

STATE OF WORLD FISHERIES AND FUTURE SUSTAINABILITY ISSUES

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1. Introduction

The global nature of the challenges to achieving long-term sustainability of fisheries and aquaculture requires global solutions. These solutions must be appropriate and adaptable to regional and local conditions. The solutions must also be 'inclusive' in character and involve stakeholders so as to ensure that responsible management and utilization decisions are taken and widely supported. Since 1992 the international community has responded to the challenges of unsustainability by identifying vital issues and actions through the conclusions of a series of international instruments and other initiatives. Importantly, this process has involved establishing a framework for action through institutions at all levels.

Consistent with a global approach, the aim of this paper is to provide new information¹ and review current developments in relation to the state of world fisheries and to discuss future sustainability issues and possible solutions. It addresses many key areas of ongoing concern for fisheries sustainability that have been identified in international fora. They are: the status of the resources and improved information for capture fisheries; production, consumption and trade; implementing international fishery instruments; the relationships among fleet capacity, illegal, unreported and unregulated (IUU) fishing and subsidies; strength and innovation in international fisheries governance, and food security and fishworkers livelihood.

These are complex and interconnected issues that are difficult to address but which will shape fisheries management for years to come. Expanding the knowledge, understanding and awareness of these issues is fundamental to taking well-informed fisheries management decisions for the present, and to ensuring sustainability for the future.

2. Status of resources and improved information for capture fisheries

The international community has become aware of the transformation, by human activities, of an apparently limitless resource into one that is now acknowledged to be finite and increasingly fragile. Current information continues to confirm that, despite local and regional differences, the global potential for marine capture fisheries has been reached.²

From 1974 to 2003 there was a consistent downward trend in the proportions of stocks offering potential for fishing expansion. At the same time there has been an increasing trend in the proportion of overexploited and depleted stocks.

It is estimated that about one quarter of the main fisheries stocks monitored in 2003 are underexploited³ or moderately exploited⁴ and could perhaps produce more. About half the stocks are fully exploited⁵ and are producing catches close to their maximum sustainable limits. Approximately one quarter are overexploited⁶ or depleted,⁷ up from an estimated 10 percent in the mid-1970s.

Ecosystem-related issues in fisheries are also of concern. For example, a recurring pattern in some areas is a long-term change in catch composition following the substantial decrease of more traditional stocks and the targeting of other less valuable species, not previously exploited at significant levels.⁸ In addition, inland fishery resources continue to be under threat from habitat alteration, degradation and unsustainable fishing practices.

In general, the state of world fishery resources and their ecosystems allows little room for delay in the implementation of management measures that should have been taken in the last three decades, as foreseen in some international fisheries instruments. As a minimum, such action should require the

reduction of harvesting rates on wild resources through lower levels of fishing effort. Moreover, supplementary measures are also needed to enhance and facilitate the recovery of marine fisheries. These measures should, at least, include the protection of spawning and juvenile concentrations and critical habitats,⁹ the development of alternative employment opportunities in the coastal areas including in aquaculture, the reduction and, hopefully, elimination of fisheries subsidies that cause overcapacity of fishing fleets, the eradication of illegal, unreported and unregulated (IUU) fishing, the strengthening of regional fishery bodies (RFBs) and the enhancement of fisheries monitoring, control and surveillance (MCS).

Looking to the future and recognizing that improved data and information is of fundamental importance for effective policy-making and fisheries management, the FAO Committee on Fisheries (COFI) approved the FAO Strategy for Improving Information on Status and Trends of Capture Fisheries (FAO Strategy) in February 2003.¹⁰ It was elaborated within the framework of the 1995 FAO Code of Conduct for Responsible Fisheries (Code of Conduct).¹¹ The FAO Strategy sets out guiding principles¹² and required actions¹³ for implementation, scheduled to begin in late 2004.

As a first step, the aim of the FAO Strategy is to obtain a complete picture of all fishery statistical and data collection systems in use by all countries and RFBs, and of all stocks or management units monitored. This will form the basis for identifying gaps in monitoring and above all assessing the quality of the systems used. Then, according to assessed needs, the FAO Strategy will address capacity building in developing countries. The FAO Strategy is considered to be now even more necessary following the 2002 World Summit of Sustainable Development (WSSD), because better information is needed to monitor progress towards the time bound goals for fisheries it established, described below in section 4 of this paper.

3. Production, consumption and trade issues

Production

The world's population, outside China, has been increasing more quickly than the total food fish supply.¹⁴ In 2002, global production from capture fisheries and aquaculture both supplied about 101 million tonnes of food fish.¹⁵ Marine capture fisheries production, at 84.5 million tonnes,¹⁶ remained relatively stable between 1999 and 2002,¹⁷ and inland capture fisheries production, at 8.7 million tonnes, had oscillated slightly after 2000. However, according to preliminary estimates by major fishing countries, global capture production decreased in 2003.

The ten top capture fishery producing countries, with cumulative catches representing 60 percent of the global total, did not change between 1992 and 2002.¹⁸ In 2002, their cumulative catches represented 60 percent of the global total, with China and Peru leading the ranking in both 2001 and 2002.

In 2002, the principal ten producers for global inland capture fisheries production, which did not include any developed country, accounted for about 66 percent of global production.¹⁹ About 90 percent was concentrated in Asia and Africa.

By contrast, global production from aquaculture continues to grow in volume and in terms of relative contribution to the world's supply of fish for direct human consumption. Production in 2002 (51.4 million tonnes,²⁰ with 71 percent from China) was about 6 percent higher than in 2000.²¹ Developing countries accounted for about 90 percent of production, consisting predominantly of herbivorous/omnivorous or filter feeding species. The shift to sustainable practices and development strategies is a work in progress, and a key objective, with significant advancement being achieved in some countries (mainly developed countries) but much remains yet to be done by many others.

Consumption

Fish²² represents a valuable source of micro-nutrients, minerals, essential fatty acids and proteins in peoples' diets in many countries. However, the role of fish in nutrition shows marked continental, regional and national differences as well as income-related variations.²³ In 2002, the average apparent per capita consumption of fish worldwide was estimated to be about 16.2 kg, 21 percent greater than in 1992. This growth was mainly due to China whose estimated share of world fish production increased from 16 percent in 1992 to 33 percent in 2002.²⁴

World per capita fish supply has remained stable since the early 1990s, with the decline from capture fisheries being offset by the growth of the contribution of aquaculture. In 2002, about 61 percent of the total food fish supply originated from capture fisheries production; the remaining amount came from aquaculture.

Over the last few years, consumption of fish and fishery products has been strongly influenced by improvements in transportation, in marketing and in food science and technology which have led to significant improvements in efficiency, lower costs, wider choice and safer and improved products. These changes have varied among regions.

