

## WTO Agreements and Fisher Livelihoods: Tradeoffs and Strategies

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### Introduction:

Rural communities often rely exclusively on natural resource utilization for both subsistence and income generation. It is their deep connection to the resources in their region that forms the base of livelihood that sustains both family security and offers potential to increase economic opportunities that improve standards of living, increase educational levels of their children and help raise people out of poverty. Natural resource use has many faces and functional aspects in these communities. For a large portion of the world, agriculture provides the bulk of livelihood activities, a practice that depends on continued fecundity of the land and adequate water resources to sustain harvestable yields. For other communities, forests provide the economic base for their existence, utilized not just for timber, but also for non-timber products like herbs and fruits, wild game, raw materials for craft production, and small wood for firewood and charcoal production. In riverine, lake and estuarine communities the water resource provides access to important protein sources and economic currency in the form of fisheries and marine life. Combined, these packages of ecological goods and services form the asset base of many impoverished communities throughout the world.

As countries race to develop their industrial potential to compete in global markets, they in turn rely on natural resources to fuel this economic expansion. The Food and Agriculture Organization (FAO) estimates that some 70 per cent of the world's major fisheries grounds are already exploited to the limit of natural replenishment or already past that stage. A number of factors have contributed to these trends. Poor fisheries management and inappropriately designed subsidies to fishing industries have been widely recognized as key drivers of over-exploitation of fisheries resources by contributing to significant overcapacities of fishing fleets, particularly in developed countries. The numbers of middle and large scale fishing vessels doubled from 585,000 in 1970 to 1.2 million in 1990. A recent World Bank paper estimated that worldwide fishery subsidies total between \$14.5 and \$20.5 billion annually, conceding that even these figures "probably err on the low side, perhaps by a considerable margin." The European Union alone spends around two-thirds of its fisheries budget subsidizing commercial fleets. Government subsidies have been used to prop up domestic producers confronted with diminishing local catches, by encouraging them to migrate to foreign waters. That is the case, for example, with the European Union's desperate need to dump 40 per cent of its excess fishing capacity — much of it owned by Spanish fishing companies. The European Union (EU) pays handsome subsidies called "exit grants" to vessel owners to send their ships to fish in other countries' waters. Multinational fishing companies like Spain's Pescanova or Japan's Mitsubishi, are well placed to take advantage of such subsidies. Like many other corporations with worldwide fishing and

seafood marketing operations, they maintain extensive worldwide operations concentrated around Africa, Asia and Latin America and even in such far-flung places as New Zealand and the waters off Antarctica. Geographical diversification enables transnational fishing companies to offset the impact of declining catches in one region by substituting supplies from another. A good example of the impact the above practices is illustrated by what has happened to the traditional, artisanal fisheries sector in Senegal, a sector characterized by low technology, a large workforce, and a limited investment. The artisanal sector is key to the Senegalese economy for both economic and nutritional reasons. Senegal has 47,000 artisanal fishermen. They comprise over 7 per cent of the economically active population and bring in more than 70 per cent of the total volume of fish caught. As European waters have become progressively overfished, the European Union (EU) has looked further afield, to countries like Senegal, for new fishing grounds. Over 15 years, in the absence of an appropriate management regime and effective enforcement, EU fishing operations have penetrated traditional fishing areas and have affected the resource, the marine environment and the Senegalese fishing communities dependent on it. As fish become scarcer, artisanal fishermen had to travel further out at sea to meet their catch. Some fishermen, unable to pay for equipment and fuel, resort to cutting deals with European or Asian boats that use local fishermen and their pirogues to gain access to coastal areas and resources, to which they have restricted access. According to a survey by the Washington-based World Watch Institute, the people in Europe, Japan, and North America consume a disproportionate amount of fish — about 40 per cent of the world total. World Watch Institute researcher Anne Platt McGinn, in her World Watch paper, "Rocking the Boat: Conserving Fisheries and Protecting Jobs", says that most fish from African, Asian and Latin American waters are exported and that 85 per cent of internationally traded fishery products originate in the coastal waters of developing nations. Yet, people in these countries rely on fish for a much larger portion of their animal protein than people do in industrialized countries. To keep the exports flowing, domestic supplies have been cut, making fish more expensive in places like Malaysia, Suriname, Laos and Cambodia. While countries may have laws regulating the fisheries sector, she says, "Local fishers in developing countries are rarely consulted, foreign fleets regularly under-report catches and the enforcement of the few environmental provisions that do exist is generally scant." Fish provide roughly 40 per cent of the protein consumed by nearly two-thirds of the world's population. For example, over a billion people throughout Asia depend on fish and seafood as their major source of animal protein. But, fish have moved into the luxury-style, high-priced food class. The United Nations Educational, Scientific and Cultural Organization (UNESCO) warns that fish, long regarded as the "poor man's protein", is diminishing globally as a result of increasing market demand and overfishing. Declaring that "the golden age" of fishing had ended, UNESCO, along with the Food and Agriculture Organization, has warned that there will be a global shortfall of fish for human diets of 20 to 30 million tons by the year 2010. The developed nations are winning in the consumption stakes. While their citizens have average annual supplies of about 26 kilograms of seafood per person each year, people in the developing countries have only nine kilograms of fish per person each year. During the period 1988-1990, the developed nations imported 76 per cent by weight of all fish for direct human consumption that went into international trade. Almost three years after it was presented for signature, the majority of the world's major fishing nations have not signed the 1995 UN treaty that would regulate world fish stocks. The agreement, formally called the UN Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks, to date has been ratified by only 27 countries: Australia, Bahamas, Barbados, Brazil, Canada, Cook Islands, Fiji, Iceland, Iran, Maldives, Mauritius, Micronesia, Monaco, Namibia, Nauru, Norway, Russia, St Lucia, Samoa, Senegal, Seychelles, Solomon Islands, Sri Lanka, Tonga, United States and Uruguay. Thirty are needed before it can go into effect, while only five of the top 20 major fishing nations — Russia, Canada, Norway, Iceland, and the United States — have signed this convention. Eight developing nations, which account for 27 per cent of world fishing, have not signed the

