

“The State of World Fisheries and Aquaculture” is the FAO’s authoritative biennial summation of what’s happening to the world in these two disciplines. The latest document, for 2004 sums up global trends for 2002 and gives an idea of preliminary trends for 2003. Here are glimpses into this document.

The State of World Fisheries and Aquaculture 2004

This 153-page report, and a complimentary CD that contains an atlas on world fisheries and aquaculture, is in four parts.

Part 1 is a review of world fisheries and aquaculture. Part 2 discusses selected issues facing fishers and aquaculturists. Part 3 highlights special FAO studies. Part 4, an “outlook” for the future, has been summarized and presented elsewhere in this issue of *Bay of Bengal News*.

The report was a co-operative effort of FAO Fisheries Department staff and some external contributors. A three-member team led the effort, FAO management staff provided direction.

Introducing the report, FAO’s Assistant Director-General for Fisheries Ichiro Nomura says that trends observed at the end of the 1990s are continuing. While capture fisheries production is stagnating, aquaculture output is expanding.



Concerns are growing about the livelihoods of fishers, also about the sustainability of commercial catches and aquatic ecosystems.

Part I: Review of World Fisheries and Aquaculture

This wide-ranging review covers the entire gamut of fisheries and aquaculture. It examines past history, recent trends, current status and future prospects.

World fishery production in 2003 decreased slightly from that in 2002 – from 133 million tonnes to 132.2 million tonnes. However, the

amount of fish for human consumption increased from 100.7 million tonnes to 103 million tonnes; the per capita supply was maintained. There was a slight decrease in capture fisheries; but other food fisheries and aquaculture made up for this decrease.

China was by far the largest producer, with a reported fisheries production of 44.3 million tonnes in 2002 (16.6 and 27.7 million tonnes from capture fisheries and aquaculture, respectively). But it is believed that the production statistics for China is an overestimate; this problem has existed since the early 1990s. Because of the importance of China and the uncertainty about its production statistics, China is discussed in the report separately from the rest of the world (a practice also adopted in previous issues of the report).

Information available confirms that despite local differences, the global potential for marine capture fisheries has been reached. More



rigorous plans are needed to rebuild depleted stocks and prevent the decline of those being exploited at their maximum potential or close to it.

By contrast, global production from aquaculture continues to grow, in terms of both quantity and its relative contribution to the world's supply of fish for direct human consumption. Production in 2002 (51.4 million tonnes, with China accounting for 71 percent) was 6.1 percent higher than in 2000.

Aquaculture production of food fish continues to be mainly (57.7 percent) from freshwater. Developing countries accounted for 90.7 percent of production in 2002, consisting of predominantly herbivorous/omnivorous or filter-feeding species.

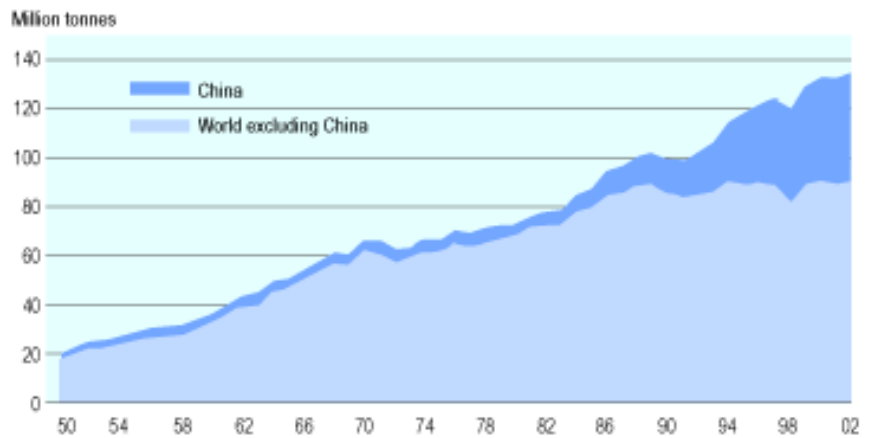
In 2002, about 76 percent (100.7 million tonnes) of estimated world fisheries production was used for direct human consumption. The remaining 24 percent was used for non-food products, in particular the manufacture of fishmeal and oil.

Total capture fisheries production

In 2002, total capture fisheries production amounted to 93.2 million tonnes, slightly above production in 2001. Preliminary estimates indicate that global marine catches decreased in 2003 by about 3 million tonnes compared with 2002.