Trade

The volume of fish traded has been rather stagnant in recent years after decades of strong increase, and while preliminary estimates for 2003 indicate a slight increase in the value of fishery exports,²⁵ it is unlikely that the trends of the pre-2000 years will be repeated in the short term, especially given the setbacks resulting from geopolitical tensions.

Fish imports reached a new record of more than US\$61 billion in 2002. Developed countries accounted for about 82 percent of the total value of imports of fish products, with the main importer being Japan. In 2002, China was the world's main exporter of fish and fish products, with US\$4.5 billion, replacing Thailand. Low-Income Food Deficit Countries (LIFDCs) have played an active part in the trade of fish and fish products and, in 2002, accounted for more than 20 percent of the total value of fishery exports.

Fish trade has many important roles. It is a significant source of foreign currency earnings, income generation, employment and food security, particularly for developing countries.²⁶ In fact, with about one third of global fish production entering international trade, fishery products are among the most traded commodities, and the top list of net exports of selected agricultural commodities by developing countries.²⁷ However, the opportunities for profitable trade can drive the process of fish stock depletion, depending on relevant factors such as destructive fishing technology.²⁸

Current major issues concerning international trade in fish products that require continuing monitoring and action include:

- the shift from developed-country processing to processing by third countries in developing countries;
- changes in quality and safety control measures in the main importing countries;
- the introduction of new labelling requirements and the concept of traceability in major markets in developed countries;
- chemical residues in products from aquaculture;
- the concern of the general public about over-exploitation of certain fish stocks, especially groundfish;
- the sustainability of aquaculture, including its future feed requirements;
- IUU fishing;
- international trade negotiations in the World Trade Organization (WTO);
- expansion of regional trade areas; and
- the increasing number of new bilateral trade agreements.

Regarding aquaculture trade, some issues of global importance requiring policy makers' attention include uncontrolled movements of goods, aquaculture products and/or live aquatic animals, a need for integrated aquatic animal health programmes in producing countries, the potential impacts of Genetically Modified Aquatic Organisms (GMAOs), the use of economic incentives in the production of traded aquaculture products and conformity to potential eco-labelling requirements with the objective of promoting sustainable practices.

4. Implementing international fishery instruments

A number of landmark international fishery instruments to address the state of world fisheries²⁹ have been concluded since the 1992 United Nations Conference on Environment and Development (UNCED). The future of sustainability in fisheries depends to a very great extent on their broad and effective implementation.

Of these, two holistic and interrelated instruments – both voluntary - can be considered to form a comprehensive blueprint for responsible fisheries.³⁰ They are:

- The 1995 FAO Code of Conduct,³¹ together with its four International Plans of Action (IPOAs)³² and the 2003 FAO Strategy, which embraces FAO's fisheries work programme and seeks to hasten structural adjustment within the fisheries sector as a means of putting it on a more sustainable footing.
- The 2002 Johannesburg Political Declaration on Sustainable Development and Plan of Implementation of the World Summit on Sustainable Development (WSSD-POI),³³ which seeks to “reinvigorate the global commitment to sustainable development” and is broadly consistent with FAO's Strategic Framework for 2000-2015 (FAO Strategic Framework).³⁴

The Code of Conduct overarches most, if not all, of the activities in the fisheries sector in a comprehensive and integrated manner. The Code assembles, in a single instrument, the commitments and requirements of all major fishery instruments of relevance to fisheries. As a flagship instrument, FAO is committed to foster the Code's full and effective implementation.

The WSSD-POI accords a high prominence to fisheries issues,³⁵ and it is difficult to locate in the WSSD-POI aspects of fisheries not addressed by the Code of Conduct. The reverse is probably also true, even though the various issues are treated with unequal degrees of detail in the instruments. In fact, many of the specific WSSD-POI fisheries provisions are a reflection of commitments in the four FAO IPOAs that were adopted within the framework of the Code of Conduct prior to WSSD.

Both the Code of Conduct and the WSSD-POI aim to reduce fleet capacity, rebuild fish stocks, combat IUU fishing and minimize the impact of fishing on biodiversity and the environment. In addition, the WSSD-POI and the Code of Conduct foresee broad stakeholder participation, transparency, institutional strengthening and the implementation of the precautionary and ecosystem approaches.

The high degree of symmetry between the two instruments, as they pertain to fisheries, means that through facilitating the implementation of the Code of Conduct, FAO is also promoting actively the implementation of the WSSD-POI and other post-UNCED instruments.

The WSSD-POI recognizes the need for certain activities and more decisive implementation of fishery instruments within specified timeframes, including: implementation of the IPOA-IUU and establishing a process for global marine assessment by 2004; implementation of the IPOA-capacity by 2005; the application of the ecosystem approach to fisheries and a significant reduction in the rate of loss of biological diversity by 2010; the establishment of networks of marine protected areas (MPAs) by 2012; and by 2015 to halve the proportion of the world's people who suffer from hunger and to maintain or restore fish stocks to levels that can produce maximum sustainable yield (MSY).³⁶

Over the past three years, extensive work has been undertaken by FAO to support the implementation of the Code of Conduct, and by implication, many of the WSSD-POI commitments. While it is too early to draw final conclusions, the intermediate results are uneven. Substantial progress has been made in the area of IUU fishing where effective action is being taken by both countries and RFBs. Substantial work has also been carried out in the more complex area of fleet capacity management, developing measurements and indicators, assessing overcapacity, analysing the impact of subsidies and looking at solutions and costs of transition. Capacity has been reduced in some fisheries and a number of capacity-reduction measures have been tested. The number of vessels over 100 tonnes as well as their construction rate has decreased significantly, signalling that the expansion phase of large-scale vessels construction has passed. But we have observed unscrupulous expansion of some particular fleet in a particular fishery as I will explain later. Furthermore, capacity expansion has continued in the construction of smaller industrialized vessels operating in exclusive economic zones (EEZs).

The process for the establishment of global marine assessment (GMA) is ongoing with the active collaboration of FAO.³⁷

FAO focuses on the reduction of biodiversity loss through the ecosystem approach to fisheries (EAF). Following the 2001 FAO Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem, a number of activities were initiated relating to, *inter alia*, the reduction of bycatch and discards, the protection of endangered species and, in collaboration with the Convention on International Trade in Endangered Species (CITES), the better assessment and reduction of the risk of extinction and the elimination of destructive fishing and protection of critical habitats.³⁸ The EAF is progressing slowly in a number of lead countries, and RFBs are struggling to implement the EAF. Limited progress has been made with the integrated management of coastal areas.

