

Preparation of this document

This report is the result of a series of studies prepared by consultants and carried out in Africa, Asia, Latin America and the Caribbean. The chief consultant prepared this publication over a period of 20 months, highlighting the importance of trade on low-income food-deficit countries (LIFDCs).

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Abstract

This report focuses primarily on the direct and indirect influence of fish trade and food security. It reviews in detail the positive and negative impacts of international fish trade on food security in low-income food-deficit countries (LIFDCs). The main findings are that this trade has had a positive effect on food security, both through higher availability of fish for human consumption in developing countries and through higher income generated through trade. The report cautions, however, that sustainable resource management practices are a necessary condition for sustainable international trade. It also highlights the need for free and transparent trade and market policies to ensure that benefits from international trade are enjoyed by all segments of society.

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Responsible fish trade and food security.

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The members of the Expert Group, an interdisciplinary think-tank, helped in the formulation of the study guidelines and in the selection of the countries in which case studies were to be conducted and the consultants to undertake the task. They also provided critical suggestions at every stage of the study and helpful comments on the draft reports.

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The final draft report was reviewed by the Norwegian College of Fishery Science, University of Tromsø; the Technical Department of the Norwegian Agency for Development Cooperation (Norad); the Department of Trade Policy, Resources and Environmental Affairs of the Royal Norwegian Ministry of Foreign Affairs; the Norwegian Ministry of Fisheries; and the Evaluation Department of Norad; as well as several individuals in the Fisheries Department of the Food and Agriculture Organization of the United Nations, Rome, and the Centre for Development Studies, Trivandrum, India.

The enthusiastic support and constant guidance from such a large number of dedicated and knowledgeable collaborators have made my task as chief consultant to the study and author of this report easier and enjoyable. I wish to thank all of them individually and collectively for seeing the study through. However, I assume full responsibility for the opinions expressed in the report.

John Kurien
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Abbreviations

ACP/EU	Africa/Caribbean/Pacific-European Union
AoA	Agreement on Agriculture (WTO)
CC	Chief Consultant
CFA	<i>Communauté financière africaine</i>
CMC	Crustaceans, Molluscs and Cephalopods
EEZ	Exclusive Economic Zone
EG	Expert Group
EU	European Union
FP	Fish Production
GATT	General Agreement on Trade and Tariffs
GDP	Gross Domestic Product
GNP	Gross National Product
HACCP	Hazard Analysis Critical Control Point
HDI	Human Development Index
HIPC	Heavily Indebted Poor Country
HP	Human Population
ICSF	International Collective in Support of Fishworkers
ILO	International Labour Organization
IRG	International Reference Group
ITQ	Individual Transferable Quota
IUCN	International Union for the Conservation of Nature
JICA	Japan International Cooperation Agency
LIFDC	Low-Income Food-Deficit Country
MFA	Ministry of Foreign Affairs, Norway
NGO	Non-Governmental Organization
NORAD	Norwegian Agency for Development Cooperation
PC	Per Capita
SIFAR	Study of International Fisheries and Aquaculture Research
SPS	Sanitary and Phytosanitary
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UVLW	Unit Value of Live Weight
WTO	World Trade Organization

Fact sheet

RESPONSIBLE FISH TRADE AND FOOD SECURITY

Main objective

The main objective of the project was to **analyse the positive and/or negative impact of international fish trade on food security, including food availability and accessibility, employment, distribution of benefits and hard currency earnings.** The various impacts of international trade in fish were also analysed, with reference to how men and women may be affected differently by this trade.

Activities, timetable and cost

This study was carried out during the period October 2002 – June 2004 and included the following activities:

An expert group (EG) consisting of persons with social science, economic and technical backgrounds was identified. Together with the chief consultant (CC), the EG developed the methodology and the CC submitted it to the International Reference Group (IRG) for their guidance and then to FAO and the Ministry of Foreign Affairs (MFA) for final clearance.

The EG and CC identified 11 countries (Brazil, Chile, Fiji, Ghana, Kenya, Namibia, Nicaragua, Senegal, Sri Lanka, the Philippines and Thailand) to carry out the case studies. The aim was to provide adequate regional representation, taking into account in the choice of countries the nature of the fishery and the significance of fisheries trade and fish consumption patterns.

Local experts conducted the case studies and were identified with the help of the IRG, EG, CC, FAO, MFA and the FISH INFO network. These reports were compiled and edited by the CC, who sought the opinions of the EG and IRG when and where necessary.

The draft report was prepared by the chief consultant and presented to FAO, which provided its comments and discussed them thoroughly with the CC. This final report has been approved by FAO and the CC, and by the MFA as an adequate reply to the terms of reference.

The findings will be appropriately disseminated by FAO and the MFA.

The overall cost of the study was 1 000 000 (one million) Norwegian krone.

Executive summary

This report examines international trade in fishery products and the impact it has on food security in two ways: (a) indirectly, as a source of livelihood through employment and income generated by the fisheries sector; and (b) directly, in the form of fish as food. The findings are based on an assessment at the global level as well as on evidence from 11 national case studies.

The main finding is that international trade in fishery products has had a positive effect on food security. International fish trade has increased dramatically over the past 20 years, from US\$ 6.1 billion in 1980 to US\$ 56 billion in 2001. Developing countries have particularly benefited from this increase, as their net receipts increased from US\$ 3.4 billion to US\$ 17.4 billion over the same period. This was greater than the net exports of other agricultural commodities such as coffee, bananas, rice and tea taken together.

There is, however, room for improvement. Statistics indicate that there has not been a significant change in the composition of exports from developing countries. The most important method adopted for processing fish was freezing. While in some instances this is due to the nature of the product being exported, there is also evidence that tariff escalation in developed countries has prevented the development of more value-added exports from developing countries.

Production and trade statistics also indicate that international trade has not had a detrimental effect on food security in the form of fish as food. Increases in production, coupled with the import and export of fishery products, have insured the continued availability of fish for domestic supply in low-income food-deficit countries (LIFDC).

The study cautions, however, that sustainable resource management practices are a necessary condition for sustainable international trade. Market demand must be coupled with a sustainable resource management policy.

The evidence drawn from the 11 country studies – Brazil, Chile, Fiji, Ghana, Kenya, Namibia, Nicaragua, Senegal, Sri Lanka, the Philippines and Thailand – indicates that in 8 of the 11 countries international trade has had a positive impact on food security. This assessment was based on outcomes related to national impacts, impacts on fishers, fish workers, fish consumers and fish resources. However, international trade in food products was determined to have had a negative impact on the fish resources for all the countries, highlighting an urgent need for more effective management regimes.

The study also stresses the need for free and transparent trade and market policies to ensure that the benefits from international fish trade are enjoyed by all segments of society. The study underscores the recommendation of the FAO Code of Conduct for Responsible Fisheries that states consult with all stakeholders – industry as well as consumer and environmental groups – in the development of laws and regulations related to trade in fish and fishery products.

1 Fish trade and food security: an introductory overview

1.1 BACKGROUND

International trade has become a contentious issue. It has acquired a “micro-global” character: its impact and the discussions about it move contemporaneously among the local, national and world stages. It is reckoned to be the cause for both wealth and widespread pockets of poverty. While it generates enormous rewards for some, the conditions for a wider and fairer sharing of this benefit are yet to be realized. Trade is therefore portrayed as being both free and unfair. The sentiment that trade should be consistent with needs and respect the diversity of national development patterns is also gaining currency. Following the formation of the World Trade Organization (WTO), these contentions and debates have been structured in a more organized manner. At the more general level, in fact, the interrelations of trade, the use of global natural resources and their potential contribution to enhanced living standards and sustainable development have now become widely accepted. The preamble to the Marrakech Agreement establishing the WTO enshrines these realizations and states that:

... trade and economic endeavour should be conducted with a view to raising standards of living ... and expanding the production of and trade in goods and services, while allowing for the optimal use of the world's resources in accordance with the objective of sustainable development, seeking both to protect and preserve the environment and to enhance the means for doing so in a manner consistent with their respective needs and concerns at different levels of economic development.

The World Food Summit in 1996, meeting shortly after the formation of the WTO, assessed the number of undernourished people in developing countries to be above 800 million and targeted to halve this number by 2015 using all manner of strategies, including that of international trade. The summit took the pledge to:

... guarantee that policies on food security, food and agriculture trade and general trade contribute to the development of food security for all concerned through a system of fair, global market-oriented trade.

Food products have long been a major component of global trade, before globalization became a buzzword. The grain, fruit, sugar, meat and fish trades – to name but a few – are all internationally well established. The reach of the globalized food basket has increased by leaps and bounds in the last two decades. All the basic ingredients of a wholesome human diet – carbohydrates, proteins, fats and sugar – move across national borders with ease. The stunning variety on the shelves of food supermarkets in the developed world is testimony to this. The daily display of fresh fish, from all the oceans of the world, in the Tsukiji Fish Market of Tokyo – the world's largest – bears evidence to the great power of international trade in bridging distances and time. International trade plays an increasingly important role in connecting food producers to food consumers. Trade can therefore generate the direct and indirect means to achieve food security and raise living standards for all those involved and linked up to it.

Whether in fact this actually materializes has been a subject of recent investigation. Many reports have been written assessing the impact that international trade has on the lives of millions of farmers, fishers, artisans and other widely dispersed groups of

primary producers, as well as the equally important segment of workers involved in the processing of primary products for export.¹ All these reports point to the potential inherent in international trade to function as if human development really mattered. Such an outcome is not automatic. If it is to materialize, there must be a carefully structured and judicious combination of internationally negotiated, fair agreements that interface with appropriate national policies. These must take account of the interests of all participants whose lives are touched by trade. Such measures can make international trade more inclusive.

This study examines international trade in fishery products and the impact it has had on the direct and indirect aspects of food security. Food security is achieved when physical and economic access to sufficient food to meet the dietary needs for an active and healthy life is available to all. Fish and fisheries cannot play a major role in this. Yet they constitute an important additional component in the “topping up” of basic food security. This materializes, for a significant share of the world’s poorer billions, in two ways: (i) directly, in the form of fish as *food*; and (ii) indirectly, as a source of *livelihood* through employment and income generated by fisheries. Investigating and enhancing our understanding of how, when and where trade in fishery products contributes to, and detracts from, direct and indirect food security is the primary purpose of this study. Providing pointers for new directions in order to enhance food and livelihood security is also a key objective.

1.2 INTERNATIONAL FISH TRADE IN HISTORY

From very ancient times, fish from the oceans and other aquatic sources have been an important source of food. Fisheries have also provided livelihood and economic benefits for those engaged in activities related to the harvesting, processing and trading of fish. Those who harvest fish cannot live on it alone. In addition, fish is highly perishable. Even at low levels of productivity, there is a need to barter or exchange the “surplus”. Fish thus has an inherent tendency to be commodified. The compulsion to trade, even locally and domestically, is thus more innate to a fishery than to livestock or agriculture. Methods of processing add to the shelf life of fish and make trade possible over greater time and distances.

Seafoods, as commodities, have been preserved and traded since the Bronze Age (Thompson, 1995). Historians have pointed out that changes in salting technology at the end of the fifteenth century were an important factor in the expansion of the world-system through the growth of trade. Fish was one of the vitally important items in the diets of sailors, who carried commodities across the seas (Braudel, 1979). Fish therefore played an important role in the first phase of the emergence of a global economy. As a commodity, it played a singular role in the international expansion of trade before it became an internationally traded commodity in its own right!

Seeking new and distant markets for fish was therefore only a short step from this development. Salted and dried cod of the New World and salted herring of the Baltic Sea were among the first foods made “durable” by simple preservation techniques at the harvest site. These commodities were then transported to the metropolis. They became an important component of the diets of both the urban elites (e.g. fish such as cod) and the working class (e.g. fish such as herring). The invention in 1810 of iron containers plated with tin to protect against corrosion stimulated the production

¹ Four of the influential reports are: (i) *Making global trade work for people*, sponsored by, among others, the United Nations Development Programme (UNDP) and the Rockefeller and Heinrich Böll Foundations (UNDP, 2003); (ii) *Rigged rules and double standards: trade, globalisation and the fight against poverty*, by Oxfam (2003); (iii) *Trade and food security: conceptualizing the linkages*, by Arvind Panagariya (FAO, 2003a); and (iv) *The global governance of trade as if development really mattered*, by Dani Rodrik, published by UNDP (Rodrik, 2001).

of canned seafood that was affordable to industrial workers. Canned fish (and other canned foods) did not require the added expense of further technology or labour to preserve or prepare for final consumption. Fish as a food has been a leveller. Wherever it was relished, it has been an important component in the consumption of the rich, the poor and the labouring sectors of society.

1.3 INTERNATIONAL FISH TRADE TODAY: SOME STYLIZED FACTS

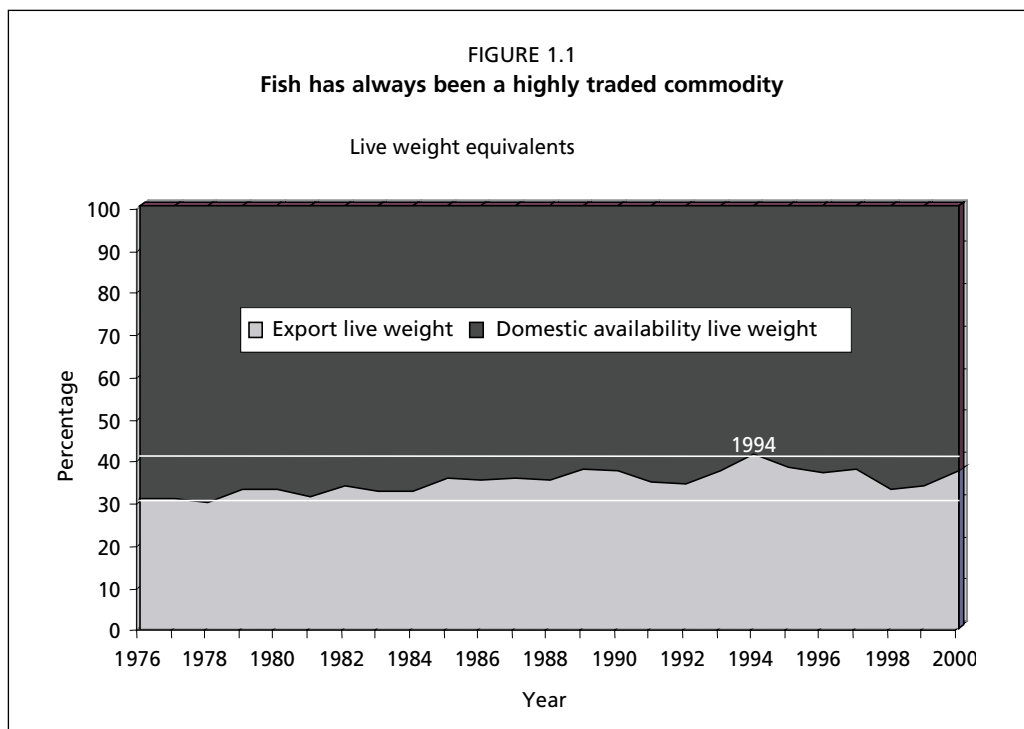
Global fish production – from all marine and inland sources – increased well over three-fold from around 44 million tonnes in 1963 to 132 million tonnes in 2003.² The share of developing countries in this production has consistently risen. There are two important reasons for this. First, from the late 1970s onwards, and increasingly from 1982, many nations began to issue unilateral declarations of exclusive economic zones (EEZs) that extended jurisdiction over ocean space to 200 nautical miles from their shore lines. The cumulative impact of this was to curb the fishing activities of many developed countries that used to fish in waters very distant from their own coasts. Such restrictions on fishing by distant-water fishing vessels laid a strong base for enhanced marine-capture production by developing countries. This production grew from 16 million to 54 million tonnes between 1963 and 2003. An equally important second reason for the increasing dominance of developing countries has been the steady growth of inland-capture production and the major growth of aquaculture. Between 1963 and 2003, the former rose from 2.5 million to 8.4 million tonnes and the latter from just around 1 million to a phenomenal 38 million tonnes.

The notion that large quantities of fish entered international trade only recently is incorrect. From the 1960s to the late 1970s, just under a third of the fish globally harvested and marketed entered international trade. This proportion has increased only marginally since then. Fishery products were among the most traded primary food products over the past two decades. Their world exports expanded even faster than did those of a number of manufactures. They were among the high-value products that have income elasticities not only much higher than traditional agricultural products, but also in excess of unity. The standards of quality, safety, packaging and delivery of such products were, in many respects, more typical of modern manufacturing than of traditional agricultural products, including basic food commodities. The analysis undertaken by the United Nations Conference on Trade and Development (UNCTAD) of the growth of exports of the most dynamic food commodities of developing economies over the period 1980–1998 shows fresh crustaceans, fresh fish and fish preparations having average annual export-value growth rates of 9.1, 9.0 and 8.6 percent respectively (UNCTAD, 2003).

In value terms, the global trade in fishery products was worth US\$63 billion in 2003. It increased from US\$6.1 billion in 1980. In 1980 developing countries accounted for 39 percent of the value of exports, and by 2003 they accounted for about half. Between 1980 and 2003, the net receipts from fish trade by developing countries increased from US\$3.4 billion to 18 billion. This was greater than the net exports of other agricultural commodities such as coffee, bananas, rice and tea taken together.

Among developing countries, it is the low-income food-deficit countries (LIFDCs) for which fish is an important means of earning foreign exchange – to service international debt and pay fast-growing import bills for other commodities needed for the economy, such as staple foods and fuel. Countries included in the LIFDC grouping are those classified by the World Bank as being low income in terms of

² It is worthy of mention, given our focus on food security, that these figures do not take into account the significant quantity of fish harvested for subsistence consumption or the fish discarded at sea by commercial fishing operations. Estimates of the former do not exist. Those of the latter range from 10 million to 25 million tonnes.



gross national product (GNP) per capita, and by FAO as having a trade deficit for food in terms of calorie content. (Currently there are 82 countries in this group, listed in Appendix 1.)³ LIFDCs account for two-thirds of the global human population. In most of these countries, the fisheries sector includes a significant share of the poorest primary producers. In 2003 LIFDCs accounted for over half of global fish production and fishery product exports worth US\$12.7 billion – about a fifth of the value of global exports. Of global fishery product imports in 2003, valued at US\$68 billion, the share of LIFDCs was only 6 percent or US\$4.2 billion. Clearly, exports rather than imports of fishery products were more important to LIFDCs.

Despite the wide species diversity in LIFDC tropical fish harvests, only a limited selection enters trade. Examining the product composition of these LIFDC exports, there has been little change between 1976 and 2003. Crustaceans, molluscs and cephalopods⁴ in frozen form have accounted for 40–60 percent throughout. In the latter period, about 20 percent of the export value was from frozen fish. LIFDC imports, on the other hand, in 1976 were largely (70 percent) composed of fish in preserved, dried/salted and smoked form. In 2003 the composition changed to frozen fish (53 percent) and fishmeal (16 percent).

LIFDCs are not a homogeneous group within the ranks of developing countries. Large countries such as China and India and small island economies such as Sri Lanka and Samoa belong to this group. Looking at fish production and international fish trade in the post-1995 period, the performance of one country – China – has significantly influenced LIFDC averages.⁵ However, viewed through the lens of food security, the importance of international trade in fishery products pervades the whole group. In this study, of the eleven developing country case studies undertaken, we have examined closely the case of six countries that are LIFDCs and five that are not.

³ FAO omits countries from the listing that have formally objected to being included in this grouping.

⁴ Scientifically, cephalopods are in the same order as molluscs. They are separated here in view of their different tradability and price.

⁵ China's performance has been a subject of controversy. In this report, we take the FAO data on this as given.

1.4 FISH FOR FOOD SECURITY

Concerns about the contribution of fish to food security and the role of trade in achieving this are of recent origin on the global scale. The FAO World Conference on Fisheries Management and Development, held in Rome in 1984, adopted a strategy endorsed by 147 countries that begins with these words:

... fish is an important part of daily diets in many countries and provides nearly one quarter of the world's supply of animal protein and ... in many countries fisheries are important sources of employment, income and foreign exchange ... (FAO, 1984).

This opening statement gives centrality to fish as food and to the role of fisheries in generating livelihoods. The strategy does highlight the role of fisheries in contributing to national nutritional goals. The programmes of action discuss international trade in fish and the role of fisheries in alleviating undernutrition, but there is no suggestion of a possible link between the two.

It was eleven years later, in 1995, that the FAO Code of Conduct for Responsible Fisheries appealed to states, development banks and other international organizations to ensure that:

... their policies and practices related to the promotion of international fish trade and export production do not result in environmental degradation or adversely impact the nutritional rights and needs of people for whom fish is critical to their health and well being

The Kyoto Declaration issued at the International Conference on the Sustainable Contribution of Fish to Food Security, in 1995, also reiterated the direct reference to the role of trade.⁶ The declaration encouraged states to:

Ensure that trade in fish and fishery products promotes food security, does not result in environmental degradation or adversely impact the nutritional rights and needs of people for whom fish and fishery products are critical to their health and well-being, does not undermine applicable global, regional and subregional conservation and management measures and is conducted in accordance with the principles, rights and obligations established in the World Trade Organization (WTO) Agreement.

The declaration was backed by a plan of action:

To assess and monitor the present and future levels of global, regional and national production, supply and demand of fish and fishery products and their effects on food security, employment, consumption, income, trade and sustainability of production.

To consider fishery products as food in the context of food security, they must be viewed more as the category of fruits is. They are composed of items of very wide diversity – from whale meat and shark fins to shrimp, scallops and seaweed. They vary in appearance and taste. Their nutritional values are, however, broadly similar, particularly with reference to their protein content. The variations are largely in relation to the amount of lysine, minerals, polyunsaturated fats, vitamins and other trace elements. The economic attribute that varies most with regard to fishery products is price. The price ratio of bluefin tuna to anchovies can be on the order of 200:1. However, both can be delicacies: the former for the well-to-do Japanese, the latter for the poor Sri Lankan. Bluefin tuna is fish for “luxury consumption” and anchovies are fish for “nutritional consumption”. In the aggregate, their contribution to direct food security – fish as food – is vastly different.

The importance of fish as a crucial element in the diet of a population is particularly important in countries in which the staple crop is particularly low in protein – such as cassava or plantain – rather than a cereal grain, for example. In such situations, as in many parts of Africa, a larger proportion of foods such as fish that are rich in proteins

⁶ The origins of the idea for this conference also lie in the philosophical question of who should have the right to eat fish from the sea – humans or the endangered species such as whales and sharks (Erhard Ruckes, personal communication).

BOX 1.1

Role of fish in human nutrition

Fish is an excellent source of readily digested, high-quality animal protein. It is high in lysine and essential amino acids. Lysine constitutes more than 10 percent of the total protein in fish and only 2.8 percent in rice. This makes it particularly suitable for complementing the high-carbohydrate diets prevailing among the poorer sectors of the population in both developed and developing countries. Fish is most significant as a source of protein, although its contribution to energy is also important. However, the vital role of fish in nutrition is probably due to its richness in micronutrients generally not found in staple foods. It is a very important source of preformed vitamins A and D if its oil is ingested. Fish also contains thiamine and riboflavin (vitamins B1 and B2). It is a source of iron, phosphorus and calcium and other important trace elements. Marine fish is a good source of iodine.

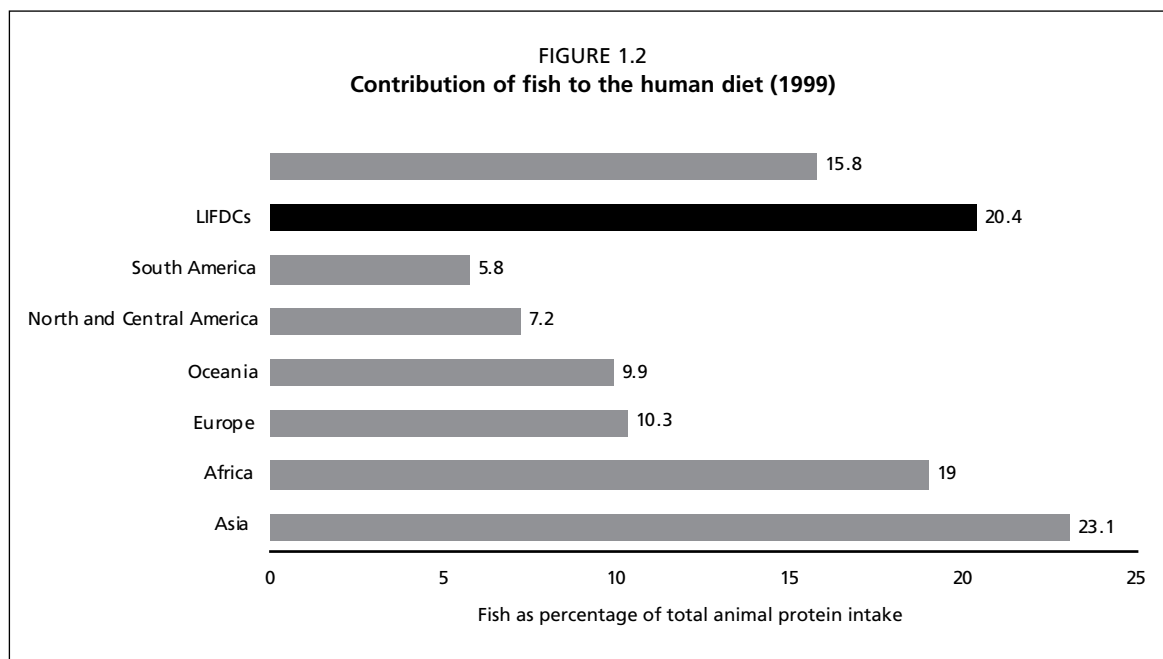
Fish also contribute fatty acids that are necessary for the proper development of the brain and body. Fatty fish is high in polyunsaturated fatty acids, especially omega-3, which is now considered important in lowering harmful blood cholesterol levels. The contribution that fish can make to the nutritional status of young children and lactating women is particularly significant. Their protein requirements are much higher, because protein is required for growth. For children, whose stomachs cannot digest the bulk of starchy staples (maize and cassava, in particular), incorporation of a small quantity of fish can substantially improve the biological value of the diet and contribute to significant improvements in nutritional security.

and fat may be essential, especially in the diets of young children, infants and pregnant women. A small quantity of fish can contribute to increasing staple consumption by improving the overall palatability of food and adding to its nutritive value. For children, whose small stomachs cannot digest the bulk of starchy staples, incorporation of a small quantity of fish can substantially improve the biological value of the diet and contribute to better nutrition (Box 1.1).

From a national food-security perspective, fish is often not considered important because it contributes few calories. Food security at the national level is usually measured in terms of carbohydrate availability per head of population. However, since people do not live on carbohydrate sources such as grains and tubers alone, there exists a strong case for broadening the components considered in the measurement of food security.

Nutritionally, fish has many advantages. Where other sources of animal protein are scarce or expensive, such as in the less developed areas of the world, fish is often the most important source of dietary protein (Figure 1.2). Nevertheless, there are several countries in the world that have fish in plenty but continue to have a large number of undernourished adults and children. This is due to the important and often unrecognized fact that the consumption of protein foods is a matter of acquired taste and habit. Moreover, it is not sufficient that there is a *need* for food. To translate into food security, it has to be backed by effective *demand* in the form of purchasing power. This is lacking among many potential consumers of fish in developing countries. Connecting unutilized fishery resources to food needs is more often easier said than achieved!

Fish is an important source of indirect food security. This is achieved by generating livelihoods, employment and income from harvesting, processing and marketing fish. These activities attain great significance along the coastal and other riparian tracts of



developing countries, in general, and of LIFDCs in particular. Estimates of the number of people involved vary widely. FAO estimates that in 2000 there were 35 million fishers and assumes three people in related jobs for each fisher. Fish workers therefore number over 100 million. In 1994 the WorldFish Center, formerly the International Center for Living Aquatic Resources Management, estimated that about 50 percent of the population in developing countries lives within watersheds and 24 percent lives within 60 kilometres of the coast. This proportion must have increased as a result of population growth and migration. In most of these countries, sectors of the population that inhabit these regions have limited opportunities for employment. The harvesting of fishery resources and their processing and trade are often an important or sometimes the only option for earning a livelihood. These activities provide an important basis for improving earnings and the quality of lives. However, there is no firm evidence of such a relationship between easier access to fishery resources and higher incomes and increased well-being. The opportunities certainly exist, and they can be utilized by nations and communities provided the right economic and institutional arrangements are in place. This study examines the manner in which this relationship materializes in different country contexts.

1.5 TOWARDS A GREATER UNDERSTANDING OF FOOD SECURITY

The World Food Summit of 1996 has given us this now widely accepted definition:

Food security exists 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.⁷

Food security by this definition relates to security at the individual level. The definition highlights the all-inclusive perspective – “all people, at all times”. It stresses the issues of physical and economic access – what we may term “accessibility” and “affordability” – but places the emphasis on the food.

Amartya Sen has elaborated the ways in which an individual can achieve the “entitlements” needed to attain the accessibility and affordability of food security (Sen,

⁷ There have been some 200 definitions of food security in published writings. Given the short history of the concept, this is an impressive record (FAO, 2003b).

1981). In this study, we adopt his approach. Sen enumerates four entitlements that give an individual the *direct* and *indirect* means to achieve food security:

- (i) *production-based entitlements* – producing food for self
- (ii) *trade-based entitlements* – selling or bartering goods or other assets
- (iii) *labour-based entitlements* – selling own labour power
- (iv) *transfer-based entitlements* – receiving gifts or transfers of food

To illustrate, fishers that catch their own fish from the sea or river are entitled to their catch, adjusted to obligations they may have (e.g. to the middlemen that have given them credit). This is a production-based entitlement. They can then also sell a part of their fish for cash – a trade-based entitlement – in order to buy other goods and services. A crew member on a fishing craft or a woman worker in a fish-processing plant gets a share or wage – a labour-based entitlement – which places a ceiling on what s/he can buy. In many traditional fishing villages, there exist socially sanctioned provisioning systems that provide people that are disabled or widowed with gifts of fish. These are transfer-based entitlements, which they consume directly or convert into trade-based entitlements by selling the fish to obtain other foods.

Food security may also be viewed from a collective or national level. However, the individual and national perspectives may differ. Overall the nation can be food secure, yet many individual citizens can be starving or malnourished. This is largely due to the fact that these individuals have inadequate production-, trade- or labour-based entitlements. They may have to depend on transfer-based entitlements, such as food aid, to attain food security. This lack of congruence between achieving food security at the national level and the ability to ensure that all citizens are food secure raises an important host of economic, social and ethical issues. The lack of entitlements is often the result of deep-seated economic inequalities within countries, which in turn deny citizens economic access to food.

Sometimes certain kinds of food may be available within a nation in plenty, but there may be strong social and cultural preferences against their consumption. Fish is a good example of this. Fish in plenty and malnutrition may coexist in a country. In such a context, one national strategy can be to trade the fish and use the earnings to buy other, more culturally acceptable forms of food. Another long-term approach could be to take measures to inculcate a taste for fish in the population and thereby utilize it to contribute directly to food security.

There is yet another important dimension related to achieving food security that is not as frequently mentioned in the otherwise vast literature on the subject. It pertains to the *absorption* of food. Even after food is made accessible and affordable, it may still not lead to effective food security because the associated conditions of hygiene and health that are needed for the food to be absorbed by the human body are lacking or absent (e.g. a good water supply and clean sanitary conditions to prevent illness). This also reemphasizes the important issue of food safety in food security. Taking all these issues into consideration, we can say that the three As of food security are: accessibility, affordability and absorption.

1.6 FOOD SECURITY AS A HUMAN RIGHT

In a world of adequate per capita supplies of food, international human rights law recognizes the human right to adequate food.⁸ This is also an important way to bridge the individual-national (micro-global) incompatibility that may exist in many countries – the nation is food secure, but numerous individual citizens remain without adequate food. Many food producers in developing countries contribute significantly

⁸ In the fisheries context, the work of George Kent is noteworthy in expounding this link. See Kent 1997, 2002 and 2003a and b.

to national wealth by participating in trade – exporting the produce of their hard labour to earn foreign exchange for their countries. Yet they may continue to be poor and food insecure in spite of this. On the one hand, fishery products contribute significantly to export earnings in LIFDCs; on the other, fishing communities and other related workers responsible for this achievement remain “outliers” in their own societies.⁹ Viewing food security as a human right is a basic requirement to bridge this micro-global gap.

The Universal Declaration of Human Rights of 1948 asserts unambiguously in Article 25(1) that:

Everyone has the right to a standard of living adequate for the health and well-being of himself and his family, including food

Later, the International Covenant on Economic, Social and Cultural Rights, which came into force in 1976, alluded to the issue of reforming systems and international trade by:

Taking into account the problems of both food-importing and food-exporting countries, to ensure an equitable distribution of world food supplies in relation to need.

In 1999 the United Nations Committee on Economic, Social and Cultural Rights released its General Comment 12 on the human right to adequate food. This is a definitive contribution to international jurisprudence. General Comment 12 makes it obligatory for governments to respect and protect the human right to adequate food, to facilitate people’s access to food and indeed, if necessary, provide them with food.

In the context of fisheries, these international agreements create obligations for the state to take action against bad fish-production practices, foster good resource management, initiate aquarian reforms to create property rights in aquatic terrain and ensure fair international trade. All these actions have a basic focus on ensuring food security for all.