The list of top 10 capture fishery countries has not changed since 1992. In 2002, their cumulative catches represented 60 percent of the world total, with China and Peru still leading the ranking in both 2001 and 2002.

Marine capture fisheries production in 2002 was 84.5 million tonnes, representing a decline of 2.6 percent with respect to 2000. The Northwest and Southeast Pacific are still the most productive marine fishing areas, although total catches in these two areas decreased by 1.8 and 2.0 million tonnes in 2002 compared with 2000 levels. Catches decreased substantially from 2000 levels in the Eastern Central and



World capture and aquaculture production.

Southwest Atlantic. By contrast, catches were still growing in the tropical regions of the Indian and Pacific Oceans, where catches of large (mainly tuna) and small pelagic species continued to increase.

Anchoveta ranks as the most caught marine species (9.7 million tonnes in 2002). Total catches of tuna and tuna-like species exceeded 6 million tonnes for the first time in 2002, accounting for 11 percent of the

total value of landings for consumption. Increased catches were also realized from tropical species such as skipjack (the third global species in 2002) and yellowfin tunas. Catches of oceanic species occurring principally in high seas waters continued to increase.

Total catch production of both marine crustaceans and molluscs declined slightly from their 2000 peak over the following two years.

Fishers and Fish Farmers

In 2002, fishery and aquaculture production activities directly employed an estimated 38 million people, a marginal increase over the previous year's figure. Of these, more than one-third were employed full-time and the rest were part-time and occasional workers. Fishing in marine and inland waters accounted for 75 percent of the total number of workers, while aquaculture employed the remaining 25 percent. The highest numbers of fishers and aquaculture workers is in Asia (87 percent of the world total).

It is apparent that, in most fishing nations, capture fisheries is losing ground to aquaculture as an employer. Since 2000, however, employment in aquaculture has started to level off in some countries.

In many industrialized countries, notably Japan and Europe, employment in fishing and in related land-based professions has been declining for several years. Reasons: lower catches, programmes to reduce fishing capacity and higher productivity resulting from technological progress.

The fishing workforce in most developed economies is advancing in age, mainly because of the profession's decreasing attractiveness to younger generations.

But fishing is still an attractive profession for many people in some areas. In China, an estimated 25 million people work in various fisheries occupations. Part-time fishers might work seasonally in fishing and return to their village during the summer, or undertake a mix of agriculture and fish farming. The average earnings from fishing can be higher than those from agricultural farming, although jobs in manufacturing and other economic sectors are generally more rewarding than those in agriculture and fishing.

World inland capture fisheries production

Total catches from inland waters remained stable at around 8.7 million tonnes in the 2000–02 period. Africa and Asia contributed about 90 percent of global production in 2002.

The bulk of world inland fisheries production (68.1 percent) came from developing countries other than China and only 6.1 percent from developed countries. In 2002, not one developed country was among the top 10 world producers.

Reporting of inland catch by species group remains very poor for many countries and does not permit detailed analysis of trends in catch composition. China accounts for the great majority of reported world catches of freshwater crustaceans (94 percent) and molluscs (87 percent).

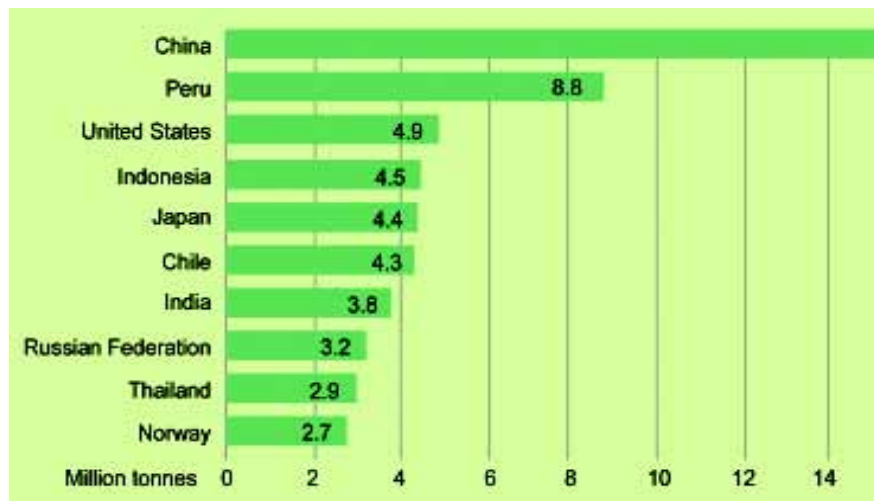
Aquaculture Production

The contribution of aquaculture to global supplies of fish, crustaceans and molluscs continues to grow. It increased from 3.9 percent of total production by weight in 1970 to 29.9 percent in 2002. Worldwide, the sector has grown at an average rate of 8.9 percent per year since 1970 (against 1.2 percent for capture fisheries).