agreement: Chile, Peru, India, North Korea, Thailand, Mexico, Malaysia and Vietnam. Sutton believes that "this (UN) agreement is very good, it sets new international standards for responsible fishing, along with the FAO code of conduct." But since 1995, governments have begun to realize just how expensive it is going to be to put it into force, both politically and financially, and began to back away from it. In comparing the world's two marine fishing industries — large-scale vs. small-scale — several important points can be made that also have bearing on cutbacks. Comparisons have shown that the small-scale, community based fisheries actually provide about the same amount of marine fish for human consumption as the large-scale, company-owned fleets on a global basis (million vs. 27 million tons respectively). In producing its half-share of fish for human consumption, however: - The small-scale, community based sector produces little or no damaging by catch/discards, keeping almost all its catch for local consumption; whereas, the large-scale, industrialized sector discards range between 17 to 39 million tons of wasted fish annually. - Small-scale artisanal fisheries employ about twenty times more people to catch its near-equal share of fish for human consumption. The small scale, artisanal sector also employs about one hundred times more fishermen per million dollars of capital invested in fishing vessels than the industrialized sector. The annual consumption of fuel oil ranges one to two-and-a-half tons for the small-scale, artisanal sector compared to 14 to 19 million tons for large-scale industrial fisheries. And the small-scale sector catches from four to five times more fish per ton of fuel consumed compared to the large-scale, industrial sector. In the final analysis, over-fishing is the principal threat to long-term employment in fisheries. Saving jobs means ensuring that fish populations remain abundant, and the oceans' health and productive processes are continuously protected. Those concerned with secure and sustainable livelihood strategies also must recognize that the "traditional" fishing sector is far more appropriate for the "industrialized" alternative.

The WTO should promote environmentally and socially beneficial trade. An area of great significance to developing countries and the livelihoods of the poor are the need to reform and/or abolish fishery subsidies. World fishing fleets are estimated to be as much as two-and-a-half times the size that would allow sustainable harvest to oceanic fishery resources. The EU pays developing countries more than \$260 million a year for fishing rights on its oversized fleet. The US has already moved to "buy-out" and decommission a portion of its fishing fleet. The WTO could play a central role in working towards elimination of fishing subsidies that promote over capacity of the fleet and use this as the first example of promoting environmentally and socially acceptable trade.