1.7 FISH TRADE AND FOOD SECURITY

Fish and fish trade are thus important sources of both direct and indirect food security. Many of the concerns relating to fish and food security have tended to focus on the direct dimension of fish for consumption. Consequently, when fish exports have been examined, the focus has been primarily on how they reduce availability of fish for domestic consumption. Fish imports, on the other hand, were viewed mostly as a means of increasing local food-fish availability. In actual fact, the relationship between trade (exports and imports) and food security is more complex. Production for exports can enhance the incomes of poor fishers substantially and thus raise their trade-based entitlements to achieve greater food security. As an extreme example, consider the case in Gujarat, India. Most marine fishermen there are vegetarians and do not eat the fish they catch. For them fish is a “cash crop”. It is only the income from its sale that matters.

Exports may deprive a sector of domestic consumers of a variety of fish. This may lead to a potential loss of their food supply. This is particularly true when fish is an integral part of the culturally conditioned diet of a sector of the population. In such cases, demand is likely to be relatively price inelastic and, if supply is less than effective demand by even a very small margin, the price of fish will increase sharply. This can lead to undesirable nutritional consequences, especially for the poorer consumers.

On the other hand, exports can also be based on new sources of production, such as a newly accessed species at sea, or from aquaculture. Consequently, the direct, adverse food-security implications of trade may not necessarily arise or be so severe. To export fish, further processing will be required. This creates more, often new, employment

⁹ Continued discussions in FAO about the poverty within fishing communities, even after decades of international trade, are indicative of this.

and enhances labour-based entitlements, particularly among women. It is now well established that women's employment tends to contribute more to family welfare and food security.

Imports, particularly when they are for nutritional consumption, can help stabilize or reduce fish prices, which benefits fish consumers. However, imports can have an adverse effect on the income of fishers in the importing country. It may lower the price they receive for the fish they harvest and thus lessen their food security. As a response, they may begin to heavily exploit the local fish stock, possibly to its ruin. Alternatively, women fish processors in that country (maybe even wives of the fishers) may obtain additional employment by processing this imported fish. Imports may also be intended entirely for re-exporting, after value-added processing. This then generates the same effects mentioned above. The consumer in the importing country may be totally unaffected by this. It is abundantly clear that the paths towards enhanced or reduced food security will depend on specific details and must therefore be examined, to the extent possible, on a case-by-case basis.

1.8 FISH TRADE AND FOOD SECURITY: MARKET, STATE AND CIVIL SOCIETY

The very existence of many paths by which trade can lead to enhanced or reduced food security flags the importance of institutions other than the market in determining the choices. The market, with its prime instrument of price signals, responds essentially to the paths with the greatest effective demand – need backed by purchasing power. However, millions that are food insecure have the *need* for food, but not the purchasing power to translate this need into effective demand. Thus catering to the food security of all – whether under the aegis of trade or not – warrants the involvement of the state (governments, judiciary and parliaments) and the arms of civil society (social and ecological movements, citizen's groups, etc.). Such involvement may be needed to create purchasing power and thus contribute to achieving the means for direct or indirect food security. It may also be directed towards creating non-market enabling conditions in the form of regulatory frameworks that can modulate market forces and make them more responsive to food-security needs. If trade is to enhance food security, the search for new ways to ensure structured and more inclusive cooperation between market, state and civil society is inevitable.

1.9 THE WAY FORWARD

All national governments are challenged to strive towards achieving a balanced and responsible international trade in fishery products. Some are more successful than others in this task. To “leave it to the market” to resolve the manner in which the benefits and costs of trade are distributed may result in food-security concerns slipping through the fingers of the invisible hand. Plugging the leaks requires structured and thoughtful policy intervention, good examples of which we already begin to witness in many countries. What *needs* to be done can only be fashioned from an understanding of what *has* been done.

An important rationale of this study – indeed what distinguishes it from earlier efforts – is the emphasis on conducting very specific case studies in a variety of country contexts. This decision was based on the perception that any changes in fish food supply or new opportunities for livelihood, consequent on the impetus for greater trade, will be dependent upon several factors. These include, *inter alia*, the manner in which existing policy and institutional arrangements have evolved, the nature of ecosystem constraints, the configuration of technological choices, the nature of market demand, the level of physical and human capital and the freedom of expression and action in civil society. There is no standard pattern to this.

The countries selected for context-specific study were the following: **Brazil, Chile, Fiji, Ghana, Kenya, Namibia, Nicaragua, the Philippines, Senegal, Sri Lanka,**

and **Thailand**. They are representative examples of countries actively involved in international fish trade. They also have the most to gain from trade in fishery products as a means of enhancing food security, both directly and indirectly. A list of relevant characteristics of these countries, which will aid our understanding of their differences and similarities, is given in Table 1.1.

The methodology adopted for selection of the countries is detailed in Appendix 2.

We will begin our investigation of the impact on food security of international trade in fishery products with a “global” analysis of international fish trade in Chapter 2. The analysis is based on secondary data provided by FAO. Its main purpose is to piece together trade data in a manner that will highlight the food-security implications.

Against this backdrop, we turn to the concrete realities in the countries chosen for analysis. For this task, we have drawn up a broad schematic framework that charts out a variety of paths to enhanced and reduced food security as a result of international fish trade (Figure 1.3). The framework is essentially a matrix showing the food-security

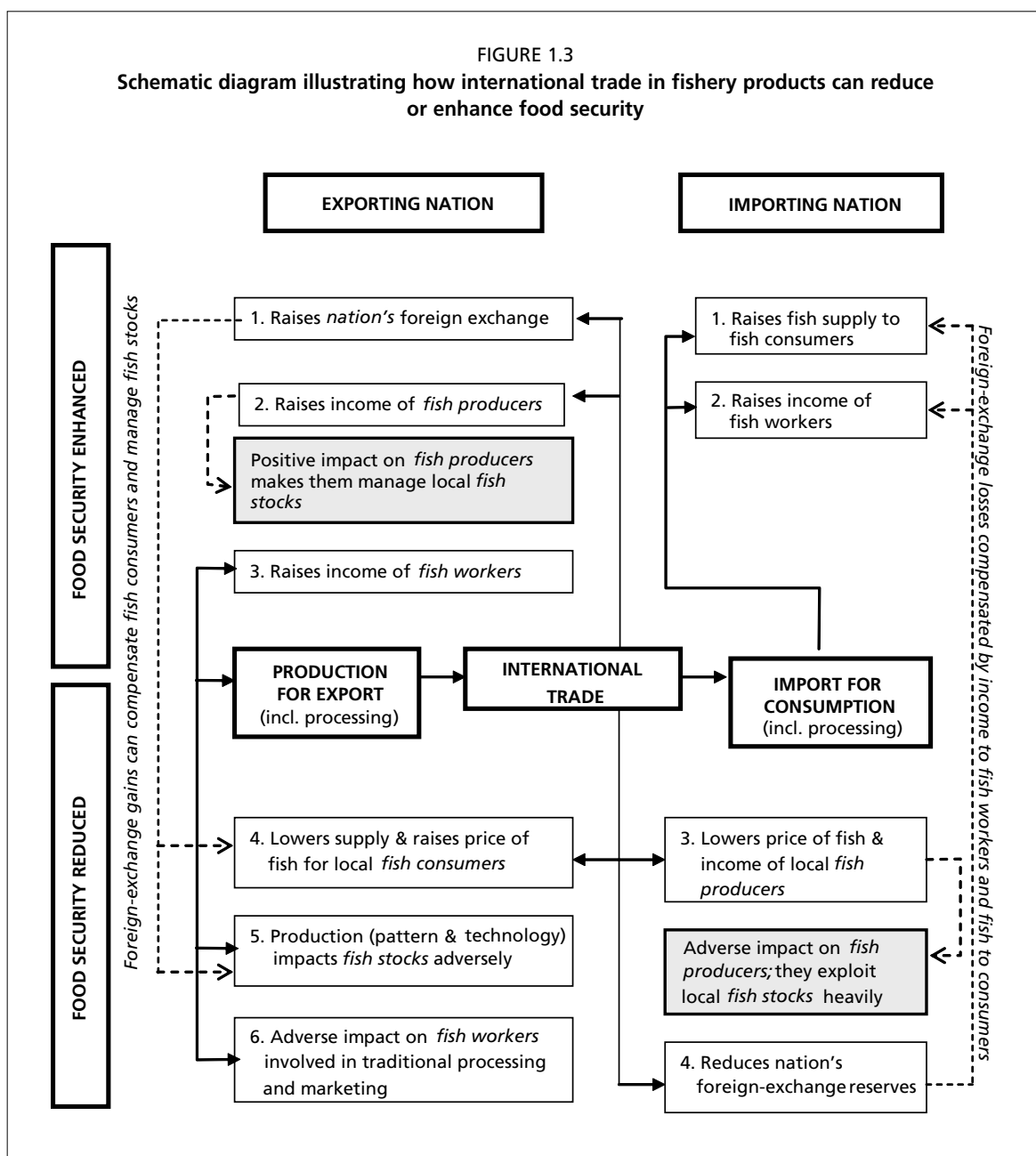


TABLE 1.1
Some characteristics of the countries chosen for detailed case study

Items/Country	Nicaragua	Brazil	Chile	Senegal	Ghana	Namibia	Kenya	Sri Lanka	Thailand	Philippines	Fiji
Population (in millions) 2000 ¹	5	176.6	15.8	10.2	20.7	2	31.9	19.2	62.0	81.5	0.8
Gross domestic product (GDP) (US\$ billion) 2000 ¹	4.1	492.3	72.4	6.5	7.6	4.2	14.4	18.2	143	80.6	2.0
Per capita income/year (US\$) for 2000 ¹	740	2 720	4 360	540	320	1 930	400	430	2 190	1 080	2 240
Human Development Index (HDI) rank (2000) ¹	118	72	43	157	131	126	148	96	76	83	81
LIFDC? (2000)	Yes	No	No	Yes	Yes	No	Yes	Yes	No	Yes	No
Heavily Indebted Poor Country (HIPC)?	No	Yes	No	No	No	No	No	No	No	No	No
Debt as % of GDP (2000) ¹	12.5	10.5	8.7	5.2	9.1	NA	4.6	4.5	11.5	9.0	2.0
Total protein per capita (PC) supply (2000) in grams ²	59.3	79.9	78.5	65.4	54	77.8	53.2	52.7	55.5	55.3	73
Total animal protein PC/day in grams (2000) ²	11.9	40.7	37.8	20.1	14.6	29	16.4	13.9	22.8	24.1	28.8
Share of fish in animal protein PC/day in grams (2000) ²	1	1.6	3.4	9	9.6	2.7	1.8	7.2	9	9.8	6
Population below poverty line (less than US\$1 a day) (2003) ¹	45.1	NA	8.2	2	22.3	44.8	34.5	20	7.6	2.0	NA
Underweight children under 5 years of age (%) (2000) ³	12	6	1	18	25	26	23	33	19	28	8
Undernourished population (as % of total population 1997/99) ³	29	10	4	24	15	33	46	23	21	24	NA
Total commodity exports (US\$ billion) ⁴	0.6	55.3	18.2	0.7	1.7	NA	1.6	4.5	68.8	38.1	0.5
Total food exports (US\$ billion) ⁴	0.5	12.8	4.4	0.4	0.5	NA	0.9	0.9	9.9	1.8	0.2
Total commodity imports (US\$ billion) ⁴	1.7	58.9	16.6	1.6	2.9	NA	2.9	5.3	61.5	33.8	0.7
Total food imports (US\$ billion) ⁴	0.3	4.0	1.2	0.4	0.4	NA	0.4	0.8	2.7	2.6	0.1
Total debt service (% of exports of goods & services) (2003) ¹	11.7	63.8	31.3	10.4	14.7	NA	15.8	7.5	15.6	22.1	NA
Fish is one of top 10 exports? (2000) ⁴	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes

Source: 1. World Bank, 2. FAO, 3. UNDP, 4. UNCTAD

enhancing and food-security *reducing* impacts in *exporting* and *importing* countries that arise from production activities for export, international trade and import for consumption. Within this matrix, the focus is on how these activities have a bearing on five categories – the nation, fish producers (fishers), fish workers, fish consumers and fish stocks.

We will not provide detailed analysis of each of the countries studied. We would also remind the reader that the country studies were undertaken by persons with different specializations and perspectives. Consequently, although they were guided by a broad common framework, they were free to give subjective emphasis to those aspects of fish trade and food security that they thought appropriate and felt competent to handle. A different set of persons may have chosen to focus on other issues. There is, therefore, no claim to “completeness” or “objectivity” of the analysis. Moreover, since the relationship we are examining is in essence very dynamic, we consider such a claim in any circumstance to be fallacious.

Our effort in Chapter 3 will be to summarize the impact of trade on the five categories mentioned above in the respective countries. Where possible and appropriate, we will point to some of the specific features obtaining in the fishery sectors of these countries and examine the organizational initiatives and institutional policies adopted by them in fashioning their trade strategies. The impacts that these have had on food security will be the focus. Arising from these analyses, in Chapter 4 we will consider a few issues that have implications for policy. These will then form the basis for some recommendations in Chapter 5 aimed at the micro-global spectrum: what can/should be done at local, national and international levels to make global trade in fishery products more responsive to the multifarious aspects of food security.

2 Analysing international fish trade: the “global” food security perspective

To analyse international trade in fishery products from a food-security perspective, we must obtain a broad understanding of the magnitudes, composition and trends of production and trade over the long term.¹⁰ This is a necessary backdrop to the preliminary effort to make a systematic assessment of fishery trade with regard to the countries examined. Trade data collected and collated at the national level have been consolidated by FAO. The overt bias of trade data is their emphasis on the commercial aspects. Commodity quantities, values and prices are the priority. The bearing that trade has on an aspect such as food security can only be inferred through indirect analyses. The limitations of such an enterprise are obvious. In this chapter, we attempt to piece together relevant data in a “relational” approach. This is one way to make an ex-post assessment of the manner in which countries incorporate food-security concerns into their fishery trade policies. The focus in this chapter will be on LIFDCs and their performance vis-à-vis the broad global trends.

Trade can reduce and enhance food security – directly and indirectly. This makes unidirectional interpretation of trends difficult. It may also be inappropriate to draw firm conclusions, but rather to state inferences. These can form the basis for more detailed investigations using the data available, or for generating new evidence based on further investigations, at the appropriate level of disaggregation.

2.1 FISH PRODUCTION

To undertake trade, adequate production is an important first requirement. Between 1963 and 2003, we observe significant increases in fish production at the global level (200 percent), for developing countries (420 percent) and for the LIFDCs among them (753 percent). The developed countries increased their production by only 29 percent over these four decades. As a matter of fact, production by developed countries has continuously declined over the past seven years. However, fish production at all levels increased faster than the human population. The performance of the developing countries as a whole and LIFDCs in particular is particularly noteworthy. In both groupings of countries, while the human population more than doubled between 1963 and 2003, fish production increased over four-fold and seven-fold respectively. These increases have decreased the share of the developed countries in global fish production from 56 percent to 23 percent over this period. By 2003 the developing countries accounted for over three-quarters of global fish production (Table 2.1).

There are few developing countries in the world that have not expanded their fish production, because it is the natural resource that requires the least lead time for development. Enhanced production has been the result of: (i) sustained efforts by the respective countries in capture and culture fisheries; (ii) development assistance in the realm of fisheries, often provided by the developed countries and multilateral

¹⁰ In this study, the data utilized in the analysis of international trade in fishery products have been provided by the FAO Fisheries Department, Fishery Information, Data and Statistical Unit, FISHSTAT PLUS, 2005. Unless otherwise specifically mentioned, all data in this chapter are from this source.

TABLE 2.1

Trends in fish production (FP) and human population (HP) (production in million tonnes and population in billions). Figures in brackets are shares of world total in respective year

Region	1963		1976		2003		% increase 1963–2003	
	FP	HP	FP	HP	FP	HP	FP	HP
World	44.0 [100]	3.2 [100]	68.8 [100]	4.1 [100]	132.0 [100]	6.3 [100]	200	97
Developed	24.0 [55]	1.0 [32]	39.4 [57]	1.1 [27]	30.9 [23]	1.3 [21]	29	30
Developing	20.0 [45]	2.2 [68]	29.4 [44]	3.0 [73]	101.9 [77]	5.0 [79]	410	127
LIFDC	8.2 [19]	1.8 [56]	14.4 [21]	2.4 [59]	69.9 [53]	4.1 [65]	752	128

aid agencies; and (iii) foreign direct investment. Among the countries examined in this study, those that faced barriers on the path to fisheries development were primarily those that experienced political constraints and turmoil. **Namibia** was the classic example of this until it attained independence in 1990. Another was **Nicaragua**, where fish production in 2003 was only 22 000 tonnes – far below potential and less than even that of the small island state of **Fiji**, which produced 34 600 tonnes. In the case of **Namibia**, since constraints were removed after independence, fisheries have become a cornerstone of development for that country. **Brazil, Senegal** and **Sri Lanka** have not expanded their fish production at the average pace of the developing countries over the four decades. Here again, in Sri Lanka, the ethnic conflicts in its northern territories were an important cause of this stagnation. Fish production in **Ghana, Kenya, Thailand, the Philippines** and **Fiji** has risen faster than the average rates for developing countries. **Chile**, though among the world's largest fish producers, accounting for 4.1 million tonnes in 2003, saw production drop from peak levels of nearly 8 million tonnes in 1995. Despite variations in levels and rates of increase, fish production in all the countries rose faster than the human population numbers. Hence there were no overall supply constraints on achieving direct food security.

***Inference 1:** LIFDCs have raised their fish-production level significantly over the last four decades. Their performance was well above that achieved at the global level as well as that of the developing countries of which they are part. The increases were several times above their population growth, ensuring adequate domestic per capita availability of fish.*

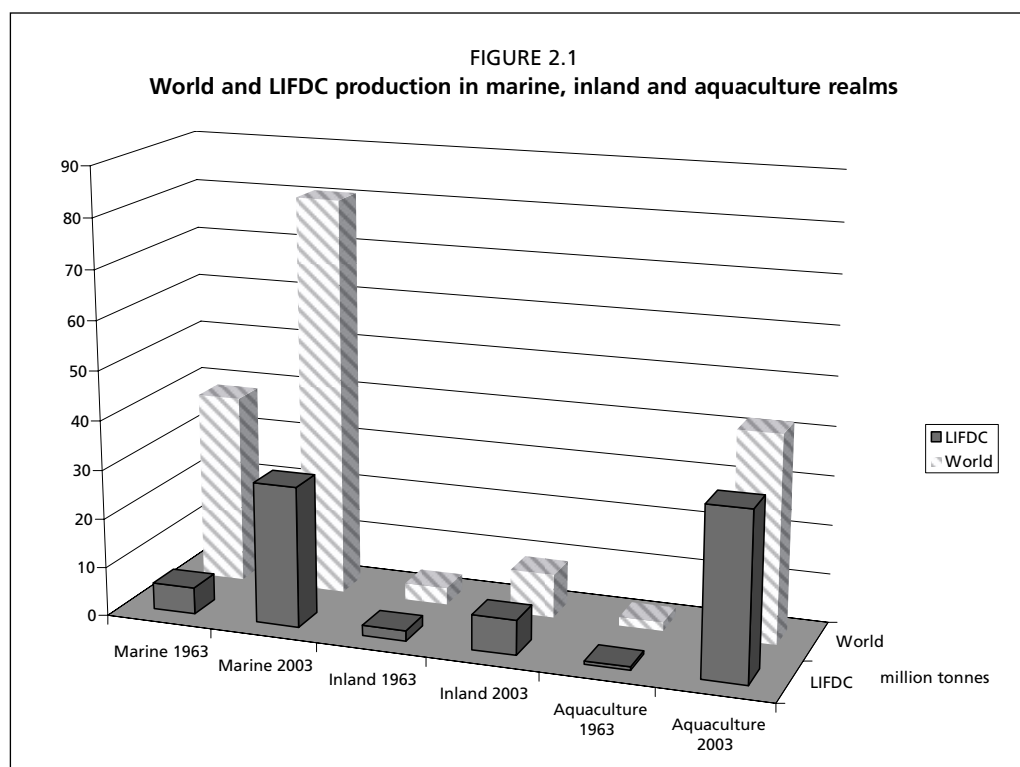
2.2 REALMS OF PRODUCTION

The three broad realms of fish production are marine capture, inland capture and aquaculture. Their shares in the total have changed radically between 1963 and 2003. In the realm of marine and inland capture fisheries, as many as 15 LIFDCs featured in the list of the top 50 fish-producing nations. These nations accounted for a third of global capture fish production. The picture in aquaculture was more dramatic. LIFDCs in 2003 produced 34.1 million tonnes, accounting for 81 percent of global production of 42.1 million tonnes. China, alone, accounted for 84 percent (34.2 million tonnes) of this LIFDC aquaculture output. Together with India, **the Philippines** and Indonesia, the share rises to over 95 percent.

At the global level, in 1963 inland capture and aquaculture together accounted for only 8 percent of the total. This share increased to 35 percent in 2003. The developing countries accounted for 90 percent of the fish from these sources and, among them, it was the LIFDCs which predominated (Table 2.2 and Figure 2.1). Within the LIFDCs, China, alone, accounted for 79 percent of the inland and aquaculture production in 2003. In 1963 China's share was only 37 percent.

TABLE 2.2
Realms of fish production (live weight in million tonnes)

Region	1963				2003			
	Marine	Inland	Aquac.	Total	Marine	Inland	Aquac.	Total
World	38.6	3.4	1.8	43.7	80.8	8.9	42.1	132.0
Developed	22.3	0.9	0.8	24.0	26.5	0.5	3.9	30.9
Developing	16.2	2.5	0.9	19.6	54.3	8.4	38.2	100.9
LIFDC	5.4	2.1	0.7	8.2	28.6	7.1	34.0	69.7



The trade orientation of the three realms of fish production, particularly the international trade orientation, varies considerably. By and large, fish from inland capture is less oriented towards international trade. There are important exceptions. **Kenya's** Lake Victoria capture fishery is now almost entirely export oriented. Inland capture fisheries are also the realm in which there is greater subsistence production, as has been evident in **Brazil**. Aquaculture, on the other hand, is more market oriented, with the international market figuring high in its priorities. The case of **Chile** is an example of the latter. In **China, Indonesia, the Philippines and Thailand**, aquaculture is oriented towards both the domestic and international markets. The orientation of marine capture is mixed. In countries in which fish is not the preferred source of domestic animal protein consumption, as for example in **Argentina, Nicaragua and Namibia**, even marine production may be largely exported. Usually, rising aquaculture production and increases in fish production from countries with a low preference for fish-eating will lead to greater quantities of fish entering international trade.

Inference 2: Fish production in LIFDCs has increased in all three realms – marine and inland capture and aquaculture – over the last four decades. In marine capture, LIFDCs have caught up with the developed countries. In inland capture and aquaculture, they have become the world leaders. Production increases in aquaculture, being more market oriented, tend to boost international fish trade.

TABLE 2.3
Trends in fishery product exports and imports (US\$ billion)
 Figures in brackets are % change of 2003 over 1976

Region	1976		2003	
	Exports	Imports	Exports	Imports
World	7.98	8.84	63.5 [695]	68.3 [673]
Developing	2.94	1.19	30.3 [931]	12.38 [940]
LIFDC	0.96	0.44	12.69 [1222]	4.13 [839]
LIFDC minus China	0.83	0.44	7.29 [778]	1.73 [293]
Developing/world %	37	13	48	18
LIFDC/world %	12	5	20	6

2.3 INTERNATIONAL TRADE

The impetus for international trade in fishery products among many of the developing countries predates our period of analysis. **Sri Lanka**, as the former Ceylon, used to import dried and salted fish beginning in the eighteenth century. **Thailand** started exporting in 1937. Most Asian countries engaged in a vibrant intraregional trade after the First World War. So did West African countries such as **Ghana**, Nigeria and **Senegal**. Latin American countries such as Peru and **Chile** were major suppliers of fishmeal to the United States. The closing of the Chinese market after the 1949 revolution created a big gap in the supply of fishery products in the world market. As a result, major fish importers such as the United States and countries in Europe were compelled to search for new sources of supply for fishery products such as tropical shrimp. India and **Thailand** were among the major beneficiaries of this “supply gap”. The rise in oil prices and the spate of EEZ extensions in the late 1970s and early 1980s made countries such as Japan cut back on their own fish production obtained using distant water vessels. They adopted the strategy of importing fish from the same developing countries where their vessels once fished. Indonesia, **the Philippines** and India thus became major suppliers to the Japanese market. The former two countries received aid for fisheries development. This came to be called the “development-import strategy”.

FAO holds systematic data on international trade in fishery products from 1976 onwards. According to these data, by 1976 developing countries had already accounted for about 37 percent of the value of exports, but just 13 percent of imports. Their share of exports increased to 48 percent and imports to 18 percent by 2003 (Table 2.3).

In nominal value terms, world fish exports rose by almost 700 percent from around US\$8 billion in 1976 to US\$63 billion in 2003. During this period, LIFDCs started with exports valued at less than US\$1 billion (12 percent of the world total) and raised their share by over 1 000 percent to almost US\$13 billion, accounting for one fifth of world exports. The LIFDCs’ focus on exports is self-evident. Their natural and comparative advantage lies in this realm. However, given the phenomenal increases in total production, as well as shifts of production to realms that are more explicitly trade oriented (Tables 2.1 and 2.2), the foray of LIFDCs into international trade is relatively less impressive and constrained. The causes and the food-security implications of this need to be explored.

The global value of fish imports, in nominal terms, increased by about 673 percent from US\$8.84 billion to 68.3 billion between 1976 and 2003. The fishery product imports of LIFDCs were very small. They accounted for just 5 percent at both time points – US\$0.44 billion and 4.13 billion respectively. The contribution that fishery product imports make to direct and indirect food security in the LIFDCs, as a group, is therefore small. There are important regional and country variations. For example, the role of fish imports into West African countries such as Côte d’Ivoire, Nigeria and **Ghana** and into other countries such as Egypt, **Brazil**, **Sri Lanka** and **the Philippines**

warrants closer examination. These imports pose a wide spectrum of interesting and debatable issues on a variety of aspects related to direct and indirect food security.

Inference 3: Over the last quarter century, the value of LIFDC exports increased substantially, though their share of global trade rose only marginally. However, their export performance pales before their production performance. Their value of imports increased twofold, but their share in global imports of fish products remained constant. The priority accorded to exports is clearly evident, and greater direct and indirect food-security implications are likely to arise from this.

2.4 FISH TRADE AND DIRECT FOOD SECURITY

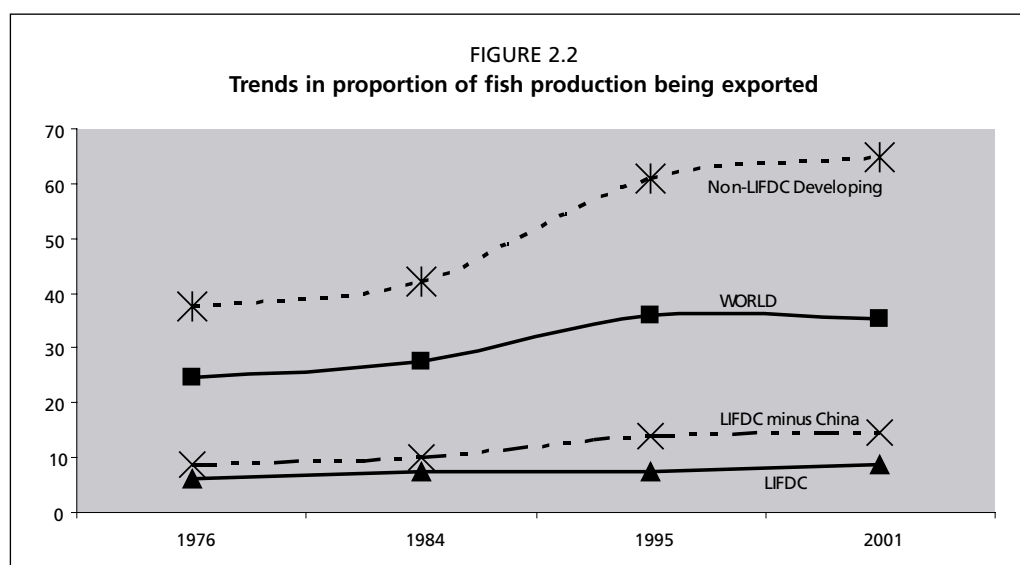
A matter of recent global concern and debate has been the manner in which fish exports affect direct food security in the exporting country. Does a large share of the fish produced by developing countries and LIFDCs enter international trade – and thus deprive potential local consumers of fish for food and other uses?

The data available for the period 1976 to 2003 indicate that the *live-weight equivalent* of fishery products (as compared to the product weight) exported from LIFDCs has accounted for a very small fraction of their total fish production – only between 6 and 8 percent. This compares with global figures for live-weight equivalents of exports that have increased from 24 to 35 percent during the same period. Considering that the disproportionate share of China’s production and exports may bias the LIFDC figures, we also present data for LIFDCs minus the “China effect”. The results do change slightly and show a higher trend, increasing from about 9 to 15 percent.

However, they still point to the fact that the increase in fish production achieved by LIFDCs, contrary to popular belief, is not being significantly diverted for exports. From a direct food-security perspective, this is a significant observation. If current trends continue, there is room for cautious optimism about the near future (Table 2.4 and Figure 2.2).

TABLE 2.4
Trends in proportion of fish production being exported (%)

Region	1976	1984	1995	2003
World	24.7	27.7	35.9	35.3
LIFDC	6.2	7.3	7.5	8.8
LIFDC minus China	8.6	10.2	13.8	14.7
Non-LIFDC Developing	37.7	42.2	61.0	64.8



The observation attains added significance when we note that in the case of the non-LIFDC developing countries, the proportions of fish production that enter trade are very significantly higher than the world averages and are also on the rise. They increased from 38 to 65 percent. Three reasons account for this vast difference between LIFDC and non-LIFDC developing countries. First, countries such as **Thailand** and Taiwan Province of China are major re-exporters of fish, and therefore their exports are not primarily from their own production, thus inflating the proportions. Second, countries such as **Chile** and Peru, with huge stocks of pelagic species, are global exporters of vast quantities of fishmeal. Third, countries such as Argentina and **Namibia**, in which fish consumption is low, export the major portion of their fish production. To the extent that such circumstances *do not* prevail in the majority of LIFDCs, the share of their fish production that flows into international trade is likely to remain within the ranges indicated above.

Inference 4: Taking the live-weight equivalent of LIFDC exports as a whole, there is little support for the argument that fish exports generally affect the physical availability of fish for domestic use adversely.

2.5 DOMESTIC FISH SUPPLY

The direct food security of a country, from the fisheries perspective, is measured by the domestic fish supply. In statistics compiled by FAO, fish for domestic supply is a function of production, the non-food uses of fish and trade (imports and exports). This is a proxy for the real quantum of fish available for consumption, because subsistence and non-marketed consumption are not factored into the calculation. The population of the country determines the per capita average level of supply. There is an important caveat to bear in mind here. In many LIFDCs the fish-eating population is small and, to that extent, these average figures do not reveal trends in the real per capita availability to the fish-eating population of the country (Box 2.1). This is particularly true once the China effect is removed, because the fish-consuming population in the other countries tends to vary very widely. However, an accurate assessment of the fish-consuming population is not available in most countries.

Changes in any one of these factors mentioned, or a combination of changes in several of the factors, would have a bearing on the per capita domestic food-fish supply. Considering the available data for LIFDCs, we have attempted to capture these changes

BOX 2.1

Per capita supply of fish and the real per capita availability of fish to the fish eaters in the population of a country

Dividing the estimate of domestic supplies of fish (live weight) by the total population of the country gives us the per capita supply. This average is a fair proxy of real consumption of fish (direct food security) if everyone in the country eats fish. In countries where this is not so, the per capita supply may be a gross underestimate of the per capita availability of fish to the fish-eating population. Take the case of India. In 1999 the total live-weight equivalent of fish supply was 4 544 685 tonnes. The total population was 992 686 000. The per capita supply per year was 4.6 kilograms (kg). A liberal estimate of the fish-eating population in India would be 40 percent of the population. This would raise the per capita availability of fish to this fish-eating population to 11.4 kg. Judgements on the direct food-security impact of fish will depend on which estimate one chooses.

TABLE 2.5
Domestic food-fish supply resulting from changes in production, non-food use, imports and exports
 (quantities are in live-weight equivalents)

	LIFDC				LIFDC minus China			
	1992	1995	1998	Change % (1992/98)	1992	1995	1998	Change % (1992/98)
Production (million tonnes)	33.5	46.9	58.5	75	18.3	18.9	20.8	13
Non-food uses (million tonnes)	2.3	2.5	8.0	248	1.8	1.4	1.4	-22
Imports (million tonnes)	2.1	2.2	2.8	33	1.7	1.5	2.1	23
Exports (million tonnes)	2.8	3.7	4.5	61	2.1	2.5	2.8	33
Food supply (million tonnes)	30.6	43.0	48.8	59	16.2	16.6	18.8	16
Population (millions)	3344	3489	3652	9	2182	2290	2421	11
PC supply ¹ (kg/person/yr)	9.2	12.3	13.4	45	7.4	7.2	7.8	5

¹ Per capita supply = production minus non-food uses plus imports minus exports divided by population.

Source: FAO, Fishery Statistics, Commodity Yearbooks, Volumes 81, 85, 91 (data are given as averages for the trienniums 1991/93, 1994/96 and 1997/99).

for the decade of the 1990s (Table 2.5). For LIFDCs as a whole, the domestic food-fish supply increased by 45 percent. However, if we adjust the data for the China effect, this drops to 5 percent. Even so, it would be fair to conclude that international trade has not reduced the domestic food-fish supply in LIFDCs. The additional and more salient insight from Table 2.5 is that increased production is the key to raising domestic food supplies. For LIFDCs as a whole, fish production increased by 75 percent. Without the China effect, it drops to 13 percent. Increased non-food use and increased exports can be sustained only if production levels can be raised.