Production from aquaculture has greatly outpaced population growth, with the world average per capita supply from aquaculture increasing from 0.7 kg in 1970 to 6.4 kg in 2002.

In 2002, total world aquaculture production (including aquatic plants) was reported to be 51.4 million tonnes by quantity and US\$ 60.0 billion by value. In 2002, Asian countries accounted for 91.2 percent of the production quantity and 82 percent of the value. Of the world total, China is reported to produce 71.2 percent of the total quantity and 54.7 percent of the total value of aquaculture production.

Most aquaculture production of fish, crustaceans and molluscs continues



Marine and inland capture fisheries: top ten producer countries in 2002.

to come from the freshwater environment (57.7 percent by quantity and 48.4 percent by value). Mariculture contributes 36.5 percent of production and 35.7 percent of the total value. Although brackishwater production represented only 5.8 percent of the aquaculture production quantity in 2002, it contributed 15.9 percent of the total value, reflecting the prominence of high-value crustaceans and finfish.

During this period, China's fresh water aquaculture production reportedly increased at an average annual rate of 11.1 percent, compared with 6.9 percent for the rest of the world. Similarly, reported Chinese aquaculture production in marine areas increased at an average annual rate of 10.9 percent

compared with 5.5 percent for rest of the world.

Unlike terrestrial farming systems, where the bulk of global production is based on a limited number of animal and plant species, over 220 different farmed aquatic animal and plant species were reported in 2002.

Aquaculture production of fish, crustaceans and molluscs in developing countries has proceeded at an average annual rate of 10.4 percent since 1970, as against 4 percent per year in developed countries. In developing countries other than China, production has grown at an annual rate of 7.8 percent.

The Fishing Fleet

The vast majority of the world fishing fleet is concentrated in Asia

Freshwater carp farming in Bangladesh.



(about 85 percent of total decked vessels, 50 percent of powered undecked vessels and 83 percent of total non-powered boats). After years of expansion of the world fishing fleet until the late 1980s and early 1990s, the number of decked vessels worldwide has remained fairly stable around 1.3 million. In addition, the world fleet engaged in fishing in marine and inland waters comprised about 2.8 million undecked vessels.

The average age of the larger marine fishing vessel fleet segment has continued to increase. The number of “young” vessels (less than 10 years old) has fallen in 2003 to 13 per cent from 30 per cent the previous year.

Fishing is considered to be one of the most dangerous occupations. The aging fishing fleet raises concerns over the safety of both vessels and crew. Standards of accommodation and crew conditions on board very old vessels do not conform to current minimum requirements for newly built vessels.

It is expected that the construction of larger fishing vessels will increase over the next ten years. FAO, the ILO and the International Maritime Organization (IMO) are finalizing major revisions of the Code of Safety for Fishermen and Fishing Vessels and of the Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels.

Fishery resources

Of the top 10 species that account for about 30 percent of the world capture fisheries production, seven belong to stocks that are fully exploited or overexploited. Major increases in catches cannot therefore be expected from these. Two species that could probably support higher fishing pressure in some areas are skipjack tuna and chub mackerel.

All information available tends to confirm old FAO estimates that the global potential for marine capture fisheries is about 100 million tonnes, of which only 80 million tonnes are exploitable. It also

confirms that overall, this limit has been reached. More rigorous stock recovery plans are needed to rebuild stocks that have been depleted by overfishing and to prevent the decline of those being exploited close to their maximum potential.

