The Fisheries Outlook for the Future

What is the future for fisheries and aquaculture? In the short-term and the long-term? Here's some sophisticated crystal-ball gazing. It is based on the last chapter "Outlook" from the FAO's report "The State of World Fisheries and Aquaculture 2004".

Will capture fisheries suffer from an implosion? Will aquaculture be stopped in its tracks? Will experts remedy the adverse impacts of aquaculture and ensure smooth and rapid growth?

The authors of the final chapter (cryptically titled "Outlook") of the FAO report "The State of World Fisheries and Aquaculture 2004" point out, "No one has the exact answers. No one can predict with precision what will happen to capture fisheries or aquaculture, particularly when the question is projected several decades into the future. But … reasonable predictions can be made – at least for the short-term."

To predict the short-term, the authors review global changes in attitudes to production and consumption of fish. How will these impinge on the state of marine resources as well as on growth in population and income?

As for the medium-to-long term, the authors take up two computer-based simulations of the future for global fisheries and aquaculture towards the years 2010, 2015 and 2020.

The Short-term (The Coming Decade): Constraints and Opportunities

Analysing the outlook for the coming decade, the authors say that how capture fisheries and aquaculture develop depends on how fishers and fish farmers react to evolving commercial and technical opportunities on the one hand, and to legal and environmental constraints on the other. Some observations:

- Demand for fish will expand as populations and incomes grow. But this increase will be relatively slow in developed countries (because populations here will grow slowly), and faster in developing countries (where populations will grow quickly).
- Market liberalization will add to pressure on wild fish stocks of developing countries, particularly for species much in demand in international markets.
- Access to natural resources is being reduced for fishers in capture fisheries. Limitations (such as licensing requirements and environmental impact assessments for new facilities) are spreading to aquaculture as well.
- Marine fish landings of conventional species are likely to remain at the current figure of 80 to 90 million tonnes.
- In advanced countries, old fishers are leaving the profession more quickly than they are being replaced. This decline in fishers may help the economic viability of capture fisheries and enable an inflow of new vessels and younger fishers.
- In developed countries, fisheries policies will become less lenient. Subsidies directly linked to fisheries capacity and effort will be curtailed, and fishers may be asked to pay for government services and for the right to fish. This will increase the costs of fishing and eliminate marginal fishing enterprises, increase fish prices and stimulate aquaculture production.
- In developing countries, artisanal and small-scale fishers may find opportunities in economic growth to graduate from subsistence

Fish spread for auction, Bangladesh.

mode to entrepreneurial mode. Economic growth may also draw some part-time fishers away from fisheries into urban employment. This factor may help to make fisheries more sustainable by reducing over-exploitation.

- As real wages increase in China, south and southeast Asia (which together account for 90% of world aquaculture output today), aquaculture production, capital and know-how may spread to Africa and Latin America, where costs of production overall may be lower.
- The search for new and high-value culture species will continue. Some success will no doubt be achieved by 2015.

2015 and beyond: future scenarios for world fisheries and aquaculture

Two studies undertaken by the FAO and the International Food Policy Research Institute (IFPRI) use quantitative computer-based simulations to project the future in 2015 and 2020. (The IFPRI study was summarised in ***Bay of Bengal News,*** September 2004).

According to the **FAO study** ("Future prospects of fish and fish products: medium-term projections to the years 2010 and 2015"), total world fish production will increase from 129 million tonnes in 1999-2001 to 172 million tonnes in 2015. Capture fishery production will stagnate, while aquaculture production will increase substantially, though at a lower rate than at present. Of the expected increase of 43 million tonnes (between 1999-2001 and 2015), 73 percent will come from aquaculture. In 2015, aquaculture will account for 39 percent of global fish production (up from 27.5 percent in 1999-2001.)

- Developing countries will increase their share of world fish production from 75 per cent in 1999-2001 to 81 percent by 2015. The share of developed countries will fall from about 25 per cent to 19 percent by 2015. Capture fisheries production in developed countries is expected to stagnate or even decline in absolute terms during the projection period.
- Developing countries will increase their net export of fish and fishery products from 7.2 million tonnes in 1999-2001 to 10.6 million tones by 2010. This figure will go down slightly in 2015 to 10.3 million tonnes, because of increased domestic demand.
- Developed countries will reduce current net imports of fish and fishery products from 11.3 million tonnes in 1999-2001 to 10.6 million tonnes by 2010 and 10.3 million tonnes by 2015.
- There will be a global shortage of supply of fish in future. The overall effect will be a rise in the price of fish. Prices for all types of fish will increase in real terms by 3.0 and 3.2 per cent by 2010 and 2015 respectively.
- On average, people will be consuming more fish in 2015, but increases henceforth are likely to accrue more slowly than in the past two decades.

The IFPRI study ("Fish to 2020: supply and demand in changing global markets") projects supply, demand and trade of fish from 1997 to 2020 in response to different policy and environmental scenarios for the fish sector. The study draws on FAO statistical databases, uses an IFPRI model modified to deal with food fish, and discusses six scenarios.