Inference 5: In the 1990s, taking LIFDCs as a whole, despite increased use of fish for non-food purposes and exports, the total and per capita food-fish supply increased considerably. The prime reason for this was increased fish production. However, if we account for the China effect, our conclusions are not as bright. Despite the decline in non-food uses of fish and lower supplies for exports, the total domestic food-fish supply in the other LIFDCs (i.e. minus China) shows only a small increase, and the per capita supply changes were very marginal. Low growth of fish production was the prime cause.

2.6 UNDERSTANDING THE FISHERY PRODUCT TRADE OF LIFDCS

In the earlier sections we dealt with aggregate increases in fish production, the small volume of production entering fish trade, increasing non-food use and the consolidated impact of these three on domestic fish supplies in LIFDCs. For a better understanding of the effects of trade on food-security dimensions, it is necessary to move beyond aggregates and averages to examine the composition of trade – exports and imports – more closely. To a great extent, trade was conditioned by the initial natural-capture fishery resource configuration of the country. As fish is not a homogeneous commodity, the specific product and process configuration of trade is important. Consider two fish-exporting countries with similar characteristics exporting the same quantity and value of fishery products. The impact on direct and indirect food security will vary if one exports frozen shrimp and the other canned tuna. The same can be said about imports. One country importing frozen fish for re-export and the other fishmeal for its livestock would yield different profiles of food-security impact.

2.6.1 Exports

Taking LIFDCs as a whole, we see that their eight-fold increase in fish production between 1963 and 2003 and their twelve-fold increase in exports between 1976 and 2003 have not yielded significant changes in the composition of their exports. Over the years, crustaceans, molluscs and cephalopods have accounted for from over half to over two-thirds of the exports (58 to 72 percent). Fish accounted for between 8 and 30 percent of the value during the same period. The most important method adopted for processing the products was freezing. Frozen products account for over half the export trade, with fresh, chilled and preserved products accounting for a fifth. Exports of LIFDCs were “locked in” to a narrow product-process specialization. This can be accounted for by three factors. First, tropical waters have an inherent resource advantage with respect to species favoured in the international market, such as crustaceans, molluscs and cephalopods. Second, the processing related to the freezing of fish, crustaceans, molluscs and cephalopods consists largely of labour-intensive operations in LIFDCs, where labour is plentiful relative to capital and such manual activities naturally get priority. Third, the tariff structures in the importing countries are favourably biased towards such low-value-added processing of the raw material. Consequently, the relatively unchanging product-process combination of exports from LIFDCs has been significantly tied to the natural resource configuration and the domestic economic and international trade structure compulsions (Table 2.6; for details, see Annex Tables A1–A4).

In 2003 16 countries accounted for LIFDC exports (China, Indonesia, India, Bangladesh, **Philippines**, Pakistan, **Sri Lanka**, Mozambique, **Senegal**, Mauritania, Morocco, **Nicaragua**, Ecuador, Côte d’Ivoire, Maldives and Papua New Guinea), of which four have been included in our study for more detailed analysis.

The food-security implications of this pattern of trade warrant explanation. Considering the direct implications, we may infer that if the exporting LIFDC also has a large fish-consuming population, then the export of pelagic and demersal fish could have direct and negative food-security implications. This would be particularly true if exports were not compensated by enhanced production or food imports. Exports of crustaceans, molluscs and cephalopods could also have a significant direct, negative impact on food security. This is particularly true when the exports come from the Southeast Asian LIFDCs and China, where these products have a strong domestic consumer preference. Exports would have a negative impact unless production or imports have increased to compensate exports. In addition, there can be price effects that have a bearing on the consumption of poorer consumers. This is a matter that requires investigation in more detail at the country level.

The indirect food-security implications relate to the fact that the structure of the value chain has been perpetuated by the tariff-structure bias towards low-value-added products (mentioned above). This has made it difficult to raise the productivity of

TABLE 2.6
Value of LIFDC trade and share of fishery products'
(EXPORTS)

Year	Value (US\$ million)	Top three products and their share of export value (%)
1976	945	Crustaceans, molluscs & cephalopods (CMC) frozen (52); CMC fresh and chilled (20); and fish frozen (10)
1984	2 101	Crustaceans, molluscs & cephalopods frozen (59); CMC fresh and chilled (8); and fish frozen (8)
1995	9 437	Crustaceans, molluscs & cephalopods frozen (48); fish fresh and chilled (12); and CMC fresh and chilled (10)
2003	12 690	Crustaceans, molluscs & cephalopods frozen (35); fish frozen (18); and fish preserved (11)

'For details, see Annex Tables A1–A4.

fish workers. Wages and earnings therefore tend to level off after some initial growth. However, total earnings may still be attractive compared to other primary food-related sectors of the economy.

With regard to the export of crustaceans and mollusks, there is an important but less well-known indirect, negative impact on domestic food security. It takes effect in the following manner, particularly in the case in which these species are of marine origin. The harvesting technology used for crustaceans, and in particular shrimp, was bottom trawling. It is now well recognized that bottom trawling has resulted in considerable ecosystem damage in tropical waters as a result of, *inter alia*, the unintended bycatch and the large discards of immature fish netted in the trawls.¹¹ Data from an FAO report (FAO, 1994) show that shrimp trawls have the highest discard rates. The rates of fish discard for every kilogram of shrimp harvested in the following LIFDC shrimp fisheries were as follows: Indonesia 12 kg, **Sri Lanka** 11 kg, India 8.5 kg, **Senegal** 2.7 kg, and in the Gulf of Mexico 10 kg.

This has caused very important shifts in overall rates of fish harvest and also in the composition of fish harvests, because such destruction results in the process of “fishing down the food chain”. In many countries that made a major switch to bottom trawling for harvesting shrimp for exports, there have been sharp falls in the fish catch rates. This has led to lower availability of fish in domestic markets and thus a significant rise in prices. Apart from this medium-term adverse impact, such practices can also have very severe long-term implications on the export industry, itself, because of irreversible ecosystem damage. It is also pertinent to note that the shrimp-export sector of the fishery economy of many of the LIFDCs has been the recipient of significant subsidies from national governments. Such subsidies have hidden the real costs of both the harvesting and processing activities. They have also created much excess capacity in both activities. This is another factor that has accounted for the heavy pressure on the fishery resource, which in LIFDCs has been largely in an open-access regime.

After about four decades of riding the crest of crustacean exports, many Asian nations are finding themselves in an ecological bind. One common response to this has been to shift production to the realm of aquaculture. India provides the most recent example of this commercial expediency. As recently as 1990 the exports of crustaceans – primarily shrimp – were exclusively marine capture in origin. In a little over a decade, in 2002, over 50 percent of the value of exports was accounted for by shrimp culture. This has brought with it new ecosystem concerns such as mangrove destruction and coastal water pollution. While such responses may address the short-term fall in supply from marine sources, they are no panacea for the more serious threat to the integrity of the ecosystem, with long-term implications for exports and food security.

Though not a significant source of export earnings now, the export of exotic products such as shark fin, fish liver, roe, caviar, etc. is another matter. Products such as shark fin are subject to what is called “finning”. Fishers from some countries hack the fins off sharks and dump their bodies back into the sea. Such practices can result in rapid depletion of such animals. On the other hand, if the parts of the shark that are not exported are used efficiently, and if the fishing is properly managed, there can be significant direct and indirect contributions to food security.

Inference 6: The composition of fishery exports of LIFDCs has not changed very radically over the past quarter century. This is primarily due to the inherent resource configuration, domestic economic considerations with regard to labour absorption, and international tariff structures largely dictated by importing developed countries. The

¹¹ A recent publication of the Environmental Justice Foundation (EJF, 2003) documents well the threat of shrimp trawling to ecological integrity and food security around the world.

share of crustaceans, molluscs and cephalopods remains high. On balance, this may have only a small adverse impact on direct fish consumption by domestic consumers. It can have a large, positive indirect food-security impact on fish workers involved in processing. But its impact on the resource base, given the currently used technologies for capture and culture, is highly adverse.

2.6.2 Imports

In the case of fish imports, there has been an eight-fold increase in the value of imports to LIFDCs between 1976 and 2003. The changes in composition in value terms have been more significant than with exports (Table 2.7; for details, see Annex Tables A5–A8).

The changing pattern of imports of LIFDCs is a function of their changing production and trade strategies and also of their increasing incomes. The increasing imports of non-food fishmeal point to the emphasis on aquaculture and the rise of frozen fish partly due to the investments in value-added re-exports. The featuring of frozen crustaceans, molluscs and cephalopods in the imports points to two possibilities: (i) demands from richer consumers or (ii) import of lower-priced crustaceans for domestic consumers to replace the more high-valued ones that were exported. The strategy adopted by China is the latter.

From a food-security perspective, it is useful to examine imports using quantities rather than values. Imports can be divided broadly into food and non-food imports (Table 2.8). The increase of non-food imports over the period 1976–2003 is clearly related to the rapid expansion of aquaculture in LIFDCs, both for export and domestic consumption. As we observed from Table 2.5, this is a China effect. In 2003 as much as 80 percent of the volume of fishmeal imports of LIFDCs was accounted for by China. As fishmeal does not go through any further processing, the employment implications of this in the importing LIFDC are very small. The imports intended for processing and re-export are also on the rise. This provides employment with slightly higher productivity. With regard to frozen fish, some of it was undoubtedly meant for

TABLE 2.7
Value of LIFDC trade and share of fishery products¹
(IMPORTS)

Year	Value (US\$ million)	Top three products and their share of import value (%)
1976	408	Fish preserved (44); fish dried, salted, smoked (24); and fish frozen (23)
1984	657	Fish frozen (41); fish preserved (20); and non-food fishmeal (16)
1995	1 802	Fish frozen (41); non-food fishmeal (30); and tuna frozen (8)
2003	4 130	Fish frozen (53); non-food fishmeal (17); and crustaceans, molluscs and cephalopods frozen (9)

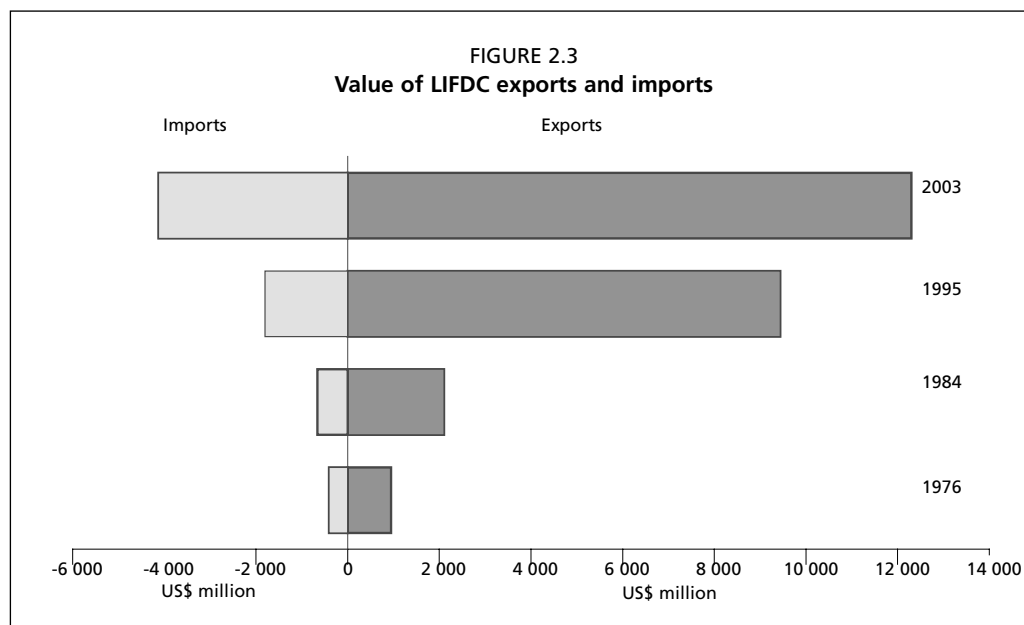
¹ For details, see Annex Tables A5–A8.

TABLE 2.8
Quantity of LIFDC trade and share of fishery products¹
(IMPORTS)

Year	Food		Non-food (‘000 tonnes)
	Domestic consumption (‘000 tonnes)	Re-export (‘000 tonnes)	
1976	Fish preserved (255); fish dried etc. (56)	Tuna frozen (11); fish frozen (347) ²	Fishmeal (67)
1984	Fish preserved (110); fish dried (77)	Tuna frozen (32); tuna chilled (20); fish frozen (673) ²	Fishmeal (231)
1995	Fish dried (81); fish preserved (80); tuna preserved (8)	Tuna frozen (163); fish frozen (1 358) ²	Fishmeal (1 043)
2003	Fish preserved (191); fish dried (95); tuna preserved (35); crustaceans, etc. frozen (235) ²	Tuna frozen (197); fish frozen (2 415) ²	Fishmeal (1 033)

¹ For details, see Annex Tables A5–A8.

² Products that may be used for domestic consumption and re-export.



domestic consumption. The dried and preserved fish imports (mostly canned products) were exclusively for domestic consumption. Only these can be said to contribute to direct food security. A rough calculation shows that the share of the value of imports that can be attributed to direct consumption declined from about 90 percent in 1976 to about 60 percent in 2003.

In 2000 (for which more detailed country data are available), if we consider those LIFDCs that were net importers of fishery products and in which fish accounted for more than 10 percent of the country’s agricultural imports, we have a list of the following countries: Côte d’Ivoire, **Ghana**, Togo, Nigeria, D.R. Congo, the Congo and Cameroon. In wet-weight equivalents, they imported a fifth of LIFDC imports in 2000.

It is important to note that the LIFDCs that import fishery products, with the exception of some of the large Asian fishery nations such as China, **the Philippines** and Indonesia, are on the African continent.¹² Nigeria, **Ghana**, Côte d’Ivoire, Cameroon, Egypt, and D.R. Congo are important among them. These African countries accounted for fishery imports in 2000 worth US\$693 million or about 22 percent of the imports by LIFDCs. In Côte d’Ivoire, for example, the wet-weight equivalent of imports was almost four times their local fish production (280 000 tonnes as compared to 72 000 tonnes).

Two countries, Côte d’Ivoire and **Ghana**, accounted for about two-thirds of the frozen tuna imports. This is meant for local consumption and value-added re-export. Such imports of frozen tuna and other pelagic fish provide an important source of employment for women in West African countries. They process the fish using labour-intensive and renewable-energy-intensive methods (drying, salting, smoking, etc.) to render it acceptable to local consumers.

Our analysis thus indicates that fishery imports, as a *critical* source of direct food security for LIFDCs, is fairly restricted to the African continent, and to the West African countries in particular. Two important, notable exceptions are **Sri Lanka** and **the Philippines** – which provide a study in contrasts. The Sri Lankan case illustrates how import policies can be tailored to ensure that both direct and indirect food

¹² In Asia, **Thailand** is also a large importer, but it is not an LIFDC.

security can be optimized by planned imports. This is ensured by controlled import of the product-process mix that caters to the less well-off consumers, for whom fish is a culturally and nutritionally important source of food. The Philippine case points to the problems that arise from a lack of market regulation. The evidence is that “free” markets can turn out to be foul, and the very purpose for which enlightened policies are instituted can be twisted to produce exactly the opposite results.

Inference 7: The composition of LIFDC imports has changed. There is no indication that, on the aggregate, it is evolving towards a mix of products that caters to the nutritional needs of poorer consumers. Current food-fish imports are also consciously utilized to enhance both direct food security and indirect food security through imports for value-added re-export. On both counts, it is largely the LIFDCs of the West African region that use fish imports accordingly. It is also in this region that fish imports are likely to form a critical food input for direct food security. But, in volume, the food imports are not as large as the need for nutrition in these countries would warrant.

2.7 WTO, FISH TRADE AND FOOD SECURITY

There have been hopes and anxieties regarding the possible impact of the multilateral trade agreements and the WTO on international trade in fishery products. Fisheries are outside the realm of the Agreement on Agriculture (AoA); they come under the stricter trade rules that govern industrial products.¹³ Nevertheless, while the tariffs on industrial products imported by developed countries were reduced by 40 percent (from 6.3 to 3.8 percent), the tariff cuts for fish and fishery products have averaged only 26 percent (from 6.1 to 4.5 percent). Many developed countries offer preferential rates and duty-free access to a wide range of fishery products from developing countries in general and LIFDCs in particular. Tariff rates in the three WTO members that dominate fish and other seafood product imports – the European Union, Japan and the United States – are low or zero for some products. This is particularly the case for raw fish, either fresh chilled or frozen. But tariffs still remain fairly high for most processed products (prepared and preserved, as well as some salted and dried products). These tariffs were often negotiated under a variety of conventions and special cooperation agreements.

However, it would be appropriate to mention other important developments that span the decade 1990–2000 and that may also have had both positive and negative impact on the fish-trade outcomes of LIFDCs. To mention but three, there were the stricter safety and quality requirements imposed by the European Union and the United States Food and Drug Administration, the Asian financial crisis and the decrease in fish prices due to the increased availability of cheap aquaculture products. Such developments must be considered when viewing aggregate trends during the important decade of transition in international trade that saw the establishment of the WTO in 1995. Be that as it may, there was a general perception by LIFDCs that the change towards a “freer trade regime” would help boost global fish trade.

2.7.1 Free trade and food security

To ascertain whether this perception has materialized into reality, we examine fish-trade data for the period 1990–2000 and divide the period into two quinquenniums:

¹³ The earlier discussions on the General Agreement on Trade and Tariffs (GATT) initially dealt with fish in the natural resources group, before it was considered for inclusion in the AoA. However, being an important commodity of trade among developed countries, a strong battle always took place on how to deal with it within the AoA. Unresolved issues pertaining to access to resources pushed it out in order to save the agreement. Developed countries also viewed fish from developing countries largely as a raw material for their fish-processing industries. This probably provided an additional reason for keeping it out of the AoA (Erhard Ruckes, personal communication).

1990–1995 (the pre-WTO phase) and 1995–2000 (the WTO phase). Since our focus is on food security, we consider trade volumes in live-weight equivalents.

Taking this decade as a whole, we see that world fish production and the volume and value of fish exports and imports have increased significantly. We can say the same regarding LIFDCs. However, what merits closer attention is the fact that post-1995 trends for LIFDCs and the world as a whole indicate a slowing down of the growth of trade, both in quantity and value. From the point of view of food security, the implications are mixed (Table 2.9).

Consider exports. Globally, the value of exports increased by 45 percent in the pre-1995 period, but by a mere 6 percent in the post-1995 phase. The figures for LIFDCs were 83 and 9 percent respectively. Such changes point to a significant slowing down of export activity. Trends in the value of imports follow the same pattern when viewed globally, but are less dramatic for LIFDCs.

In LIFDCs, the slowing of export growth in quantity terms may have had positive implications for direct food security through increased fish supplies in the domestic market. This may have benefited domestic consumers in LIFDCs in which fish is an important source of food. However, such a trend can simultaneously cause a decline in trade- and labour-based entitlements – lower commodity exchange values for fishers and lower employment and wages in processing for fish workers. This may in turn have an adverse effect on indirect food security. The net effect of these opposite tendencies is hard to assess. The reduction in the live-weight equivalent of fish exported can also be a sign of a shift to more value-added products for export. The implications of this shift can be mixed. It may release more fish for domestic consumption, raise the unit value of exports and enhance labour productivity of fish workers, but reduce the overall employment generated in processing.

TABLE 2.9
Fish production, exports and imports in live-weight equivalent and value (1990–2000)

Region	1990	1995	Change ¹ 1990/95 % pre-WTO	2000	Change ¹ 1995/2000 % WTO phase
Fish production ('000 tonnes)					
World	103 684	124 808	20	142 403	14
Developed	42 352	35 160	-17	33 256	-6
LIFDC	33 157	53 594	62	73 858	38
LIFDC minus China	18 490	20 863	13	24 222	16
Live-weight equivalent of exports ('000 tonnes)					
World	33 186	44 980	35	49 831	11
Developed	15 144	19 005	25	21 347	12
LIFDC	2 280	4 021	76	6 139	53
LIFDC minus China	1 806	2 889	60	3 541	23
Value of exports (US\$ million)					
World	35 820	51 984	45	55 342	6
Developed	20 323	25 499	25	27 765	9
LIFDC	5 450	9 956	83	10 826	9
LIFDC minus China	4 150	7 029	69	7 119	1
Live-weight equivalent of imports ('000 tonnes)					
World	34 574	45 617	32	51 197	12
Developed	24 634	30 197	23	32 176	7
LIFDC	3 755	7 394	97	10 941	48
LIFDC minus China	2 466	3 169	29	3 597	14
Value of imports (US\$ million)					
World	40 476	57 309	42	60 020	5
Developed	34 305	47 573	39	49 941	5
LIFDC	1 158	2 050	77	3 100	51
LIFDC minus China	934	1 092	17	1 278	17

¹ Figures have been rounded.

Inference 8: There is a slowing down of the growth of both world and LIFDC trade in fishery products in the WTO phase (1995 onwards). While it cannot be wholly attributed to the institutional changes in the trade regimes, from a direct and indirect food-security perspective, it can turn out to be both favourable and unfavourable. The net effect is hard to assess.

2.7.2 Fish trade and fish prices

There is another way to analyse the issue of the slowing down of the growth of trade from the perspective of food security – by examining the prices received (paid) for the fish exported (imported). For the purpose of comparability, we express these prices as the “unit value of the live weight” (UVLW) of exports and imports. By taking live weight rather than product weight, we move towards greater product homogenization, because expressing the vast diversity of fishery products in their wet-weight terms implies equalizing them in terms of their food values¹⁴ (Table 2.10).

Taking the LIFDCs, we see that the UVLW for exports increased marginally in the pre-WTO phase, from US\$2 390 to 2 476/tonne, and then dropped significantly in the WTO phase to US\$1 763/tonne. However, the UVLW for imports decreased marginally in the pre-WTO from US\$308 to 277/tonne and then increased marginally in the WTO phase to US\$283/tonne. The impact of inflation is not considered, as the values stated are in current prices. The trends we observe in the post-1995 WTO phase are no cause for celebration. From the food-value perspective, the earning per unit of LIFDC exports reduced during this period, while the unit cost paid for imports increased.

More conventional trade analysis, for example taking the barter terms of trade, does not paint a rosier picture of the trends on the aggregate (Table 2.11). The terms of trade of the developed countries show a slight deterioration in the period 1990–2000. In fact, they have improved in the WTO phase. LIFDCs, on the other hand, experienced a significant deterioration in terms of trade in the WTO phase. When we account for the China effect, the decline is more modest.

The deteriorating terms of trade, caused primarily by falling unit export prices, create pressures to export more quantity, or if possible graduate to more value-added products. Both these options are limited. A rough estimation of losses on this score is revealing. Consider the case of shrimp, the mascot of LIFDC fish exports. In 2000 the value of global shrimp exports (all process forms) was valued at US\$11 billion and the LIFDC share was about a third or US\$3.15 billion. Our calculations show that if world prices in 2000 had remained at the 1996 level, the total shrimp export value would have been worth US\$1 billion more and LIFDCs would have made their proportionate gains.

Inference 9: When examined from a “food-value perspective”, the unit earnings from exports of LIFDCs have reduced more rapidly than the cost paid out for unit of import. The conventional terms of trade in fishery products for LIFDCs have deteriorated in the WTO phase. The potential earnings loss to their economies has been considerable, with attendant food-security implications.

2.7.3 Value addition and food security

There is a small silver lining in this overall trade scenario. Despite the existence of tariff escalation (increase in tariffs by the importing country as more value is added to the product with a greater degree of processing), the composition of fishery product

¹⁴ There is greater homogeneity in the protein content and calorific values of fish than in other attributes such as taste, appearance or colour. It is the latter attributes which form the basis for the wide diversity in price.

TABLE 2.10
Unit value of live weight (UVLW) of LIFDC fishery product imports and exports

Year	Import price (US\$ per tonne)	Index	Export price (US\$ per tonne)	Index
1990	308	100	2 390	100
1995	277	90	2 476	103
2000	283	92	1 763	74

TABLE 2.11
Fishery product terms of trade (product weight)

Region	1976	1990	1995	2000
World ¹	1.00	0.99	0.98	1.01
Developed	1.00	1.11	0.91	0.95
Developing	1.00	0.98	1.07	1.02
LIFDC	1.00	1.67	1.61	1.05
LIFDC minus China	1.00	1.64	1.59	1.30

¹ At the world level, the terms of trade should always be 1.00; the variations indicate data deficiencies only.

TABLE 2.12
Export value of prepared and preserved fishery products as a share of total exports of developed and developing countries and LIFDCs (US\$ billion)

		1990	1995	2000
Value of exported preserved and prepared products	Developed countries or areas	4.97	6.00	6.01
	Developing countries or areas	3.06	5.48	6.02
	LIFDCs	0.69	1.97	2.45
Total export value	Developed countries or areas	19.39	24.53	26.34
	Developing countries or areas	14.50	24.16	26.11
	LIFDCs	5.39	9.72	10.62
Ratio of preserved and prepared products in the total export value	Developed countries or areas	0.26	0.24	0.23
	Developing countries or areas	0.21	0.23	0.23
	LIFDCs	0.13	0.20	0.23

exports of LIFDCs has shown a small but significant shift towards more processed products (Table 2.12).

We arrive at this conclusion by examining the data for the three categories (developed and developing countries and the LIFDCs) for the three time points 1990, 1995 and 2000. We take the value of the preserved and processed exports and express this as a ratio of the total value of exports. It is only for LIFDCs that we see an increase in the value of the ratios. In 1990 only 13 percent of the total exports of LIFDCs were processed products. Total exports increased to 20 percent in 1995 and further to 23 percent in 2000. This squares with our earlier observation (Table 2.9) that there is a slowing down in the live-weight equivalent of fishery product exports from LIFDCs. This change towards more value-added processed and preserved products is welcome.

However, whether this is a uniform feature across LIFDCs merits examination. A few LIFDCs may be responsible for the greater (and increasing) share of processed products. Their fish-processing industries may also be dominated by a handful of firms, including large, food-processing multinational corporations. The growing market concentration of exports and the change in the structural composition of exporters (importers) evident from the data in Table 2.13 raise some doubts on this count. The data for four broad product-process categories during the WTO phase provide some indication of trends. The future directions of international fish trade will hinge considerably on the manner in which these issues of market concentration and structural change evolve. Compared to other food products, the structure of fish trade was less concentrated in the hands of a few large multinational interests. However, there is no reason to be overtly optimistic if there can be a doubling of the structural change index in a matter of six years in the era of “free” trade (Table 2.13).

TABLE 2.13

Export concentration and structural change indices (1992 = 0)

	Market concentration index of exports			Structural change index of exports		
	1994	1997	2000	1994	1997	2000
035 Fish salted, dried, smoked	0.288	0.272	0.256	0.133	0.154	0.179
037 Fish prepared, preserved	0.189	0.208	0.239	0.149	0.272	0.308
034 Fish fresh, chilled, frozen	0.156	0.156	0.159	0.140	0.228	0.249
036 Shellfish fresh, frozen	0.172	0.150	0.156	0.123	0.165	0.209

The market concentration index of exports ranges from 0 to 1. A value close to 1 indicates a very concentrated market. Values closer to 0 reflect a more equal distribution of market shares among exporters or importers. The structural change index of exports ranges from 0 to 1. It reveals the structural change in trade for a particular product as compared to the reference year (1992 = 0). Values closer to 1 indicate a significant change in the composition of exporters (importers). Values closer to 0 demonstrate a higher degree of "traditionality" in the markets over the period concerned.

Source: UN, 2002.

Will the developing countries, and LIFDCs among them, be able to exercise sufficient leverage to ensure that their commercial and socio-economic interests in fish trade are retained? What may be the food-security implications of such actions? Issues of this nature may have global answers, but the way the reality "plays out" at the micro level of the countries and the firms involved in fish trade will be the more important action to observe.

Inference 10: Tariff escalation has not had a totally adverse effect on LIFDCs exports. However, there is a growing concentration of the markets between exporters and importers of fish in preserved and processed forms. This is accompanied by a change in the composition of the countries involved in these exports. This combination of market concentration and structural change is not apparent for other product-process categories. How this develops at the micro level needs to be watched.

2.8 CONCLUSION

The long- and near-term trends in world and LIFDC fishery production and international fishery trade exhibit both disturbing and encouraging trends – as we have seen from the discussion above. The analysis that we have made is global. It is bound to hide the numerous variations that are apparent only at the micro level of specific countries and regions within them. The meaning of such a global analysis lies in the fact that it provides us with the "handles" with which to further examine the secondary data and then probe deeper, using case studies to understand the dynamics of change within the wide variety of concrete realities.

ANNEX

Exports and imports of low-income food-deficit countries

EXPORTS

TABLE A1
Fishery exports of LIFDCs by product and process in 1976
(Quantity in '000 tonnes and value in US\$ million)

Process		Fish	Tuna	CMC	Exotic products	Fish oil	Inedible	Total	Percentage
Fresh, chilled	Q	Neg	-	66	-	-	-		
	V	Neg	-	183	1	-	-	184	19.5
Frozen	Q	116	43	134	-	-	-		
	V	96	18	490	-	-	-	604	64.0
Dried/salted smoked	Q	28	-	-	1	-	-		
	V	17	-	-	3	-	-	20	2.1
Preserved	Q	66	23	3	-	-	-		
	V	67	36	7	-	-	-	110	11.6
Other processes	Q	-	-	-	-	9	-		
	V	-	-	-	-	4	-	4	0.4
Live	Q	2	-	-	-	-	-		
	V	3	-	-	-	-	-	3	0.3
Non-food	Q	-	-	-	-	-	71		
	V	-	-	-	-	-	20	20	2.1
Total value	V	183	54	680	4	4	20	945	100
Percentage	V	19.4	5.7	72.0	0.4	0.4	2.1	100	

TABLE A2
Fishery exports of LIFDCs by product and process in 1984
(Quantity in '000 tonnes and value in US\$ million)

Process		Fish	Tuna	CMC	Exotic products	Fish oil	Inedible	Total	Percentage
Fresh, chilled	Q	1	-	68	9	-	-		
	V	1	-	174	12	-	-	187	8.9
Frozen	Q	143	136	281	-	-	-		
	V	173	90	1 241	-	-	-	1 504	71.6
Dried/salted smoked	Q	34	-	-	5	-	-		
	V	28	-	-	24	-	-	52	2.5
Preserved	Q	64	75	1	-	-	-		
	V	83	161	2	-	-	-	246	11.7
Other processes	Q	-	-	-	-	7	-		
	V	3	-	-	-	4	-	7	0.3
Live	Q	32	-	-	-	-	-		
	V	66	-	-	-	-	-	66	3.1
Non-food	Q	-	-	-	-	-	109		
	V	-	-	-	-	-	39	39	1.9
Total value	V	354	251	1 417	36	4	39	2 101	100
Percentage	V	16.8	11.9	67.4	1.7	0.3	1.9	100	

TABLE A3
Fishery exports of LIFDCs by product and process in 1995
 (Quantity in '000 tonnes and value in US\$ million)

Process		Fish	Tuna	CMC	Exotic products	Fish oil	Inedible	Total	Percentage
Fresh, chilled	Q	45	41	283	6	-	-		
	V	106	164	978	28	-	-	1 276	13.5
Frozen	Q	715	108	685	-	-	-		
	V	1 148	92	4 533	-	-	-	5 773	61.1
Dried/salted smoked	Q	75	-	Neg	15	-	-		
	V	237	-	1	83	-	-	321	3.4
Preserved	Q	155	212	5	-	-	-		
	V	891	607	22	-	-	-	1520	16.1
Other processes	Q	6	-	-	-	10	-		
	V	9	-	-	-	6	-	15	0.2
Live	Q	93	-	-	-	-	-		
	V	307	-	-	-	-	-	307	3.3
Non-food	Q	-	-	-	-	-	-		
	V	-	-	-	-	-	224	224	2.4
Total value	V	2 698	863	5 534	111	6	224	9 436	100
Percentage	V	28.6	9.1	58.6	1.2	0.1	2.4	100	

TABLE A4
Fishery exports of LIFDCs by product and process in 2003
 (Quantity in '000 tonnes and value in US\$ million)

Process		Fish	Tuna	CMC	Exotic products	Fish oil	Inedible	Total	Percentage
Fresh, chilled	Q	111	46	349	6	-	-		
	V	659	174	816	24	-	-	1 697	13.3
Frozen	Q	1554	77	820	-	-	-		
	V	2283	144	4428	-	-	-	6 855	54.0
Dried/salted smoked	Q	98	-	-	10	-	-		
	V	326	-	2	94	-	-	326	2.6
Preserved	Q	317	233	70	-	-	-		
	V	1400	746	1227	-	-	-	3373	26.8
Other processes	Q	67	-	-	-	23	-		
	V	84	-	-	-	15	-	99	0.8
Live	Q	103	-	-	-	-	-		
	V	288	-	-	-	-	-	288	2.3
Non-food	Q	-	-	-	-	-	-		
	V	-	-	-	-	-	57	57	0.4
Total value	V	5061	1064	6471	24	15	57	12 692	100
Percentage	V	40.1	8.3	51.0	0.2	0.1	0.4	100	

IMPORTS

TABLE A5
Fishery imports of LIFDCs by product and process in 1976
 (Quantity in '000 tonnes and value in US\$ million)

Process		Fish	Tuna and like species	CMC	Fish oil	Non-food	Total	Percentage
Fresh, chilled	Q	1.2	-	1.3	-	-		
	V	0.3	-	1.4	-	-	2	0.5
Frozen	Q	347	11	-	-	-		
	V	95	9	-	-	-	104	25.5
Dried/salted smoked	Q	56	-	-	-	-		
	V	98	-	-	-	-	98	24.0
Preserved	Q	255	0.4	0.2	-	-		
	V	179	0.8	0.5	-	-	180	44.1
Other processes	Q	Neg	-	-	2.6	67		
	V	Neg	-	-	2.0	22	24	5.9
Live	Q	Neg	-	-	-	-		
	V	Neg	-	-	-	-	-	
Total value	V	372	10	2	2	22	408	100
Percentage	V	91.2	2.4	0.5	0.5	5.4	100	

TABLE A6
Fishery imports of LIFDCs by product and process in 1984
 (Quantity in '000 tonnes and value in US\$ million)

Process		Fish	Tuna and like species	CMC	Fish oil	Non-food	Total	Percentage
Fresh, chilled	Q	0.4	20	5.4	-	-		
	V	0.4	16	14.0	-	-	31	4.7
Frozen	Q	673	32	2.0	-	-		
	V	272	28	2.1	-	-	302	46.0
Dried/salted smoked	Q	77	-	-	-	-		
	V	74	-	-	-	-	74	11.3
Preserved	Q	110	2.8	0.2	-	-		
	V	132	7.4	0.3	-	-	140	21.3
Other processes	Q	8.4	-	-	2	231		
	V	4.3	-	-	2	104	110	16.7
Live	Q	Neg	-	-	-	-		
	V	Neg	-	-	-	-		
Total value	V	483	52	16	2	104	657	100
Percentage	V	73.5	8.0	2.4	0.3	15.8	100	

TABLE A7
Fishery imports of LIFDCs by product and process in 1995
 (Quantity in '000 tonnes and value in US\$ million)

Process		Fish	Tuna and like species	CMC	Fish oil	Non-food	Total	Percentage
Fresh, chilled	Q	21	-	16.8	-	-		
	V	13	-	28.3	-	-	42	2.3
Frozen	Q	1 358	163	-	-	-		
	V	746	144	-	-	-	890	49.4
Dried/salted smoked	Q	81	-	-	-	-		
	V	98	-	-	-	-	98	5.4
Preserved	Q	80	8	2.2	-	-		
	V	128	20	3.0	-	-	151	8.4
Other processes	Q	4	-	-	18	1 043		
	V	2.6	-	-	13	537	553	30.7
Live	Q	1.7	-	-	-	-		
	V	68	-	-	-	-	68	3.8
Total value	V	1 056	164	32	13	537	1 802	100
Percentage	V	58.6	9.1	1.8	0.7	29.8	100	

TABLE A8
Fishery imports of LIFDCs by product and process in 2003
 (Quantity in '000 tonnes and value in US\$ million)

Process		Fish	Tuna and like species	CMC	Fish oil	Non-food	Total	Percentage
Fresh, chilled	Q	25	13	40	-	-		
	V	62	12	119	-	-	193	4.7
Frozen	Q	2 415	197	235	-	-		
	V	2223	165	377	-	-	2765	66.9
Dried/salted smoked	Q	95	-	-	-	-		
	V	164	-	-	-	-	164	4.0
Preserved	Q	195	35	1.9	-	-		
	V	217	75	21	-	-	313	7.6
Other processes	Q	65	-	-	18	1033		
	V	76	-	-	21	675	772	18.7
Live	Q	3.3	-	-	-	-		
	V	17	-	-	-	-	17	0.5
Total value	V	2759	252	423	21	675	4130	100
Percentage	V	66.8	6.1	10.2	0.5	22.716.3	100	

3 Fish trade and food security: the “micro” evidence from countries

The objective of this chapter is to make a country-specific micro assessment of the multifarious impacts of international trade in fishery products on food security. Food security, as characterized in the introductory chapter, embraces the goals of delivering food and creating entitlements – employment and income – through which access to food may be achieved. Nations adopt a variety of approaches and people have a variety of ways and means of creating entitlements to attain these food-security goals. There are no common strategies. Moreover, a country’s strategy in this regard will often change over time, depending on national priorities and international pressures. In addition, the positive “gains” in one realm of action may be offset by negative “losses” in others.