A goal in the WSSD-POI to maintain or restore stocks to levels that can produce the maximum sustainable yield by 2015 would at first appear to be highly optimistic, given the failure of the international community to do so over the past five decades. However, taking into account the improving international framework for fisheries governance over the past decade, the hitherto incomparable international commitment to address overfishing, the growing and unabated social pressure to achieve sustainable fisheries and the technological changes and developments, this optimism could be justified. The proportion of stocks currently being overfished, now at a plateau of around 25 percent, could well decrease significantly by 2015.³⁹

However, in the process of implementing FAO's programme of work in fisheries and the post-UNCED international fisheries instruments, constraints and gaps have been identified. These would need to be addressed in efforts to restore overfished stocks. While they differ between fisheries and regions, the constraints and gaps include inadequate human and institutional capacity, insufficient allocation of declining levels of development assistance for human resource development and institutional strengthening, poor MCS and enforcement, inadequate stock re-building, inequitable and inadequate access to information, public education programmes and the media, weak participatory management processes and incomplete representation of stakeholders, outdated legislative frameworks and limited prospects for alternative employment of fishers in overfished coastal and inland areas.⁴⁰

5. Cause and effect: managing fleet capacity, IUU fishing and the impact of subsidies

There has been ongoing high level international debate and activity about fleet overcapacity, IUU fishing and linkages between them, and the impact of subsidies. These issues were recently addressed in June 2004 at the FAO Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA-IUU and the IPOA-Capacity⁴¹ (Technical Consultation on the IPOA-IUU and IPOA-capacity) and the FAO Technical Consultation on the Use of Subsidies in the Fisheries Sector (Technical Consultation on subsidies).

The continuing high and growing incidence of IUU fishing seriously undermines national and regional efforts to sustainably manage fisheries. Some key causes of IUU fishing are overcapacity of fishing fleets and “flag of convenience” vessels where the flag State does not exercise adequate control.⁴² A major effect of IUU fishing – in addition to those impacting the state of the fisheries resource – is that it distorts competition and penalizes fishers that operate legally. IUU fishing is not an isolated problem: rather, such fishing should also be seen as a symptom of other problems facing the management of fisheries.⁴³

One area of concern is the linkage between overfishing resulting directly from overcapacity which in turn leads to IUU fishing. However, a current impediment to addressing the situation is the lack of complete data on the state of IUU fishing and capacity.⁴⁴

Information currently available on the global fishing fleet indicates trends and possible consequences:

- The apparent stabilization of the size of the global fishing fleet in numbers and tonnage since 1992, but this is offset by increased technological efficiency.⁴⁵
- The reduced number of new ships weighing over 100 gross tonnes being built each year;⁴⁶
- The increased number of older vessels.⁴⁷ The present average age of the fleet is currently about 24 years compared to an anticipated lifespan of 30 years. If the building rate of larger vessels does not increase significantly, it is expected that the world fleet size of these vessels will decrease substantially in the next two decades.
- It is expected that excess fleet capacity will remain mobile and increased movements from legal to IUU fishing can be anticipated through until 2010.
- The increased number of smaller sized industrial fishing vessels (less than 100 tonnes) that have generally targeted the resources within their own national EEZs are now contributing more intensively to global excess fleet capacity.⁴⁸

Most recently, the FAO Technical Consultation on the IPOA-IUU and IPOA-capacity considered the very recent expansion of the super purse seine fleet in the western and central Pacific Ocean and the potential impact of its technological innovations.⁴⁹ It was noted that at the same time, international business entities, including trading companies, had played an important role in encouraging vessel owners to expand their fleet. Many of the new purse seine vessels were flagged in developing countries that have open registries. The Technical Consultation recommended some actions to address the situation.⁵⁰

Subsidies in the fisheries sector have a negative impact on the resource where they are used to maintain fleet sizes that are contrary to the interests of resource and economic considerations.⁵¹ The effects of subsidies vary depending on the nature and implementation of the management regimes, the state and nature of fish stocks, and the type and magnitude of subsidy and its duration. For instance, in a weak fisheries management regime and in the case of a fully exploited fishery, subsidies would, with a high degree of certainty, lead to over-fishing.⁵² In other cases, however, subsidies have outcomes that are positive for fisheries management, such as those that support sustainable fisheries management.⁵³

Additional work is required to determine the effect on subsidies on fleet capacity as well as the linkage between subsidies, fleet capacity and IUU fishing. The WSSD-POI calls for the elimination of subsidies that contribute to overcapacity and IUU fishing. FAO has been working on fisheries subsidies since 1999 and will widen its assessments in line with the needs stated in the WSSD-POI.

Recommendations of the recent 2004 FAO Technical Consultations will be carried forward to the Twenty-sixth Session of COFI in 2005, constituting focal points for future action. The Technical

Consultation on the IPOA-IUU and IPOA-capacity addressed a number of major areas for consideration.⁵⁴ The Technical Consultation on subsidies recommended that in the short term, FAO should broadly examine the relationship between subsidies and overcapacity and IUU fishing, and to that end identified a short-term programme of work for consideration by COFI.⁵⁵

6. Strength and innovation in international fisheries governance

Strengthened international fisheries governance is vital for the future of sustainable fisheries. While the international fisheries instruments and other global developments provide a framework for such governance, it is the institutions – the RFBs - that contribute the day-to-day operational component of governance. This is achieved by RFBs with advisory mandates as well as those with management mandates (regional fisheries management organizations or arrangements, RFMOs).

A clear shift in the role of RFBs – including RFMOs with a mandate to adopt management measures - has occurred since the adoption of the post-UNCED international fisheries instruments, bringing strength, innovation and increased vigor to international fisheries governance. The stature of RFBs in fisheries governance is growing steadily as reflected, *inter alia*, in the expanding obligations on States to cooperate through RFBs, the number of new RFBs established in recent years and the institutional and constitutional reforms achieved by many RFBs to meet current and future needs. These developments have resulted in important contributions by many RFBs to fisheries governance, including:

- Promoting the development of national research and management capacity;
- Improving and strengthening data collection, handling and dissemination;
- Addressing new issues such as IUU fishing, management of fleet capacity, the effect of the payment of subsidies and the reduction of by-catch and discards;
- Adopting management measures and resolutions relating to such issues as fishing effort reduction, the use of gear, minimum fish sizes, mesh restrictions , etc;
- Adopting rules and procedures for boarding, inspection and enforcement; and
- Taking measures to enable implementation of recent international instruments.