Fish are also one of the world's most highly traded commodities. Almost 40 per cent of fish output by value is traded internationally – primarily from developing to developed countries – with an export value of US\$ 63 billion in 2003 (Emerson, 2005). Seafood is now one of the most traded commodities in the world (FAO, 2004a). In the developing world, exports of fishery products make up 20 per cent of their agricultural and food-processing exports – more than tropical beverages, nuts, spices, cotton, sugar and confectionary combined (World Bank, 2004). Expected increases in prices for fish and fishery products could have potentially significant ramifications for the availability of fish for food use as well as fishmeal, which provides an important source of livestock feed in some countries. International fisheries trade can play an important role in the development strategies of many developing countries, and it is the cornerstone of many fishing communities throughout the world. For developing countries, the fisheries sector is a major source of export revenue, a key dietary input and an important provider of local livelihoods. Nearly a billion people worldwide depend on fish as their primary source of dietary protein (Schorr, 2004). Further, small-scale fisheries form a significant part of the fisheries sector (though

their actual contribution to total capture fishery products remains difficult to estimate) (FAO, 2004b). In the past several decades, bilateral fisheries access agreements between developed and developing countries have emerged as a critical part of trade relations between developed and developing countries. While these agreements have the potential to help build capacities in developing countries and maintain fishing communities in developing countries, they can also fuel over-exploitation of fisheries resources in developing country national waters by distant water fleets that are provided access under the agreement while reducing the competitiveness of the local industry. The fisheries sectors in many of the poorest countries often face serious obstacles to expanding their participation in international trade and diversifying production and exports towards value-added processed products. These barriers include tariff escalation, stringent standards, countervailing measures and rules of origin requirements in export markets as well as domestic supply-side capacity constraints. In addition, fisheries subsidies in developed countries have contributed to market distortions, reducing developing countries' ability to compete with subsidized fleets and often making it economically unviable for poor countries to build up their own fisheries industries. Trade liberalisation in the form of subsidy cuts and reduced tariff escalation may promote more efficient use of fisheries resources, reduce trade distortions, enhance market access for developing countries (particularly for processed fishery products) and thus increase incomes and employment opportunities. On the other hand, while some countries may gain from expanding fisheries trade, some portion of their populations, or other countries, may not reap any benefits, or indeed, may be made worse off. There are fishing communities that fear the impact of expanded trade on their livelihoods, culture, local development and food security. Alongside these considerations exists a debate about the environmental impacts of expanding fisheries trade. On the one hand, expanding international trade may further strain the sustainability of fish stocks and the marine environment where resources are not effectively managed or regulated. Moreover, some trade laws and policies may impede efforts to reduce pressures that drive overfishing. The global market does not currently contain feedback loops that ensure that environmental costs and sustainability concerns are recognised and internalised. There is, for example, no automatic mechanism within the trade system for constraining trade at points where it is clear that the scale of trade and production are out of proportion to the availability of the fisheries resources. Some argue that growth in aquaculture production and trade could mitigate some of the pressures on the resources and provide opportunities for expanding domestic industry. To be sustainable, however, the sector will need to address livelihood considerations, including the likelihood of market concentration at the expense of small-scale industries and the environmental impacts, such as pollution from aquaculture pens or the use of wild fish as fishmeal and oil for use as feed in aquaculture production.

On the other hand, the opportunity to generate profits and foreign exchange from increased trade could be one way to focus the minds of some countries on the need to ensure sustainability as a way to safeguard long-term economic opportunities. In some instances, trade measures have been proposed as possible avenues to address some of the drivers of fish stock depletion, including the use of import controls, traceability systems and labeling schemes which take into account developing countries' capacity constraints to implement and comply with such measures.

The fishing industry is a vital source of social and economic development, providing employment, livelihoods and food security in developed and developing countries alike. A core challenge for governments is to devise policies to maximize social and economic benefits for those linked to the industry, particularly in coastal areas, while balancing socio-economic gains with sustainability considerations in order to ensure the long-term viability of the resource base. Employment and livelihoods For both developing and developed