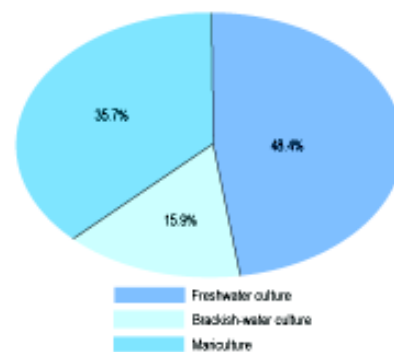
Some of the most important management concerns today are the effects of fisheries on habitats, on marine communities, and ecological interactions (such as predator - prey relationships), as well as those of land-based activities and climatic changes on fisheries.

The precautionary approach to fisheries, recommended by UNCED, the United Nations Fish Stocks Agreement and the FAO Code of Conduct for Responsible Fisheries, needs to be implemented in practice.

Inland fisheries

Unlike the major marine fish stocks, inland fish stocks are less well defined and occur over much smaller geographical areas, such as individual lakes, rice fields or rivers, or over vast areas such as transboundary watersheds in areas that are difficult to access. These factors make it costly to monitor the exploitation and status of fish stocks. In fact, very few countries can afford to do so. Result: a majority of countries report only a small fraction of their catch of

Aquaculture Environments



inland fisheries by species. Thus FAO is not in a position to make global statements on the status of these resources. The threat to inland fishery resources from habitat alteration, degradation and unsustainable fishing, reported earlier, continues.

But the status of some inland fishery resources has been enhanced in many areas through stocking programmes, the introduction of alien species, habitat engineering and habitat improvement. In many developing areas, especially in Asia, rice fields and irrigated areas are being enhanced to increase the production of aquatic biodiversity other than rice, and to improve the nutritional status of rural households.

Fish utilization

Utilization of fish production shows marked continental, regional and national differences. In 2002, more than two-thirds of fish used for

Ribbon fish catch at a landing centre in India.



human consumption in Europe and North America was in frozen or canned form. In Africa and Asia on the other hand, the share of fish marketed live or fresh was high. The sale of live fish to consumers and restaurants is especially strong in Southeast Asia and the Far East.

Fish Consumption

In 2002, average apparent per capita consumption of fish, crustaceans and molluscs worldwide was estimated to be about 16.2 kg, 21 percent higher than in 1992 (13.1 kg). This growth is largely attributable to China, whose estimated share of world fish production increased from 16 per cent in 1992 to 33 percent in 2002. Per capita fish supply in China in 2002 was about 27.7 kg.

Overall, fish provides more than 2.6 billion people with at least 20 percent of their average per capita intake of animal protein.

Fish consumption is distributed unevenly around the globe; there are significant differences among countries, with per capita apparent consumption ranging from less than 1 kg per capita to more than 100 kg. Geographical differences are also evident within countries, with consumption usually being higher in coastal areas.

Fish Trade

In 2002, total world trade of fish and fish products increased to US\$ 58.2 billion (export value), a 5 percent increase over figures for 2000 and a 45 percent increase since 1992. In terms of quantity, exports were reported to be 50 million tonnes in 2002, a slight decrease (1 percent) from the 2000 level. The quantity of fish traded has remained stagnant over the last few years, following decades of strong increases. Many of the economic factors responsible for the high growth in world fishery trade in the previous decade have now diminished in importance.

In 2002, China overtook Thailand for the first time to become the world's main exporter of fish and fish products, with exports valued at

Mainstreaming fisheries into national development and poverty reduction strategies.

The report highlights the important role of fisheries in the alleviation of poverty and the achievement of food security in many parts of the world. Fishery products contribute towards 15-16 percent of global animal protein intake and more than 38 million people are directly engaged in fishing and fish farming as a full time or part time occupation. Therefore, efforts should be made to ensure the effective integrations of fisheries into key national policy documents relating to poverty reduction and rural development.

an estimated US\$ 4.5 billion. Thailand ranked second as exporter of fish and fish products (US\$ 3.7 billion), Norway was the third largest exporter (US\$ 3.6 billion), followed by the United States (US\$ 3.3 billion), Canada (US\$ 3.0 billion), Denmark (US\$ 2.9 billion) and Viet Nam (US\$ 2.0 billion).

World fish imports touched a record US\$ 61 billion in 2002. Developed countries accounted for about 82 percent of the total value of imports of fish products. Japan was once again the largest importer of fish and fish products (US\$ 13.6 billion), with a 22 percent share of the world import value in 2002. The United States was the second largest importer (US\$ 10 billion). Spain (US\$ 3.9 billion), was the third largest importer, followed by France (US\$ 3.2 billion), Italy (US\$ 2.9 billion), Germany (US\$ 2.4 billion) and the United Kingdom (US\$ 2.3 billion).