Many RFBs, responding to the need for improved governance, have reviewed or amended their respective agreements or conventions in response to their strengthened post-UNCED role in conservation and management. RFBs have taken innovative and cooperative approaches to carry out their functions and implement the post-UNCED instruments; many efforts are directed towards rebuilding the depleted stocks, preventing further decline and combating IUU fishing. However, if RFBs are not able to fulfil their mandates because of IUU fishing, the outlook for the sustainable utilization of many of the world's commercially important fish stocks is bleak.⁵⁶

The strengthened conservation and management role of RFBs, and accompanying public demands for accountability and transparency, brought with it the need for an effective decision-making process and authority. Several RFBs have taken concrete action on a wide range of decision-making objectives, functions and processes.⁵⁷

Other areas of fisheries governance that will be of continuing significance for the future role of RFBs include institutional arrangements, mandate and functions, membership, members' data provision, budget and finance, capacity, enforcement mechanisms, non-parties undermining measures, cooperative management, partnership/stakeholder participation, collaboration with other RFBs, political will to implement decisions, acceptance of international instruments and dispute settlement mechanisms.

Regrettably, assessments show that strengthened governance of RFBs does not always translate into more effective fisheries management. One of the main constraints faced by RFBs in achieving this is a lack of willingness by their Member States to delegate sufficient decision-making power and

responsibilities combined, in some cases, with an inability or reluctance to implement decisions of RFBs. The RFBs are not supra-national entities and their governance, including measures to combat IUU fishing, is only as effective as their members permit.⁵⁸

7. Food security and fishworkers livelihoods

The Code of Conduct recognizes the importance of fisheries management in promoting food security.⁵⁹ Nutritionally, fish is often presented as one important source of dietary protein, especially where other sources of animal protein are scarce or expensive. Estimates show that fish provided 19 percent of the protein intake in developing countries in 2002.⁶⁰ However, the role of fish in nutrition shows marked continental, regional and national differences as well as income-related variations.⁶¹

The predicted rise in global population, and corresponding increases in demand for food, including fish, mean that the current food security problems are likely to remain.⁶² Although the increasing aquaculture production can address some problems, there has been slow progress in developing an enabling environment for sustainable aquaculture in many developing countries.⁶³

This situation calls for clear and effective approaches to addressing how fish may more effectively provide food security.⁶⁴ Consideration of two issues can be helpful in this regard: (1) the impact of international trade on food security; and (2) the contribution of small-scale fisheries to food security. These issues are discussed below.

International trade has a direct impact on food security, in providing fish as food, and an indirect impact as a source of livelihood through employment and income generated by fisheries. In a recent study on the relationship between international fish trade and food security,⁶⁵ it was noted that millions who are food insecure have the need for food but not the purchasing power to translate this need into adequate effective demand. Catering to the food security of all – with or without the aegis of trade – warrants the involvement of the state and civil society to, *inter alia* create:

- purchasing power and thus contribute to achieving the means for direct or indirect food security; and
- non-market ‘enabling conditions’ in the form of regulatory frameworks which can modulate market forces and make them more responsive to food security needs.

The study suggested that working toward obtaining food security through fish trade can be a means of humanizing fish trade, making it more people-friendly and thus more responsive to people’s needs for livelihood and food.⁶⁶

The contribution of small-scale fisheries to food security is also important for future sustainability. It is recognized that certain current policies do not always treat small-scale fisheries in accordance with the sector’s importance to national economic and social development and, in particular, its contribution to food security and poverty reduction. To address this, technical guidelines on small-scale fisheries are being developed, as called for by the Twenty-fifth Session of COFI.⁶⁷ The process has identified some key issues relating to the contribution of small scale fisheries to food security at national level:

- the productive capacity of a country to exploit its own small-scale fisheries resources is not a sufficient condition to ensure the effective contribution of fish to national food security, and
- the importance of trade (particularly regional and global trade) and its potential contribution to countries’ national food security - the effects of fish trade on the price of fish is likely to be a key factor affecting the nutrition of the urban and rural poor in the future.⁶⁸

A related issue is the contribution of fisheries to the livelihoods of those employed in the fisheries sector. There has been a marginal increase of employment in capture fisheries and aquaculture from

2001 to 2002,⁶⁹ with the share of employment in capture fisheries stagnating in the most important fishing nations and increased opportunities being provided by aquaculture. Since 2000, however, in many countries, employment in aquaculture has started to level off, in parallel with the observed slow down in the growth of production of some major species groups.

In this context, fishworkers rights and livelihoods are a significant issue, and the Code of Conduct calls for States to protect the rights of fishers and fishworkers, particularly those engaged in subsistence, small-scale and artisanal fisheries.⁷⁰ In the study on the impact of international trade on food security, some inferences were reached on the positive and negative impacts of trade on fishworkers and on related issues:⁷¹

- The unanimous opinion that significant new employment for fish workers had been created in fish processing activity as a result of international trade.⁷²
- Modern international trade has had an adverse impact on the lives of the women fish workers involved in traditional fish processing activities.⁷³
- Without the employment opportunities provided at the fish processing plants, the alternate employment and income avenues for these workers are likely to have been worse.⁷⁴
- For social security arrangements, only the few fish workers defined as permanent workers were entitled to insurance, medical benefits, and in some rare cases, retirement benefits.
- The issue of continuing occupational health hazards to workers has also been raised in some countries.⁷⁵

The study recommends that law and policy must clearly set out the rights of fishworkers⁷⁶ and allow them to participate in the policy and law development process.

8. Conclusion

For thousands of years, the fisheries resource of the world has provided humanity with an array of benefits, many of them life-sustaining. Worldwide, humans depend on fish for food security and livelihood, and are engaged in fisheries production, trade, management and other sub-sectors. The fisheries sector will continue to be vitally important in future, but there are new challenges for society to address to ensure sustainability.

The rapid expansion of fisheries over the past 50 years, together with fast-paced technological changes, has transformed both the resource base and ecosystem. Capture fisheries are generally facing many challenges and the road to sustainable aquaculture is not without its difficulties. The same society that is calling for a correction to current fishery harvesting practices and volumes is, at the same time, expecting some 180 million tonnes of total production by 2020.

Global energies devoted to the goal of sustainable fisheries have intensified since 1992. Continued agreements and action, together with commitment and strong political will, are required to improve both the state of the world fishery resources and the state of the people dependent on them.

In view of the challenges, the international community has concluded a comprehensive suite of fisheries instruments which are all geared towards achieving greater responsibility and sustainability. They have been reinforced by the fisheries elements of the WSSD-POI. Although the instruments and the WSSD-POI provide a clear way forward, implementation is a related challenge. It places a considerable administrative burden on fisheries administrations in developed and developing countries. The areas that they must address are broad and deep, and include fisheries governance, food security, IUU fishing, subsidies and management of fishing capacity. It is encouraging that, despite the challenges, some positive trends towards sustainability are clearly emerging, such as

measures to combat IUU fishing and a decrease in the construction of large fishing vessels, except in some particular areas as outlined above.