countries, the productivity, sustainability and profitability of fish stocks is of critical importance to sustain the millions of families and communities who rely on the fisheries sector for their livelihoods. The world's fisheries sector provides employment to over 200 million people. Developing countries account for an estimated 98 per cent of the 51 million people engaged directly in the global fishing industry and related processing activities (FAO, 2004a; World Bank, 2004). A further 150 million people in developing countries are estimated to work in sectors associated with the fishing industry, such as marketing, boat building, gear making and bait (ICLARM, 1999). Furthermore, the number of full-time fishers has increased at a rate of 2 per cent per year since 1990 and is continuing to grow. In particular, aquaculture has become an important source of work, employing roughly 10 million people worldwide. While only partial statistics are currently available for the industry, numbers indicate that over the last decade, aquaculture employment has increased an average of 8 per cent per year (FAO, 2004a). Artisanal and small-scale fishers comprise nearly 90 per cent of fishers worldwide and produce nearly 25 per cent of the world's catch (Schorr, 2005). That at least 6 million of the world's fishers earn less than US\$ 1 per day reinforces the critical link between fisheries and the survival of the world's poorest people (World Bank, 2004). Small-scale fishers are particularly vulnerable to external shocks that impact their capacity to harvest and market fish. Beyond direct employment, the socio-economic importance of the fishing industry to livelihoods is known to be significant but is difficult to quantify. For many coastal communities, fish resources represent the livelihood of the entire family. Women play a particularly prominent role in the fisheries sector – with many women (and family members) engaged in fishing and in some area of harvest, processing or marketing (Josupeit, 2004). In developed countries too, fisheries resources can be a critical source of income for coastal fishing communities whose communities and local traditions have relied for many decades, and sometimes centuries, on fishing and related processing activities (ANFACO, 2005; YUTAICYO and ZENGYOREN, 2005). When it comes to international fish trade, the implications for employment and livelihoods are complex. From an exporter's perspective, increased trade in fish and fishery products facilitated through improved market access and strengthened supply-side capacity can provide important export revenue and employment opportunities. At the same time, greater trade orientation can result in less or lower quality fish for domestic consumption and in the longer term may negatively impact the sustainability of fisheries resources. From an importer's perspective, fish and fishery products can provide an important source of protein as well as inputs into the domestic processing industry. At the same time, cheaper imports can threaten to displace less competitive local fishers and processors. In any case, fishing communities in both developed and developing countries have a vested interest in the long-term sustainability and productivity of their fisheries as the basis for addressing food security and livelihoods objectives – particularly those with low incomes and/or limited possibilities to shift to other sectors or locations for work. Whether in ICTSD — Natural Resources, International Trade and Sustainable Development 21 developed or developing countries, when fish stocks collapse, fishing communities are forced to undergo difficult economic adjustments and the loss of income. Food security The FAO defines food security as the situation “when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life” (FAO, 1996). The role of fish in nutrition shows marked continental, regional and national differences as well as income-related variations (see Figure 1.8). The importance of fish to food security is highest for artisanal and small-scale fishers in developing countries. For developing country populations, fish provides nearly 20 per cent of animal protein (World Bank, 2004). In many coastal areas and especially among the poor, fish are the staple source of animal protein, particularly in developing countries. The FAO warns that “unless the appropriate actions are taken very soon, the contribution of fisheries to food security – and to economic welfare in general – will decline” (FAO, 1995). The effects will be felt most severely in developing countries. A

further decline in fish stocks, or a significant increase in the price of fish for consumption would seriously affect the nutritional status of many population groups, including some of the most vulnerable. Given food security concerns, there is increasing criticism of the inefficient conversion of high percentages of the global fish catch into oil and meal to feed livestock, poultry and farmed fish.

### Human health

In the past decade, there have been growing concerns about the levels of chemicals in fish intended for human consumption and the potential impacts on human health. According to the FAO (2004a), several studies have concluded that levels of these chemicals in such fish are low and probably below levels likely to affect human health. Nevertheless, the FAO advises that they can be of potential concern for populations for whom fish constitutes a major part of the diet as well as for pregnant and nursing women and young children who consume substantial quantities of oily fish. The presence of chemical contaminants in seafood is highly dependent on geographic location, species, fish size, feeding patterns, solubility of chemicals and their persistence in the environment. To clarify the risks and concerns, focused risk assessments are needed. At present, there is little information about the effects of concerns about chemical levels on demand for fishery products. Comprehensive studies and clear information would improve opportunities for producers to respond to and manage concerns – particularly as consumer awareness of these issues rises. Several organic and inorganic compounds can find their way into fish and seafood. These compounds can be divided into three major groups:

- Inorganic chemicals: arsenic, cadmium, lead, mercury, selenium, copper, zinc and iron.
- Organic compounds: polychlorinated biphenyls (PCBs), dioxins and insecticides (chlorinated hydrocarbons). These chemicals are able to accumulate and persist in the environment.
- Processing-related compounds: sulphites (used in shrimp processing), polyphosphates, nitrosamines and residues of drugs used in aquaculture (e.g. antibiotics or hormones).