Exports from developing countries (28 million tonnes) were around

one-quarter of their combined production. The share of developing countries in total fishery exports was 49 percent by value and 55 percent by quantity.

Although there is a strong trade in fish and fishery products among the more developed economies (mostly demersal species, herring, mackerel and salmon), trade tends to flow from the less-developed to the more-developed countries (mainly tuna, small pelagics, shrimps and prawns, rock lobsters and cephalopods). In 2002, about 74 percent of the import value was concentrated in three main areas: the EU, Japan and the United States.

Despite a slight decline in exports, shrimp continues to be the main fish commodity traded in value terms, accounting for about 18 percent of the total value of internationally traded fish products in 2002.

During 2003, shrimp imports in several key markets reached new highs. Sales to the world's largest shrimp market, the United States, exceeded 500 000 tonnes for the first time – 17 percent higher than imports in 2002. But annual imports of shrimp into Japan during 2003 declined by 6 percent compared with the previous year. In Europe, shrimp imports increased in 2003, as a result of a strong euro and competitive international prices. Brazil, China, Ecuador, India, Thailand and Viet Nam are to pay higher duties for dumping in the United States, which will create some problems for their sales there in the short-term. Prices remained low during most of 2003, and there are no indications of an increase in 2004.



Products derived from aquaculture production accounted for an increasing share of the total international trade in fishery commodities, with an estimated 22 percent of the export quantity.

For many economies, and in particular for developing nations, trade in fish represents a significant source of foreign currency earnings, in addition to the sector's important role in income generation, employment and food security.

Some major issues concerning international trade in fish products in recent years include changes in quality and safety control measures, the introduction of new labelling requirements, chemical residues in aquaculture products; the general public's concern about overexploitation of certain fish stocks, the sustainable development of aquaculture, international trade negotiations in the WTO.

With the entry of China into the WTO in 2001, all major fishery countries other than the Russian Federation and Viet Nam (which have started negotiations to become members) are now members of the organization.

Part II: Selected issues facing fishers and aquaculturists

The report discusses some select issues in fisheries and aquaculture — problems in capture-based aquaculture; labour standards in the fishing sector; fisheries management and CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora), trade implications of fish species and fish product identification; recovery of depleted stocks; governance and management of deep-water fisheries.

For each issue, the report summarises the issue, possible solutions or action required, action taken so far and future perspectives.

Example: On capture-based aquaculture (CBA), the report points out that it accounts for about one-fifth of the total food production through aquaculture. CBA is an



Tuna landings in Malé fishing harbour.

interface between capture fisheries and true aquaculture, and provides local coastal communities with an alternative livelihood. CBA provides opportunities for developing low-hazard good-quality products that satisfy codes of conduct and practice. But certain environmentally questionable management practices need to be tackled, such as the use of wild seed, the use of raw fish as feed, devising cost-effective environmental assessment systems to ensure good site selection, a practical method for monitoring aquaculture production.

Positive developments include hatchery-reared seed which limits the ecological impact of wild seed, and the partial substitution of raw fish by manufactured diets. The report says it is critical for the future to develop fry production in hatcheries on an economically viable commercial-scale; and to refine environmentally sound grow-out technologies. "Failure to address these could have severe consequences for the future of both aquaculture and some capture fisheries."

Part III: Highlights of special FAO studies

The report throws light on some special studies carried out by the FAO on significant issues in fisheries and aquaculture. These constitute useful reading for planners and decision-makers. The studies are

- Scope of the seaweed industry
- Global aquaculture outlook: an analysis of production forecasts to 2030
- Impacts of trawling on benthic habitats and communities
- Measurement of fishing capacity
- Re-estimating discards in the world's marine capture fisheries
- Fisheries subsidies
- Small-scale fisheries in African freshwaters

In its study on "Global aquaculture outlook," the report says the aquaculture sector could replicate the expansion of agriculture. "Much will depend on the realism of assumptions used to support projected targets." The report urges policy-makers formulating development plans for aquaculture to place a stronger emphasis on the rationale supporting their production forecasts. Such an emphasis will enable better sector development planning and progress monitoring."