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Briefing Paper

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FISHERIES AND THE THIRD WORLD

This month, the UN Food and Agriculture Organisation (FAO) is holding the first World Conference on Fisheries Management and Development, which will be attended by over a thousand delegates from most member countries of the UN, including the USSR. As a background to the Conference, this Briefing Paper examines the role of developing countries in world fisheries, the problems confronting developing countries in their attempts to exploit their own fisheries potential, and the range of issues for developing countries which the Conference is expected to raise.

World Fisheries

The world fish catch in 1982, the latest year for which figures are currently available, totalled 75.0 million tonnes. 38.3 million tonnes were landed in developed countries, and 36.7 million tonnes in developing countries (49% of the total world catch). Table 1 shows the leading fishing countries.

Production from inland waters has been growing steadily and now accounts for almost 10% of the total catch. The bulk of the world marine catch comes from the continental shelf waters of the North Atlantic and North Pacific and the upwelling waters along the coasts of North West Africa, Namibia, Peru and California. Over half consists of surface-dwelling fish, such as herring, mackerel and tuna. Deep-water fish such as cod and flounder make up 35%, while invertebrates — molluscs, including squid, and larger crustaceans eg. prawn, lobster and crab — and marine plants account for the remaining 15%.

The scope for increasing the developing countries' output is substantial; it has been estimated by FAO that an additional 30 million tonnes of seafood could be harvested each year from their coastal waters alone.

About 70% of the world catch is currently used for human consumption, and the remaining 30% converted into meal or oil for animal feed. While in recent years more than twice as much meat as fish has been directly used for human consumption — 120 million tonnes compared with 50 million tonnes — projections by FAO suggest that fish consumption may have increased by up to 20 million tonnes between 1975 and 1985. Fish consumption is expected to reach an average of about 15 kg per person in 1985 compared with 13 kg in 1972-74.

Average per capita direct consumption of fish in developing countries is expected to be 4.5 kg below the world average. But the demand for fish in developing countries is expected to rise along with increases in population and, in some regions, incomes. By the end of the century it is estimated that the Third World will account for 60% of world fish consumption, and the total annual world demand for fish will reach 110 million tonnes. But, on present trends, with world production increasing by only

1% per year, by the year 2000 annual world production will be little more than 90 million tonnes, 20 million tonnes short of demand. This will inevitably result in higher prices, but more seriously, it will have a severe impact on the many individuals and communities in the Third World that depend on fish to maintain even the most meagre of diets.

Fisheries and International Trade

Around 35% of the world catch enters international trade. Table 2 lists the leading importers and exporters. Developing countries make up about half of the main exporting countries (ie. those with US\$100 million in exports and above). They are the major exporters of shrimp, and contribute 50% of fishmeal exports. Their share of the export market has remained fairly constant in recent years at around 40%. The trading position of developing countries may be improved as a result of the establishment of 200 mile Exclusive Economic Zones (EEZs) under the new Law of the Sea, giving developing countries control over fishing grounds previously open to long range fleets from developed countries. However, other serious obstacles (eg. tariff and non tariff barriers and the low share of developing countries in fish processing and related activities) may restrict future development of their export potential.

The Importance of Fisheries Development

Fisheries development is of major importance to most developing countries. It offers a potential for meeting the increasing nutritional demands of both urban and rural areas. As a source of protein, vitamins and essential minerals, it offers an ideal supplement to the often poor and monotonous diet of many in tropical and sub-tropical countries. If appropriate marketing and distribution

Table 1: Leading Fishing Countries

(by weight of catch in '000 tonnes of aquatic organisms, excluding aquatic mammals and aquatic plants)

Country	1982	1981
Japan	10,760	10,657
USSR	9,450	9,546
China		4,377
USA	3,922	3,767
Chile	3,860	3,393
Peru	3,453	2,751
Norway	2,463	2,539
India	2,400	2,415
South Korea	2,281	2,366
Indonesia	1,957	1,863

Source: FAO

Table 2: Largest fish exporters and importers during 1982

(includes fishery products)

Exporters		
	1982	1981
	US\$ million	
1. Canada	1,291	1,267
2. USA	1,034	1,142
3. Denmark	901	940
4. Norway	888	1,002
5. Japan	807	863
6. Korea, Rep.	759	835
7. Mexico	620	538
8. Iceland	536	713
9. Netherlands	504	512
10. Chile	408	365
Total	7,748	8,177
% of World Total	50%	53%