The study highlights five major structural shifts now under way, which will become more pervasive between now and 2020.

1. Developing countries (particularly those from Asia) will dominate food fish production from both capture fisheries and aquaculture. Stocks that are not fully exploited will be fished more heavily.
2. Consumption will increase in developing countries by 1.9 percent annually, or by 2.0 percent if China is included. It

Comparisons of simulation results

	Simulation target year					
	2000	2010	2015	2020		2030
Information source	FAO statistics [a]	SOFIA 2002 [b]	FAO study [c]	SOFIA 2002 [b]	IFPRI Study [c]	SOFIA 2002 [b]
Marine capture	86	87		87	-	87
Inland capture	9	6		6	-	6
Total capture	95	93	105	93	116 [2]	93
Aquaculture	36	53	74	70	54	83
Total production	131	146	179	163	170 [3]	176
Food fish production [1]	96	120		138	130	150
Percentage used for food	73 %	82 %		85%	77%[4]	85%
Non-food use	35	26		26	40 [5]	26

Note: All figures - other than percentages - are in million tonnes and rounded.

[1] *Aquatic animals other than reptiles or mammals, excluding quantities reduced in fishmeal and oil.*

[2] *Calculated by the authors from total production minus aquaculture.*

[3] *Calculated by the authors by adding food fish to fishmeal production*

[4] *Calculated by the authors by comparing food and non-food use.*

[5] *Calculated by the authors by multiplying fishmeal production forecasts by five.*

Sources:

[a] *Based on latest statistics of the FAO Fishery Information, Data and Statistics Unit.*

[b] *FAO. 2002. The State of World Fisheries and Aquaculture 2002. Rome.*

[c] *Op. Cit., footnote 90, p.146, The State of World Fisheries and Aquaculture, 2004.*

will remain static in developed countries (0.2 percent) and sub-Saharan Africa.

3. South-south trade will increase with the emergence of urban middle classes. Domestic producers in developed countries will gradually leave the sector. Fish will increasingly become a high-value commodity. The shift in traded products from frozen low-grade whole fish to value-added products will continue.
4. Environmental controversies will continue. Sustainability concerns will increase. These will spur environmental regulations and institutions, initially in developed countries, later in developing countries. Overfishing will remain a major concern.
5. Fisheries and aquaculture technology will address new challenges in both the north and the south — such as reducing fish meal and fish oil requirements in aquaculture; reducing the environmental impacts of intensive aquaculture; and utilizing information technology for improved fishery management.
6. Institutional development in the sector will be necessary – for reducing poverty through fisheries and aquaculture development, as well as for improving environmental sustainability and food safety

Comparing the FAO and IFPRI projections

The two studies point to similar futures, but there are some significant differences. These relate to the total volume produced and consumed, to the relative roles of capture fisheries production and aquaculture, and to trends in real prices for fish.

- The FAO study is more optimistic in terms of fish supplies and consumption. It envisages a total production of 179 million tonnes in 2115, while the IFPRI study (base scenario) foresees a production of only 170 million tonnes by 2020.
- The IFPRI study expects capture fisheries landings to expand significantly (to 116 million tonnes in 2020), the FAO study foresees a contribution of only 105 million tonnes in 2015.
- The most dramatic difference is in aquaculture production. IFPRI expects only about half the growth foreseen in the FAO study (74 million tonnes by 2015 – FAO; 54 million tonnes by 2020 – IFPRI).

The FAO and IFPRI models to simulate future scenarios have important similarities. They both use international trade as the mechanism to equalize world supply and demand of fish. They both consider developments in industries that produce substitutes. The reasons for the differences in results spring from basic assumptions – such as sensitivity to prices, the physical possibilities of increasing capture fisheries production, the "reactivity" of aquaculture to developing opportunities.

The FAO study assumes that consumers will not have to sharply reduce fish consumption following fall in fish production and higher prices, because aquaculture will meet the gap in supply.

The IFPRI study is less optimistic than the FAO study about aquaculture increasing production rapidly. It does not expect the fisheries sector as a whole to expand output as rapidly as the FAO study indicates.

A common denominator of both studies is that **during the next three decades,** the world will not have to face any fish shortages; prices will be relatively stable.

The authors of "Outlook" say that the FAO and IPPRI simulations seem to indicate gradual and uniform evolution of the fisheries sector. But the world of reality is likely to differ from the world of simulations. Though globalization tends to lead to uniformity, the world of fisheries in future will remain diversified, thus:

1. The picture will be positive in countries with "sufficient economic and institutional capacity". Fishing capacity will be significantly reduced, stocks will rebuild, environmental impacts will be reduced. A number of fishers will find other forms of livelihood.
2. The picture will be one of stagnation or "controlled degradation" in countries where reform is too little, too late. Rebuilding will be uncertain, overcapacity will be rampant. Catches will stagnate or drop. Fishers will face hardships because of livelihoods becoming unsustainable.
3. The picture will be one of crisis in countries where governance is poor. Developments such as droughts and war will escalate pressure on resources, pushing more fisheries toward decline. Catches will fall in quality and value. Fishing communities will face hard times.