Governments, RFBs, industry, civil society and other stakeholders must continue to take concerted action to implement policies and practices that promote sustainability in fisheries and aquaculture. This can best be achieved by ensuring that international fishery instruments are implemented fully and effectively, that the gaps and constraints hindering implementation are better understood and that strong progress towards strengthening regional fishery governance is realized. Related action should be taken to both improve our common understanding of responsible fisheries, and to manifest responsible fisheries. Finally, continuous efforts must be made to ensure that future challenges to sustainability are met.

This Conference is clearly a positive step towards achieving future sustainability in fisheries by promoting an improved understanding of responsible fisheries, and providing an impetus for all participants to focus on the future of fisheries from various perspectives. It reflects a commitment to the future that both builds on past efforts and provides a worthy example for all stakeholders that depend on the resource.

¹ Much information in this paper is taken from preliminary work in preparation of the FAO State of World Fisheries and Aquaculture Report for 2004.

² This information is based on 427 stocks monitored in 2003 and for which assessment information is available. There are wide variations among fishing regions of the percentage of stocks exploited at or beyond their maximum sustainable levels. Between 2000 and 2002, catches decreased in the Northwest and Southeast Pacific, and the Eastern Central and Southwest Atlantic, but were still growing in the tropical regions of the Indian and Pacific Oceans. Catches in the temperate Northeast Atlantic and Mediterranean did not show significant variations, while in the Northwest Atlantic and in the Northeast Pacific, total catches increased in 2001 and remained stable in 2002.

³ 3 percent.

⁴ 21 percent.

⁵ 52 percent.

⁶ 16 percent.

⁷ 8 percent.

⁸ For example, in the Northwest Atlantic there has been an increase in invertebrate catches (molluscs and crustaceans) and a decline in catches of demersal fish. These changes in species composition of fisheries catches can have different causes, including the adaptation of the industry and markets to previously low value resources, the effect of fisheries on the structure of marine communities and the changes in environmental regimes affecting the productivity of stocks. Very often these effects are confounded and in most cases they are difficult to discern, particularly in areas where research and monitoring of resources and environment processes are not well developed.

⁹ For example, through closing critical time and areas to fishing.

¹⁰ UN General Assembly Resolution A/RES/58/14, "Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments" invited States to support implementation of the Strategy for Improving Information on Status and Trends of Capture Fisheries at the national and regional levels, giving particular emphasis to capacity-building in developing countries. Paragraph 17.

¹¹ FAO. 1995. Code of Conduct for Responsible Fisheries. FAO. Rome. 41p. Article 2(d) and (e).

¹² The guiding principles are described in Part 4 of the FAO Strategy, and consist of: sustainability, best scientific evidence, participation and cooperation, objectivity and transparency, timeliness and flexibility.

¹³ The required actions are described in Part 5 of the FAO Strategy, and consist of: need for capacity building in developing countries; data collection systems in small-scale fisheries and multispecies fisheries; expanding the scope of information on status and trends of fisheries, including the need to incorporate ecosystem considerations into fisheries management; global inventory of fish stocks and fisheries; FIGIS participation, structuring and capacity building; development of criteria and methods for ensuring information quality and security; development of arrangements for the provision and exchange of information; the role of working

groups in assessing the status and trends of fisheries; sustaining data collection, information on the status and trends of fisheries.

¹⁴ There has been a decrease in the global per capita fish supply from 14.6 kg in 1987 to 13.2 kg in 2002.

¹⁵ This constituted about 76 percent of estimated world fishery production, with the remaining 24 percent destined for non-food products, mainly the manufacture of meat and oil.

¹⁶ 84.5 million tonnes marine and 8.7 million tonnes inland.

¹⁷ With the exception of 2000 when annual catches exceeded by over 2 million tonnes the average of the other years, due to the remarkable increase in the environmentally driven catches of Peruvian anchoveta.

¹⁸ These were, in order from the top producer country: China, Peru, United States of America, Indonesia, Japan, Chile, India, Russian Federation, Thailand and Norway.

¹⁹ These were, in order from the top producer country: China, India, Bangladesh, Cambodia, Indonesia, Myanmar, Egypt, United Republic of Tanzania, Uganda and Brazil.

²⁰ Includes aquatic plants.

²¹ Although growth in production of the major species groups continues to be rapid, there were signs of a slow down in growth in production during 2000-2002, except for crustaceans.

²² In this context, the term “fish” indicates fish, crustaceans and molluscs, excluding aquatic mammals and aquatic plants.

²³ For example, worldwide, 100 million tonnes were available for consumption in 2001, but only 6.3 million tonnes were consumed in Africa whereas two thirds of the total were consumed in Asia.

²⁴ If China is excluded, the per capita fish supply would be 13.2 kg, almost the same as in 1992. Following a peak of 14.6 kg in 1987, world per capita fish supply, excluding China, showed a declining trend from the late 1980s to the early 1990s but has stabilized since then. The declining trend was mainly due to a faster growth in population than food fish supply during the 1987-2004 period.

²⁵ Export value of world trade in 2002 was US\$58.2 billion, up 5 percent relative to 2000 and a 45 percent increase since 1992.

²⁶ In a few cases, fishery exports are crucial for the economy.

²⁷ In 2002, the value of net exports of fish were over three times that of coffee for 2002, the closest commodity traded. Others, with lesser values, included cocoa, bananas, rubber, sugar, tea, rice, tobacco and meat.

²⁸ Kurien, John, *Fish Trade for the People*, Toward understanding the relationship between international fish trade and food security. *Report of the study on the impact of international trade in fishery products on food security Conducted jointly by Food and Agriculture Organisation of the United Nations and the Royal Norwegian Ministry of Foreign Affairs*, Rome, 2004. <http://www.tradefoodfish.org/images/iitfifs2.PDF>. The report notes that there appears an uncanny relationship between a fish specie entering international trade and its depletion. The opportunities for profitable trade drive the depletion process. The single most important factor identified as being responsible for this in capture fisheries was the technology of harvesting – in particular the use of bottom trawling. Such trends jeopardize not just export production. Through larger ecosystem feedback, it impinges on production for domestic consumption as well. The ‘creeping’ negative indirect and direct impacts of this do have a bearing on national food security.

²⁹ 1992 Agenda 21: Programme of Action for Sustainable Development, the 1993 FAO Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, the 1995 UN Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, the 1995 FAO Code of Conduct for Responsible Fisheries and its four International Plans of Action and Strategy, and the 2001 FAO Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem. The instruments are based on the 1982 United Nations Convention on the Law of the Sea.