The information gathered by the national consultants in the eleven countries studied illustrates the wide gamut of impacts that international trade in fishery products has on food security. Following the approach to the analysis spelled out in Chapter 1, we consider the impact of trade on five categories – the nation, fishers, fish workers, fish consumers and fish stocks. Highly condensed summaries for each country are given in Appendix 3. The analysis in this chapter alludes to them, though for brevity all the details will not be incorporated. We have also made a preliminary attempt at quantifying the impact by assigning weights and giving positive or negative scores to each of the five categories analysed. The consolidation of these scores is given in Appendix 4. The overall exercise is by no means pathbreaking. Hopefully, however, it erects some signposts that provide directions on the manner in which more robust analysis of these issues can be undertaken in the future.

3.1 IMPACT ON THE NATION

International trade in fishery products is not a new pursuit of developing countries. Edible fish, in dried, salted, smoked and cooked form, has moved from coastal provinces of one country, across land and sea, to cater to the food needs of avid fish consumers in other countries. The maritime countries in West Africa and the continental and island economies of South and Southeast Asia were among the many such regions known for vibrant mercantile trade in fishery products. However, in the post-World War II period, particularly among the newly independent countries of the developing world, the encouraging of exports of food fishery products was undertaken with new “national” earnest. The prime motivation was to earn much needed and scarce foreign exchange. It had dawned on policy-makers that unlike other land-based agriculture products; marine fishery products lent themselves to perpetual and plentiful harvests. A bonanza was there for easy exploitation in the near-shore and offshore waters of most tropical developing countries. A “blue revolution” was in the making.

In addition, during this period, the propitious combination of three technological innovations – bottom trawling, freezing and reefer sea transport – expanded the possibilities of moving fish to distant markets in its near natural state of flesh. This matching of an underexploited aquatic natural resource from the poorer developing countries with the expanding culinary demands of developed country markets also prompted significant quantities of foreign direct investment and development aid in the subsequent decades. Such assistance was aimed specifically at helping developing

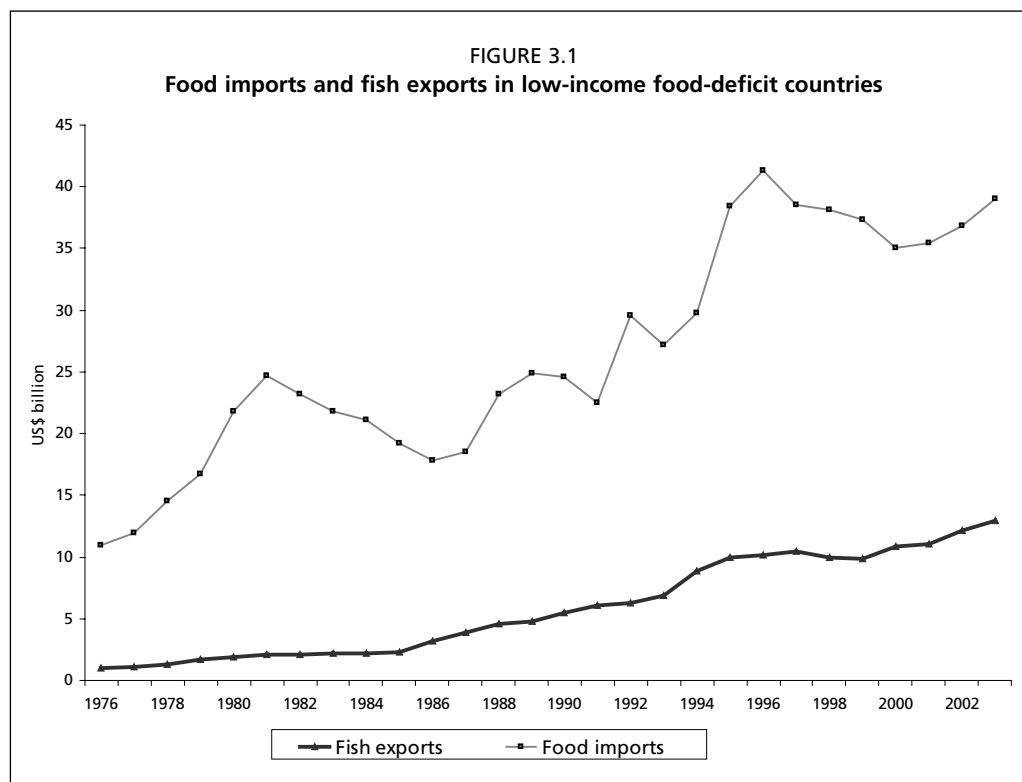
countries build their fishery export industries.¹⁵ The initial runaway success of this trade in yielding much-needed, hard foreign currency greatly conditioned national fishery development plans and projects. The export orientation of the fishery economy became synonymous with fisheries development. This era witnessed significant build-up of physical infrastructure in the form of fishery harbours, land-based cold storage and freezing facilities. It was also accompanied by investment in industrial-style fishing fleets to the complete neglect of the existing, small-scale artisanal fisheries sector. A dichotomy emerged – on the one hand the modern, state-supported, export-oriented fishery and on the other the traditional, artisanal, small-scale sector, largely left to its own survival. In many developing countries, particularly in those that promoted export in fishery products, the current conflicts in the fishery sector are the unintended legacy of this race for the dollar.

This legacy of the last half of the twentieth century – exporting in order to earn foreign exchange – continues to be a prime motivator for international trade in fishery products. Among the 11 countries studied, fish exports were among the top ten foreign-exchange earners in as many as eight of them – **Chile, Fiji, Ghana, Kenya, Namibia, Nicaragua, Senegal and Thailand**. The greater globalization of the world economy has given a firmer foundation and also a new legitimacy to international trade. It is portrayed not only as an engine for national economic growth, but, importantly, as a solution to the persistent problems of unemployment and poverty. When traditional primary commodities slumped in global markets, the search for “non-traditional” items for export made fishery products a prime candidate. The legitimacy of continuing to emphasize foreign-exchange earnings from exports of fishery products, as a national objective, is thus hard to question. Taking the LIFDCs as a whole, we see that their earnings from fish exports can make an important contribution to their increasing, total food import bills. (Figure 3.1). There is no doubt that in food-deficit countries the earnings from international trade in fishery products contribute to ensuring food security at the aggregate level.

Another rationale for foreign-exchange earnings from fishery product exports arises from the need to repay accumulated foreign debt. In countries such as **Nicaragua, Senegal, Ghana and Kenya** – classified as heavily indebted poor countries (HIPC) – foreign exchange from fish exports covers a significant share, if not all, of annual debt-service payments. In a non-fish-eating, poor country such as **Nicaragua**, blessed with large fishery resources, what better option could there be?

The continuing potential for earning foreign exchange brings with it an equally serious concern in countries with poor macroeconomic governance mechanisms and porous international borders. Do all these legitimate earnings really get back to the coffers of the country? Lax foreign-exchange remittance regulations, the practice of transfer pricing (i.e. prices lower or higher than the market rate) by firms involved in the trade and the existence of “black market” exchange rates – to name a few of the distortions – result in nations losing out on legitimate earnings. There is also increasing evidence of illegal exports of fishery products across borders. Such concerns have been raised in **Brazil, Kenya, Ghana and the Philippines**.

¹⁵ A rough estimate of the development assistance from multilateral and bilateral aid agencies shows a progressive increase from US\$15 million in the 1970s to US\$425 million in the 1980s and US\$1 312 million in the 1990s (FAO/SIFAR OneFish Data Source). In this context, it is significant to note that the world's first ‘development project’ was based on a tripartite agreement in 1951 between the United Nations and the Governments of Norway and India for a fishery development project. This project was chiefly responsible for developing the potential for the export of shrimp from India to developed country markets. The project introduced bottom trawling, plate freezing and a new end market, the United States. These exports became an important, fast foreign-exchange earner for India during its difficult economic crisis in the 1960s (Kurien, 1985).



National income from resource rents was significant in **Namibia**. The fishery resources, defined as national property, are almost totally exported. They can be accessed only on payment of a resource fee – with foreigners paying more than nationals. These fees not only cover general administrative costs of the sector, but also contribute to the government’s central coffers and contribute to meeting the most pressing demands in the country for health and education.

International fishery product trade not only brings in foreign exchange, it also takes it out. Countries that have to import fish – as food, as the raw material for value-added processing, or as fishmeal for livestock and aquaculture industries – need to make considered decisions on sources of supply, choice of species and the terms of purchase, which significantly include price and quality considerations. **Brazil** has been the largest importer of fish in Latin America. Much of this has been for “luxury consumption” in the large metropolitan cities of the southeast. The population there is predominantly of European stock and has strong preferences for species of fish not produced domestically. The purchasing power of these wealthy consumers translates into imports of Pacific salmon, frozen hake and cod fillets from neighbouring and European countries. This accounted for a sizeable foreign-exchange outflow and a consistent trade deficit in fishery products until 2000. In **Sri Lanka**, food-fish imports for “nutritional consumption” have been historically well planned, with state-controlled organizations making the crucial decisions as to when, where, what and from which country to buy (Box 3.1). Much of the trade has been consciously south-south and restricted largely to the South-Asian region. This trend continued even after the liberalization of the country’s economy in the late 1970s. While the middle-income and poorer consumers’ food-security interests were uppermost concerns, the possible adverse price impact of imports on local fishers was also adequately addressed. Measures adopted include seasonal modulation of tariffs and import of quantities in keeping with domestic fish-production levels.

The Philippines illustrates a case in which tariffs were rapidly dismantled and “free” imports led to the creation of “foul” markets – the nation pays out precious foreign exchange, domestic fishers and fish sellers complain bitterly and local consumers are

BOX 3.1

State and market participation in international fish trade for food security in Sri Lanka

Sri Lanka has the unique distinction of being the only country in the world with fishing communities that follow the major religions of the world – Buddhism, Hinduism, Islam and Christianity. Sri Lanka has not been self-sufficient in food fish. From the early British colonial period, dried and salted fish was imported into the country from neighbouring British colonies. This pattern continued in the post-independence period. In Sri Lanka fish is a leveller. It is the protein of choice for both the poor and the rich. Fish is socially and nutritionally a very important component of the diet of this multireligious, multiethnic population. This is one country in South Asia in which products such as dried fish are not considered an ‘inferior good’ whose demand declines with rising incomes.

To maintain fish consumption levels, it was initially part of planned state policy (1950s – late 1970s) to attune import quantities and adjust seasonal tariffs so that domestic fish producers were not adversely affected by import surges. Fishery products were also exported from Sri Lanka during this period, but these were composed exclusively of traditional, dried exotic products such as sea cucumber, shark fin and chank and other shells. With greater liberalization of the economy (late 1970s) and enhanced fish production – with the introduction of fishing vessels capable of fishing in deeper waters – the drive for a new export strategy began. Joint ventures were undertaken in fish processing with firms from the United Kingdom, Europe and Southeast Asia. This ensured high export-quality standards for new items such as fresh, chilled and frozen tuna and crustacean products. These were meant exclusively for luxury consumption in developed country markets (south-north trade). The new ventures also generated new employment opportunities for women and men in coastal areas. Higher foreign-exchange earnings from these new products and markets gave Sri Lanka a net surplus from fishery product trade. In quantity terms, however, it continues consciously to be a net importer of fishery products from developing countries (south-south trade), with very little change in the product mix. This is intended to cater largely to the nutritional-consumption needs of the poorer income groups, while keeping the interests of local fish producers in mind. It is noteworthy that the involvement of the state in closely monitoring and channeling these imports, though part of an earlier ‘socialist’ state policy, continues today in the more market-oriented economy. This is evident from a recent policy document (2003), which states that “imports of fish products will be monitored to ensure that there will not be any adverse impact on the local fishers, dried fish producers and consumers”. Sri Lanka provides a good example of international trade in fishery products aimed at achieving all-around food security with balanced state and market involvement.

Material abstracted from case study of Sri Lanka by Oscar Amarasinghe.

provided with fish of doubtful quality, albeit at a lower price. The main beneficiaries are the importers and the export processing firms, often the same entities. **Thailand** is one of the world’s largest importers of fish, with imports valued at about US\$800 million annually over the last decade. Imports are largely meant for value-added processing and re-export. This is a planned national strategy implemented by private companies. It intends to take full advantage of the country’s comparative advantage in food-processing technologies; its sizeable, educated female labour force; and its strategic geographic location vis-à-vis the Japanese and the rapidly growing Southeast Asian markets for processed fishery products.

The terms of trade in fishery products in **Sri Lanka** between 1990 and 2000 were favourable until 1995 and rose by 20 percent. Thereafter they declined, but only to the 1990 level. In **the Philippines** during the same time period, they declined by 24 percent up to 1995 and then fell further by another 31 percent to 2000. In **Thailand**, between 1990 and 1995 the terms of trade improved substantially by 140 percent and then dropped marginally by 19 percent to 2000. All three economies are relatively open. All were affected by the Asian meltdown of 1997 but at different intensities. All of them are WTO signatories. Undoubtedly, trade of fishery products in Sri Lanka and Thailand were better managed.

From a macroeconomic perspective, the continued significance of international trade in fishery products is undeniably evident. The foreign exchange earned is precious to most of the economies and contributes to the fund of hard currency needed to import food and other resources for national development. There are few fiscal mechanisms in place that can ensure that foreign exchange generated in one sector of the economy is used for the specific requirements of that sector – such as the food-security needs of producers. Were that the case, the fish economies of most of our case-study countries would do very well. In **Brazil**, for example, a tax on lobster exports was proposed by artisanal fishers and other stakeholders several years ago. The feasibility and viability of creating “designated” funds out of the foreign exchange earned by the country – which can cater to the economic and social needs of a sector – warrants close examination.

Such a mechanism can create micro-global links within the economy, which can “track” the sectoral output-input relationships that depend on international trade. If it caters to social needs – such as creating a workers’ welfare fund – it can be a great motivator for sustainable trade facilitation. In the case of export-oriented fisheries, there may be a rationale for earmarking designated funds for resource management as well.

3.2 IMPACT ON THE INCOME AND WELL-BEING OF FISHERS

If the fish-export trade has been so vibrant and if prices of these products are higher in international markets, then the earnings of fishers, who labour to harvest this resource, must also improve. Theory and simple logic leads us to this conclusion. Assessing this in reality, however, is not so straightforward and easy. First, the numbers of fishers in a country can be large, and assessing how many of their lives are linked to the chain of custody of exports is not always easy. Second, very few developing countries have a systematic socio-economic data-collection mechanism for the fisheries sector. This makes income or earning assessments difficult. Third, at the point of first sale, it can be hard to tell whether the fish will eventually be exported.

In **the Philippines**, with over 990 000 fishers spread over 7 000 islands, only the occasional catch of shrimp or tuna gets purchased by a trader for delivery to an export processing firm. A higher price to the fisher would depend on his access to price information. There is currently no mechanism to record this transaction and the bearing it has on his income. Equally important, but also imprecise, has been assessment of the negative impact on the income of fishers of the imports of fish for value-added re-export and/or domestic sale. There was important evidence from the country of the structure of the chain of custody for the fishery products that are exported and imported. These chains are generally controlled by the same individual traders or trading companies in a given landing centre or island. This monopsonistic structure weighs heavily against the fishers. They have no say in setting fish prices. Fishermen are often indebted to the traders. This creates an overlapping of the credit and product markets and further tilts the bargaining power away from them. These observations reflect the reality in numerous developing countries. They are the root cause for fishers having livelihoods often far below national averages.

In **Kenya**, following the expansion of the market for fish to international realms, deterioration of the control that fishers have over their lives was also reported. Lake

Victoria was once the realm of self-employed fishers with small artisanal craft and gear that supplied fish to the immediate hinterland. The scaling up of technology, to increase the output of the Nile Perch fishery to meet the export market, resulted in the alteration of production relations in the harvesting arena. They became market driven, with investors from outside the fishery setting the norms for cost-sharing and the division of earnings. At the same time, the price of Nile Perch increased nearly nine-fold between 1988 and 1995. Consequently, whatever the new production relations, the fishers were likely to have gained some income benefit.

In **Nicaragua**, the central bank assessed the average monthly income of fishers in 1991 to be US\$124. The income of those in agriculture was US\$71. Following the greater export orientation of the 1990s, the monthly earnings of fishers increased to US\$250, while earnings in agriculture dropped to US\$55, with much of the poverty in the country to be found there. In **Brazil**, the monthly income of lobster fishermen in 2002 was estimated to be US\$70. This was close to the minimal salary level for the country. In **Sri Lanka** in 2000, there were about 111 400 fishermen in the country, spread across 2 558 villages. Those fishing offshore for tuna species, those fishing along the coast for lobster and those engaged in shrimp farming earned US\$230, 80 and 70 per month respectively. These earnings were higher than the earnings of the fishers involved in coastal fishing for domestically consumed finfish. They earn on average only about US\$25–30 per month. However, with the exception of those fishing offshore, the earnings of fishers were not higher than those of self-employed workers in the other sectors of the economy, whose average per capita monthly income was estimated to be US\$70.

In **Namibia**, the total population is small and the number of fishers in the mere thousands – 5 700 in 2001. All of them were employed on large fishing vessels exclusively harvesting for export. These fishers earned on average about US\$192 per month (US\$2 300 per year). This compares with the national per capita annual income of US\$3 166. The situation in **Fiji** was similar. In 2001 the tuna fleet employed slightly over 1 100 Fijians. Their wages were positively influenced by the higher prices obtained due to exports. On the contrary, in **Chile**, one of the world's largest fish exporters, whole geographic regions were involved in export-oriented aquaculture and there was not even a "trickle-down" effect to the fish producers from this much-heralded export bonanza. The Lakes Region (Region X) with the highest concentration of export-oriented salmon farming was also the region with the lowest average per capita income.

In the world's largest fish-exporting country, **Thailand**, there has been a considerable increase reported in rural incomes due to the overall export orientation of the economy as a whole: fishers are likely to have benefited to the extent that their harvesting and production were linked to export-oriented species; poverty levels in the rural areas have also dropped significantly; marine fishers, who were among the poorer sections of the population, must have also escaped poverty through exports. The probability is high that these assertions are true. However, the point is that even in a country with a long and meticulous tradition of good socio-economic data, the income impact of international trade in fishery products on the fishers has not been accurately assessed.

There was one unambiguous statement from all the countries: the number of persons employed in export-oriented fisheries had increased over time. Jobs have been generated at an increasing rate. The export-oriented fishery sector has been a strong magnet, attracting people from other sectors of the economy. Contrary to much of the received literature, for the unemployed and environmental refugees, the fishery is not necessarily the realm of last resort. This is primarily due to the deterioration of opportunities in land-based agrarian occupations and the lack of growth of employment in industry. In the former, the iniquitous distribution of land is a major barrier in creating employment opportunities. In the latter, entry is generally contingent upon

skills that these job-seekers do not possess. Those who are poor or jobless are aware of the easier labour absorption into the fishery sector. This is primarily due to the open-access nature of the fishery in nearly all these countries. Evidence from the case studies also indicates that the adoption of higher technologies for export has reduced earlier skill barriers to entry into fisheries. For example, fishing from a mechanized boat for shrimp does not require the balance needed to pull a net while standing in a dugout canoe. The latter is something only a person from a traditional fishing community could do. On a mechanized boat, even a young man from an agricultural community can quickly get accustomed to the task.

However, the initial income advantage accruing to these entrants is dissipated quickly with further entry. Greater and free entry into the fishery is strongly encouraged by those who control the means of production in the harvesting sector. This makes for a lowering of average income. The initial bargaining power of the fishers vis-à-vis the owners of fishing vessels and traders – if any existed at all – is lost. This is in relation to shares, wages and/or the first sale price of fish. In none of the case studies was there mention of producer organizations or cooperatives of the fishers, which could exert an upward influence on the price of the exportable species of fish. Fishers are always “price takers”. This is not only for all the inputs they need for fishing, but also for the only output of their hard labour, the fish.

These structural deficiencies of production organization and fish distribution channels are considered to be matters that do not detract from the basic theoretical proposition that “free” trade enhances incomes and welfare. However, the reality is that trade, and indeed lucrative trade, which most export-oriented trade happens to be, is invariably controlled by individuals, agencies and firms that have very considerable economic, social and political influence at local, national and/or international levels. Maintaining and, indeed, perpetuating the structural deficiencies of the production organization and the asymmetries of information to the producers is in their interest. Breaking these “system rigidities” requires collective action of producers from below and commitment of the state from above. Such contemporaneous action is crucial to altering the balance of power between the profit-oriented export trade interests and the livelihood-oriented interests of thousands involved in production for export.

In **the Philippines**, years of widespread collective action by fishers were matched by a commitment by the state to delegate resource management to the village level. This holds a glimmer of hope for committed socio-political action to alter the balance of power. The task in that country is daunting, but this is a good beginning. The other example is **Namibia**, where a politically committed state has taken upon itself the role of guardian of the fishery resource. There is a constitutional requirement that fishery resources be utilized on a sustainable basis, benefit the people through employment generation, provide avenues for domestic investment and make support available to national projects for social development. With this commitment, there is greater congruence between national goals and the aspirations of the people that labour to generate wealth from natural resources.

The evidence from the case studies also points to instances of “ill-fare” (rather than “well-fare”) among the fishers in their pursuit of fish for export. The rise of occupational ailments such as eye problems, back pain and skin diseases has been reported among the artisanal fishermen of **Brazil**, even though, as a result of diving, there is less exposure to the sun during lobster fishing. In **Chile**, divers that extract dead fish from the salmon nets and cages are prone to a disproportionate level of accidents and health risks. There is little medical or insurance compensation offered by the industry or the state. In **Senegal**, artisanal fishermen engaged in fishing for exportable demersal species in deeper waters meet with accidents involving collisions with industrial fishing vessels. In **the Philippines** and **Sri Lanka**, cases have been reported of arrests of fishermen straying into neighbouring EEZs in hot pursuit of tuna. They

are subjected to long prison terms and torture. In such situations, the owners of the vessels do precious little to help. Their interests are usually focused on getting back their impounded vessels, and it is the fishers who largely take the suffering. So do their family members back home, who often have to do without the breadwinner of the household for long periods.

The ill-fare experienced by fishers, although not limited to export-oriented activities, has been inadequately highlighted and is passed off as an occupational hazard.¹⁶ To the extent that it occurs in the pursuit of livelihoods and remains largely unaddressed by employers or the state, it does merit more serious attention as a human rights violation.

The evidence from the case studies is mixed. In most cases in which fishers are directly and substantially related to harvesting and production of export-oriented products, incomes have increased. Whether their cash incomes adequately compensate for other “disbenefits” associated with fishing for export is another matter. In addition, the extent to which their incomes compare with other primary producers in the respective economies needs closer investigation. On balance, there is inadequate proof of a substantial *real* improvement in the overall food security of fishers that can be directly associated with harvesting or producing high-priced fishery products for export.¹⁷ This is in sharp juxtaposition to the substantial net gains made by the business concerns (including multinational corporations) that control exports and the foreign exchange gains that countries receive from the hard labour of these food producers. The exporting firms, on aggregate, also make substantial profits. Clearly, the “trickle-down” theory has little credibility. The majority of the benefits from international fish trade accrue somewhere between the rich-country consumer and the poor-country producer. By improving our understanding of the price spreads along this marketing chain, the scope will be greater for making appropriate policy interventions towards a fairer international trade regime. Unless there is a radical altering of the structure of the trade channels, particularly at the end closest to the fishers, there is no possibility that a greater share of the “export dollar” will reach those in greatest need of improved food security.¹⁸

The commitment to producer organizations, such as cooperatives, was a much-touted objective of the earlier “development decades”. This zeal has been set aside by the wave of new evangelization for unfettered free trade. A revival of the former would bring no loss of commitment to the latter. As a matter of fact, it is only by this dual commitment that trade can be made genuinely “free”. Only then does trade become an arrangement for the exchange of entitlements among groups that are “more equal” and that are able to exercise considered and judicious choices, keeping their individual and collective interests at heart. In such circumstances, trade can create gains for all the parties involved and also generate positive externalities for society as a whole.

In the rhetoric on trade and poverty reduction, one important feature is not usually taken into account – the structure of the sector from which trade occurs and the

¹⁶ This is despite the fact that many international and, in several cases, national regulations exist, which if implemented would have addressed these issues.

¹⁷ These real-world conclusions are not totally in line with the elegant pieces of economic theory on this subject. For example, the Stolper-Samuelson theorem – that an increase in the price of labour-intensive goods raises real labour incomes and reduces real return to capital – has an immediate link to international trade and poverty. However, the theorem is built on highly restrictive assumptions about several features of the economy, including, *inter alia*: income distribution, perfectly competitive factors, the free mobility of labour, homogeneity of goods, smooth factor substitution and so forth. Most of this does not obtain in the *real* economy.

¹⁸ In this context, a comment made in 1946 by J.M. Keynes on the international control of raw material prices is worth quoting: *Proper economic prices should be fixed not at the lowest possible level, but at the level sufficient to provide producers with proper nutritional and other standards in the conditions in which they live ... and it is in the interests of all producers alike that the price of a commodity should not be depressed below this level, and consumers are not entitled to expect that it should.* (Keynes, 1980).

multidimensional nature of the economic actors within it. A common feature in many of the countries that have been studied is the heterogeneous nature of fishers. The income impact of trade and its consequent bearing on the livelihood of these fishers vary significantly. The gross earnings of small-scale fishers may be substantially more than those of the crew on the offshore fishing vessels or the workers in aquaculture, though all of them may be linked to shrimp harvests for exports to the same destination. However, as the small-scale fishers have to purchase their own inputs (fuel, nets, hooks, etc.), the prices of which may also be determined by international trade, their net earnings can work out to be less than the wages and shares received by the others. International trade will have differential poverty and food-security impacts depending on the structure of the sector. Be that as it may, maintaining the status quo of low returns to producers, in the ultimate analysis, perpetuates a hidden subsidy to consumers in the developed world.

The obligation to address some of the issues raised must transcend local and national initiatives. International solidarity is an essential ingredient of any transition to creating a more food- and social-security-oriented trade regime.

3.3 IMPACT ON FISH WORKERS INVOLVED IN PROCESSING

Categories of workers who perform post-harvest services in any fishery economy have been grouped together under the name “fish workers”. (The understanding here is that this category excludes those who catch the fish, the fishers, discussed in the preceding section.) Fish workers include: (i) the men, women and children that haul, sort, pack and transport fish on the shore or at harbours and landing sites; (ii) those involved in the various processing activities through which the shelf life of fish is enhanced and value-added product transformations take place; and (iii) those engaged in the supply of fish to exporters, processors, wholesale and retail markets or directly to consumers. This category of workers has always existed in traditional fisheries, but their roles and relevance to the sector were inadequately highlighted. Traditionally, both in developed and developing countries, fish workers were primarily women from the fishing or coastal communities – often the wives and daughters of fishermen. The decades of modern fisheries development and the expansion of modern international trade have brought about some salient changes in these activities. Accompanying these, there have also been changes in the gender, nature and social origins of the workers involved. The case studies undertaken focused on the workers – women and men – involved in export processing activities, in the modern sector. The intention was to assess the extent to which their labour-based entitlements, generated by fish processing for international trade, contribute to their food security.

The unanimous opinion across the 11 case studies was that significant new employment had been created in this fish-processing activity as a result of international trade. According to the size of the trade operations, the numbers employed vary – from 900 in **Kenya** to 212 000 in **Thailand**. An important hallmark of the employment is its largely casual and seasonal nature, almost matching the ebb and flow of fish arrivals. Another notable feature is the large presence of rural, migrant labour, often drawn from the poorer regions of the respective country unless social or cultural specificities warrant the employment of locals.

Another common feature has been harmonized standards in the processing plants, arising from the Hazard Analysis Critical Control Point (HACCP) specifications imposed by the developed countries as a prerequisite for exports and imports. This ensures good physical working conditions irrespective of whether the plant is in **Brazil**, **Fiji**, **Senegal** or **Sri Lanka**. These changes have contributed significantly to the health and well-being of women workers. They may also have had important demonstration effects in their hygienic practices at home. The indirect impact of such positive trade-driven changes needs proper assessment.

These new HACCP-based requirements have created an employment niche within the fish-processing industry for a specialized category of workers, namely fish technologists, veterinarians and hygienists, often with attractive wages¹⁹ and social benefits. However, these represent rather a minority among fish workers.

With regard to social security arrangements, small intercountry variations apart, only the few fish workers defined as permanent workers were entitled to insurance, medical benefits and, in some rare cases, retirement benefits. Despite better plant conditions, the issue of continuing occupational health hazards to workers has been raised in **Chile, the Philippines, Senegal and Ghana**.

The labour-based entitlements for food security come in the form of piece rates, daily wages or monthly incomes. Unlike the income of fishers, we have better records and estimates of numbers and earnings. We enumerate these below for the countries studied:

Kenya (700–900 workers in 2000). Workers earned between US\$1.50 and 3.00 per day.

The minimum wage in Kenya was US\$1.50 per day.

Sri Lanka (1 350 workers in 2000). Fish workers earned US\$30–40 per month. This was lower than workers in other food-processing sectors and also lower than the per capita income of the population as a whole, which was US\$65.