Many of the inorganic chemicals are essential for life at low concentration but become toxic at high concentration. Several studies indicate that fish in the open seas (which are still almost unaffected by pollution) mostly carry only the natural levels of inorganic chemicals (FAO, 2004a). However, these elements can be found at concentrations that exceed the natural load in heavily polluted areas, in waters that have insufficient exchange with the world's oceans (e.g. the Baltic Sea and the Mediterranean Sea), in estuaries, in rivers and especially in locations that are close to industrial sites. Organic compounds, on the other hand, are mostly of human origin and are brought to the aquatic environment by humans. Increasing amounts of chemicals may also be found in predatory species as a result of bio magnification, which is the concentration of the chemicals in higher levels of the food chain. Similarly, they may be present as a result of bioaccumulation, which is the accumulation of chemicals in the body tissues over the lifespan of the individual fish.

Work safety-While fisheries are an important source of employment, work in the industry is often accompanied by considerable risks. The FAO observes that fishing is considered one of the most dangerous occupations (FAO, 2004a). A particular set of safety concerns for crews arises in relation to ageing fishing fleets. Older vessels often do not comply with the minimum standards for accommodation and safety that are applied to newly-built vessels. Several labour unions with members in fisheries and related processing sectors have also raised concerns about extremely poor labour standards and low wages for work on fishing vessels and in processing facilities (ICSF, 1997). For vessels at sea for many weeks or months, the working conditions and safety of crew may be compromised in favour of keeping costs low. Importantly, the International Labour Organization (ILO) is currently

establishing a new Convention on labour conditions in the fishing industry (which includes accommodation standards for new fishing fleets). The FAO, the ILO and the International Maritime Organization (IMO) are also together finalising major revisions of the Code of Safety for Fishermen and Fishing Vessels and the Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels. ICTSD — Natural Resources, International Trade and Sustainable Development 23

Political volatility and tensions in fisheries A growing source of tension in the fisheries sector is the relationship between artisanal and industrial fishers. Increasingly, artisanal fishers protest the presence of foreign, often heavily-subsidized industrial fishing fleets in coastal waters, uniting through social movements to protest irresponsible harvesting techniques and the related impacts on artisanal fishing communities and traditional livelihoods (ICSF, 1994; ICSF, 1997). In the face of fierce competition, many of these communities fight to maintain local skills and knowledge of local ecosystems, often arguing that their fishing methods are more efficient and sustainable. While some artisanal and small-scale fishers are integrated into international supply chains, many artisanal communities struggle to maintain local marketing channels as a way to meet local food needs and improve food security (Kurien, 1998; SeaFish for Justice, 2005). Artisanal fishers have also raised a series of concerns about the effects of aquaculture on coastal environments, fish stocks and local fish markets. In developed countries, too, many fishing communities struggle to protect their livelihoods. In the face of both domestic and local competition, fishers use strikes and political power to influence political processes. In late 2004, for example, Spanish fishers wary of the potential for declining government support to their industry held a strike that halted traffic and business for a number of days (BBC, 2005). Similarly, in several developed countries, there are also small-scale and owner-operated fishers with long-standing community and family traditions in the fishing industry that face the threat of being pushed out of the industry by larger and more powerful companies. Debates about use of, and access to, diminishing fish stocks have also culminated in legal challenges, diplomatic tensions and even the use of force among states. There have been disputes between states over fish resources in the Grand Banks of Newfoundland, the Bering Sea, the Barents Sea, and off Patagonia and the Falklands (see, for example, Farnsworth, 2005). More recently, there have been conflicts over tuna in the north-eastern Atlantic, crab and salmon in the North Pacific, and squid in the south-western Atlantic. Particular political problems have arisen regarding straddling and highly migratory stocks, as was the case in a 1995 dispute between Canada and Spain over turbot. From 2000 to 2001, Chile and the European Union were also engaged in a trade dispute over swordfish. The EU-Chile dispute over swordfish In 2000, a dispute arose between Chile and the EU regarding trade in swordfish. Concerned that the Spanish fishing fleets were undermining Chilean conservation efforts related to swordfish, Chile prohibited EU vessels in the South-East Pacific from landing swordfish for warehousing, transshipping onto other vessels in Chilean ports or direct importation.