³⁰ For a full discussion, see Garcia S. M and D. J. Douman. 2004 (in press). “FAO’s Fisheries Programme and the Implementation of the Plan of Action from the World Summit on Sustainable Development”. In S A Ebbin, A H Hoel and A Sydnos (eds). *A Sea of Change: The Exclusive Economic Zone and Governance Institutions for Living Marine Resources*. Kluwer Academic Publishers.

³¹ The substantive articles of the Code address the general principles, fisheries management, fishing operations, aquaculture development, integration of fisheries into coastal area management, post-harvest practices and trade and fisheries research. The Code is a non-binding, voluntary instrument. It was purposely designed in that manner. Drafted in a legally-friendly format, the Code’s provisions can be easily transformed into binding provisions and embedded into national legislation or regional agreements.

³² FAO. 1999. International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries; International Plan of Action for the Conservation and Management of Sharks; International Plan of Action for the Management of Fishing Capacity. FAO. Rome. 26p. and FAO. 2001. International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing. FAO. Rome. 24p.

³³ United Nations. 2003. Johannesburg Declaration on Sustainable Development and Plan of Action of the World Summit on Sustainable Development. UN. New York. 89p.

³⁴ FAO. 1999. The Strategic Framework for FAO 2000-2015. FAO. Rome. 59p.

³⁵ The WSSD-POI addresses many aspects of responsible fisheries including international fishery instruments and mechanisms; high-level goals (reduction of hunger and the restoration of stocks); factors that lead directly to unsustainable fisheries (fishing capacity and IUU fishing) and associated factors (subsidies and poor gear selectivity); primary consequences of unsustainable resource use (overfishing); collateral effects (destructive practices, bycatch and discards, threats to biodiversity) and mitigating measures (MPAs and closed areas or seasons).

³⁶ More specifically, the WSSD-POI sets out the following goals: **By 2004**: Two important results are foreseen. These are (1) the urgent development and implementation of national and, where appropriate, regional plans of action to give effect to the IPOA-IUU and the establishment of effective MCS of fishing vessels, including by flag States, to further the implementation of the IPOA-IUU (paragraph 31d) and, (2) the establishment of a regular UN process for global reporting and assessment of the state of the marine environment, including socio-economic aspects, both current and foreseeable, building on existing regional assessments (paragraph 36b). **By 2005**: To urgently develop and implement national and, where appropriate, regional plans of action, to put into effect to the IPOA-capacity (paragraph 31d). **By 2010**: The application of the ecosystem approach (paragraph 30(d)) and a significant reduction in the current rate of loss of biological diversity (paragraph 44). **By 2012**: The development and facilitation of the use of diverse approaches and tools, including the establishment of marine protected areas consistent with international law and based on scientific information, including representative networks by 2012 (paragraph 32c). **By 2015**: It is envisaged to halve the proportion of the world's people who suffer from hunger (paragraph 38a), and to maintain or restore (fish) stocks to levels that can produce MSY (paragraph 31a). WSSD-POI also recognizes the important institutional commitments and instruments developed as a response to UNCED, the lack of progress with the improved use of resources, the socio-economic conditions of fisheries that point towards non-sustainability in present conditions. However, WSSD did not address in detail neither the conditions that will prevail during the implementation period up to 2015 nor the capacity of countries relative to the means required to implement the goals. The commitments stemming from these political negotiations and the post-UNCED international instruments represent a staggering set of partially overlapping commitments that poorly equipped administrations are trying to implement under severe constraints.

³⁷ In this regard, The FAO prefers a central role for Joint Group of Experts on Scientific Aspects of Marine Environmental Protection (GESAMP) in leading the scientific peer review of the assessment.

³⁸ The IPOA-seabirds and IPOA-sharks also contribute to FAO's implementation of the ecosystem approach to fisheries (EAF). Collaboration between FAO and CITES has been identified as a means of improving listing criteria. A number of large-scale field projects have been initiated within the GEF framework including the reduction of bycatch and discards in shrimp fisheries, integrated management and the study of the interactions between fisheries and turtles.

³⁹ Garcia and Doulman, *op. cit.* note 30.

⁴⁰ Garcia and Doulman, *op. cit.* note 30.

⁴¹ At the Twenty-fifth Session of COFI in 2003, the Committee: agreed that strenuous efforts should be made to control fleet capacity, particularly that of large-scale fishing vessels, and, as appropriate, implement measures to reduce overcapacity and prevent it from migrating to other fully exploited or overexploited fisheries; noted the need to monitor fleet capacity of large scale fishing vessels on a global basis; and endorsed a proposal by Japan that FAO should convene a Technical Consultation in 2004 to review progress and promote the full implementation of the IPOA-IUU and the IPOA-capacity.

⁴² Other causes include inadequate MCS and aspects of trade. In relation to "flags of convenience" and the issue of open registers, FAO convened an Expert Consultation on Fishing Vessels Operating under Open Registries and their Impact on Illegal, Unreported and Unregulated Fishing in September 2003 in cooperation with the USA. This was an important meeting because FAO had not organized such a consultation previously. The Experts focused discussions on the effects of IUU fishing on global fishery resources and on lessons that might be learned from the experiences of flag States, including those operating open registries, which have implemented tighter control over the activities of their fishing vessels. See FAO. 2004. "Report of the Expert Consultation on Fishing Vessels Operating Under Open Registries and Their Impact on Illegal, Unreported and Unregulated Fishing". FAO Fisheries Report No. 722. FAO. Rome. 158p.

⁴³ These problems, which must be ameliorated if the incidence of IUU fishing is to be reduced, include, inter alia, ineffective management that fails to regulate fishery inputs and outputs; excess fleet capacity and, as regulations tighten, the 'pushing out' and re-flagging of vessels from managed fisheries to other fisheries that are unmanaged or poorly managed; and the masking of the real costs of vessel construction and fishing operations through the payment of direct and disguised subsidies. In addition, there are also increasing claims by some States alleging strengthening ties between organized national and international crime, money laundering and

IUU fishing operations. This indicates that IUU fishing is no longer simply a fisheries problem (Forum Fisheries Agency 2003). See Cochrane K L and D J Doulman. 2004 (in press). "The rising tide of fisheries instruments and the struggle to keep afloat" Transaction of the Royal Society. London.

⁴⁴ This was noted by the June 2004 FAO Technical Consultation to review progress and promote the full implementation of the IPOA-IUU and the IPOA-Capacity.