Fiji (2 000 workers in the three main plants). The annual gross wage range for women was between 700 and 4 200 Fiji dollars (F\$) (US\$1 622 and 1 842) and for men F\$3 900 and 4 500 (US\$1 710 and 1 973). These figures were well below the national poverty line.

Nicaragua (2 500 workers in 1995, declined to 1 500 in 2000). Processing workers earned on average between US\$110 and 150 per month. This compared with the “basic necessities package”, which was estimated to cost about US\$135 per month.

Senegal (number not specified). Permanent workers earned 70 000 CFA francs (CFA) per month (US\$95). Daily wage-earners earned CFA3 000 (US\$4) and piece-rate workers were usually paid CFA300 (US\$0.40) per kg of processed product.

The Philippines (17 000 workers in the General Santos City canneries). Average monthly earnings were US\$130. Married workers found it difficult to make ends meet.

Brazil (20 000 workers in the late 1970s; this number declined greatly with the increasing capital intensity of the sector). In 2000 fish workers earned between US\$80 and 100 per month. Their wages were just adequate to purchase the basic food requirements of a family.

Chile (30 000 workers in the salmon-processing industry). Wages varied according to the size of the firm, with the smaller ones paying less. The estimated average earning of a worker in 2000 was US\$220 per month, which was estimated to be 40 percent above the minimum wage.

Ghana (numbers declined substantially following closure of many firms unable to meet European standards). Wages were low.

Namibia (5 000 workers in 1997; increased to 7 600 in 1998 and declined to 4 500 in 2001). Over 85 percent of the workers earned at least 1 500 Namibian dollars (N\$) per month (US\$175), which is more than what workers in the manufacturing or retail trade earned.

Thailand (212 000 workers in the 480 plants in 2003, covered by the social insurance fund). For the 50 000–60 000 fish workers in tuna-processing operations, average earnings were about 5 200 Thai baht (B) per month (US\$118), which was higher than earnings in agriculture.

The above information shows that the employment generated by fish processing is significant in the countries examined. However, the record of wages and earnings in

¹⁹ Lahsen Ababouch, FAO Fisheries Department, personal communication.

most of the countries leaves much to be desired. Only in **Namibia**, and to a certain extent in **Thailand**, are the earnings commensurate with or better than those of workers in other sectors. In the other countries, without these employment opportunities at fish-processing plants, the alternate employment and income avenues for these workers are likely to have been worse. This is evident particularly in the case of migrant workers, who have come from the poorer, rural regions of the countries. The incomes they earn flow rapidly to their families and dependents back home. Evidence from **the Philippines** and **Thailand** indicates that they remit as much as 50 percent of their incomes. In this minimalist sense, international trade in fishery products does contribute to the food security of these workers. The role of trade as a potential engine for *income* poverty reduction is not in doubt.

To leave the issue at this, however, would be to shy away from the principal contradiction of the rising tide not lifting all boats to the same level. Why is it that nations, processing firms and trading companies rise high with the tide, while the biggest segment of the workers whose labour adds value to the fish are kept with their heads just above water? Undoubtedly, the nature and structure of the industry, on the one hand, and the atomized and unorganized character of the workers, on the other, is central to this dichotomy. The evidence from **Ghana**, **Fiji**, **Kenya** and **Chile** testifies to either the overwhelming control of one firm over the industry, or the growing concentration within the industry, both aided by increasing foreign control. These tendencies effectively prevent any “social control” over its operation. Only in **Namibia**, and to a lesser extent in **Thailand**, is structured participation of the state clearly evident in modulating the pace and direction of the industry as a whole. The instrumentalities used to achieve this result vary in the two countries. This is primarily due to differences in the governance structures, the manner in which the private sector participates in the industry and the possibility of organization of workers. What is important from our perspective of food security is the evidence that both approaches are creative first steps to ensuring that greater benefits of trade reach fish workers. Greater trade certainly yields greater economic growth – but left to itself, it only determines what happens to *aggregate* average income, and not to the incomes of the workers. There is no automatic association between international trade and economic growth, on the one hand, and the food security or human development of the workers on the other. It is necessarily a guided outcome. Such outcomes will materialize only when the state takes a proactive role in ensuring that benefits are more equitably distributed. The mechanisms available for this are numerous. What is applied will depend on historical experience and the prevailing economic and political systems.

As part of the process of globalization there are growing pressures and compulsions within the developing countries, and LIFDCs among them, to fashion such guided outcomes. One source of pressure derives from the fact that workers in the developing countries are becoming increasingly aware of their rights. As another, consumers in the developed world are raising larger ethical issues about the hidden consequences of globalized trade. The consciousness of civil society on these matters has vastly increased. The example of the cooperative labour associations in **the Philippines** provides one model of an innovative organizational arrangement. It has made a good beginning in enhancing the collective bargaining power and social security arrangements of the fish-processing workers in General Santos City. Pressure from consumers in the developed world has forced **Chile’s** salmon-aquaculture export industry to consider its corporate social responsibility to ensure that free trade is conducted without violation of fair practices. (Box 3.2). These are isolated examples of small initiatives. Yet they point to the immense possibilities ahead to make global trade work for the human development and food security of the labouring majority whose livelihoods depend on it.

This analysis would be incomplete if we did not reflect briefly on the impact of modern international trade on the lives of the traditional fish workers in the fish

BOX 3.2

Corporate social responsibility – prerequisite for greater environmental integrity and food security in Chilean aquaculture

Chile is one of the most open economies in the world and foreign investments flow into the sectors that provide the highest returns. Aquaculture in the deep southern Lakes Region (Region X) is one such realm. Between 1990 and 2001, foreign investment totalled US\$252 million. Of this, about 40 percent was invested in Region X. An additional US\$90 million is awaiting clearance from the environmental authorities of the region. The process of globalization has given Region X its own space in the international economy. The creation of what is called the “salmon cluster” marks the cooperation between private and public sectors for the growth of the industry.

However, a major blot on this rosy salmon picture has been the finding of a recent study that the level of social development in the region gives serious cause for concern. The region has the lowest average per capita and household income in the country. In fact, even the studies of the Planning and Cooperation Ministry reveal that about 256 000 people, or a quarter of the region’s population, are poor or destitute amid the great generation of wealth in the industry. Against this background of rising investments and profit potentials, such an observation is socially and politically unacceptable. The issue of corporate social responsibility is thus becoming a much discussed topic in Chilean aquaculture-industry circles. This is also significantly in response to increasing pressure from consumer groups in the developed countries, pushing for greater social control of the market. Consumers are pushing for credible evidence that products are safely produced, in social milieu free of abuses of labour rights and with care for the natural environment.

A genuine interest in long-term profits warrants a commitment to product and environmental quality, but equally to the overall welfare of the workers in the industry. Some of the bigger companies, who have clients in very demanding markets, retain their workers on a permanent basis. They provide training workshops to improve quality and reduce product losses. They even conduct literacy workshops and courses to advance the studies of their employees, thereby increasing employee loyalty. They accommodate the needs of women workers, giving them fewer working hours and special maternity conditions for expectant mothers, such as being taken off night shifts, given special rest periods and permitted to work seated. Some also provide special courses on avoiding unwanted pregnancies. Local NGOs closely monitor the industry and carry out studies that provide information on the environmental and social aspects of the industry. They recently set up a “sea parliament” consisting of all the unions and social groups representing the fishing industry. Such negotiated approaches to market modulation are the only way ‘free’ trade can be conducted without loss of fair practices. Recognizing such issues and addressing them collectively is the only sure path to ensuring that the aquaculture industry not only contributes to private profits of the corporate world, but also to the long-term integrity of the environment and to the social and food security of the labouring community. These are the twin foundations of the real wealth of any country.

Material abstracted from case study of Chile by Roberto de Andrade.

economies of many countries. As in the modern processing sector, the vast majority of these workers are women – generally middle-aged and with little education. Large numbers of them have been and continue to be associated with different forms of regional trade in traditionally processed products. The remainder are employed in fish processing for domestic markets. The increase in the export of fishery products,

particularly to the developed countries, has resulted in a significant decline in the quantity of fish available to these women for processing – and also an increase in the price. This has resulted in loss of employment, loss of income or both. In **Kenya**, over 2 000 women who were involved in artisanal fish processing lost their livelihood when the Nile Perch found a market in Europe. In **Ghana**, it is reported that the livelihood of traditional fish processors, mainly women, was affected when the raw material fish supply from **Senegal** declined significantly. It is likely that other factors, more than increased fish export from Senegal, have contributed to this decline of fish supply to the Ghanaian traditional fish processors. These include the spread of artisanal fish-curing processes to countries other than Ghana. In addition, the 100 percent devaluation of the *Communauté financière africaine* (CFA) franc in the early 1990s made imports from outside the CFA region of pelagic fish, used in traditional curing, more costly. The net impact was less fish for artisanal processing in Ghana.²⁰

In **Sri Lanka**, women from some fishing communities turned to alternate employment opportunities when large quantities of fish from their villages were redirected to the export market. However, in their case, having benefited from free schooling provided by the state, they were able to obtain new jobs in the export-oriented garment industry. These new jobs were better paid than their earlier earnings in traditional fish processing. Thus the advantages of investments in education and other human capabilities are evident. In **the Philippines**, the “illegal” flow of imported fish and its sporadic sale in domestic markets had an adverse effect on the income of fish vendors. Women vendors located in port towns with export processing firms were badly affected.

This evidence that a change in the trade policy of a country has had differential impacts on women fish workers has an important bearing on the question of food security and poverty. As numerous studies have shown, an increase in the income of women has a greater positive impact on household food security. The converse also is therefore true. Since the number that were adversely affected is not known with certainty, much of the impact is hidden from the “official account”. As we have seen above, processing activity aimed at exporting fish to developed countries does provide new jobs to younger women in a good work environment at higher earning levels. However, this can lead to another category of women – from a different age group, social background and geographic location – being deprived of their meagre sources of livelihood. From a macroeconomic perspective, this may result in a net gain in welfare on the aggregate. In real life, it can be a case of robbing Stella and Fatima to make payments to Doula.

Trade liberalization and the consequent greater export and import of fishery products have had differential impacts on the various categories of fish workers. In the case of workers in fish processing, they have resulted in a positive, aggregate employment effect. In most countries, they have raised the labour-based entitlements of a new section of workers, predominantly women, in the modern fish-processing activity. The actual numbers vary considerably. It depends on the size of the country and the industry. As the majority of these workers were poor, increases in their income have contributed to their food security, given that the marginal propensity of the poor to spend on food is high. It is also well known to be higher for women, who constitute the majority of fish workers. There has been some degree of homogenization of the physical structure and capital intensity of the operations across countries following adoption of the HACCP standards. As a result, capital-labour ratios were similar and labour absorption rates were unlikely to vary very significantly. This also ensured that physical conditions of work were similar across countries – the cleanliness and hygiene standards of tuna processing in **Ghana, Thailand** and **Fiji** were standardized

²⁰ Lahsen Ababouch, FAO Fisheries Department, personal communication.

across space and time. What has varied is the wages and other employment conditions, including, significantly, the issues pertaining to occupational health. These depend on macroeconomic factors, the structure of the industry and the organizational power of the workers. Achieving greater food security for workers depends on the manner in which these features combine in specific country contexts. The mere fact of being involved in an international trade-oriented industry alone is not a sufficient condition for ensuring food security or alleviating poverty.

3.4 IMPACT ON THE FISH CONSUMPTION OF POORER CONSUMERS

That international trade in fishery products adversely affects the fish consumption levels of the poor in the exporting country is an oft-expressed concern. Some well-studied cases, where export orientation has directly deprived local consumers of their favoured fish diets, have contributed significantly to broad generalizations in this regard. In many countries, fish is not a preferred source of protein, and the exports of fishery products therefore have negligible adverse impact on the direct food security of the local population.

The case studies exhibit a broad spectrum of situations and point to the need for more detailed context-specific studies on this issue. The extensively studied case was that of **Kenya**.²¹ The Nile Perch introduced into Lake Victoria gradually became the backbone of the domestic, artisanal fish-processing activity and catered greatly to growing domestic consumption both among the poorer communities around the lake and in more distant urban markets. The 1980s “discovery” of the European market led to a flood of investments made by foreign investors in trawlers for fishing and in freezing factories for processing. This resulted in the Nile Perch moving almost totally into exports, depriving local consumers of fish and fish workers of employment in traditional fish processing.

Viewed from a global perspective, this is an unrepresentative case from which to generalize. Among LIFDCs, Kenya is a very small and insignificant player in the international trade in fishery products. The food-security problems in that country relate more to availability of food staples and the enormous lack of economic opportunities available to the population to obtain the entitlements necessary to achieve food security. Even so, the case illustrates forcefully how strong and distorting the dynamics of international trade can be if completely “left to the market”. Without any strong or significant state involvement in overseeing food trade, the “nutritional disbenefits” can be heaped on the local population while the “financial benefits” accrue in the hands of foreigners. At the national level, only 6–10 percent of the total animal intake of the population is from fish. But at Lake Victoria today there exists a cruel paradox. It is reported that the fishing communities are the most deficient in protein and energy foods and the non-fishing communities do not have adequate economic access to either fish or other sources of protein. FAO classifies Kenya among the countries with the highest level of undernourished people, and the number has been rising since 1981 (FAO, 2003b). If allowed to function as in Kenya, international trade in fishery products can significantly undermine food security. We need to exhibit this case as one that should not be emulated in any other country.

From **Ghana**, we have reports that exports of the favoured species are driving up domestic fish prices, although imports have kept per capita supply from falling. Fish is the favoured protein source and, taking 36 kg/person/year as the norm, there was still

²¹ A series of studies was sponsored by the Eastern Africa Programme of the International Union for the Conservation of Nature (IUCN) on the impact of international trade of the Nile Perch on the economies, fish consumers and fish workers of the three countries that share the resources of Lake Victoria: Kenya, the United Republic of Tanzania and Uganda. These studies have provided the motivation to extend the analysis to other countries (Jansen, 1997; Abila and Jansen, 1997).

a 360 000-tonne fish deficit. This is almost as much as annual domestic production. It is demand from the “luxury consumption” of the richer consumers that drives up fish prices, though they still remain lower than the prices of other protein sources. The net result is twofold. General consumption shifts to less expensive species of “second preference” and the poor consume less. The situation in **Senegal** is similar. The export of demersal species, once important in the diet of the local population, and declining fish imports due to the overall foreign-exchange crisis have created a short supply of fish in the market. Prices have risen. Fish consumption has become spatially skewed. Supply has been restricted to Dakar, the capital, where market demand is still high. The rural areas further away from the coast have been deprived of fish due to lower effective demand and the lack of road infrastructure into the interior of the country. This has made delivery there difficult even if economically viable to the trade.

Namibia has no fish-eating tradition. The plentiful fishery resources have been traded internationally to earn valuable foreign exchange. In this process, the government has recognized the nutritional, economic and ecological sense of inculcating a taste for fish – particularly among the vulnerable groups in the hinterland. Through a “Fish for Life” programme, assisted by the Japan International Cooperation Agency (JICA), the government has made efforts to bring fish to the poor. These are social investments to generate transfer-based entitlements among the poor. Shopkeepers have been encouraged to display government promotional material in an effort to raise awareness of the benefits of fish eating and thus gradually increase the generic demand for fish. Fishing vessels have to pay a quota fee for their export-oriented catch. But they are also offered a free quota for horse mackerel, which must be landed in Namibia for distribution through the nutrition programme.

The context-specific and evolving nature of the impact that international trade has on the direct food security of people is evident from the experience of the four African countries. We have both good and bad scenarios. As we saw in **Kenya**, unbridled international fish trade can pose a significant threat to food security. However, as we have seen in **Namibia**, international trade also provides opportunities for the wise use of resources – natural and financial – in addressing food-security problems. The prerequisite for this was astute governance and political will in adequate measure. None of the countries studied was deficient in fishery resources. **Senegal** and **Ghana** were both leaders in fisheries development in West Africa. Fish has always been the major source of animal protein for the majority of the population. Nevertheless, if current trends in international trade continue, for future generations in these two countries, good table fish can become a mere remnant of culinary history.

In **Nicaragua**, fish-eating preference is low. People are poor, while fishery resources are plentiful. The country exemplifies an important point about the cultural conditioning of food preferences. Because people are poor, it does not mean they will eat *any* good food offered to them or which is physically and economically accessible. The simultaneous presence of a nutritious food resource and hungry people may be ethically unsettling. But at the local level this paradox can be socially and culturally compatible. The earlier Sandinista government did perceive the potential of the vast fishery resources as a source of foreign-exchange earnings and a basis for livelihood and food. They made significant efforts at national and local levels to encourage the use of a plentiful natural resource to solve the problems of poverty and malnutrition. Subsequent regimes have been driven exclusively by market considerations. Despite the fragile macroeconomic situation, the country imports gourmet seafood for luxury consumption by the very wealthy and the expatriates. Fish exports today yield valuable foreign exchange and contribute significantly to debt repayments. However, there was no evidence that the option was being exercised of using these earnings to provide the preferred proteins for the poor. There is scope for viewing food-security provisioning as an investment for the future. This opportunity is being missed (Box 3.3).

BOX 3.3

Viewing food-security provisioning as an investment for Nicaragua's future

Nicaragua is confronted with a paradox. Substantial fishery resources go hand in hand with high levels of malnutrition in a large population, particularly women and children. This is primarily due to a culturally conditioned diet preference that does not favour fish. But it is also inextricably related to the total lack of purchasing power of the people, because they are devoid of opportunities for employment that could provide labour-based entitlements for food security. In such a situation, a domestically driven market demand for fish is unlikely to emerge. Innate to this context, however, there is also an opportunity.

Fish and fishery products, which are plentiful as a natural resource in the sea and an easily produced resource in inland waters, could become the future answer to both the poverty and nutritional insecurity of the people. This calls for a guided and multipronged approach. It will not emerge if 'left to the market'. To achieve this, the awareness of the beneficial nature of fish as food needs to be communicated to the population. This can be done through nutritional demonstration programmes and by generic advertising. Structured possibilities need to be developed to create transfer-based entitlements to food security that will also contribute to influencing tastes. School food programmes are a good avenue for introducing fish to children. The nutrition of pregnant and lactating mothers linked to public health programmes is another crucial realm. Conditioning people's tastes is a long-term proposition. This entails viewing food-security provisioning as an investment that will translate into effective demand in later years. The challenge is to create innovative new food products using fish. Perhaps there is even a case for re-examining old initiatives – such as fish protein concentrates or fish sauces. The researching, development and manufacture of such products can provide significant domestic commercial opportunities, even while fulfilling these important social purposes.

Development aid agencies concerned with the long-term, sustainable and self-reliant development of Nicaragua should promote such initiatives. Even high-end gourmet fishery products, using appropriate locally harvested fish species and produced locally for domestic consumption, can contribute to the creation of employment and income for processing workers. Such initiatives can be organized in decentralized, small-scale food-processing industries along the coast. Hygienically dried, smoked, salted products that do not require expensive 'cold-chain' investments are important directions to consider. They can contribute immediately to widespread food security, both directly and indirectly.

Material abstracted from case study of Nicaragua by Sjeff van Eijs.

In **Chile**, the impact on consumption of the link between flourishing salmon aquaculture and the diversion of phenomenal quantities of numerous pelagic species to fishmeal production warrants closer examination. FAO data indicate that the per capita supply decreased from 26 to 21 kg/year between 1990 and 1999. During this period, the share of fish protein in total protein consumption decreased from 20 to 10 percent. One must consider the extent to which this decline may also relate to environmental factors affecting the pelagic stocks (El Niño) or be the result of a combined interactive effect of fishing pressure and natural fluctuations. Be that as it may, the likelihood is indeed high that the adverse nutritional implications of this reduction of fish supplies have been borne disproportionately by the poor in coastal regions. This proposition requires closer study.

There is concern in **the Philippines** about falling fish consumption levels, particularly among the poor. However, the evidence is inadequate to demonstrate that the export of species is depriving domestic consumers of physical access, or that domestic fish prices

are increasing faster than the average cost of living. In fact, fish imports have brought relief to poor consumers through lower prices. The real problem is lack of entitlements among the poor to economic access to fish and all other foods produced locally. Fish farmers producing tilapia for domestic consumption are seeking export markets following poor local offtake. The highly iniquitous income distribution in the country creates a demand recession, and average statistics showing trends in earnings or supply of commodities cannot capture the real context of the poor. Only macroeconomic changes can address these problems. Sector-specific changes in production or trade, undertaken in isolation, are unlikely to alter poverty levels.

In **Sri Lanka**, fish imports play a crucial role in the nutritional consumption of the poor. The bulk of imports are dried and salted pelagic species, and this composition has not changed significantly over the decades. This indicates that the tastes of the majority have not altered much over the years. It points to the commitment of both state and market to cater to this demand, despite changes in the ideological orientation of successive governments. It is also a clear indication that what is socially and nutritionally desirable can also be profitable to the trade – a match not very commonplace. The huge popularity of fish as a side dish, an appetizer or, as the Sri Lankans call it, a “rice-puller”, cuts across the income spectrum. Imports were earlier a strain on the limited foreign-exchange reserves, but the current strategy of limited fish exports of value-added products, from species that have limited aggregate domestic consumption, has created a trade surplus in fishery products.

The role of production-based entitlements for food security is best demonstrated in the biggest, smallest and most vibrant fish-trading countries studied – **Brazil**, **Fiji** and **Thailand**. In all three countries, it is reported that real fish consumption is much higher than the statistics of fish availability or supply would indicate. Fish exports have little adverse impact on this. In the three countries, the fish consumption of the relatively poorer sections of the population is derived from their own subsistence production. Much of this is from rivers, floodplains, coastal waters and the numerous impoundments of fresh water for backyard aquaculture. Consumption estimates from **Brazil** and **Thailand** highlight a revealing relationship: fish consumption is highest in the poorer communities living in the poorer regions – and it has also been increasing. This has not detracted from the communities’ participation in the processes of international fish trade when opportunities have arisen. We may conclude that there is no *inevitable* adverse relationship between direct fish consumption of the poor and international fish trade.

The aggregate data analysis in Chapter 2 revealed that the share of global LIFDC fish production entering international trade was only a small, albeit increasing, fraction of the total. The net interactive impact of production, non-food use, imports and exports on domestic supply of fish in LIFDCs other than China resulted in only a very minimal increase of 5 percent on a very low base of 7.4 kg/person/year. At the global level in these countries, the impact of international trade on domestic fish supply has not exhibited an adverse trend on the average. However, our micro-level case-study analyses show that there can be a range of situations involving differential impacts on rich and poor consumers. Thus an average, at the “global” national level, is no guide to policy-making.

It is not inevitable that international trade will have an adverse impact on the physical availability of fish to poorer fish-eating consumers. As we have seen from the analysis above, several country-specific social, cultural, economic and political factors will need to be examined before any conclusion about the nature of the impact can be reached. A means of diachronic analysis is also imperative, because the nature of the impact will change with time. Early warning signals, pointing to adverse impacts, will help attune production and trade to meet direct fish consumption needs where appropriate. Domestic production is the most credible basis for direct food security with respect to

fish for the poor. However, in certain special circumstances, imports may be the only viable option. If the poor cannot create their own production-based entitlement to fish (subsistence production and its consumption), then they must obtain it through the market. In this circumstance, the baseline is the effective demand (purchasing power) of the poor. Providing fish that is affordable to the poor, without overt compromises on quality and taste preferences, must be the guiding principle.

3.5 IMPACT ON THE FISHERY RESOURCE AND ECOSYSTEM INTEGRITY

The long-term sustainability of international fish trade depends on the sustainability of the fishery resource. This is a plain truth. The evidence from the case studies points unequivocally to the fishery sector's failure to take cognizance of this. There appears to be an uncanny relationship between a fish species entering international trade and its depletion. The opportunities for profitable trade drive the depletion.

There are reports of adverse impacts on the resource from all the countries. In capture fisheries, the single most important factor responsible was the technology of harvesting – in particular the use of bottom trawling. In countries as widely separated as **Brazil, Senegal, Kenya, Ghana and Thailand**, trawling was used to achieve higher rates of extraction of the species that entered trade. The inevitable consequence was sharply declining catch rates, reduction in the specimen size of the species and a higher proportion of non-targeted fish in the catch. Such trends jeopardize not just export production. Through larger ecosystem feedback, they impinge on production for domestic consumption as well. The “creeping” negative indirect and direct impacts have a bearing on national food security. That their magnitude has not been measured merely affords us the bliss that accompanies ignorance.

In **the Philippines**, tuna stocks have diminished following the extensive use of fish-aggregating devices intended to increase the ease with which they are harvested. In **Nicaragua, Brazil, Sri Lanka, the Philippines and Thailand**, the rapid development of shrimp aquaculture has led to mangrove destruction. The use of poisons and dynamite to stun high-value ornamental fish has destroyed coral reefs. In **Chile**, the use of fungicide in salmon aquaculture is reported to affect the delicate marine environment and accumulate in the flesh of the salmon in cages and nets. There was also evidence that the pelagic species being diverted for fishmeal are showing signs of stress due to excessive fishing pressure in a milieu in which environmental factors affecting the stocks are also strong and still not fully understood. In **Namibia**, there are reports of the species that inhabit deep ocean mounds, such as orange roughy, being threatened by trawling.

Spurred by trade, the higher rates of resource extraction and rapid changes in harvesting technologies are the most obvious factors accounting for resource depletion and loss of ecosystem integrity. Alteration of property rights to the resource realms is an equally important reason. In **Brazil, Nicaragua, Senegal, Ghana, Kenya, Sri Lanka and Thailand**, these rights have moved from a variety of forms of socially sanctioned, community arrangements to unregulated state property regimes. The latter have degenerated, due to lack of adequate enforcement, into de facto open access in which only “possession rights” prevail. The inevitable consequence of this is a race for fish. This leads to more investment in crafts and gear, resulting in higher costs of fishing, often aided by financial support from the state. This pursuit leads to overfishing – economic and biological.

In **Namibia**, political independence in 1990 brought an end to open access, and the whole EEZ was brought under effective state control. A properly functioning monitoring, control and surveillance system was put in place. Within this institutional framework, fishing licences were issued for species-specific quotas that were not transferable. The centralized nature of the fishing operations ensured that harvests were recorded properly. An observer programme ensured that proper technology was

used, that fishing was conducted in orderly fashion and that bycatch was minimized and not discarded. These were major steps in moving towards sustainable production.

In **Chile**, the realms of aquaculture were leased out to corporate concerns for long-term leases that conferred the privileges of private property. This was done in coastal waters where earlier community claims did not exist and state-held property rights prevailed. Such shifts to private rights are theoretically expected to do away with the “tragedy of the commons”. Actual practice reveals that the time horizons chosen by investors – regarding the date by which they expect to recoup their investments – is a crucial determinant of resource sustainability, whatever may be the property rights regime.

In an otherwise dismal scenario, there are some encouraging signs. The higher returns from international trade do provide motivation for concrete action to foster resource management. The artisanal lobster fishermen in **Brazil** have campaigned against destructive fishing practices and have taken steps to establish greater control over the first sale of lobsters by making direct contacts with exporters and soliciting the support of international consumers (Box 3.4). What **Namibia** has done with national political commitment (mentioned above) illustrates what is possible, even when there are pressures emanating from organized groups of developed countries to maintain the status quo. The recent governance changes in **the Philippines** have created a nested organizational structure of fisheries and aquatic resource management councils, from the village level up to the national level – a micro-global link. These changes have been in response to two decades of struggle by small-scale fishers to gain control over coastal resources. Such structures can create the scaffolding for initiating measures towards sustainable harvesting and production of fishery products.

These examples from three continents together contribute to an increasing share of global trade in fishery products. They can be stepping stones towards attuning new approaches to modulating trade, technology and property rights to the specificities of nature and the basic needs of the majority. Such a symbiosis is a necessary condition to ensuring that the integrity of the resource base is maintained. This is the enduring way to have both the gains from trade and the fruits of food-security benefits spread to all.

A cocktail of strong market demand, new technology to maximize throughput from the aquatic ecosystem and inappropriate property rights has stimulated international trade in fishery products. The reported ubiquitous resource degradation and decline are the consequence of this brew. It has yielded deadly consequences in some countries and created inebriated conditions in others. Thankfully, there is now widespread and growing awareness among fishers, scientists, policy-makers, trade interests and consumers that continuing “business as usual” will bring ruin not only to the resource, but to trade and food security as well. Clear evidence of these commitments is illustrated by the upsurge of discussions and work on alternatives that propose changes to modulate the market, set right the technology and alter the property rights.

International trade is ultimately based on the natural resource and the humans whose labour and enterprise add value to it. If these two continue to flourish, then, and only then, will international trade be here to stay. The big challenge ahead calls for fashioning international trade in fishery products, along with the mechanisms and institutional arrangements pertaining to it, in a way that recognizes this truth.

3.6 MOVING ALONG THE “MICRO-GLOBAL” SPECTRUM

In our analyses in Chapters 2 and 3, we have used diachronic and cross-sectional data and information. We have also been able to assess the impact of international trade on food security at various levels and from different viewpoints. These are different spatial junctures along the micro-global spectrum of analysis. They give rise to different perspectives that may seem incompatible and even conflicting. They may

BOX 3.4

International trade motivates fishers to undertake resource management in Brazil

There is one undisputed conclusion about the dynamics of international trade in fishery products. The current context of open access to fishery resources, which is in place in most developing countries, leads to the compulsion for trade and quick profits that inevitably leads to ruin of the resource. The artisanal fishing communities along the eastern seaboard in the state of Ceará have been acting counter to this prevailing current. Motivated by the higher income that they earned by turning to export of lobsters, fishermen organized sufficient working capital to do away with middlemen and deal directly with exporters. This resulted in substantial increases in prices for their catch on the order of 50 to 70 percent. These increases gave them the incentive to fight destructive lobster fishing by illegal fishers in the region using illegal gear, keen to make a 'quick buck'. They also censured fishers within their own ranks that ignored fishing regulations.

Members of the communities travel around, exchange intelligence information about predatory fishers and share market information. Some leaders maintain contacts with exporters, discussing closer cooperation in the handling and control of origin of the lobsters to cater to quality-conscious niche markets in the United States. Artisanal fishers and NGOs are promoting discussion of the FAO Code of Conduct for Responsible Fisheries. One community in Prainha do Canto Verde, Ceará, even went through a pre-assessment for an eco-label certification process initiated by the Marine Stewardship Council. The result revealed that while the community management of the fisheries is considered excellent, the management of the fishery as a whole is insufficient to satisfy certification criteria. A government task force approved a pilot project for a Marine Extractive Reserve in the area. This could eventually lead to comanagement of the lobster resource. In poor fishing communities, such actions help raise food-security prospects and lead fishers to behave more responsibly. They also put to rest the argument that the poor will not take any initiative to manage resources on which their livelihood depends. Moreover, since only the lobster tails are exported, the heads are provided to the hinterland villages for local consumption. Solidarity still works here, and this is a great boon for collective food security.

Material abstracted from case study of Brazil by José Augusto Negreiro Aragão and René Schärer.

not “add up” in linear fashion. The “disbenefits” at one point on the spectrum do not prevent benefits accruing at another juncture. Examples of this abound. The low prices paid to fishers at the micro level of the landing centre go unnoticed in relation to the large foreign-exchange earnings at the global level of the nation. The rising fish prices at the micro level of local fish consumers in developing countries may be a direct consequence of exporting the best quality fishery products to the global level of consumers in developed countries. The wide employment of women at the micro level of the fish-processing plants may prevent regulation of harvesting gear, such as trawls and purse seines, that ensure a regular flow of fish to the plants, but at the global level of a geographic region, these harvesting technologies may ruin the fishery resource. These few examples reveal the difficulty in making any judgements by examining only one juncture on the spectrum, at one point in time and using just one method of analysis (Box 3.5).

These disparities, conflicts and seemingly incompatible consequences and dilemmas at two junctures along the spectrum point to the need for greater contemporaneous

BOX 3.5

Micro-global conflicts – the case of fishmeal in Kenya

From a food-security perspective, a decision that is rational at the global level may lead to conflict at the micro level. Consider the issue of non-food fishery product imports by LIFDCs. The increase in imports of fishmeal by an LIFDC is considered on two counts as an adverse trend from the global food-security perspective. First, the argument is that this fish might have been utilized to feed humans directly rather than indirectly via livestock and cultured fish. From a global energy-accounting perspective, this is infallible reasoning. Second, paying out valuable foreign exchange for fishmeal for which domestic (non-fish) substitutes may be available is also questioned. From a global macroeconomic perspective, particularly in a context in which foreign exchange is scarce, this makes economic sense. However, what is rational at the global level may conflict with food-security needs at the micro level.

Consider the case of Kenya. In order to save precious foreign exchange and establish greater economic self-reliance – both indisputably laudable national objectives – the government actually reduced fishmeal imports and encouraged the setting up of an import-substitution fishmeal industry based largely on the pelagic fish called *daaga*, available in plenty from Lake Victoria. The immediate effect of this measure was the deprivation of poor consumers of fish that they relished. What once provided them crucial nutritional consumption at affordable prices was ‘taken away’ because the fishmeal industry was able to offer traders a higher price for the fish. The result: nutritious and inexpensive fish flowed out of the plates of the poor and into making feeds that were used to fatten livestock and poultry for luxury consumption in Kenya and other neighbouring countries.

This is a good example of genuine micro-global incompatibility and of conflict between the effectively realizable nutritional needs of poorer consumers and legitimate national economic priorities. From the poor consumer’s food-security perspective, it would be more appropriate for Kenya to import fishmeal from countries such as Chile or Peru, leaving *daaga* for direct, local human consumption. Economic, energy-use and ethical issues are inextricably intertwined in such micro-global conflicts. Such choices can hardly be left to the market.