The impacts of tariff liberalisation in the fisheries sector on social development, livelihoods, income and poverty alleviation are hotly contested (Ahmed, 2006; Kurien, 2004). On the positive side, liberalisation could raise producer prices – benefiting poor fishers. Increased demand and access to new markets that emerge from liberalisation could bring new opportunities to small-scale fisheries and workers in processing industries. Where tariff escalation restricts the opportunities for developing countries to diversify production, liberalization could aid efforts to diversify employment opportunities within national economies (Bulte and Barbier, 2005). In addition, increased trade as a result of further tariff reductions could lower consumer prices of fishery products and increase the variety of fishery products available for processing and sale. On the other hand, tariff liberalisation may also produce social costs, including threats to food security, threats to fish stocks in fisheries important to local livelihoods and, in some cases, pressures on local cultures and traditions. From a food security perspective, poor consumers may be

negatively impacted, as fishery products may be diverted into more lucrative export markets instead of being<sup>34</sup> Fisheries, International Trade and Sustainable Development available for local consumption. As fishers devote effort to producing fish for higher prices in export markets, liberalisation may increase the cost of fish in local markets and/or reduce the variety of fish available – leaving local communities with only lower-value fish to consume. As commercial operators take overfishing and aquaculture activities, more fish may be consumed by wealthier consumers, and the share of fish protein available to artisanal fishers could also decline. A study on Senegal, for example, found that the switch of the local Senegalese fishing effort to export species had a serious impact on local food supplies (and on key stocks) (UNEP, 2001). An expansion of trade in aquaculture-based fishery products also generates some socioeconomic concerns. At present, most production in developing countries is subsistence farming for local consumption (OECD, 2003). However, for some products, production is almost entirely export-oriented and the export orientation of production in many developing countries is growing (OECD, 2003). There are some concerns that increases in the export orientation of aquaculture production may displace small-scale producers, lead to greater market concentration and compromise local food security. In some countries, there are concerns about labour standards in the industry. As aquaculture production for international market has grown, there have also been conflicts between culture and capture producers. Fishermen have, for example, argued that the environmental issues associated with aquaculture – including pollution, coastal degradation and ‘escape’ of culture fisheries into the wild – could have a negative impact on ecosystem health and wild fish populations.<sup>8</sup> From a community development perspective, liberalisation may also have a polarizing effect if some communities reap the benefits of increased trade while the majority remains poor. Where trade liberalisation motivates over-exploitation of fisheries, the loss of employment opportunities important to local people can compromise food security goals. Moreover, the potential benefits to the poor of the increased growth that accompanies trade should not be taken for granted. Without proactive measures by governments, it is not clear that enhanced local development and investment useful to the poor will transpire. Tariff reductions have the capacity to incite structural change in the world’s fisheries industries, rendering some skills or equipment obsolete. Thus, many developing countries are working to control the pace at which they open their own markets to imports of fishery products and services to ensure liberalization is consistent with, and complementary to, development objectives. Liberalization can also generate concerns in developed countries. Some producers in developed countries, such as Japan and Korea, fear that liberalization of import tariffs could undercut their domestic fishing and processing industries by allowing more competitively-priced fish and fishery products to enter the domestic market. In particular, reductions of tariff escalation could cause greater competition and, in some instances, loss of competitiveness in processed fishery products. If imports depress the price of domestically produced fish, this is likely to reduce wages, rents to equipment and even jobs. This explains why domestic fishing industries in developed countries are “typically a vehement opponent of free trade in fish, arguing for tariff protection, import quotas or other barriers to trade” (Hannesson, 1998). Empirical evidence on the actual impacts of trade liberalisation on food security remains scarce. An FAO study of eleven developing countries concluded that overall, international trade in fishery products appears to have had a positive impact on food security. Growing fish production in LIFDCs (excluding China) did not appear to be diverted for exports as is often feared, and per capita supply increased slightly. Food imports, however, did not seem to have kept pace with demand in LIFDCs. At the same time, the conventional terms of trade in fishery products for the LIFDC were found to have deteriorated since the entry into force of the WTO Agreement in 1995 with a consequent loss of export earnings (Kurien, 2004). The impacts of tariff liberalisation in the fisheries sector on social development, livelihoods, income and poverty alleviation are hotly contested (Ahmed, 2006; Kurien, 2004). On the positive side, liberalisation could raise