⁴⁵ In 2002, the number of large vessels increased to 24 406, but growth has halted as many nations adopted programs of capacity containment. Indications are that the fleet size of some major fishing nations has continued to decrease. The vast majority of the world fishing fleet is concentrated in Asia (about 85 percent of total decked vessels, 50 percent of powered undecked vessels and 83 percent of total non-powered boats). The increased technological efficiency of some fishing vessels complicates the assessment of fishing capacity because the efficiency of fishing vessels continues to increase with improved technology, even though the size of the vessel remains the same or decreases.

⁴⁶ About 300 large vessels are built each year, down from over 2500 in the 1980s.

⁴⁷ About 13 percent of the vessels in 2002 were less than 10 years old, and 28 percent were above 30 years of age (compared to 30 and 6 percent respectively in 1992). The present average age of the fleet is currently about 24 years compared to an anticipated lifespan of 30 years. If the building rate of larger vessels does not increase significantly, it is expected that the world fleet size of these vessels will decrease substantially in the next two decades.

⁴⁸ See Garcia and Doulman, *op. cit.* note 30. Also note the open nature of small scale fisheries is a significant problem.

⁴⁹ It was noted at the FAO Technical Consultation to review progress and promote the full implementation of the IPOA-IUU and the IPOA-Capacity that, although international efforts to eliminate large-scale tuna longline vessels engaged in IUU fishing had resulted in a substantial reduction in the number of such vessels fishing since 2001, the cessation of construction of large-scale tuna longline vessels in Taiwan Province of China had led to an increase in the construction of large-scale tuna purse seine vessels in that Province. These vessels are destined for operations in the western and central Pacific Ocean. The delegation of Japan, which had presented this information, noted that the uncontrolled expansion of fishing capacity in the tuna fishery in the western and central Pacific was impeding the successful implementation of the IPOA-capacity and the IPOA-IUU, and proposed several actions to address this situation.

⁵⁰ Some of the key actions, in paragraph 79 of the Report of the Technical Consultation, are: Where fishing capacity in the region is undermining the achievement of sustainable tuna fisheries based upon stock assessment on relevant species, particularly those with high economic values:

- cessation of introduction of large-scale tuna fishing vessels over the existing fishing capacity in the fishery by States and fishing entities with large high seas fishing fleets;
- restraints of issuance of fishing authorizations by coastal States in the region and/or by Flag States to foreign owned and operated large-scale tuna fishing vessels if it leads to an increase in the existing fishing capacity;
- collection, exchange and disclosure to the extent possible under domestic law, of information on the activities of international business entities such as trading companies undermining effectiveness of the IPOAs so that the concerned States and fishing entities can take appropriate cooperative actions to prevent such activities;
- implementation of a fleet reduction programme by any State or fishing entity whose nationals or residents caused significant expansion of tuna fishing capacity in the region in the recent years contrary to RFMOs recommendations or the IPOA-capacity;
- cooperation and coordination among RFMOs, Coastal States and flag States to avoid transfer of over-capacity from one region to another, and from tuna fisheries to other fisheries.

⁵¹ FAO has undertaken considerable work on subsidies. See FAO. 2000. "Report of the Expert Consultation on Economic Incentives and Responsible Fisheries". FAO Fisheries Report No. 638. FAO. Rome, 96p and FAO. 2003. "Introducing fisheries subsidies". FAO Fisheries Technical Paper No. 437. FAO. Rome, 58p.

⁵² Report of the FAO Technical Consultation on the use of subsidies in the fisheries sector.

⁵³ For developing countries, subsidies can lead to the sustainable development of their fisheries sector and social wellbeing of remote coastal communities. For example, subsidies can be an incentive for implementing environmentally-friendly management measures, or can contribute towards the welfare of fishworkers.

⁵⁴ Major areas covered in Appendix E of the Report of the Consultation include: minimum regional standards among coastal States for sustainable management of shared fish stocks; control flagging, re-flagging of fishing vessels; control and monitor transshipment of catches at sea; RFMO assessment of capacity, development of capacity management schemes; the fishery management aspect of the "genuine link" issue in particular the beneficial ownership of fishing vessels used in IUU fishing operations; establishment by FAO a database of available IUU information; development by FAO of a global picture of IUU fishing and over-capacity; RFMOs

to consider third party expert auditors for conservation and management measures; coordination of state agencies involved in registering of fishing vessels and authorizing importation and exportation of fish; sanctions against IUU fishing; RFMOs enhance compliance by contracting parties; information on the activities of international business entities undermining effectiveness of the IPOAs; implementation of IPOA-IUU and IPOA-capacity.

⁵⁵ The Consultation noted that the relationships between subsidies, overcapacity and IUU fishing were complicated and compounded by a lack of information and it urged FAO to closely examine the nature of the linkages. The examination should also, as part of the short-term work programme, consider the situation in developed and developing countries, high seas and EEZs, and the artisanal and industrial sectors. In addition, FAO should examine the role and impact of subsidies in fisheries development, particularly in the artisanal sector and with respect to food security and livelihoods and consider the effects and role of other economic instruments. This applies particularly to the situation of developing countries and their special needs.

⁵⁶ To address this, some RFMOs have made recommendations and passed resolutions as a means of condemning and combating such fishing, including, *inter alia*, efforts to: encourage non-Members to become parties to their organizations; implement new, and strengthen existing, policies, procedures and mandates; develop “lists of vessels” with a view to gaining the greater cooperation of flag States; and implement catch certification and traceability controls on catch so that the marketing of fish taken by fishers who are known to have engaged in IUU fishing will be made more difficult, if not blocked completely.

⁵⁷ Specific areas where this is occurring include:

- The adoption of criteria that determine the nature or extent of participatory rights for new members, which facilitate the adoption of conservation and management measures and may encourage objectivity; The adoption of clear decision-making procedures both for the parent body, usually included in the constitutive instrument, and for the subsidiary bodies, generally detailed in the rules of procedure, to ensure that the recommendations or advice will be timely and effective;
- The institution of an objection procedure, length of time and specific procedure different between RFBs;
- Placing greater emphasis on transparency by adopting, *inter alia*, procedures for observers which may specify qualifications, application procedure, and attendance at meetings; and
- Focusing on related areas of dispute settlement, particularly the prevention of disputes.

However, it is important to note that, in the absence of agreed performance indicators for self evaluation, which could conceivably include evaluation of decision-making authority and process, it is difficult to establish a correlation between strengthening governance in terms of decision-making and effective fisheries management. This is further complicated by the fact that decision-making is only one of many interrelated elements of governance by RFBs.