Importers		
	1982	1981
	US\$ million	
1. Japan	3,998	3,737
2. USA	3,226	2,988
3. France	1,056	1,051
4. UK	886	995
5. Germany, FR	819	819
6. Italy	755	720
7. Spain	466	479
8. Hong Kong	467	362
9. Nigeria	400	520
10. Belgium	327	348
Total	12,400	12,019
% of World Total	75%	74%

Source: FAO

channels can be established, fish offers a cheap food source to low-income consumers who are at present under-nourished. Fisheries development, particularly of artisanal fisheries, can also provide a way of increasing the low incomes of many rural households. At present the incomes of fishing families are usually below those of other groups in rural areas. For example, in Malaysia, which has one of the highest per capita incomes of all developing countries in South East Asia (\$1620 in 1980), over 73% of all fishing households live below the official poverty line.

Certain kinds of fisheries development also offer the potential of significantly increasing foreign exchange earnings. High value fish, especially crustaceans, which demand labour intensive methods of fishing, are particularly suited to developing country exploitation as countries such as Burma, Chile, India, Indonesia and Thailand have shown. But the development of fish — particularly low value fishmeal — for export in pursuit of foreign exchange often conflicts with the provision of food for the home market, and poorer groups are especially vulnerable to policies which emphasise export development.

Three types of fishery production are found in developing countries: large scale industrial fisheries, small scale or artisanal fisheries, and aquaculture.

Industrial Fisheries

Most of the world's supply of canned and frozen fish, together with most fish destined for processing into fishmeal or oil, and fish for export markets, is landed by large-scale fisheries. In structure, industrial fisheries tend to resemble agro-industrial firms in the developed countries; they are relatively more capital intensive, and provide higher incomes, for boat owners and crew, than artisanal fisheries. The fishing, processing and distribution functions are frequently combined within the same enterprise to

achieve economies of scale. Because highly complex support services are required for large-scale fisheries — ports, repair facilities, refrigeration — they are usually located in urban areas.

Several developing countries are involved in large scale fisheries: Cuba, Ghana, the Republic of Korea and Thailand all have well developed industrial fleets that harvest stocks in distant waters. Argentina, Chile, India, Indonesia, Mexico, Nigeria and the Philippines have developed large domestic fleets and processing industries, although they also have an extensive small-scale sector. In another group of developing countries, which now possess some large boats or a processing industry, there is considerable scope for the expansion of large-scale fisheries: this group includes Cameroon, Ivory Coast, Papua New Guinea and Senegal.

The potential for significant expansion of large-scale fisheries in developing countries is generally limited, however. The unpredictability of fish supplies, rising energy costs, the high capital costs of equipping fleets (which use up scarce foreign exchange) and the need for highly trained crew all make it a risky and expensive area of operation for many developing countries.

Artisanal Fisheries

Artisanal fisheries are those in which the largest enterprise engaged in catching operations consists of a single fishing unit owned (or hired) by a working fisherman or a fishing family. Small-scale fishermen are occasionally prosperous: in the Gulf area, for example, an Omani fisherman in a small dugout, using a single hook and line, may earn several hundreds of dollars a day. But the vast majority of small-scale fishermen are poor.

Reliable statistics about the extent of small-scale fisheries are difficult to obtain; estimating the numbers of fisherfolk and fishing craft scattered in areas of poor communications is difficult and estimating catches even more so. Bearing this in mind, it is estimated that in 1982, about 18 million tonnes of the world total catch of 75 million tonnes were contributed by small-scale fisheries. In Asia, small-scale fisheries provided two-thirds of the total catch: in Africa five-sixths of the total.

In some developing countries (eg. Senegal) small-scale fisheries have been organised for export production; but the comparative advantage of artisanal fisheries is in production for the local market. Artisanal fisheries employ millions of scattered fishermen throughout frequently inaccessible — but warm and productive — coastal and inland waters. Development by central government agencies is often impracticable, although the scope for investment exists: for example by upgrading technology (eg. motorising the boats), improving the quality of shore facilities and developing processing and marketing facilities. As much less energy is used in drying, smoking and salting activities, artisanal fisheries enjoy a considerable competitive advantage in processing for domestic markets, yielding protein at a significantly smaller cost per unit. Artisanal fisheries also often overlap with other activities such as agriculture and animal husbandry. Fisheries development can provide a major additional source of income but account must be taken of the other activities which compete for labour in rural households.