Material abstracted from case study of Kenya by Richard O. Abila.

analysis of impacts. From the perspective of studies of this nature, this is an important methodological point. It highlights the need for judicious combinations of methods of analysis to comprehend the evolving, complex and differential nature of impacts of any economic and social activity.

Viewing international trade and food-security issues from a global perspective, using secondary data, and making a micro analysis using case studies from several country contexts has helped obtain a more nuanced understanding of the issues involved. What we have attempted so far in this study needs to be viewed as a preliminary effort in this direction. Others may wish to take forward and investigate some of the general global inferences and the specific micro observations.

4 Fish trade and food security: some policy perspectives

Understanding the impact of international trade in fishery products on food security cannot be achieved by examining the quantitative and economic dynamics of trade alone. It needs to be supplemented with analysis of the institutional and technological options; nature specificities; gender and cultural differences; consumption patterns and information needs that can influence trade. Our objective in this chapter is to reflect on a few important policy perspectives that have a bearing on the way international trade in fishery products can be tempered so that food security can move from the periphery to the centre of concerns of this trade. This will make fish trade more beneficial to people – particularly those millions of producers and consumers at the two ends of the chain of custody.

Food security for all is a guided outcome. State, market and civil society must play appropriate roles towards its achievement. Formulation of national development policies towards this end should be accorded priority. This can then form the sound foundation for hastening towards greater global integration through international trade. International trade in general, and trade in food products in particular, do play an important direct and indirect role in contributing to the generation of entitlements that enable people to attain food security.

In Chapter 3 we saw how the dynamics of this process emerged in 11 different countries across the globe. To channel the benefits of international trade in fishery products towards achieving food security, some important policy decisions must be made. In the ultimate analysis, these are issues that have larger governance attributes associated with them. They are therefore intimately linked to the political economy of development choices exercised by countries in the context of a rapidly globalizing world. The effort to balance the variety of interests involved in the realm of international fish trade warrants introspection on the actions that states, market actors and civil-society organizations have taken thus far and need to take in the future. We discuss below six policy perspectives that span the micro-global spectrum of expedient measures to help achieve this.

4.1 RESOURCE MANAGEMENT, “CONVIVIAL” TECHNOLOGY AND SUSTAINABLE CONSUMPTION FOR FOOD SECURITY

Fishery resource depletion and aquatic ecosystem degradation in many developing countries are closely associated with species that have become highly traded in the international market. An important causal factor that strengthens this association is the choice made of harvesting technology to respond to this market demand. The best example is that of shrimp, the most traded species from LIFDCs, and the shift to bottom trawling to cater to the demand for it in developed country markets.²²

Shrimp was an important species harvested in the tropical waters of developing countries in the 1950s. This was particularly true in the South and Southeast Asian countries, which today contribute the largest share of shrimp to international trade. In

²² A similar argument can be made with respect to shrimp aquaculture. In this case, the shift has been from extensive farming to intensive farming with its attendant problems, which are now globally recognized as having caused an enormous variety of ecosystem problems in many developing countries.

tropical waters, shrimp were fished during particular seasons when they temporarily left their demersal habitats and became semi-pelagic. During such periods, large, uniform-sized shrimp were easily harvested using encircling, gill and trammel nets. The presence of bycatch and the practice of discards were non-existent in such a seasonal fishery. The labour-intensive, decentralized harvesting activity was linked to a similarly organized processing activity. The products were dried, salted or pickled shrimp. These products were part of a vibrant international trade in the Asian region. It catered to the food needs of lower- and middle-income consumers.

In the post-1950s, in order to organize international trade to the newly rich, developed countries, an important drawback was perceived in the above pattern of shrimp production, processing and trade. Harvest levels were too small and seasonal. Processing methods were not adequately hygienic. The trade was unorganized and informal. The introduction of bottom trawling to the Asian region solved the production hitch. It fished out shrimp from their demersal habitat, breaking both the small harvest and seasonality barriers. Coupled with the innovations of freezing technology and maritime reefer transport, the method and the quality of shrimp processing as well as the organization of shrimp trade changed radically. Developing Asian countries were assisted in this transition by well-funded development-assistance projects with a focus on technology transfer. Shrimp moved from being an important source of nutritional consumption in Asia to become the mascot of modern international fish trade for luxury consumption in the United States, Europe and Japan. The new-found possibility of making such substantial gains from the harvest of the sea led many newly independent countries, with needs for quick foreign exchange, to adopt this new technological approach. Time-tested harvesting technologies were rapidly replaced with artifacts inappropriate to tropical ecosystems. The root cause for the resource and ecosystem degradation being widely experienced in Asian fisheries today must be found in these actions that were taken in the “national” short- and medium-term interest, with strong impulses from the international market. The huge incentives and subsidies given to national capitalists to invest in shrimp fisheries, and the numerous concessions given to foreign capitalists to harvest the same, made open access the “default mode” in the marine fishery of most Asian LIFDCs.

It was only in the late 1970s and early 1980s that huge protests against shrimp trawling by coastal fishing communities in Indonesia, **the Philippines**, India and to some extent **Thailand** led to a re-examination of the traditional, marine territorial claims of coastal fishing communities. This highlighted the need for state intervention to modulate both technology-choice and resource-extraction norms. There was a realization that the combination of open access and inappropriate technology in tropical contexts made a deadly mix that could lead to resource depletion and ecosystem damage. Indonesia banned trawling, encouraged passive nets and zoned the coastal waters. This was seen as “taking two steps back to make a leap forward”. Other countries adopted milder versions of regulations. In the end, however, lack of sustained political will watered down the initial enthusiasm and status quo ante prevailed.

Fish-exporting developing nations need to reassert their commitment to immediate resource rejuvenation and long-term conservation and management. They need to reinstate institutions (rules, norms) and technologies – not necessarily in their old form – but rather taking the innate essence that characterized their genial use and appropriateness to the socio-economic, cultural and techno-ecological context. Developed importing countries have made commitments to provide financial, technical and scientific assistance to developing countries to help them meet what are today “inter-national” environmental obligations. Mechanisms need to be evolved to ensure that these mutual commitments are met. Only then can a dedicated move towards sustainable harvesting and production be undertaken.

Consumers in developed countries play an important role in this context. It is they, finally, who will decide the contours of luxury consumption.²³ Harvesting of small Nile Perch in **Kenya** is based on the export demand for fillets obtained from immature fish with a body weight below one kilogram. There is a vibrant, illegal market in the United States for immature lobsters from **Brazil**. As long as such demands persist, it actually pays developing country fishers to fish unsustainably. The onus of a major transformation of the market to ensure sustainable consumption rests in the hands of rich, developed-country consumers. First, there is the economic question: how can we ensure that the price paid by importing country consumers for fishery products reflects their full social and environmental costs? Second, what are the mechanisms – selective consumption, eco-labels, a consumption tax fund, boycotts etc. – whereby consumer concerns can be transmitted both to those that control the trade and to those that engage in the production, in order to stimulate greater responsibility towards fostering sustainable trade and production. However, at the same time, such action must respect the sovereignty and rights of developing countries to policy autonomy.

We must hasten to add that the issue of resource management with a food-security perspective, even in the limited realm of the fisheries sector, is essentially a national development issue. International trade and market access must therefore be seen as “enablers”, not as substitutes for national economic endeavour. Nevertheless, the asymmetries in international trade in fishery products can be more credibly addressed by LIFDCs and other developing countries if they have a well-managed fishery resource and aquatic ecosystem that could even qualify as credible collateral for market access or fair development assistance.

A point made at the INCO-DC Workshop on Markets, Global Fisheries and Local Development, held at Bergen in 1999, is pertinent here. In their paper on *Fisheries and internationalisation of markets*, the authors (Asche and Bernard, 2000) conclude:

If most of the imports continue to flow into industrialised countries, this will improve the situation for the fish stocks here. For the developing countries who provide the exports, the situation is opposite in that increased exports will lead to increased pressure on the stocks. To avoid [repeating] the very bad situation that exists for fish stocks in the industrialised countries in developing ones, the importance of good management can not be over-emphasised.

The numerous multilateral trade and environmental agreements, particularly those of the 1990s, raise the important question of the mutual responsibilities for resource and ecosystem management of both exporting developing nations and importing developed nations. Trade is only a connector. It does not have an existence by itself. Therefore, discussions about sustainable trade attain meaning *only* in the context of commitments to sustainable production and sustainable consumption. Food security is premised on this trinity.

4.2 CHAIN-OF-CUSTODY CONTROL AND FOOD SECURITY

The evidence from most of our case studies contradicts the proposition that merely enhancing the national economic pie through international trade will benefit the poorest sections of society through their increased labour participation. If a fair share of the significant benefits from international trade in fishery products does not reach those who labour to produce them, the problem is, indeed, significantly with the structure of trade and the nature of control over it. This is a matter that must be addressed in earnest if enhanced food security is to be an important by-product of international fish trade.

The chains of custody of internationally traded fishery products – from the point of first harvest to the point of final consumption – are long and varied. They are

²³ According to neoclassical economics textbooks, consumers are the main beneficiaries of “free” trade. Yet it is important to point out in this context that consumers as an interest group have no role or representation in any multilateral trade fora – in particular, the WTO.

influenced by the nature of the product; the type of processing and the character of the end market. From the perspective of food security for the poor, the most important part of the chain is the end closest to the fisher and fish workers. The first sale transaction and the first product transformation are the most crucial in this regard. Appropriate organizational arrangements are required at these junctures that would help augment the trade- and labour-based entitlements of fishers and fish workers. That producers should remain atomized, while trade interests coalesce to gain greater control over resources and markets, reinforces and perpetuates inequalities along the chain of custody. Producer organizations, labour associations, cooperatives, community action groups and other such collective action initiatives at the micro level are the need of the hour. Such arrangements would ensure that a larger share of the “consumer dollar” accrues at this level and thus greatly enhances food security.

Initiatives such as the Tema Manhean Cooperative Fish Processors Society in **Ghana** and the Maverick Multi-Purpose Cooperative in **the Philippines** (Box 4.1) provide models for what can be done by fish workers to help themselves. The realm of small-scale fisheries in marine and inland capture fisheries, which link up with export-oriented chains of custody only on a seasonal or irregular basis, warrant greater investigation. The potential gains that they can obtain from control over first sale transactions have been effectively demonstrated by the South Indian Federation of Fishermen Societies (SIFFS) in India.²⁴ Such arrangements help ensure that the exchange of entitlements at the lowest levels of the chain takes place between equal partners, by matching “people power” with “market power”. They become a boon to enhance the food security of the poor.

To sustain such micro-level producer initiatives, active support by the state and by civil society is required. In the case of the latter, we emphasize again the role of consumers in the developed world. It was their concern for the quality of food products that played an important role in setting higher food safety standards and improving the physical facilities in processing plants. Similarly, their commitments to labour and human rights need to find expression in fostering support for local collective action, while fully respecting the sovereignty and rights of national policy autonomy. A good example from **Chile** is the Chile-Canada free trade agreement, which includes complementary resolutions on environmental and labour cooperation. The latter resolution does not seek to harmonize labour laws. Rather it requires both governments to monitor their respective labour, employment, health and safety norms. Each country is entitled to criticize the other for not upholding their respective commitments, but without recourse to trade sanctions.

4.3 GENDER, SUSTAINABLE TRADE AND FOOD SECURITY

The insignificant role of women in fish harvesting is adequately compensated by their involvement in pre-export and post-import fish-processing and trade activities. When examining the food-security implications of international trade, it is hard to ignore the role of these women fish workers. Their presence is most noticeable in two realms: (i) in the export-oriented fish-processing activities of chilling, freezing and canning; and (ii) in the largely domestic-market-oriented fish-processing activities of drying, salting, smoking and marketing. However, the export versus domestic market distinction is becoming increasingly blurred. Consider a technique such as smoking. The shift from using smoking for preservation to using it to give special tastes to fish is becoming increasingly popular again in the developed countries. Similarly, with the availability

²⁴ This federation of small-scale fishermen in South India had a membership of 4 800 in 2002. The total value of their first sale transaction of fish at the 89 village landing centres was US\$6 million that year. In one of the regional units, where the fishers, with the help of SIFFS, control the auctioning of export species, as much as 30 percent of the value of fish sales was from shrimp and cuttlefish (SIFFS, 2003).

BOX 4.1

Cooperative labour and safety-net arrangements for fish workers in the Philippines

Modern fish-processing units functioning according to HACCP standards have become a standard feature of the chain of custody in the fishery export trade in developing countries. In many LIFDCs, these units are now “islands of cleanliness”. The facilities and processes adopted inside the plants match standards available in developed countries. The sight of young women with white caps, aprons and gloves handling the fish with great dexterity is a standard front-page illustration for seafood trade journals. All these physical niceties contribute to excellent working conditions. However, they hide some important occupational and job-related conditions that have only recently attracted the attention of the industry and the media. Most of these women are casual employees. They may be on a piece-wage rate. They have jobs only when there is fish to process. The coverage by some form of social security is the exception.

It is in such circumstances that the Cooperative Development Authority in the Philippines has promoted the concept of workers’ service cooperatives. The Maverick Multi-Purpose Cooperative (MAVEMCO) in General Santos City, the tuna-processing capital of the Philippines, is one such entity. Workers enrol as members in MAVEMCO by buying a small share in the cooperative. Processing firms recruit the labour they require from the cooperative. In an employment context in which the processing firms generally set the terms, labour cooperatives such as MAVEMCO have been able to lobby the canneries to provide workers with legally mandated benefits such as social security, health facilities and 13th-month pay. The cooperative provides its members with consumer and salary loans, and even distributes dividends on their share capital from its earnings. Recent studies have estimated that members of MAVEMCO earn family incomes ranging from US\$75 to 200, with the average being US\$130. A large share of this goes to food, education of children and support to other family members living in the depressed communities in the provinces from which the workers originate. In a “free” market context, where “hire and fire” is the norm, such organizational innovations by the workers, with creative support by the state, are necessary safety-net arrangements for fish workers. They help sustain and raise their labour-based entitlements to food security. Such forms of affirmative collective action create a countervailing balance of power. Trading companies at higher levels on the chain of custody pursue the goal of profit maximization. These worker-sponsored initiatives ensure that labour gets a fair share of returns, basic food, social security and recognition of minimum working rights.

Material abstracted from case study of the Philippines by Cesar Allan C. Vera Jr.

of new and less expensive food-grade materials for packaging, the process of canning may become increasingly used for domestic fish processing.

With the expansion of international trade in fishery products, it is generally expected that the share of women’s paid employment rises as well, due to the specific demand for female labour in fish-processing activities.²⁵ Insofar as paid work can help women’s empowerment within the family and society, this may be interpreted as a benefit. In addition, there is reason to believe that in developing economies, a greater share of

²⁵ The “nimble-fingered, docile-figure” perspective is an important consideration here. The tasks of peeling, sorting and grading require sleight of hand and fingers and great patience – both attributes less prevalent among men. In addition, despite hard work and difficult conditions, women do not protest as quickly as men might.

women's incomes/wages is spent on the needs of the household. Since women involved in fish processing are from the poorer sections of society, the probability is indeed high that their incomes will make a significant contribution to poverty alleviation. It may therefore be reasonable to conclude that aggregate food security has been enhanced in the community as a result of greater employment of women.

However, the likely increase in employment, as we have seen from the case studies, is subject to numerous caveats. While physical conditions may improve, there may be new health hazards that have yet to be well investigated. The gender-based wage gaps may not have narrowed. Women's jobs may be more insecure; they may still be doing the less skilled work. While the paid employment opportunities multiply, the overall work burden of women may also increase if there is no reduction in their unpaid domestic work. Yet there is the possibility that their jobs result in enhancement of self-esteem, expanded social opportunities and life choices. All this may indirectly contribute to changing gender relations within the family. The significant positive bearing this can have on intrahousehold food security should not be ruled out.

Expanding international fishery product trade has resulted in some job reallocations in the sector as a whole. As mentioned in Chapter 3, this may be favourable to some women and unfavourable to others. For example, the expansion of the export market for fresh, chilled or frozen fish may expand work opportunities in the modern processing plants set up for this purpose. On the one hand, these plants may provide jobs for younger, more literate women from urban areas. On the other, however, the expansion may reduce the livelihood options for older, less literate women from rural areas, who have traditionally depended on this fish for their domestic market-oriented processing. They may now become unable to compete for the fish against the higher prices offered by export firms. In **Senegal**, for example, in communities where wholesalers and agents representing export firms have gradually come to dominate fish trade, these have taken over the more lucrative end of the trade channels. High-value species are now exported directly through them. This has lowered the earnings of local women market traders and reduced the income coming back to the community. It has also meant lower status and lower social power for the women in the community, with their attendant adverse implications.

Such reallocations need not necessarily materialize in the same location or even in the same country. It may therefore be hard to monitor these changes, let alone estimate their impact quantitatively. For example, with the expansion of fish export to the European Union from **Senegal**, there is evidence of a drop in regional West African trade in fish. This may have increased the incomes of Senegalese fishing families and provided new job opportunities to women in Dakar, Senegal, where the new processing plants were set up to meet the requirements of this new market. However, at a recent meeting of women involved in traditional fish processing in West Africa (ICSF, 2001), there were demands for greater intraregional flows of fish by the older women fish processors in **Ghana**, who now get only poorer quality and often more expensive supplies of fish. The positive and negative food-security implications of a growing international trade oriented towards the higher-income developed country markets can be quite significant. That they have the distinct possibility of having different kinds of impacts on women needs to be heeded and investigated.

Moving towards sustainable trade will require that the employment, work and social security conditions available to women fish workers be greatly enhanced. This basically calls for strengthening national labour legislation and social welfare measures in keeping with standards set by the International Labour Organization. There is a need to extend these social security benefits beyond the purview of the organized sectors of the industry. In compact regions such as West Africa, where there has been a history of regional fish trade involving women in a great many activities, a regional approach to such legislation can ensure optimal results for two important reasons. The first relates

to the nature of capital in the export processing industries. It is constantly seeking ways and means to reduce costs and operate in an economic environment with minimal restrictions. Given this compulsion, intercountry variability in wages and the legal and institutional environment will be exploited by those who control capital. The second reason is the increasing “informalization” of work and the return of the “putting out system”. This is another strategy adopted by capital to reduce costs and short-circuit national labour legislation. Greater regional harmonization of wages, labour legislation and social welfare norms, among other things, will compel those who invest capital to play a more enduring, long-term and committed role in fostering sustainable trade for their own interests. Fishery-trade review mechanisms should include specific gender assessments that consider all the aspects indicated above. International development assistance agencies and financial institutions should make such assessments mandatory.

4.4 INFRASTRUCTURE, ENVIRONMENT AND DOMESTIC MARKETING FOR FOOD SECURITY AND FOOD SAFETY

Infrastructure, in this context, is broadly defined to include landing centres, processing facilities, link roads, proper electricity, portable water supply, housing, and sanitary and environmental engineering works. The state of affairs of these facilities has a significant bearing on the physical environment. This in turn conditions both the quality and effectiveness of domestic marketing. Taken together, good infrastructure, a wholesome physical environment and effective domestic marketing have a positive impact on local food security and, very importantly, on a country’s capacity to advance sustainable international trade.

We can meaningfully divide the realm of infrastructure into “livelihood-related infrastructure” and “trade-related infrastructure”, though there is an obvious and inevitable overlap between the two. Until recently, investments made by bilateral and multilateral aid agencies to facilitate fish exports from LIFDCs emphasized trade-related infrastructure to the near exclusion of livelihood-related infrastructure. Our contention is that there are important environmental, food safety and food-security implications in enhancing and improving *both* types of infrastructure in LIFDCs – particularly in their coastal and other fishery-related areas. Undoubtedly, the food-security and food-safety implications of such investments are not restricted to the exporting country alone; they extend to the importing countries as well.

In the fish-exporting LIFDCs, improvement in the livelihood-related infrastructure – good water, environmental sanitation, housing, education facilities, etc. – contributes to hygienic and illness-free coastal community life. This has a very important bearing on the “absorption” dimension of food security, which is correlated with the associative environmental conditions in which such communities are placed. A good, healthy environment is crucial if food supplies are to translate into food security and nutritional well-being. The developed importing countries also have a major stake in ensuring that this environment materializes. Hygienic coastal and other fishing regions in LIFDCs ensure that fish that is exported and consumed is not prone to carrying disease-producing micro-organisms. Such mutual interest should provide the basis for greater development assistance. It will have far-reaching implications for sustainable trade, food security and food safety, which may be difficult to assess at the time of investment.²⁶ Enlightened self-interest on the part of developed countries should bring them to pursue this two-pronged strategy.

²⁶ The notable case of Norwegian assistance in the 1950s – to improve the water supply to the region that hosted the famous Indo-Norwegian Project in Kerala, India – is a case in point. It is our assessment that this single investment, rather reluctantly made by the Norwegians at the time, had more long-term, positive impact for the region’s export trade development and food security than the core fishery objective pursued by the project. This realization came rather late for the Government of Kerala, and perhaps for the Government of the Kingdom of Norway as well (see Kurien, 1985 for a detailed analysis).

Trade-related marketing infrastructure – clean landing centres, good coastal roads, reliable electricity supply, telecommunications and efficient road transportation – contributes to the overall development of coastal areas and the country as a whole. It also contributes significantly to the trade-related entitlements to food security of fishers and fish workers because of its significant income-enhancing effects. Fish being one of the most highly perishable foods, the quicker it is preserved or processed, the greater will be the reduction of post-harvest losses. Better transportation infrastructure ensures that fish consumption is more spatially spread out and not concentrated in the coastal tract and the urban centres alone. The case for such investments is particularly strong in the LIFDCs in sub-Saharan Africa. The variations in domestic fish consumption in West Africa, in general, have been significantly associated with poor infrastructure as we move away from the coast into the rural hinterland. This was highlighted in the case of **Senegal**. The emphasis given to trade-related infrastructure in **Thailand** is particularly noteworthy (Box 4.2). It illustrates the importance of market infrastructure to the orderly conduct of domestic fish marketing. The latter, in turn, is a necessary condition to the obtaining of fair prices for fishers and to the direct food security and food safety of domestic consumers, enabling them to receive good-quality fish at fair prices. In countries where there is a large domestic market for fish, perpetuating a dichotomy between the quality and effectiveness of domestic marketing and that of export marketing is dysfunctional. The narrower the gap between the two, the greater will be the strides a country can make in international trade. A sound and viable trade infrastructure for the domestic market is also the foundation for enhancing the capacity of a country to trade internationally. This is a proposition worthy of greater investigation.

For trade-related infrastructure specific to fish processing (e.g. smoking ovens, drying facilities, ice factories, freezing plants, filleting factories, etc.), it is necessary to ensure two important conditions if they are to yield optimum benefits.

First, such infrastructure should not create environmental pollution. In many developing countries, great emphasis is placed on the environmental quality *within* these modern facilities. However the *external* environmental effects created by them – in particular the water and air pollution – tend to be ignored. Traditional processing facilities such as smoking ovens and fish drying yards, on the other hand, are notorious for their state of utter neglect by state and community. The negative externalities created by such short-sighted action and neglect most often affect the livelihood-related infrastructure and environmental conditions of the very same coastal population that supplies the fish to these facilities! Breaking such vicious circles has important implications for food security.

Take the case of the smoking oven, so common and essential to the regional fish exports and cultural context of West Africa. A more fuel-efficient stove, which will focus the smoke more onto the fish and be designed to be easily transportable, can convert fresh fish (locally produced or imported) into good-quality, durable products for both the domestic market and the emerging niche “diaspora markets”²⁷ in the United States and Europe. Such decentralized value-addition could ensure that a greater share of the export-value realization accrues to the women that do the smoking. It could also contribute to reduction of wastage of fish resources, make a positive impact on the health of women fish workers and save renewable resources such as firewood.

²⁷ People from developing countries scattered in developed countries can be an important source of effective demand for several traditional fishery products. However, in their new circumstances, they may place greater premium on factors such as product quality and taste. Such new demands, if effectively channeled, can become an important stimulus for reviving certain traditional fish-processing methods, which were temporarily stopped following the diversion of fish to new processing methods, oriented towards the tastes and processing preferences of developed-country customers.

BOX 4.2

Domestic fish-marketing channels in the world's largest fish-exporting nation – Thailand

Domestic fish consumption in Thailand is high and rising. It increased from an annual quantity of about 20 kg per capita in 1980 to 33 kg per capita in 2000. Price increases during this period have been modest. Thailand's being the world's largest fish exporter has not deprived local consumers of fish. This is partly due to the fact that a sizeable share of the exports are really re-exports and not taken from the national production. Another important factor is the high share of own-production in a household's consumption. This is particularly true in the rural inland provinces, where backyard aquaculture for home consumption is popular.

Overriding this are the fish-marketing arrangements that form elaborate networks across the country. These markets are organized both by the state and by private parties. There is a hierarchy of markets – primary, intermediate, central assembly and wholesale. The primary markets at the farmgate or landing centre collect and redistribute fish to larger, aggregating intermediate markets. Fishers and fish farmers may, however, choose to sell their own fish directly if they wish. The fish are transported from the intermediate to the central assembly and wholesale markets. The state is actively involved at this level. The Fish Marketing Organization functions in central Bangkok and two other coastal provinces.

Fish is sold through registered agents – by auctioning and price negotiation. There are privately run wholesale markets. These have developed significantly following the increased demand for freshwater fish and cultured shrimp. The wholesale markets are mostly located in large cities and good locations. Many incorporate retail and final consumer markets. They are all efficiently run and hygienically maintained. Retail markets are scattered in urban and peri-urban areas to which consumers have easy access. Fish is sold live or in whole and small portions. Today fish is found in supermarkets, where open freezers are used for storage and display. Other retail outlets include the numerous sheds that spring up in front of the homes of fish processors. Fish is sold to travelers, mostly in salted and dried forms. Today fish is being promoted as a fast food, and home delivery services are changing consumer habits from eating out to staying at home. Proper organizational arrangements for domestic consumers are a prerequisite for well-organized export marketing as well. They can be mutually reinforcing.

Material extracted from case study of Thailand by Somying Piumsombun.

Considerable work on this has been undertaken by FAO and now, increasingly, by NGOs in the region. An assessment is in order of what can be done further.

Second, the physical operational capacities of processing facilities should be maintained *collectively* at optimal levels. If such capacities are too large, they may lead to unacceptable “feedback” pressures on fish stocks. This was forcefully illustrated in the case of the rapid and unplanned expansion of processing facilities around Lake Victoria in **Kenya**. This expansion fuelled investment in additional trawlers to catch Nile Perch, leading to a rapid decline of the stock. On the other hand, if capacity is inadequate or unevenly located, this may result in the loss and wastage of fish that cannot be processed before it spoils. Dilemmas of this sort were reported in **the Philippines**, where the post-harvest loss was estimated to be on the order of 20 percent. Both these situations have long- and short-term impacts on direct and indirect means of achieving food security. National governments need to be encouraged to create

the necessary policies – fiscal, economic and legal – to address this issue of optimal processing capacity.

Addressing these issues is a prerequisite to tackling the more important, related matters that were pointed out in the numerous articles of the FAO Code of Conduct for Responsible Fisheries, Article 11, on post-harvest practices and trade. It would also provide scope for a review of the development assistance priorities of bilateral and multilateral agencies.

4.5 DATA AND INFORMATION REQUIREMENTS FOR FOOD SECURITY

The need for and usefulness of data and information for proper decision-making can hardly be overemphasized. One common feature across all the case studies has been the paucity of good data. This is not restricted to realms such as estimates of fish consumption across income groups, which are hard to obtain even in the data-rich developed countries. Even estimates of the real share of the fisheries sector in GDP are sometimes hard to obtain. Given the focus of our study on the people affected by the harvesting and processing of internationally traded fishery products, we realize the extreme paucity of data in this area. In fact, the truth is that data on the status of the fishery resource of a country are more readily available and perhaps of greater reliability than those on the number of fishers that labour to harvest that resource or the fish workers that add further value to it through processing. This is true in small-island developing states such as **Fiji**, poor countries such as **Nicaragua**, with inadequate data-collection facilities, and vast continental-sized countries such as **Brazil**, with both the scientific capability and governance competence for credible data gathering. Some remarkable exceptions are countries such as **Thailand**, where an ethic of data gathering and display is an important hallmark of government practice. Yet even here, data on human resources in the fisheries sector are inadequate.

Part of the problem is what we may call the “agrarian and terrestrial perspective”, which dominates all governmental statistical divisions. Issues relating to land and farmers are easier to collect and interpret. Moreover, the political economy of this duo, in most LIFDCs, makes data availability on them more essential. The relative “invisibility” of fishers – particularly those in marine realms, where the nature of the occupation takes them away from the land – makes data gathering less politically necessary and statistically more complex. In some societies, in addition to the above complexities, there is the issue of the lower social and cultural status of people in fisheries. This sometimes results in them not even being regularly counted!²⁸

Along with the above social and cultural issues, there are other routine problems that hamper data collection. Tax-evasion strategies prevent the true amount of foreign exchange earned from exports being reported – or the quantity and type of fish imported. Apprehension about attracting legal complications, or the inconvenience of formal registration and licensing hurdles, often prevents the proper reporting of the number of women working in fish-processing plants. National accounting practices often include fish processing under the broad rubric of food processing. Thus the substantial value-added of this activity is not credited to the fisheries sector. The world over, there is a total exclusion of the value of subsistence fishing in national income accounts, as well as the inability to capture subsistence consumption in nutrition surveys, which assess only purchased food commodities in the household diet.

It was pointed out in the case of **Fiji**, after adjusting for such data deficiencies and accounting imperfections, that the contribution of the fisheries sector to the GDP of

²⁸ In India, for example, as a matter of routine, the quinquennial estimation of the number of fishermen was carried out and included in the livestock census, until the brazen inappropriateness of this was forcefully pointed out.

BOX 4.3

Data quality and impact analysis – the case of Fiji

What is the contribution of the fisheries sector to the economy of a small island nation? How can the large subsistence production and consumption in such economies be factored into an assessment of its national income? Are the recorded earnings from export of fishery products a true reflection of the output value? Questions such as these attain great significance when we wish to make an analysis of the impact of a sector on the economy. A recent report prepared for the Asian Development Bank attempts to identify deficiencies in the methods used to measure the fishery contribution to the economies of the Pacific Islands. Taking the case of Fiji, the report identifies three important deficiencies.

The first pertains to the exclusion of subsistence fishing from the calculations. Subsistence fishing is widespread in Fiji, and over half the real harvest from the sea does not enter the realm of market commodity exchange. Lack of assessment of the value of this production results in a gross underestimate of the goods produced in the economy. The second deficiency pertains to the manner of classifying fish-processing activity. The value-added here is classified under a general “food processing” category. Consequently, the contribution of this all-important activity in the fishery economy goes unidentified as a contribution of this sector. The third deficiency relates to the assessment of gross output, due to the under-invoicing of the quantity and price of fish for export. Taking account of these imperfections, a recalculation of the “real” contribution of the fisheries sector to GDP raised the contribution from 1.7 to 2.4 percent. Data, and the information derived from them, must be accurate and reliable for any credible impact analysis. Planning and policy advice are greatly enhanced when data and information are of high quality.

Material abstracted from case study of Fiji by V.R. Bidesi *et al.*

that country would be closer to 2.4 percent, rather than the 1.7 percent indicated in the official estimates for 1999 (Box 4.3).

The paucity of data on the number of fishers and fish workers was highlighted in every one of the case studies, making the assessing of income and employment difficult. This rendered less reliable the measuring of the positive food-security implications of international trade. In countries such as Thailand, the more decentralized responsibilities for data and information management for decision-making and the greater collaboration of the private sector with governmental structures in matters of international trade have created the conditions for more credible data on fish workers, at least in the export processing sector. This is a good beginning. In Namibia, the involvement of trade unions and mandatory social security measures have made data on human resources more accurate. Such multiorganizational efforts, with the structured (and mandatory) involvement of private-sector investors and workers’ organizations, can make human resource data an informational asset.

For a better assessment of the impact of trade on food security, it is paramount to remedy the data and information lacunae. In the fisheries sector in developing countries, it is essential to provide a framework for assessing the number of participants in the variety of fish-harvesting and processing operations. Details of the gender division of labour are very important. The division into dichotomies – informal and formal; artisanal and industrial; small-scale and large-scale; traditional and modern; part-time and full-time; casual and permanent (or combinations and permutations of these) – may be warranted for a clearer and more cogent policy-making process. Cost and earnings studies should become a regular feature of fishery statistical systems in developing

countries. They can form the basis for assessing the economic, financial and social “health” of the fishery economy.

Another important realm would be detailed documentation of the chain of custody of the fish, from harvesting through processing to the stage of export, or from import through processing to the stage of retail domestic marketing. This would permit better understanding of commodity flows and of the value and price spreads. Such regular assessments would help track changing practices in all activities of the sector as they come under the dynamic and powerful sway of international trade. They would provide the first approximation for more thorough assessments of employment generation and income-earning potential. This, in turn, would contribute to our understanding of the indirect food-security implications of international trade.

In this context, it is also appropriate to add that there is a need to develop a menu of new methodologies that can be utilized to obtain data and information. These include rapid appraisals, focus-group discussions, participatory surveys, log-book maintenance and self-evaluations – to name but a few. These can complement the standard techniques of data collection using questionnaires.