⁵⁸ A failure by RFMOs to effectively address IUU fishing reflects, to some degree, a lack of political will by members to take action to implement agreed measures even when it is known by some States that their vessels are engaging in IUU fishing and undermining the work of RFMOs. There is also a tendency for some States to take refuge behind national policies and legislation as a means of avoiding or deferring action on regionally-agreed commitments. This has led to a growing impatience by some States with diplomatic approaches to IUU fishing, encouraging more radical action by the members of some RFMOs including the adoption of ‘name and shame’ policies for vessels and flags that are perpetual IUU fishing offenders (Australian Minister for Fisheries, Forestry and Conservation 2003). See Garcia and Doullman, *op. cit.* note 30.

⁵⁹ Code of Conduct, Art. 6.2: Fisheries management should promote the maintenance of the quality, diversity and availability of fisheries resources in sufficient quantities for present and future generations in the context of food security, poverty alleviation and sustainable development.

⁶⁰ This share, however, can exceed 25 percent in the poorest countries and reach 90 percent in isolated parts of coastal or inland areas. Two-thirds of the total amount is consumed in Asia.

⁶¹ For example, worldwide, 100 million tonnes were available for consumption in 2001, but only 6.3 million tonnes were consumed in Africa (per capita supply of 7.8 kg); two-thirds of the total were consumed in Asia, of which 36.2 million tonnes were consumed outside China (14.0 kg per capita) and 42.6 million tonnes in China alone (25.6 kg per capita). Per capita consumption in Oceania was of 23.0 kg, in North America 21.6 kg, in Europe 19.8 kg, in Central America and Caribbean 9.3 kg and in South America 8.7 kg.

⁶² FAO-SOFIA 2002. The status of natural stocks is also likely to threaten further the access to food, income and livelihoods of the small-scale fishers through indirect mechanisms: as demand for fish and competition for access to supplies will continue to increase, lower income groups are likely to be the ones who will be marginalized, to be replaced by more powerful groups with growing interests in these scarcer natural resources.

⁶³ Some reasons for this are inadequate resources and the relatively low importance given to aquaculture compared to other priority areas in national development plans, conflicts between sustainable aquaculture development and efforts to improve food security and alleviate poverty, and a high cost of compliance for small enterprises.

⁶⁴ Food Security, together with poverty alleviation, are the two major pillars of the United Nations Millennium Goals.

⁶⁵ Kurien, John, *Fish Trade for the People*, Toward understanding the relationship between international fish trade and food security. *Report of the study on the impact of international trade in fishery products on food security* Conducted jointly by Food and Agriculture Organization of the United Nations and the Royal Norwegian Ministry of Foreign Affairs, Rome, 2004. <http://www.tradefoodfish.org/images/iitfpfs2.PDF>.

⁶⁶ The study suggested thirty measures that would put in place economic and social arrangements to facilitate the achievement of greater direct and indirect food security through fish trade.

⁶⁷ FAO. Report of the Twenty-fifth session of the Committee on Fisheries. Rome, 24–28 February 2003. *FAO Fisheries Report*. No. 702. Rome, FAO. 2003. 89p. paragraphs 74-86. The Committee requested that FAO allocate more resources to promote sustainable small-scale fisheries. It further welcomed the suggestion for the Organization to elaborate, in the context of the Code of Conduct for Responsible Fisheries, technical guidelines on increasing the contribution of small-scale fisheries to food security and poverty alleviation. Such guidelines should, *inter alia*, stress the importance of national fisheries development strategies that promote good governance and inclusiveness, thereby creating a sense of ownership and accountability by small-scale stakeholders in the decision-making process. Members agreed that appropriate avenues towards this goal included the encouragement of fishermen's organizations at community level and the facilitation of their representation at local, regional and national levels. The draft Technical Guidelines on Small Scale Fisheries, as at 7 July 2004.

⁶⁸ Draft Technical Guidelines on Small Scale Fisheries as at 7 July 2004. Field experience suggests however that looking at aggregate levels of fish imports and exports may be slightly misleading. More in-depth analysis of past and projected trade trends indicates that developing countries as a whole have been, and are projected to remain, large net importers of low-value food fish but exporters of high-value finfish (Delgado et al 2003). At present however there is great uncertainty on how these opposite trends will impact upon the poor (both producers and consumers) in terms of food security: low-value fish have traditionally accounted for a higher share of the animal protein consumption by the poor in developing countries, but the swelling ranks of middle class will increasingly demand, and be able to pay for, local high-value fisheries items themselves. What is certain is that the effects of fish trade on the price of fish is likely to be a key factor affecting the nutrition of the urban and rural poor in the future.

⁶⁹ About 38 million people were directly employed in capture fisheries and aquaculture production activities in 2002. This work force represents 2.6 percent of the 1.3 billion people economically active in agriculture worldwide, compared with 2.3 percent in 1990. The highest numbers of fishers and aquaculture workers (85 percent worldwide) are in Asia, with China accounting for nearly one third of the world total.

⁷⁰ Code of Conduct, Art. 6.18: Recognising the important contributions of artisanal and small-scale fisheries to employment, income and food security, States should appropriately protect the rights of fishers and fishworkers, particularly those engaged in subsistence, small-scale and artisanal fisheries, to a secure and just livelihood, as well as preferential access, where appropriate, to traditional fishing grounds and resources in the waters under their national jurisdiction. Categories of workers who perform the wide range of post-harvest services in any fish economy have been clubbed together and called fish workers. There has been significant new employment created in the modern international trade-related fish processing activity. The numbers varied according to the size of the trade operations.

⁷¹ Kurien, *op. cit.* note 65, *supra*.

⁷² 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 tide 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.

⁷³ The increase in the export of fishery products, particularly to the developed countries, has resulted in a significant decline in the quantity and also an increase in the price of fish available to these women for processing. This has resulted in a loss of employment, loss of income or both. Imported fish and its sporadic sales in the domestic markets have had an adverse income effect on fish vendors. The evidence that a change in the trade policy of a country has differential impacts on women fish workers has important bearings on the question of food security and poverty. An increase in the income of women has a greater positive impact on household food security. The converse also is therefore true.

⁷⁴ The labour-based entitlements for food security to fish workers come in the form of piece rates, daily wages or monthly incomes. The wages and earnings in most countries indicate that they are largely close to the average earnings of women in other sectors of the economy. This is evident particularly in the case of migrant workers. The incomes they earn flow back rapidly to their families and dependents back home. In this minimalist sense, international trade in fishery products does contribute to the food security of these fish workers.

⁷⁵ Chile, Philippines, Senegal and Ghana; in some cases this was in spite of better plant conditions.

⁷⁶ The study referred to the importance for fisheries legislation that specifically defines fishworkers/fisheries to include processing and marketing, in addition to capture fisheries, thereby ensuring that shore-based work where typically women are more active, is not excluded from legislation.