producer prices – benefiting poor fishers. Increased demand and access to new markets that emerge from liberalisation could bring new opportunities to small-scale fisheries and workers in processing industries. Where tariff escalation restricts the opportunities for developing countries to diversify production, liberalization could aid efforts to diversify employment opportunities within national economies (Bulte and Barbier, 2005). In addition, increased trade as a result of further tariff reductions could lower consumer prices of fishery products and increase the variety of fishery products available for processing and sale. On the other hand, tariff liberalisation may also produce social costs, including threats to food security, threats to fish stocks in fisheries important to local livelihoods and, in some cases, pressures on local cultures and traditions. From a food security perspective, poor consumers may be negatively impacted, as fishery products may be diverted into more lucrative export markets instead of being available for local consumption. As fishers devote effort to producing fish for higher prices in export markets, liberalisation may increase the cost of fish in local markets and/ or reduce the variety of fish available – leaving local communities with only lower-value fish to consume. As commercial operators take overfishing and aquaculture activities, more fish may be consumed by wealthier consumers, and the share of fish protein available to artisanal fishers could also decline. A study on Senegal, for example, found that the switch of the local Senegalese fishing effort to export species had a serious impact on local food supplies (and on key stocks) (UNEP, 2001). An expansion of trade in aquaculture-based fishery products also generates some socioeconomic concerns. At present, most production in developing countries is subsistence farming for local consumption (OECD, 2003). However, for some products, production is almost entirely export-oriented and the export orientation of production in many developing countries is growing (OECD, 2003). There are some concerns that increases in the export orientation of aquaculture production may displace small-scale producers, lead to greater market concentration and compromise local food security. In some countries, there are concerns about labour standards in the industry. As aquaculture production for international market has grown, there have also been conflicts between culture and capture producers. Fishermen have, for example, argued that the environmental issues associated with aquaculture – including pollution, coastal degradation and ‘escape’ of culture fisheries into the wild – could have a negative impact on ecosystem health and wild fish populations.<sup>8</sup> From a community development perspective, liberalisation may also have a polarizing effect if some communities reap the benefits of increased trade while the majority remains poor. Where trade liberalisation motivates over-exploitation of fisheries, the loss of employment opportunities important to local people can compromise food security goals. Moreover, the potential benefits to the poor of the increased growth that accompanies trade should not be taken for granted. Without proactive measures by governments, it is not clear that enhanced local development and investment useful to the poor will transpire. Tariff reductions have the capacity to incite structural change in the world’s fisheries industries, rendering some skills or equipment obsolete. Thus, many developing countries are working to control the pace at which they open their own markets to imports of fishery products and services to ensure liberalization is consistent with and complementary to, development objectives. Liberalisation can also generate concerns in developed countries. Some producers in developed countries, such as Japan and Korea, fear that liberalisation of import tariffs could undercut their domestic fishing and processing industries by allowing more competitively-priced fish and fishery products to enter the domestic market. In particular, reductions of tariff escalation could cause greater competition and, in some instances, loss of competitiveness in processed fishery products. If imports depress the price of domestically-produced fish, this is likely to reduce wages, rents to equipment and even jobs. This explains why domestic fishing industries in developed countries are “typically vehement opponent of free trade in fish, arguing for tariff protection, import quotas or other barriers to trade” (Hannesson, 1998). Empirical evidence on the actual impacts of trade liberalisation on food security

remains scarce. An FAO study of eleven developing countries concluded that overall, international trade in fishery products appears to have had a positive impact on food security. Growing fish production in LIFDCs (excluding China) did not appear to be diverted for exports as is often feared, and percapita supply increased slightly. Food imports, however, did not seem to have kept pace with demand in LIFDCs. At the same time, the Conventional terms of trade in fishery products for the LIFDC were found to have deteriorated since the entry into force of the WTO Agreement in 1995 with a consequent loss of export earnings (Kurien, 2004).