There is yet another significant reason for investing in quantitative assessments of the human resources in the sector. And this is of particular significance to the developing countries in which protective and promotional social security and wage and employment benefit arrangements are poor or non-existent. There are new pressures from developed fish-importing countries to implement social-clause measures in fish-exporting countries. These are likely to be the next set of “non-tariff barriers”, after the current wave of environmental concerns runs its course. While such external pressures may become the compelling reason to undertake the first measures for assessing numbers (as it was in the case to improve quality in fish exports), it may indeed actually pay developing countries to be more proactive on this count for the good of their own citizens and their overall livelihood security. A vibrant fish-export trade and well-managed fishery resources can be made more holistic by integrating the genuine livelihood-security concerns of the people involved in fish harvesting and processing. In fact, if history is any guide, the former is not sustainable without addressing the latter. To achieve responsible international fish trade, the basic data requirements of human numbers, income, employment and related aspects are mandatory.

4.6 RESPONSIBLE INTERNATIONAL TRADE AND FOOD SECURITY

The overarching issue we have addressed is not whether international trade is necessary, but rather how it can be modulated to operate in ways that support and foster food security and overall human development for all those involved. In other words, how to make international trade more inclusive. International fish trade raises several contentious issues, some of which we have addressed in our analyses in Chapters 2 and 3. We have highlighted that at the aggregate “global” level of analysis, international trade in fishery products yields substantial economic benefits to the nation. If these increased global gains from trade are to contribute positively to the larger cause of development, and the more specific cause of food security at the “micro” level, good and committed governance is required. This is necessarily a guided outcome, which will benefit from the input provided by relevant stakeholders. In accordance with the Code of Conduct for Responsible Fisheries,²⁹

States, in accordance with their national laws, should facilitate appropriate consultation with and participation of industry as well as environmental and consumer groups in the development and implementation of laws and regulations related to trade in fish and fishery products.

This calls for sagacious political and administrative will, proper national institutions and organizations of the state and market, as well as dedicated, expert civil-society partners.

²⁹ Article 11.3.2 of the Code of Conduct for Responsible Fisheries (FAO, 1995).

It has been argued by several economists³⁰ that unbridled free trade can often be replaced by a compulsion to trade on almost any terms. This has been referred to as “forced trade”. Even Paul Samuelson (1962) insisted that analysis of “gains from trade” had to be related to social welfare functions. Developing fishery nations may need to be more “protectionist”, in that they should protect efficient national policies for total internalization of their fish-harvesting and processing costs, uphold certain minimum standards of living for their fish producers and workers and ensure basic health, insurance and safety standards. Most developed maritime states achieved the above-mentioned benefits for their fishing people by implementing such national policies and *not* as a result of global economic integration. As a matter of fact, it was such national policies that played a foundational role in facing subsequent global integration with strength. Why squander away such hard-won gains in a blind, standards-lowering competition for “free” international trade?³¹

It is this kind of position that we urge developing fishing nations to take if they are to benefit from international trade. However, we must not be blind to the reality that trade in fishery products also creates competitive pressures *between* exporting developing countries, which prevents internalization of external costs at the national level. There have to be internationally coordinated initiatives to foster such changes.³² Equity in liberalized international trade relations requires that the rules of the game be biased in favour of the weaker partners.

Facilitating such national policy priorities, which of necessity *cannot* be uniform, will require compensatory mechanisms to finance such initiatives. The proposed cess (tax) on export earnings in **Sri Lanka** to create a Fisheries Resources Development Fund, or the requirement that earnings from food exports be utilized as a priority for food imports, as suggested in the Poverty Reduction Strategy Paper for **Senegal**, are examples of the direction to be taken. In **Brazil** there have been efforts by NGOs and fishers interested in the sustainability of fisheries to push for a tax on exports of luxury seafood. The objective is to create a fund to guarantee efficient fisheries management and enforcement as well as to support artisanal fisheries. These examples illustrate the role that civil society may need to play to push the state to take action. While such measures may be considered subsidies, we may need to distinguish between subsidies that are “livelihood-enhancing” and those that are “trade-distorting”. Subsidies that provide income support, as well as those that promote community and regional development programmes and raise the social security of poor fish producers and workers, should be recognized as an integral part of a developing country’s public policy.

In the realm of exports of fishery products, it may also be desirable for national governments to place some degree of social control over the quantum and species of fishery products exported. When there is clear evidence that certain species are essential to the food security of local populations, certain developmental and social “safeguards” may have to be instituted to ensure that the larger social good is optimized. The suggestion offered from **Senegal** that a code for trade in fishmeal might be desirable – to avoid all pelagic species being utilized for this purpose – is an example of such social concerns for market modulation. What might be at stake here is also the issue of the basic human right to food. There is the concomitant obligation of governments to act

³⁰ Herman Daly (1994), Robert Goodland (1994), Dani Rodrik (2001), Inge Røpke (1994), Paul Krugman (1994).

³¹ This line of argument is very much in keeping with the “strategic trade policy” argument, which shows that under some circumstances, governments can raise national welfare by supporting such policies, but at the expense of other countries (Krugman, 1987).

³² The Sustainable Consumption Initiative of the United Nations Environment Programme, supported by the Government of Norway, is a good example of the international pressure that can be brought to bear on exporting countries to adopt certain norms that they may have been reluctant to undertake individually.

in accordance with Article 11 of the International Covenant on Economic, Social and Cultural Rights (referred to in Chapter 1, section 1.6) to ensure that there will be “an equitable distribution of world food supplies in relation to need” and not exclusively oriented to the effective demand of the world market.

Responsible international trade, particularly in contexts in which issues of food security may be at stake, needs to be strongly supported. Such trade requires that all interested parties – fish producer organizations, fishing and processing firms, fish worker organizations, export trade associations, consumer interest groups and, importantly, the state – are consulted in prioritizing the development and implementation of laws and regulations related to trade in fish and fishery products. It is an attempt to make trade more inclusive. Prioritizing involves difficult political choices. They can include: promoting international trade to raise foreign-exchange earnings for the nation; exporting only the products that give higher profit margins; generating higher earnings for unorganized fish workers; importing fish to generate employment; and respecting food rights of poorer consumers.

The creation of a “sea parliament” in **Chile**, with NGOs taking the lead, and the suggestion of a multistakeholder Trade Advisory Council in **Sri Lanka**, to enhance the well-being of all parties involved in international trade, are good pointers towards feasible measures for broadbasing and prioritizing trade decisions. Such processes contribute to a paradigm shift. They explore ways of creating “markets that are people-friendly”, rather than pursuing the free-market prescription inducing “people to be market-friendly”.

Food security will not just happen. It is a guided outcome. The state may need to play a more proactive role to achieve it by fostering the right choices, at the right time. In such situations, clear national priorities should be the dog and international trade the tail.

4.7 CONCLUSION

Can international fish trade contribute significantly to the food security of the people?

The six perspectives discussed above, in which crucial developmental decisions need to be made, indicate the scope for undertaking measures to make fish trade contribute significantly to achieving food security in developing countries. As we have indicated, food security *for all* can be achieved only as a guided outcome. Only a careful orchestration of the wide variety of interests of the different social actors can serve this end. Such an approach presupposes a certain minimum consensus among the actors on the course of action to be taken. In addition, such actions cannot be only top-down or bottom-up. They need to be contemporaneous along the micro-global spectrum.

For a start, there is a need to protect the integrity of the resource base and to consider carefully the manner in which we intervene in it. This needs to be followed by a clear recognition of the due economic and social rights of the men and women that labour to convert the resource into tradable products. The physical facilities that will ensure good-quality, safe products for trade and thus contribute to sustained and responsible entrepreneurship must be assured. The lack of data and the information asymmetries that hamper wise and efficient decision-making need to be addressed. A greater solidarity between social classes and a greater identity of interests among the developing countries need to be fostered.

Arising from these policy perspectives and the discussions in the earlier chapters of this study, in the final chapter we provide a list of recommendations that can contribute to giving international trade in fishery products a greater people focus and can thus contribute significantly to food security. We organize the list around some of the major themes that have been discussed in this study.

5 Fish trade and food security: what is to be done?

Viewing any food trade through the lens of food security gives it a greater people-oriented focus – a focus on the millions of fishers, fish workers and fish consumers along the chain of custody. To achieve food-security objectives through food trade, it is necessary to bring the interests and concerns of these millions from the periphery to the core of trade practices.

When the interests of individual traders, trading firms and processing companies dominate both trade practices and trade policy, the focus tends to be only on profits and earnings as well as on the ways and means by which these can be maximized. What we observe today is that the financial benefits of fish trade accrue largely somewhere along the micro-global spectrum between the producer and the consumer.

Sustainable trade is a more people-focused trade. It connects sustainable production and sustainable consumption and brings adequate benefits to all who link up to it. Working towards obtaining food security through fish trade can be a means of humanizing this trade, making it more people-friendly and thus more responsive to people's needs for livelihood and food. Such a collaborative venture requires that the forces of state, market and civil society work together.

What measures can be taken to put economic and social arrangements in place that would facilitate the achievement of greater direct and indirect food security through fish trade? How can the initiatives along the micro-global spectrum be coordinated? What is to be done to move towards this goal? The thirty measures we have spelled out below are arranged under ten broad subject heads that we have touched upon in the course of our analysis.

5.1 RESOURCE MANAGEMENT

1. Preserving the resource base and the integrity of the aquatic ecosystem is a *sine qua non* for food security – with or without international trade. The fundamental requirement is to sustain the growth of fish production and maintain a harmonious balance between the three realms – marine capture, inland capture and aquaculture – in accordance with the natural context of the respective countries. To achieve this, there is a need to revisit the issue of technology for harvesting and production. In marine and inland capture fisheries, the possibility should be explored of reviving the use of more passive fishing techniques, which emphasize quality over quantity and make a virtue of seasonal over perennial operations. In aquaculture, a new balance between intensive and extensive production techniques, with more efficient feed-conversion ratios and the search for non-animal protein feeds, should be a priority.
2. Greater emphasis on micro-level, local resource comanagement becomes significant and has better chances of success if micro-level producer organizations are in place. It is important to take advantage of the greater sense of “community” and “trust” that still exists at this micro level in most LIFDCs. It can be a vital building block in creating such local organizations. In marine coastal areas, granting preferred access – *both* seaward and landward – to coastal communities might also be the only way to ensure secure long-term rights to fishery resources. The spatial coordinates of this can be coterminous with the relevant lowest level of political governance in the country. The Japanese model of coastal fisheries management

based on village cooperatives and the new Philippine initiative of fisheries and aquatic resource management councils at the local level of the *barangay* (village) are examples worthy of emulation.

3. At the global level of the nation, efforts at fishery resource management through rearrangement of property rights; new forms of management-cost-sharing contracts between stakeholders and government; adoption of eco-friendly technologies; and efforts at resource rejuvenation that result in the creation of a sustainable resource should be attempted. Such actions should be acknowledged and rewarded by the international community. A sustainable fishery resource, the foundation of food security forever, should qualify as collateral for market access and fair development assistance.

5.2 CHAIN OF CUSTODY AND TRADE STRUCTURE

4. A closer re-examination of the lower ends of the chain of custody of international fish trade is warranted. The revival of appropriate forms of producer organizations needs more attention. Earlier initiatives on this account, in most developing countries, have traditionally focused on input-delivery systems – supply of credit, boats and nets, and welfare measures. The current need is to organize control of the first sale transaction. Supportive legal measures to strengthen this process may be desirable – for example, “right of first sale” legislation as part of the overall domestic market regulation.
5. The role of transnational corporations in fish trade and the impact that their operations can have on the structure of the domestic industry and the people in fisheries need closer scrutiny than they have received thus far. Studies need to be commissioned that will reveal greater details of the structure of fish trade, the evolving nature of the market for fish and the chains of custody of internationally traded fishery products.
6. Timely information on prices of fish for export and import can contribute to enhancing the bargaining capability of small producers and processors. Greater use needs to be made of the mass media – newspapers, radio, cinema, television and the Internet – to publicize issues pertaining to food security and fisheries. Generic advertising about the health implications of fish consumption can raise domestic demand, particularly in countries with low fish-consumption preferences. The Internet can be utilized by producer organizations to contact and liaise with fair-trade groups to explore new channels of direct trade. Where such initiatives have been undertaken, an assessment of their effectiveness should be made and information about this widely disseminated.

5.3 FISH AS FOOD

7. Subsistence fishing is a major source of direct food security. This needs to be recognized and its extent judiciously assessed at the national level on an eco-system basis. The impact of international trade on subsistence fishing and the nutritional consequences of this warrant close investigation.
8. There exists a crying need, and also both scope and hope, to create greater transfer-based entitlements to achieving food security through fish. International development agencies should revive efforts to examine the prospect for innovative products from pelagic fish stocks that can be utilized as human food. Given the recent developments in food and packaging technologies, such initiatives are likely to have greater success than their precursors. Examples such as the Namibian “Fish for Life” initiative, funded by JICA, are good models to be emulated by countries in which nutritional needs are not met, despite the presence of plentiful fishery resources.
9. In many developing countries, there are committed national initiatives being undertaken to address the issues of poverty and hunger. Several well-conceived,

government-sponsored supplementary nutrition initiatives warrant mention here. These efforts include a vast array of programmes that link small-scale food producers and consumers through product sourcing, nutrition education, school feeding, etc. Most of these are agrarian-focused initiatives and supply cereals and pulses. The possibilities of linking small-scale fishers to these schemes, and adding fish to the menu of products sourced, can have an important bearing on poorer fishing communities and provide fish as food to the nutrition-needy population.

5.4 WORKERS' WELFARE

10. The work of women is crucial to producing products for international trade that meet quality and safety standards. The rewards they receive must be commensurate with this contribution, particularly considering that their incomes contribute more directly to household food security. Where trade unions are not encouraged, women's self-help groups or labour cooperatives and associations provide an effective organizational framework through which women involved in fish processing can raise their collective bargaining power. Such self-help initiatives should go beyond the work realm within the "fish factory gates". They should take creative action to provide broader services to women workers. Examples of development initiatives that have strong food-security implications include: setting up child care centres, providing functional education and skills development, helping migrant workers maintain contact with their families, starting credit schemes, etc. Corporate and state responsibility should be exercised to foster such worker initiatives.
11. Social security and welfare funds and appropriate insurance arrangements should be extended to all producers and workers involved with the harvesting, production, processing and marketing of fish. These designated funds and arrangements should be based on contributions from the workers, fleet owners, traders, processing firms and exporters. Contributions from the foreign exchange earned from fishery product exports can form an important part of the corpus of such funds.

5.5 INFRASTRUCTURE

12. Livelihood-related infrastructure such as housing, sanitation and water supply should be an integral part of any fishery trade and development initiative. A wholesome physical environment is a prerequisite for both food security (by contributing to better food absorption) and safe fishery products for international trade. The long-term common interests of consumers at the global level and producers at the micro level overlap here. International trade should therefore be viewed as a realm in which food safety and food security can simultaneously become central concerns. This perspective allows scope for fostering greater and more creative international solidarity between consumers in developed and producers in developing countries.
13. Developing countries should make special efforts to regulate and upgrade the status of their domestic fish processing and marketing. This is particularly relevant in countries where women play a central role in these activities. From a national, fish-oriented food-security perspective, this is an important field of action. Poor-quality domestic fish-processing and marketing practices often act as a strong brake on the fostering of quality standards for international trade. On the other hand, investments (human, educational and financial) made in the domestic sphere, pay rich dividends in furthering a nation's international trade initiatives. This is a realization that only a few developing countries have reached. The good news on this count must spread.
14. Initiatives should be revived to improve trade-related, traditional fish-processing infrastructure (such as more fuel-efficient smoking ovens and hygienic drying

facilities). Such efforts should be part of, or integrally related to, the betterment of livelihood-related infrastructure. The reasons for the past failures of such efforts need to be carefully analysed on a context-specific basis. The design and construction of such facilities should be undertaken with the consent and involvement of local communities. Consensus on the total capacity and location of the facilities should be reached at the outset.

5.6 DATA AND INFORMATION

15. At the national and regional level, data and information requirements should have priority. Greater coordination is needed by the agencies that collect different aspects of the data necessary to a better understanding of the impact of trade on food security – e.g. export, consumption, employment, income data and so forth. The fish and fishery components of such data sets should be specifically identified where they exist and generated where they are not available. Wherever appropriate, gender-based information should be collected, analysed and disseminated. To achieve responsible international fish trade, the basic data requirements of human numbers, income, employment and related aspects are mandatory.
16. New data and information are required, both to further trade and to assess its development implications, in particular those relating to food security. New data-collection methodologies should be explored. At the micro level, greater participative methodologies for data collection should be initiated. Such measures can be implemented under the aegis of producer organizations and other civil-society groups. The role of NGOs that work closely with fishing communities in the developing countries may be appropriately enhanced to achieve this. However, these NGOs may need to be provided with a menu of appropriate social skills to undertake these tasks. One of the salient data requirements in this context is regular cost and earnings studies of harvesting, production and processing at the micro level. These studies require intimate knowledge of the people and processes involved to be able to obtain accurate data.
17. Benchmark studies should be undertaken across countries and regions at the same point in time, emphasizing the human resource use in fisheries, with the collaboration of private industry, NGOs, producer associations, fishery research institutions and the state apparatus. They should include economic and socio-cultural data on the activities and needs of fishing communities. Greater north-south and south-south cooperation is warranted in this regard. Poverty-mapping exercises being undertaken by international agencies such as the World Bank should attempt to isolate data that pertain to people involved in fishery-related activities. This is important, because the pathways into and out of poverty can be vastly different in the fishery sector and need to be specially understood in the context of food security.
18. The FISH INFO network of FAO, given its vast professional expertise and organizational links with fish trade, should take on a special data collection and analysis exercise to better understand the food-security implications of fish trade. Some of the insights of this study can be taken as the basis for making a beginning in this direction. Studies to improve understanding of the price spreads across the chain of custody for different combinations of products and markets should also be initiated.
19. Efforts should be begun towards prognostic studies of likely trends in the composition, direction and structure of fish trade and their likely implications for direct and indirect food security in developing countries, particularly in LIFDCs. This is also a realm in which fishery research and educational institutions in developed countries can undertake collaborative ventures for capacity-building of researchers in the numerous fishery institutions in LIFDCs. Triangular

collaborations of a south-north-south nature can produce greater synergy and learning than the conventional bilateral assistance programmes.

5.7 TRADE CAPACITY-BUILDING

20. In the context of the new and more complicated international trade regime put in place through the WTO, many developing countries are experiencing a period of change and upheaval in the fishery sector. They will need assistance to adapt to new market conditions. Exporters and government officials will need to obtain information on diversification possibilities and the scope for new product development. There is a need to initiate greater trade-related capacity-building among developing country policy-makers and fishery officials. The commitments made by the developed countries in the context of WTO to assist developing countries in this regard should be fully honored. The endeavour in these capacity-building initiatives should be to provide the appreciation that trade is not an end in itself. It must be viewed as a means towards achieving national economic and social development. The emphasis on the commercial aspects of trade, if managed well, should not mask the contribution of trade to human development.
21. Examples of best practices of fishery trade arrangements that consciously factor in food-security concerns should be subjected to detailed, national-level case studies. A consolidation of the key elements of such practices can be a major input into training programmes for greater trade-related capacity-building among national-level decision-makers, food-trade entrepreneurs and worker organizations.
22. The evolving nature of the global structure of fish trade should be carefully monitored. If the structure of this trade goes the way of food-grain and cash-crop trade, the implications for LIFDCs can be very adverse at the global level. The food-security implications at the micro level in these countries can create significantly adverse social and economic consequences, which may be politically sensitive. In this context, the causes for the slowing down of fish trade in the WTO phase (1995–2002) need to be considered carefully. The attendant food-security implications provide developing countries with a good basis for urging FAO to undertake participatory national and regional fishery-trade policy reviews from this perspective.

5.8 COOPERATION AMONG COUNTRIES

23. There exists a wealth of experience in developing countries in handling matters of fish trade in tropical fish species. In some cases, this has even extended to closely monitoring its food-security implications. Such experiences should be shared. They provide the basis for greater south-south cooperation, and they can be shared constructively so that there can be greater global empowerment of developing countries. The various special programmes of FAO on trade, food security and nutrition that target LIFDCs may be important starting points to help initiate and further such cooperation.
24. Some parts of the world would greatly benefit from more thoughtfully planned regional cooperation. The West African region is one such. Here, the synergic impact on fish trade and food security that would arise from regional cooperation could be very high. The benefits would be experienced not only by the respective states but, significantly, by the people involved in fisheries. In this region, there is great scope for people-to-people cooperation to facilitate convivial technology transfer; exchange of time-honored human skills in harvesting, processing, trade and marketing; and sharing of information on organizational initiatives. Indeed, these can become an effective catalyst to foster greater cooperation between states! Such pressures from below can provide a good basis for regional harmonization of trade-related administrative, fiscal and policy measures. There is an enormous

need for this in West Africa, given the high degree of informal trade and “informal” trade barriers between countries, which thrive on the lack of harmonization.

25. Harmonization of trade measures, labour policies and social security initiatives through regional cooperation will prevent “a race to the bottom” by individual countries with respect to these standards. International initiatives funded by multilateral and bilateral development agencies and executed by FAO should profit from these great advantages of regional cooperation in West Africa and elsewhere.
26. Developed countries should be lobbied to reduce the tariffs on imports of processed fishery products. This is the only way LIFDCs can escape being locked into an unchanging raw material processing mode. Such trade measures will be more important in enhancing food security than all the development assistance that can be offered to them on other counts. Concrete assessments of this proposition must be made with reference to a representative list of products of interest to the major fish-exporting developing countries.

5.9 RESPONSIBLE TRADE

27. To facilitate sustainable international trade, there is need for a more inclusive, broadbased policy on trade. Trade with a greater focus on people. Trade as if development matters. Such trade policies can only be crafted by the structured involvement of all stakeholders. Holistic trade appraisal and review mechanisms should be set up with the representative participation of all stakeholders. These appraisals and reviews should be undertaken at regular frequencies. They should include, *inter alia*: issues related to the quantities entering international trade; the nature of species and characteristics of the end markets; assessments of the degree to which export-value realization covers the “real” environment and social costs of production and processing; regular assessments of the aggregative and spatial spread of processing capacity vis-à-vis harvesting and production capacity; standards on the minimum ratio of earnings of workers to the consumer dollar received for a product; the occupational, health and social security status of fishers and fish workers relating to fish exports, with particular emphasis on women workers.
28. The fashioning of trade policies and practices that are inclusive will require compensatory mechanisms for financing such initiatives. The earnings from resource rents and foreign exchange from exports can be good sources for this. There is a need to distinguish between financial transfers that are livelihood enhancing and those that are likely to be considered trade distorting. Financial support committed to promote community and regional development programmes and resources that raise the direct and indirect food security of poor fishers and fish workers should be recognized as an integral part of a developing country’s public policy.

5.10 RESPONSIBLE CONSUMPTION

29. Focusing on the food-security implications of fish trade is a major step in the movement towards responsible fish utilization and trade as advocated by the Code of Conduct for Responsible Fisheries. States should encourage the use of fish for human consumption. When a domestically consumed fish obtains an export market, its price tends to rise. Though this is a good outcome for the fisher, the higher price may squeeze domestic consumers out of the market. The strong possibility of diversion of pelagic species for fishmeal production the world over highlights the importance of developing a code of conduct for trade in fishmeal to ensure that direct food-security concerns are considered. Steps should be taken at the global level to articulate a code of conduct for responsible fish trade.
30. To build up a movement for sustainable consumption, consumers in developed countries should use legislation and consumer action methods in their own

countries, rather than support the use of non-tariff barriers by their governments. Campaigns for “responsible consumption” undertaken by socially oriented environmental movements can prove to be widely beneficial. Invoking the Lacey Act in the United States, which allows United States courts to prosecute importers whose actions contravene environmental laws in other countries, is one example. Such actions strengthen the cause of the great majority of fishers, provide dividends to honest entrepreneurs in developing countries and add to the well-being of consumers in the developed world. The use of ecologically benign fishing techniques, which yield low-quantity but high-quality output, will also be stimulated. Sustainable consumption becomes linked to sustainable production through sustainable trade.

5.11 CONCLUSION

The above list of “what is to be done” is by no means exhaustive. Attempting to achieve such completeness would be a facile exercise. The solutions for making fish trade more responsive to the food-security needs of the people are necessarily context-specific and dynamic. To imagine that all developing countries, or the LIFDCs among them, will act in consort is also wishful thinking. The behaviour of developed countries is unlikely to be any different. The bottom line is the growing evidence that the people involved along the chain of custody – fishers, fish workers and consumers – wish to ensure greater direct and indirect food security for themselves. This yearning is a powerful uniting force. It pervades all societies. It finds outward expression in some. In others, it lies dormant waiting to be awakened.

The above measures and the actions that can be taken along the micro-global spectrum rest on three themes on which our efforts to maximize the food-security benefits of international trade in fishery products should be based: *revive* the resource, *restore* greater control by the people over trade and *rationalize* the market. There is no sanctity about the order in which these themes should be taken up. All three of them cut across the micro-global spectrum. Consequently, the point at which action is initiated may not be of any strategic significance. To recognize the need for action, and make the commitment to move forward, is the more important mission. That will make responsible fish trade an achievable goal. It will also ensure food security for all.

APPENDIX 1

List of the 82 low-income food-deficit countries

(taken from FAO Yearbook of Fishery Statistics, Volume 93, 2001)

AFRICA

Angola
Benin
Burkina Faso
Burundi
Cameroon
Cape Verde
Central African Republic
Chad
Comoros
Congo, Democratic Republic
Congo
Côte d'Ivoire
Djibouti
Egypt
Equatorial Guinea
Eritrea
Ethiopia
Gambia
Ghana
Guinea
Guinea Bissau
Kenya
Liberia
Madagascar
Malawi
Mali
Mauritania
Morocco
Mozambique
Niger

Nigeria
Rwanda
Sao Tome & Principe
Senegal
Sierra Leone
Somalia
Sudan
Swaziland
Tanzania, United Republic
Togo
Uganda
Zambia

AMERICA, NORTH

Cuba
Guatemala
Haiti
Honduras
Nicaragua

AMERICA, SOUTH

Bolivia
Ecuador

ASIA

Armenia
Azerbaijan
Bangladesh
Cambodia

China
Georgia
India
Indonesia
Korea, D.P. Republic
Kyrgyzstan
Laos
Maldives
Mongolia
Nepal
Pakistan
Philippines
Sri Lanka
Syria
Tajikistan
Turkmenistan
Uzbekistan
Yemen

EUROPE

Albania
Bosnia and Herzegovina
Macedonia

OCEANIA

Kiribati
Papua New Guinea
Samoa
Solomon Islands
Tuvalu
Vanuatu

APPENDIX 2

Methodology for selection of the countries

Following commencement of the study, a preliminary listing was made of developing countries in which fish exports and imports were among the top ten items of the respective countries total exports or imports. At a meeting of the Expert Group in Rome, this list was then vetted against the “categories”, “realms of analysis” and “perspectives” (see below) that the study was to achieve based on its terms of reference. Based on these multi-criteria, the priorities of the funders, and extensive discussion among FAO staff members with intimate knowledge of the fish trade in developing countries, 19 countries were initially short-listed. These included the following:

Peru, Chile, Nicaragua, Honduras, Guatemala, Brazil
 Namibia, Chad (Lake Chad), Mauritania, Ghana, Senegal, Kenya (Lake Victoria)
 Sri Lanka, India (Orissa), Bangladesh, Viet Nam, Philippines
 Solomon Islands, Papua New Guinea

This list was further pruned as a result of concerns about overlapping efforts on issues of trade being undertaken by other FAO projects. The availability of good consultants at very short notice was also a factor, since the time allotted for the case studies was only two months.

The semi-final list included:

Chile, Nicaragua, Brazil
 Kenya (Lake Victoria), Namibia, Ghana
 Sri Lanka, Thailand, Philippines, Viet Nam
 Papua New Guinea

It was also suggested that a location from North Africa be included.

Finally, due to unavailability of consultants in the time allotted, Viet Nam, Senegal and Papua New Guinea were dropped. In place of the latter, Fiji was included. Senegal was then restored to the list, because the Sustainable Fisheries Livelihood Programme of FAO and the Department for International Development (DFID) had a consultant in place, who was keen to contribute. The inability to carry out the study in a location in North Africa is a shortcoming with respect to the global coverage of the study.

In each of the countries selected, the identified consultants were provided guidelines requiring that they study the fishery (the whole or a sector of their choice and competence) from the point of view of the five categories mentioned below:

CATEGORIES FOR STUDY

The nation
 Fish producers
 Fish workers
 Fish consumers
 Fish stocks

Based on the inputs of the Expert Group, the consultants were asked to focus on certain realms of analysis. These varied from country to country. The entire list is given below:

REALMS OF ANALYSIS

Foreign-exchange outflow and inflow
Increase of incomes and employment
Fish supplies to consumers
Arenas of conflict
Fishery resources and aquatic environment
Characteristics of products traded
Technology of fishing and processing
Human population dynamics in fisheries
Role of subsidies

Based on their first-hand knowledge of the issues being discussed in the countries chosen for study, the consultants were requested to highlight certain perspectives that were considered to be of particular relevance to the country under review. These perspectives included:

PERSPECTIVES

Historical dimensions of trade
Political economy of fisheries development
Gender perspective
International policy perspectives
Issue of human right to food
Question of social regulation of the market
Property rights arrangements for fisheries management
Impact of trade on ecosystems
Governance issues

APPENDIX 3

Country summaries of the impact of international trade

This appendix is based exclusively on the 11 country reports that were commissioned as part of the study. The full reports followed a given set of broad guidelines and were based largely on secondary data. In some instances, primary studies were conducted on selected aspects chosen by the respective consultants. These are not national reports. The reports, along with short 10–15 page summaries, will be posted on the study Web site (www.tradefoodfish.org) in due course. The one-page summaries provided in this appendix present an analysis of the impact of international trade in fishery products on the nation, fishers, fish workers, fish consumers and fishery resources. They are highly condensed versions of material from the detailed country reports. They do not adequately reflect the vast data and information provided in the country reports. Based on a six-point scale, the impacts have been given a scoring. These scores are weighted, and the weighted averages form the basis for ranking the countries according to our assessment of the impact that their international fish trade has had on their food security (Appendix 4).

