acronyms

AAI	Aquaculture Authority of India
CBD	Convention on Biological Diversity
CCAMLR	Convention on the Conservation of Antarctic Marine Living Resources
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COP	Conference of Parties
DOD	Department of Ocean Development
EEZ	Exclusive Economic Zone
EMS	Environmental Management System
GSP	Generalised System of Preferences
HACCP	Hazard Analysis and Critical Control Point
HPLC	High Performance Liquid Chromatography
ICCAT	International Commission for the Conservation of Atlantic Tunas
IOTC	Indian Ocean Tuna Commission
ISO	International Organization of Standardization
IUCN	International Union for the Conservation of Nature
IUU	Illegal, Unreported and Unregulated
MCS	Monitoring, Control and Surveillance
MEAs	Multilateral Environmental Agreements
MFRA	Marine Fishing Regulation Act
MoEF	Ministry of Environment and Forests
MPEDA	Marine Products Export Development Authority
MSC	Marine Stewardship Council
NAPM	National Alliance of People's Movements
NFF	National Fishworkers' Forum
NSS	National Sample Survey India
OAL	Length Overall
PPB	parts per billion
PPM	parts per million
PPT	parts per trillion
SCM	Subsidies and Countervailing Measures
SEAI	Seafood Exporters Association of India
SIL	Special Import Licence
TEDs	Turtle Excluder Devices
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
WTO	World Trade Organization
WWF	World Wildlife Fund

Defining Human Development

The premise that people are the real wealth of nations, and the real end of development, led UNDP to define human development as a "process of enlarging people's choices". The three essential choices: to lead a long and healthy life, to acquire knowledge, and have access to resources needed for a decent standard of living. Additional choices range from socio-economic and political freedoms to opportunities for being creative and productive, and enjoying personal self-respect and guaranteed human rights. The paradigm of human development views poverty as a deprivation not only of incomes, but of choices and opportunities to lead the kind of life that people have reason to choose and value. The notion of human capabilities thus focuses on what people are actually able to do and what people are able to be. Higher income is seen as necessary for its 'instrumental' role in expanding opportunities for achieving many of these broader goals. The following four components are seen as being essential to human development:

Empowerment -- This is an all-encompassing notion that addresses the people's capability to shape the processes and events that affect their lives, not just on the economic front, but also the socio-political-cultural. Going beyond the notions of 'basic needs' for the poor, often with an accent just on commodity possession, the human development paradigm downplays this as being paternalistic. The paradigm attaches importance to issues of dignity and self-respect, which has a serious bearing on how people engage in processes that lead to higher incomes and capabilities, and political voice.

Productivity -- Investments in enhancing human potentials so that greater productivity that lends itself to higher growth is an important subset of the paradigm. Human development is a means to higher productivity -- a well nourished, educated, and alerts labour force is an important productive asset. But rather than viewing humans as mere inputs into the production process, this paradigm views them broadly as ends of development itself. This thus implies that there is a crucial distinction between human resource development and human development, with the former just being one aspect of the latter.

Equity -- Enlargement of people's choices requires that they can access opportunities equitably. This often implies that the prevailing power structures have to improve, such as better distribution of assets like land and credit, transfer of public incomes through fiscal measures, and socio-political reforms that enhance opportunities for participation of certain groups, ethnicity and gender.

Sustainability -- Not to be confused with renewal of natural resources only, sustainability in human development terms means that the physical, human, financial and environmental resources are governed by the current generation in a way that does not prevent the next generation from improving its own welfare. It also implies that international commitments made by governments do not impede the economic and social development and cultural integrity of future generations.

The challenge facing the Asia Trade Initiative is, thus, to relate these concepts to trade issues and policies.

Take the Initiative

The Asia Trade Initiative aims at promoting debate on trade and human development issues. We would therefore welcome your comments on our studies.

Our web page, www.asiatradeinitiative.org provides further information about the programme and its activities. In case you want to participate in them, please contact us. You will also find a complete downloadable copy of all the Technical Support Documents.

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How useful was this paper to you?

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How do you think the ideas and issues contained herein can be disseminated more widely in your country or region in order to advance the debate from a human development perspective?

Are you interested in joining our effort, as well as network of scholars, practitioners, and officials to promote the debate and understanding on this subject in Asia?

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