The use of anti-dumping and safeguard measures can raise serious socio-economic concerns in targeted countries. Aquaculture production in particular, which has been the main target of safeguard measures in the past, is often dominated by small-scale family business (Peacock, 2004). These producers are most vulnerable to possible negative impacts as they will find it difficult to pay the required duties and bonds and therefore risk being marginalized vis-à-vis a few large-scale competitors. The measures can also have impacts in the importing countries (by raising costs for domestic consumers) and on local producers in related industries (by raising the prices of inputs for processing industries). The impact of US anti-dumping measures on shrimp producing countries in India provides a clear overview of the challenges. The Indian shrimp industry is dominated by small primary producers of wild-caught and aquaculture shrimp with an average farm size of around three ha, producing 1.6 tonnes annually (Peacock, 2004). Shrimp aquaculture – which accounted for 78 per cent of shrimp exports in 2000 – provides livelihoods to one million people in South Asia, both in cultivation and ancillary activities (Salagrama, 2004). Fisheries exports in general and shrimp in particular, play a significant role in India's economy. In 2003, shrimp exports from India to the US accounted for almost US\$ 400 million in export revenue (ITA, 2005). The imposition of duties by the US – amounting to between 5.02 per cent and 13.42 per cent for Indian producers (DOC, 2005) – is expected to result in a significant drop in exports with wide-ranging repercussions on the economic development of India's shrimp producing regions. Interestingly, the US shrimp duties are also opposed by grocers, restaurants, processors, distributors, business councils and other consuming groups in the United States who came together under the Shrimp Task Force to campaign against the duties. These groups have pointed to likely impacts on employment and earnings in the United States, claiming that every job in the shrimp-producing industry is matched by 20 jobs in the shrimp-consuming (processing and distribution) industry (STF, 2005). They also predict that the price of shrimp in the US market would rise if the supply of cheap shrimp were reduced. In 2002, almost 90 per cent of the US shrimp product supply came from imported shrimp, of which 70 per cent is supplied by the countries targeted by US anti-dumping measures (Buck, 2004). Given the over-exploitation of wild fisheries, US production is unlikely to increase to compensate for lower imports, forcing importers to source from alternative countries such as Bangladesh (Peacock, 2004). In principle, a core purpose of several nontariff measures is to safeguard particular public interests in importing countries. SPS and TBT standards may be designed with an eye to protecting consumers and ensuring that they have a supply of safe food. On the other hand, nontariff measures that advance these social goals in some countries may simultaneously constrain both economic and development opportunities in other countries that bear the burden of compliance. Where countries cannot comply with foreign rules and regulations governing imports, this can not only frustrate their opportunities to expand and diversify exports, but can also have specific micro-economic effects. In particular, where exports are rejected by foreign markets, this can slow down or eliminate local employment opportunities and reduce local investment. Export-based businesses that ignore foreign standards risk failure. Small-scale producers, in particular, often lack the capacity to comply with export markets' standards or deal with consequent repercussions on income and employment. Compliance with export standards could potentially have positive spill-over effects in the exporting

country by leading to a general rise in standards across the industry, both for export and domestic consumption. At the same time, however, concerns have been raised that stringent standards in export markets might lead to two-tier production systems in the producing countries where considerably lower SPS standards are applied to fish and fishery products destined for domestic consumption.

The use of trade measures in environmental regimes can be contentious for socio-economic reasons. Whether trade measures are taken to defend distinctly national standards or an internationally accepted environmental or fisheries management objective, they can raise questions of equity between trading partners. Of particular concern to developing countries are trade-measures that require them to engage in expensive environmental protection or fisheries management measures which demand significant government resources or capacity. In cases where financial resources and technical capacity is limited, the burden of promoting more sustainable fisheries through trade measures may fall disproportionately on the weakest countries and on some of the poorest fishing communities (CSE, 1996; CSE, 1998; Pearson, 1998). In particular, decisions taken by RFMOs to require Catch Documentation Schemes (as well as other management tools such as vessel monitoring systems) generate costs that developing countries often find difficult to shoulder. At present, there are no arrangements within RFMOs to share the burden of compliance with these regulations which can include the need for sophisticated administrative, logistical and documentation procedures as well as investment in vessels and technologies to aid in monitoring (Roheim and Sutinen, 2006). To promote fairer cost-sharing, the RFMOs could look to a range of MEAs for precedent; CITES, for example, has a system of financial and capacity-building assistance for developing countries, including training of individuals, purchase of capital equipment and development of infrastructure. A core constraint to improved monitoring and enforcement in developing countries, particularly the implementation of various catch documentation and certification schemes, is the affordability and appropriateness of monitoring equipment. To aid compliance, one important option is to promote stronger technology transfer. Industry or private foundations might, for example, support the acquisition of relevant on-board computerised traceability systems and other environmentally-friendly technologies. Finally, to ease the regulatory and cost burdens on developing countries, greater efforts could be made between RFMOs and MEAs to streamline the different certification, documentation and other requirements. Along with various national labelling laws, developing countries otherwise confront a bewildering number of labelling and documentation requirements in order to get their fish to market. In addition to capacity building, cost-sharing for enforcement and greater coherence among the trade measures adopted, other cooperative options could include joint financing and implementation of projects, 'green loans', credit guarantees, and grace periods for countries within which to satisfy MEA and RFMO commitments (Osakwe, 1997). Finally, the willingness of governments to develop and implement trade-measures adopted by MEAs and RFMOs is likely to improve significantly if they were coupled with broader efforts to reduce the economic pressures which drive overfishing in their waters. This could include efforts to reduce foreign debt which drives some countries to sacrifice sustainability considerations to acquire foreign exchange. It could also include measures that help countries improve the profitability of their fisheries resources, including support for initiatives to add greater value to fisheries exports (e.g. through processing) and to meet higher quality standards, and also to improve the access of developing country fish exports to the most profitable segments of the international market.

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