LIST OF NATIONAL CONSULTANTS

Sjef van Eijs (**Nicaragua**)

José Augusto Negreiro Aragão and René Schärer (**Brazil**)

Roberto de Andrade (**Chile**)

Andrew Murray and Mamadou Mar Faye (**Senegal**)

M.A. Mensah, K.A. Koranteng, D. Yeboah and A. Bortey (**Ghana**)

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Somying Piumsombun (**Thailand**)

Cesar Allan C. Vera Jr. (**Philippines**)

V.R. Bidesi, N. Evans, J. Raj, J. Rajan and D. Williams (**Fiji**)

3.1 NICARAGUA

<p>Impact on the nation (positive – large)</p>	<p>Foreign exchange from fish exports increased between 1990 and 2000 from US\$10 million to 127 million. Small quantities of canned fish and crustaceans were imported and valued at US\$7 million in 2000. Fish exports in 2000 accounted for 20 percent of the country's total foreign-exchange earnings of US\$635 million. The debt service in 2000 was US\$127 million and hence the earnings from fishery products could cover it.</p>
<p>Impact on fishers (positive – large)</p>	<p>Fish harvesting is the tenth most important employment-producing activity of the economy. As much as 5 percent of the country's population depends on fishing for a livelihood. In 2000 about 41 800 persons were directly employed, accounting for 2.5 percent of the country's total labour force. Of these, 18 300 were in capture production and 23 500 in aquaculture. Of the former, about 2 800 work on industrial fishing vessels. It is estimated that 17 out of every 100 fishers are women. Being exclusively export oriented, the prices of fish are determined by traders. Fishers have little leverage in this matter, as there is no alternative domestic market. According to the Central Bank, in 1991 the average monthly income of fishers was US\$124, compared to the average earning in agriculture of US\$71. Following greater exports, incomes of fishers increased in 1998 to US\$250, compared to an average monthly earning in agriculture that dropped to US\$55.</p>
<p>Impact on fish workers (positive – significant)</p>	<p>The fishery is almost totally export oriented and capital in the processing sector is private. The total number of fish workers in 1995 was estimated to be around 2 500 in processing and around 7 600 in trade and marketing. Of the latter, around 2 000 were in export-related trade. There have been many closures and bankruptcies among processing firms. The new ones are more capital intensive. Consequently, the number of fish workers in the export sector has declined to 1 500 in processing. Processing workers earned on average between US\$110 and 150 per month. This compared with the cost of a "basic necessities package" in Nicaragua that was estimated to be about US\$135 per month in 1999. The workers include both men and women, are young, have primary-school education and are recruited from the region of the processing plants. Permanent workers are covered by social security. Due to HACCP regulations, the working conditions are good.</p>
<p>Impact on fish consumers (positive – small)</p>	<p>Since the population does not consist of fish eaters, fish exports do not have any adverse impact on poorer consumers. Fish imports are for the higher income groups in urban areas. Per capita supply has increased from 0.4 kg/person/year in 1990 to 3.8 kg/person/year in 1999. The opportunity exists, and fishery resources are available in plenty, have fish contribute to solving malnutrition in the country, particularly among children. This will require planned modification of diet preferences among the nutritionally needy.</p>
<p>Impact on fish resources (negative – significant)</p>	<p>Shrimp farming led to major destruction of mangroves between 1993 and 1996, when exports experienced a major boost. Yields of spiny lobster have declined following competition between different harvesting methods. The marine shrimp on the Caribbean coast is economically overfished. There is a shift in species mix. The "inferior" brown shrimp is gradually dominating the fishery. Tilapia resources in the lakes and lagoons are also showing signs of declining output.</p>

3.2 BRAZIL

<p>Impact on the nation</p> <p>(positive – small)</p>	<p>In 2002 the value of both exports (US\$334 million) and imports (US\$47 million) of fishery products accounted for less than 1 percent of the country's total exports and imports. There was a fishery products trade deficit between 1990 and 2000. Thereafter, following devaluation, a small surplus was achieved. Concerns about illegal trade of fishery products out of the country raised doubts about the veracity of the trade accounts.</p>
<p>Impact on fishers</p> <p>(positive – significant)</p>	<p>There are about 550 000 fishers, of which 500 000 are artisanal fishers. There are about 25 000 in the industrial sector, another 11 000 in aquaculture, 8 000 ornamental fish collectors and over 1 000 women involved in shellfish and crab collection. The livelihood of large numbers of artisanal fishers depends on exporting lobsters. The average monthly earning of a lobster fisherman in 2000 was about US\$70. This was close to the minimum wage for the country. However, due to widespread illegal trade in lobsters, the real income is hard to assess. Lobster fishers also benefit from unemployment compensation. They suffer from occupational illnesses such as eye problems, back pain and skin diseases. Skin cancer is on the rise. Fishers in the industrial fleet work under legal contracts for a wage. In some fisheries, they receive unemployment compensation.</p>
<p>Impact on fish workers</p> <p>(positive – significant)</p>	<p>Fish processing is largely undertaken in "industrial parks". In the late 1970s, when the concept came into being, there were about 20 000 employed. Of these, about 85 percent were fish workers. The rest held managerial posts. About three-quarters of the fish workers were women. The total number of workers has declined following increasing capital intensity of the sector. The workers are generally recruited from the communities near the fishing ports, and many are also from the poorer northeastern parts of the country. They migrate to escape the recurring drought conditions there. Fish workers earn between US\$80 and US\$100 per month. Their wages are just adequate to purchase the basic food requirements of a family. There are trade unions in the processing sector and some contributory social security schemes operate.</p>
<p>Impact on fish consumers</p> <p>(positive – small)</p>	<p>Brazilians appreciate fish. However, there is wider variation in the species consumed by different consumer segments. The upper-income consumers of European origin in the southeast prefer white-fleshed marine fish and shrimp. Fish imports cater largely to these richer consumers. The poorer sections of the population in the northeast depend mostly on subsistence production. Fish sold in the markets is costly compared to beef. The data on fish supply shows a marginal increase from 5.2 to 6.1 kg/person/year in the 1990s. This is mainly due to higher imports. However, it is no indication of the real consumption of fish in the country, for which estimates vary widely.</p>
<p>Impact on fish resources</p> <p>(negative – large)</p>	<p>The fishery resources targeted for export are largely overfished. These include the pink shrimp fishery of the north, the Amazon catfish and red snapper in the northeast and the trawl shrimp fishery of the southeast and south. The lobster fishery in Ceará has been affected by illegal mesh sizes in traps and the capture of undersized specimens, which form the basis of the illegal trade. Resource depletion has increased the level of conflict between the artisanal fishermen and those using industrial vessels for the catfish and shrimp fishery. The potential of the export market has fostered initiatives among artisanal fishers to undertake collective resource management at the local levels.</p>

3.3 CHILE

<p>Impact on the nation (positive – large)</p>	<p>Fish export earnings increased from US\$866 million in 1990 to US\$1.9 billion in 2001. Fish imports during this period increased from a mere US\$8 million to US\$48 million. Net earnings from fishery products trade are substantial.</p>
<p>Impact on fishers (positive – small)</p>	<p>Development of salmon farming has created job openings at all levels. Workers involved in the farming activity tend to be unskilled and young. They are generally migrants from the capital, Santiago, numbering about 12 000. One important category of fishers is divers, many of whom are from artisanal fishing communities. Their number is estimated to be between 500 and 600. They have to dive frequently to extract dead fish from nets and cages. The job is accident prone and involves health risks that have not been adequately addressed by the companies or the state. Recent studies cast grave doubts that the benefits of salmon farming reach the majority of those who labour to produce them. Region X, with the highest concentration of export-oriented salmon farming, is also the region with the lowest average per capita income. Socio-economic studies conducted by the Planning and Cooperation Ministry showed the region to have the fifth highest levels of poverty and fourth highest levels of destitution.</p>
<p>Impact on fish workers (positive – significant)</p>	<p>The salmon industry provides about 30 000 direct jobs, most of which are in the processing plants. Recent surveys show that 50–90 percent of the workers in plants are women, who are employed on contract and without much job security. Only the very “top level” companies have organized unions that help negotiate satisfactory contract terms with their employees. The workers are young (15–20 years) and not highly educated. Wages vary according to the size of the firms. Average earnings in 2000 were around US\$220/month, which is about 40 percent above the national minimum wage. Some companies invest in training the workers, since they realize that it reduces operational costs and creates positive work relationships and thus higher profits. This “enlightened” approach has been singled out as being part of corporate social responsibility.</p>
<p>Impact on fish consumers (negative – small)</p>	<p>The diversion of fish to manufacture fishmeal for aquaculture is substantial. Combined with export of other fishery products, it accounts for the drop in per capita supply. The adverse nutritional impact of this decline is largely restricted to poor consumers in the coastal region.</p>
<p>Impact on fish resources (negative – small)</p>	<p>There have been reports of the use of green malaquite fungicide by the industry. This is known to affect the marine environment and to accumulate in the salmon flesh. Consumption by consumers of salmon with high levels of this substance can give rise to health problems. There are also reports of abnormal amounts of copper in the water and in the sediment of lakes close to the farms. Pelagic species fished to make fishmeal for aquaculture are being subject to heavy fishing pressures.</p>

3.4 SENEGAL

<p>Impact on the nation</p> <p>(positive – large)</p>	<p>On average, between a quarter and a third of the foreign-exchange earnings of Senegal are from fishery products. In 1999 the earnings from fishery exports were US\$314 million. This was twice the country's debt repayment for that year. From 2002 to 2006, Senegal also earned foreign exchange from access fees paid by the European Union worth about 16 million Euro (€) per year. Fish imports declined from US\$47 million in 1990 to a mere US\$1 million in 2000. This was due to the country's poor foreign-exchange reserves and not to the lack of effective demand for imported fish.</p>
<p>Impact on fishers</p> <p>(positive – significant)</p>	<p>Fishers involved in fishing for export varieties such as <i>thiof</i> and <i>yeet</i> earn more than those fishing for the domestic market. Their gross earnings were estimated to be about US\$ 3 000 per year. However, with the devaluation of 1994, the investment and input costs have increased substantially, thereby reducing their net earnings.</p>
<p>Impact on fish workers</p> <p>(positive & negative – small)</p>	<p>Exports have brought gains to younger women and men workers in the export fish-processing industry. Companies employ a small permanent pool of workers, who earn about CFA70 000 per month (US\$95). The male daily-wage workers are paid about CFA3 000 per day (US\$4), and women workers are usually paid a piece rate of CFA300 kg (US\$0.40) of product processed. These earnings are just adequate to meet the daily food expenses of a family of six. The export boom has taken its toll on the fish workers processing artisanal products. They are confronted with a shortage of fish for drying and smoking and fewer days of work. The raw material also costs more. Women processors are more affected by this than men, who have greater access to capital.</p>
<p>Impact on fish consumers</p> <p>(negative – significant)</p>	<p>The export of fish has raised its price in the domestic market. It has also changed the species-mix available to consumers. Demersal fish available domestically has moved from local fish markets to the supermarkets at increased prices. The overall supply shortage has affected the spatial supply patterns of fish. Markets more distant from the coast get less fish and of poorer quality. The richer consumers in and around Dakar consume about 43 - kg/year compared to the average of 26 kg/year for the country as a whole. On average, the fish supply has declined marginally from 32.2 kg/person/year in 1992 to 31.4 kg in 1998.</p>
<p>Impact on fish resources</p> <p>(negative – large)</p>	<p>The catch rates of species targeted for exports have declined; average lengths have dropped and fewer mature adults appear in the catch. Studies show that by 2000 the average landed size of most export species had fallen below that of sexual maturity. The main reason for this, apart from the increasing effort, is the nature of the technology used, which is damaging the ecosystem. The steel rollers are an example of destructive gear. Their use may have led to the replacement of dominant demersal species, such as bass and groupers, by species such as cephalopods. However, cephalopods have an export market in Asia and have become the new target of the fishery. The fishing effort for pelagic species has also increased beyond sustainable limits, due to industrial fishing under licence agreements that are not properly monitored.</p>

3.5 GHANA

<p>Impact on the nation</p> <p>(negative – large)</p>	<p>Between 1990 and 2000, export earnings increased from US\$2 million to US\$78 million. Imports in the same period increased from US\$11 to a peak of US\$105 million in 1998, and ended at US\$8 million in 2000. There was a fishery products trade surplus until 1997. After this, the level of imports rose and a deficit was created. The structure of the export processing industry, in particular the monopoly power of one multinational firm, and the unrecorded nature of substantial informal cross-border trade, make it difficult to access the real foreign-exchange earnings.</p>
<p>Impact on fishers</p> <p>(negative – significant)</p>	<p>Artisanal fishers, numbering about 123 000 in 2001, are losing out in the competition with industrial fishing for exports. There is strong evidence to suggest that their regular fishing activities have been affected due to the uncontrolled influx of trawlers into coastal waters.</p>
<p>Impact on fish workers</p> <p>(positive & negative – small)</p>	<p>Initially there was generation of employment, but the closure of numerous firms when European Union quality standards were imposed has resulted in loss of jobs. The dominance of one major company, controlled by multinational corporation, also results in the concentration of jobs in one location. Fish workers associated with import activities have also been affected by the wild fluctuations in import quantities. This has created unpredictable employment conditions and low incomes. Women involved in informal cross-border trade have been affected by the lack of fish for artisanal processing – in particular the imports from neighbouring countries.</p>
<p>Impact on fish consumers</p> <p>(negative – significant)</p>	<p>Fish is the most important source of animal protein. Per capita supply has fluctuated between 1990 and 1999 from 18 to 30 kg/year. Taking 36 kg per capita as the desirable consumption norm, there is a 360 000 tonne deficit in fish for consumption. This is as much as the current annual production. Exports are driving up domestic fish prices. But they still remain lower than the prices of other sources of animal protein. The result is that though average fish consumption is rising, the poor are being priced out. There is also a shift towards consumption of less expensive, “second preference” species by all consumer segments. The adverse nutritional impact of lower fish consumption is considerable. This is evident from the fact that a quarter of the children below five are undernourished.</p>
<p>Impact on fish resources</p> <p>(negative – significant)</p>	<p>Exported species such as demersal fish species, shrimp and tuna stocks are showing signs of depletion. Fish in Lake Volta are also showing signs of decline, clearly evident from the falling catch per unit effort.</p>

3.6 NAMIBIA

<p>Impact on the nation (positive – large)</p>	<p>Export earnings increased from US\$173 million in 1996 to US\$324 million in 2000. This accounted for, on average, 18–20 percent of the country's total export earnings. The country also has the distinction of earning rent from its fisheries by collecting quota fees, bycatch fees and a marine resource levy. Together they account for 5–8 percent of the country's GDP.</p>
<p>Impact on fishers (positive – large)</p>	<p>The fishery is exclusively industrial and export oriented. In 1997 there were around 4 800 Namibian fishing crew members, which increased to 5 700 by 2001. In 2003 annual incomes ranged between US\$572 and US\$5 160. The average was US\$2 300. This compares with a national per capita annual income of US\$3 166.</p>
<p>Impact on fish workers (positive – large)</p>	<p>Fish processing is totally export oriented and concentrated in the two main landing centres of Walvis Bay and Luderitz. In 1997 about 5 000 workers were employed. This increased to 7 600 in 1998, but then dropped to 4 500 in 2001. The workers are mainly women and three companies employ 80 percent of them. The industry pays well. Over 85 percent of the workers earn at least N\$1 500 per month (US\$175). This is more than what workers in the manufacturing or retail trade earn. Fish workers get medical aid and pension coverage. Some companies provide housing and free transport to work. Workers are from the interior of the country. They remit, on average, about N\$7 500 to N\$10 000 per year (US\$875–1 160) to their families.</p>
<p>Impact on fish consumers (positive – small)</p>	<p>Namibians are not traditionally fish eaters. Fish is the least expensive protein source. A kilo of fish costs N\$4/kg (US\$0.45) compared with chicken at N\$20 (US\$2.30). A state-run programme called "Fish for Life" intends to increase awareness of the dietary and economic benefits of fish consumption. The government purchases the fish and distributes it free to vulnerable groups among the population. Shopkeepers in the hinterland are encouraged to display promotional material in order to raise the generic demand for fish. The quota fee for horse-mackerel fishing has been removed because it is supplied for local consumption.</p>
<p>Impact on fish resources (positive – small)</p>	<p>Prior to independence in 1990, the fishery resources of Namibia were totally depleted. Post-independence resource management was based on rights-based fishing, quota allocations, modest total allowable catches and an effective monitoring, control and surveillance system. The combined measures have helped stocks recover. However, species such as pilchard and orange roughy, subject to heavy fishing pressure, could face problems despite this.</p>

3.7 KENYA

<p>Impact on the nation</p> <p>(negative – small)</p>	<p>Fish exports account for only about 1 percent of the country's export earnings. The value declined from US\$50 million in 1996 to US\$39 million in 2000. Imports of fishery products included Nile perch from neighbouring countries for re-export and fishmeal for domestic use. They increased from US\$1 million in 1991 to US\$12 million in 1997 and then declined to US\$5 million in 2000. Some doubts have been raised about the extent of foreign-exchange earnings actually repatriated back to the country, given the liberal foreign-exchange retention policies and the predominant foreign ownership of the industry.</p>
<p>Impact on fishers</p> <p>(positive – small)</p>	<p>The fishery sector plays an important role in closing the unemployment gap in the country. There were about 20 000 fishers in 1990. Following the export orientation of the Nile Perch, the number increased to about 42 000. About 90 percent of them fish in Lake Victoria. Most of the new entrants are young, have no previous fishing skills; and little education. Following the export orientation, Lake Victoria has changed from a realm once largely composed of self-employed fishers to one dominated by blatant capitalist relationships. The annual net income of a boat owner in 1999 was estimated to be about US\$2 240. Fishing crew members earn about 10–30 percent of the owners income. Considering that shore prices of Nile Perch increased ninefold between 1988 and 1995, exports have resulted in increased earnings for all categories of fishers. However, the open-access character of the fishery and fishers' lack of control of the trade channels have reduced the earning potential substantially.</p>
<p>Impact on fish workers</p> <p>(positive & negative – small)</p>	<p>The export processing industry employs 700–900 workers. A third of them are women. The workers earn from US\$1.50 to 3.00 per day. The minimum wage in Kenya is US\$1.50. Most are employed on daily and weekly contracts. The workers come from different parts of the country and have some schooling, but no formal job training. When factories close, workers shift to other factories or take up petty hawking on the streets, while waiting for a new opening. It is estimated that about 2 000 persons – mostly women – that were earlier involved in artisanal fish processing have been adversely affected by the diversion of Nile Perch for export. Even the fish frames (skeletons) that were once processed for domestic consumption are now used as input for fishmeal. The net employment effect of fish trade is probably negative, though overall earnings from the export and domestic processing activity have increased.</p>
<p>Impact on fish consumers</p> <p>(negative – large)</p>	<p>Fish forms only 6–10 percent of the total animal protein intake of the population. Even so, the overall fish supply in Kenya declined in the 1990s from 6.8 kg/person/year to 5.3 kg. Nile Perch's contribution to domestic consumption dropped from 43 percent in the 1980s to 26 percent in the 1990s. Several official reports indicate that the Lake Victoria region is among the most deficient in protein and energy foods. The fishing communities around the lake now eat little of the fish they catch and can ill afford to supplement it with other sources of protein. Non-fishing communities do not have the capacity or opportunity to generate entitlements to access fish or other sources of protein.</p>
<p>Impact on fish resources</p> <p>(negative – large)</p>	<p>Most indicators suggest that the Nile Perch stocks of Lake Victoria are overexploited. The pressure from the export and domestic market for juvenile perch is an important reason. Catch per unit effort between 1989 and 1998 dropped from 180 kg/trawler/day to about 80 kg. The modal length declined from 70–80 cm in 1988 to 40–50 cm in the late 1990s. Average size of female perch at first maturity decreased from 100 to 70 cm between 1989 and 1999.</p>

3.8 SRI LANKA

<p>Impact on the nation (positive – significant)</p>	<p>Fish export earnings increased from US\$67 million in 1996 to US\$137 million in 2000. Imports of fish cost the nation US\$64 million in 1996 and this increased to US\$74 million in 2000. The trade surplus in fishery products has been increasing steadily.</p>
<p>Impact on fishers (positive – significant)</p>	<p>In 2000 there were about 111 400 fishermen in the country, spread across 2 558 villages. Those fishing offshore for export species, those fishing along the coast for lobster and those engaged in shrimp farming earn US\$230, \$80 and \$70 per month respectively. These earnings are higher than the earnings of the fishers involved in coastal fishing for domestically consumed fin-fish. They earn on average only about US\$25–30 per month. However, with the exception of offshore fishers, the earnings of fishers are not higher than those of self-employed workers in other sectors of the economy, whose average per capita monthly income was estimated to be US\$70. The higher average income of fishers involved in harvesting export-oriented species is offset by non-monetary “disbenefits” such as greater risk to life, exhaustion, ill health, injuries, loneliness and the possibility of arrest at sea for straying into neighbouring EEZs. There is no evidence that the importing of fish has had any adverse impact on the shore prices received by coastal fishers or has deprived women processors of employment. On the contrary, it has contributed to greater retail trade opportunities.</p>
<p>Impact on fish workers (positive – significant)</p>	<p>Studies estimate that there are about 1 350 fish workers in the export processing sector. They are generally in the 20–30 age groups, have had minimum schooling and are unmarried. The male to female ratio varies according to the nature of processing. Shrimp processing employs twice as many women as men. In canning operations, there are more men. Fish workers are largely from rural areas and the work is seasonal. Firms processing offshore species provide year-round employment. Earnings of fish workers (US\$30–40 per month) are lower than those of workers in other food-processing sectors (US\$35–50) and lower than the average per capita income of the population as a whole (US\$65) despite the value-added per worker in fish processing being three times higher than that in the fruit-processing sector. In fish processing, there are numerous incentives for overtime and off-season jobs not available in other sectors. The working conditions are good. Food for workers in the plants is subsidized. Permanent workers are covered by social security provisions. Fish workers remit one-third to one-half of their earnings to their families in rural areas. With greater export orientation, some women involved in traditional fish processing now have less fish available for their work. This has not necessarily had an adverse impact, because employment opportunities in sectors such as garment-making, etc. have absorbed many women from the coastal areas.</p>
<p>Impact on fish consumers (positive – large)</p>	<p>Fish is socially and nutritionally very important. Domestic production accounted for only 75 percent of the fish protein supply in 2000. Per capita production increased from around 12 kg/person/year in 1992 to only 14.5 kg in 1998. With imports, the per capita supply of fish increased from 17.3 kg/person/year to 20.7 kg in the same period. The prices of fish consumed by the poorer sectors have risen more slowly than prices of other foods. The product and process consumption preferences have remained largely unchanged over the years. There is no evidence that the preference for small, dried pelagic species of fish, commonly considered an “inferior good”, declines with increases in income. These species have traditionally been consumed as side-dishes. They are called “rice-pullers”, since they help raise the flavour of rice, the main carbohydrate dish. This accounts for the fact that the import of dried fish has not declined.</p>
<p>Impact on fish resources (negative – significant)</p>	<p>Shrimp aquaculture operations have had an adverse impact on the economy and the coastal ecology. Catch rates of export-oriented tuna, lobster and ornamental fish have declined.</p>

3.9 THAILAND

<p>Impact on the nation</p> <p>(positive – large)</p>	<p>Thailand is the world's largest exporter of fishery products. Export earnings remained above US\$4 billion between 1996 and 2000. Imports remained steady at around US\$800 million. The trade surplus in fishery products was over US\$3 billion. The export processing industry has very strong and well-integrated backward linkages into the larger economy. Since the processing activities are spatially distributed in the country, they contribute significantly to the economic growth of some of the less developed regions.</p>
<p>Impact on fishers</p> <p>(positive – significant)</p>	<p>General economic indicators suggest that those involved in fishing have benefited from export-orientation. Wages received by workers in all agricultural and related operations increased by 6.9 percent per annum between 1984 and 2000, from B1 209/month (US\$27) to B3 094/month (US\$70). This was higher than the 2 to 4 percent inflation rate. Poverty levels in rural areas dropped from 32.6 to 9.8 percent of the population between 1988 and 2002. Marine fishers, who are among the poorer sectors of the population, have benefited from this drop. The labour force in shrimp aquaculture was estimated at 100 000. Labour accounts for 4 to 10 percent of the value-added at the farm level, and the boom in shrimp exports has raised incomes in the last decade. Imports of fish had an adverse impact on local fish farmers after tariffs were lifted. This was remedied by re-imposing tariffs on a selective basis.</p>
<p>Impact on fish workers</p> <p>(positive – large)</p>	<p>Fish export processing was a major employment generator. In 2001 there were 480 processing firms covered by the social insurance fund. They employed 212 000 workers, of which three-quarters were women. About 50 000–60 000 fish workers are employed in the tuna processing operations located in the less economically developed east, west and southern provinces. Over 80 percent of them are women. On average, they are around 30 years of age, educated, and over half are single. There is a high proportion of widowed and divorced women workers among those who are Muslims. Over 80 percent had to support two dependents. Some 90 percent of the workers in the plants in the western and eastern provinces are migrants from the poor northern and northeastern provinces of the country. In the southern province, fish workers are from the same region, because this is a predominantly Muslim province. A third of the women workers formerly worked in agriculture. A few were involved in petty trade. A quarter of them were unemployed. On average they earned about B5 200 a month (US\$118), which was higher than earnings in agriculture. Men workers were on average more highly educated. Over half were single, with an average age of 29 years. On average, the men earn less than the women – about 5 000 per month (US\$113). Men moved more freely between fish processing and plantation agriculture. Working conditions in the plants are good. Workers are covered by a social insurance fund that covers loss by death, accident and illness.</p>
<p>Impact on fish consumers</p> <p>(positive – small)</p>	<p>Fish is the most favoured protein source. In 2000 the annual per capita consumption was estimated at 33 kg – four times the consumption of pork, three times the consumption of chicken and fifteen times the consumption of beef. Between 1980 and 2000, when international trade increased by leaps and bounds, annual fish consumption rose by 3 percent per year. However, consumption exhibits spatial variations. Coastal consumers eat more fish than those in inland areas. Rural consumers eat more fish than their urban counterparts. Fishers in rural coastal areas are the largest consumers of fish. About half the fish is from their own production. Among fishers in inland areas, a greater share (70 percent) of their consumption is from their own production. Among poor consumers, production-based entitlements to food security are more important than trade-based entitlements.</p>
<p>Impact on fish resources</p> <p>(negative – large)</p>	<p>Behind the impressive trade, high domestic production and expanding consumption lies a dormant ecosystem crisis in the coastal waters and the Gulf of Thailand. Marine fish production data for the period 1987–1999 reveal a secular decline. Even the category of fish labelled "trash", which is basically trawl juvenile bycatch, is declining. This has forced Thai fishing vessels to enter into fishing arrangements in the EEZs of neighbouring countries. The resource management context in these realms is also unsatisfactory. In the aquaculture sector, inadequate regulation has resulted in disease outbreaks.</p>

3.10 PHILIPPINES

<p>Impact on the nation (positive – significant)</p>	<p>Fish export earnings declined from US\$545 to US\$414 million between 1995 and 2000. In the same period, fish imports ranged from US\$120 million – 140 million. This net surplus from fish trade, though small, must be viewed against the backdrop of a US\$1 billion deficit in agricultural commodities trade in 2001.</p>
<p>Impact on fishers (negative – small)</p>	<p>The archipelagic nature of the country and the spatial spread of the 991 000 fishers make the impact of trade on their lives very varied and context specific. The impact has also varied over time. In the 1960s, small-scale fishers were organized in the southern islands to use hand lines and trolls to hook tuna for the export market. Their incomes boomed. Thousands were organized and contracted to fish in deeper waters because the best grade tuna was caught using hook and line. This practice continues. Small-scale fisheries do not get the full benefits owing to the monopsonistic structure of the chain of custody of procurement for tuna exports. The commercial fishers are the primary suppliers of tuna for export processing. Very few are owner-operators and thus they earn only the crew share or wages, which are not necessarily raised because some of their catch is exported. Shrimp farmers initially made significant gains from international trade. Their incomes have been declining recently. Fish imports have the most adverse impact on commercial fishers, due to the similarity of the imported products to their catch. The problem is further confounded because the importers are the same people who buy from the fishers. The presence of illegally imported fish in the wet fish markets affects the prices received by small-scale fishers.</p>
<p>Impact on fish workers (positive & negative – small)</p>	<p>Fish workers, like fishers, are spatially spread throughout the country. The biggest single concentration is in the tuna canneries of General Santos City, Mindanao. The industry employs about 17 000 workers. Most are women, particularly in the precooking stage. Men are employed for the heavier jobs of reception of the fish and retorting. Work in the canneries is tiring, because of the hot and humid conditions, and involves long periods of standing. This has health implications, particularly for women. Many of the workers are organized under labour cooperatives, and processing firms deal with these cooperatives to recruit workers. The average monthly wage is US\$130. Workers that are married find it difficult to make ends meet. They resort to loans from informal sources or from the cooperative. Only about 30 percent of the workers are from General Santos City. About 70 percent are migrants from the surrounding poorer areas. Members of the cooperative are provided with minimum social security coverage. The legal and illegal imports of fish affect the women fishsellers. When this fish arrives in the market, poor consumers and bulk buyers are attracted by the lower prices. As a result, the fresh fish of local fishers, which the women offer in the markets, remains unsold and they have to bear the loss. This has both economic and social implications.</p>
<p>Impact on fish consumers (negative – small)</p>	<p>Per capita fish supply has dropped from 37.4 kg in 1991 to 30.2 kg in 1999, despite the fact that the quantity (live weight equivalent) of fish imported is larger than the quantity exported. The statistics do not capture the 20 percent wastage in the post-harvest realm. This lowers effectively available supply even further. There is no evidence of rising prices. In fact, prices of fish intended for domestic consumption, such as milk-fish and tilapia, have dropped, making them uneconomical for fish farmers – who are looking for export opportunities. Falling fish consumption is due to inadequate effective demand even at the current level of production and is not due to the impact of international trade. This is also the reason that cheap, illegally imported fish sells so well. Overall economic decline, lack of purchasing power (entitlements) and the structure of fish production and trade are weighted heavily against the poorer fish producers and poorer consumers.</p>
<p>Impact on fish resources (negative – large)</p>	<p>The tuna stocks have diminished due to excessive fishing of juveniles, following extensive use of aggregating devices called <i>payao</i>. These help the fisher catch more easily but, in the long run, harms the stock. Shrimp aquaculture has led to destruction of over 300 000 hectares of mangroves. This, in turn, has affected the nursery areas for all varieties of fish. The recent creation of fisheries and aquatic resource management councils, in response to the all-round depletion of aquatic resources in the country, is an institutional step in the right direction towards resource management. The post-1998 increase in the catch of small-scale fishers is largely attributed to this initiative.</p>

3.11 FIJI

<p>Impact on the nation</p> <p>(positive – large)</p>	<p>Fish export earnings rose from about US\$34 million in 1990 to US\$42 million in 1996 and then dropped back to US\$34 million in 2000. Imports similarly rose from US\$20 million in 1990 to US\$26 million in 1995 and then dropped to US\$12 million in 2000. Fiji thus had a net surplus in fish trade during this period ranging from US\$8 million to 22 million. Apart from fish trade earnings, the country also earns from the various licence fees and tax revenues from foreign fishing vessels that berth in Fiji for transshipment and offloading operations.</p>
<p>Impact on fishers</p> <p>(positive – small)</p>	<p>International fish trade has only a very limited positive impact on the large number of subsistence and artisanal fishers. A miniscule fraction of them supply products such as <i>bêche-de-mer</i>, aquarium fish and <i>trochus</i> for exports. The tuna fleet employs about 1 110 Fijians, whose wages are positively influenced by the higher prices of tuna for export.</p>
<p>Impact on fish workers</p> <p>(positive – small)</p>	<p>Fish workers are engaged in the PAFCO tuna cannery, the Fiji Fish sashimi factory and Atlas Ocean Products Ltd, a company specialized in live reef food fish. Together they employed more than 2 000 workers in 2001. Among the cannery workers (about 1 000), as many as 80 percent are women. Most of the workers are temporary employees. It takes 10–20 years for a worker to become permanent. The legal minimum wage in the fish-processing factories is F\$1.65/hour. The annual gross wage for women is between F\$3 700 and 4 200 (US\$1 622 and 1 842) and for men F\$3 900–4 500 (US\$1 710–1 973). These figures are well below the national poverty line. Women are paid less than men, even for similar work. Work conditions in the cannery have recently improved significantly, after PAFCO signed an agreement with the multinational company Bumble Seafoods. Workers are not provided any social security coverage. Women on maternity leave are not paid allowances. In fact, they are often fired the moment they are discovered to be pregnant. PAFCO does not encourage industrial disputes. Recent strike action by workers led to many being fired when the strike was declared illegal by the Ministry of Labour and Industrial Relations.</p>
<p>Impact on fish consumers</p> <p>(positive – small)</p>	<p>Data on fish consumption are poor. The per capita fish supply remained relatively stable, between 34 and 36 kg/person/year. As much fish consumption is from own production, these data may not reveal much about the impact of trade on consumption. There are spatial, temporal, occupational and cultural differences in fish consumption, and consequently the impact of trade on these varies significantly. Canned fish, which is both imported and locally produced, is the most widely consumed product, even in the narrow coastal zone. Its consumption increases with the distance of the consumer from the coastline. Indigenous Fijians consume their own fish catch. Actual consumption may range from 45–60 kg/person/year. Development of offshore fisheries has made low-grade tuna and other bycatch available in local markets at more affordable prices than coastal fresh fish. Current licences for offshore fishing in Fijian waters give some preference to ventures that are willing to consider domestic food security by landing 10 percent of their catch in Fiji.</p>
<p>Impact on fish resources</p> <p>(negative – small)</p>	<p>Most tuna fish stocks fished by Fijian vessels are not threatened by overfishing. The only species catch that faces some degree of decline is bigeye tuna.</p>

APPENDIX 4

Scoring the impact of international trade on food security

Scores

----- Negative-----			-----Positive-----		
Large	Significant	Small	Small	Significant	Large
1	2	3	4	5	6

IMPACT OF INTERNATIONAL TRADE IN FISHERY PRODUCTS ON:

	Nation (25)	Fisher (20)	Worker (15)	Consumer (10)	Stock (30)	TOTAL (100)	RANK
Namibia	150	120	90	40	120	520	1
Chile	150	80	75	30	90	425	2
Sri Lanka	125	100	75	60	60	420	3
Fiji	150	80	60	40	90	420	3
Nicaragua	150	120	75	10	60	415	4
Senegal	150	100	53	20	30	353	6
Brazil	100	100	75	40	30	345	7
Thailand	150	100	90	40	30	410	5
Philippines	125	60	53	30	30	298	8
Kenya	75	80	53	10	30	238	9
Ghana	25	40	53	20	60	198	10

Figures in parentheses are the weights assigned. The values in the cells are the weighted scores.

OVERALL ASSESSMENT OF THE IMPACT OF FISH TRADE ON FOOD SECURITY

Positive and large
NAMIBIA

Positive and significant
CHILE, SRI LANKA, FIJI, NICARAGUA, THAILAND

Positive and small
SENEGAL, BRAZIL

Negative and small
PHILIPPINES, KENYA

Negative and significant
GHANA

APPENDIX 5

List of institutions and persons consulted

INSTITUTIONS

Food and Agriculture Organization of the United Nations, Rome, Italy
 Centre for Development Studies, Trivandrum, India
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**Also members of the International Reference Group.*

APPENDIX 6**Summary of terms of reference**

The general objective of the project is to analyse the positive and/or negative impact of international fish trade on food security, including food availability and accessibility, employment, distribution of benefits and hard currency earnings. The various impacts of international fish trade should also be analysed with reference to how men and women may be affected differently by this trade.

The study will provide examples of conflicts between resource uses (artisanal versus industrial, trawling versus other fishing techniques, etc.) and indicate the possibilities of solving these conflicts. The study should discuss the role that governments in the south and the international community may play in order to solve the conflicts.

The study should provide examples of fisheries in which there is competition between the export fishery and the fishery for local consumption. The study should explore the conditions under which trade in fish is likely to harm or improve local food security.

The impact of the fish export industry on the sustainable management of fish resources should be discussed.

The study will initiate a cost/benefit analysis for different resource uses, analysing the issue of who benefits and who loses from each resource use. The use of the fishery resource by artisanal and industrial fisheries will be analysed to see which offers the most benefit – with regard to economic, environmental and social aspects. The use of the aquatic resource for aquaculture will be compared to other uses of the aquatic environment (mangroves, agriculture, etc.) and the benefits/costs of each choice will be detailed.

In addition to the quantitative data on global fisheries available to FAO, some ten case studies should be selected, addressing the issues mentioned above. These case studies will be selected reflecting different situations and the great variety that exists with regard to different impacts from trade in fish products. The actual selection of the ten locations of the case studies should be left to the consultants, in interaction with the reference group.

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