Aquaculture

The potential for fish farming ('culture' rather than 'capture' fisheries) in developing countries is enormous. The contribution of aquacultural production to the world catch was 9 million tonnes in 1979, and this came mainly

from the individually-farmed small ponds of South Asia and South East Asia. But even in the relatively well-developed Asian region, the area under aquaculture is only one-tenth of the potential area of development, much of it current wasteland and idle flood control areas. Cropped land under irrigation also has major potential for fish farming.

However, there has been a general reluctance among donors and governments to invest heavily in aquaculture. This is partly because of the priority given to the agricultural uses of available water and the generally low level of development in breeding technology and lack of fast-growing species. But it is also because of the formidable difficulties in managing access to water where there are competing demands for its use and, for example, the lease arrangements which could encourage individual users are difficult to arrange.

Issues for Third World Fisheries

EEZ Investment and Management

Under the UN Convention on the Law of the Sea, concluded in December 1982 and now signed by over 130 states, coastal states are given very wide discretionary powers to manage fishery resources within their 200 mile zones, including the allocation of access to these resources and the setting of conditions for access. Many distant industrial fishing fleets from developed nations fished in developing country EEZs prior to the implementation of the Convention, but developing countries may now consider whether to permit continued long term access for these foreign fishing fleets, or whether instead to develop their own indigenous large-scale distant fishing fleets to maximise the benefits from their newly controlled marine resources. In some instances it may be to the economic advantage of a developing country to allocate permanently some of its fishery resources to foreign fishing operations. In effect the developing country then imports the harvesting, processing and marketing services of the distant water nation while maintaining some of the benefit of the value of these exports.

As a further alternative to developing an indigenous large-scale fishing industry, some developing countries have sought joint ventures, usually with developed country fishing fleets (eg. between Indonesia and Japan) but sometimes with other developing countries. These may include inter-governmental agreements, reciprocal fishing rights and licensing arrangements with foreign fishing interests. It is generally envisaged that such ventures will create jobs, increase production and incomes and generate foreign exchange. But these benefits often fail to materialise, at least for the developing country partner, and fish resources have been seriously depleted through overfishing.

Coastal developing countries can also license several foreign fishing fleets. Fees can be charged on the basis of an assessment of the value or quantity of catch, on assessment of the effort (the number of vessels employed, their tonnage, etc.), or as a lump sum in return for agreed fishing rights. Considerable administrative effort is required by the coastal State where fees are related to catch, including measures to limit and detect evasion and non-compliance. Lump sum payments impose very few administrative burdens on developing country coastal States, but the fishing operator faces a much higher risk and therefore such payments tend to be fixed at a lower level than is likely from catch-related fees. Conditions of access also impose considerable administrative requirements on coastal States (eg. enforcing restrictions on fishing time and compliance

Extracts from the UN Convention on the Law of the Sea

Article 61: Conservation of living resources

1. The coastal State shall fix the total allowable catch of living resources in its exclusive economic zone.
2. The coastal State, taking into account the best scientific evidence available to it, shall ensure through proper conservation and management measures that the maintenance of living resources in the exclusive economic zone is not endangered by overexploitation . . .
5. Available scientific information, catch and fishing effort statistics and other data relevant to the conservation of fish stocks shall be contributed and exchanged on a regular basis through competent international organisations . . .

Article 62: Utilisation of the living resources

1. The coastal State shall promote the objective of optimum utilisation of the living resources in the exclusive economic zone . . .
2. The coastal State shall determine its capacity to harvest the living resources of the exclusive economic zone. Where the coastal State does not have the capacity to harvest the entire allowable catch, it shall, through agreements or other arrangements, give other States access to the surplus of the allowable catch . . .
3. In giving access to other States to its exclusive economic zone under this article, the coastal State shall take into account all relevant factors, including *inter alia*, the significance of the living resources of the area to the economy of the coastal State concerned and its other national interests, the requirements of developing States in the subregion or region in harvesting part of the surplus and the need to minimise economic dislocation in states whose nationals have habitually fished in the zone . . .

control such as vessel identification and position reporting). Where coastal States develop their fisheries industry, they face an additional difficulty of access to world trade. In recent years the EEC has reduced restrictions on the import of a few fish products but fishery commodities are confronted by a range of tariff and non-tariff barriers which GATT is due to examine this year.

More importantly, most developing countries continue to export only primary fishery products for processing in developed countries and they have only limited participation in the fishery trade services, notably transport.

Small-scale Fisheries Development

A number of serious constraints inhibit development of small-scale fisheries in developing countries. First, the *technical* level of fisheries is poor. Substantial losses occur at the harvesting stage; the lack of suitable preservation facilities and, in the case of salted, dried and smoked fish, the effects of spoilage, insect attack and physical damage, have contributed to such losses, which are estimated to be in the region of 25%. Losses may be much higher than this: a recent study in Senegal established that about one-third of the fish catch was lost through blow fly infestation. The loss world-wide is believed to be of the order of 5 million tonnes of fish (fresh weight). However, for the small quantities of fish involved at each individual site, with little in the way of services or infrastructure, development of advanced processing and preservation equipment and techniques is uneconomic.

In terms of captive technologies traditional boats often need to be strengthened and modified to take engines and permit more efficient methods of catching the fish. Standard engines are often not well suited to this kind of

fisheries use, having a high fuel consumption in relation to their efficiency. Maintenance, often in the absence of suitably trained personnel, can also be a major problem.

Another constraint is often a lack of *effective marketing*. Effective price competition for a catch between two or more wholesale buyers rarely exists, and the result is frequently exploitation of fishermen by traders. But alternatives, in the form of marketing co-operatives or state marketing corporations, also have their problems. Indeed, state marketing corporations may perpetuate low prices, using their monopoly position to impose low prices as part of 'cheap food' policies aimed at urban consumers at the expense of the fishermen. And, however effective the marketing, it is difficult to counter the effects of gluts or heavy landings from mechanised large-scale fleets.

Conflicts frequently exist over the use of water. In coastal fisheries, small-scale fishermen often compete with better equipped large-scale fleets over the same stretch of water. Inland, more complex conflicts exist. Agricultural and industrial development frequently causes water pollution from pesticide residues and industrial waste, seriously damaging fisheries, not only by the direct effect of the contaminant, but also indirectly in that fish become more susceptible to disease (fish farmers in Thailand have recently suffered severe losses this way), and the health of fishermen and fish farmers is put at risk. Conflicts also arise in aquaculture over land use. There may be alternative agricultural demands for suitable land, eg. for rice production and although co-existence is possible (eg. in rice-cum-fish culture), careful organisation is required. Artisanal fisheries development, especially in relatively neglected regions such as Africa, requires a particularly sensitive approach to local fishing conditions which are often poorly understood even by Fisheries Departments and major development agencies involved in fisheries investment.

The World Conference

The technical, economic and social problems raised in fisheries development are among the main issues at the Rome World Conference on Fisheries Management and Development. The Conference is focused on three areas:

- i. developing individual and joint strategies and action programmes to increase the contribution of fisheries to world food supplies and nutritional, social and economic goals;
- ii. improving the ability of developing countries to develop and manage their fisheries;
- iii. promotion of international co-operation in obtaining these objectives through better co-operation between developing and developed countries, and between developing countries themselves.

A series of technical seminars and expert consultations on fish resource matters were held in preparation for the Conference, culminating in an expanded session of the FAO Committee on Fisheries in October 1983.

At the Conference an eight-point Strategy for Fisheries Management and Development will be proposed, setting out guidelines and general principles for the implementation of the Conference objectives. Consensus will be sought in adopting the Strategy, but its contents will not be binding or require commitments from governments. Perhaps of greater significance for developing countries are proposals for the establishment of five Action Programmes, which could influence fisheries policies of governments and donor agencies.

The first Action Programme, on **planning, management and development of fisheries**, includes provision of advisory services, and technical support to assist regional

collaboration, in addition to training locally based fisheries training personnel. The **development of small-scale fisheries** is the focus of the second Programme, with an emphasis on matching technical potential with the socio-economic needs of fishing communities. The third Programme is devoted to **aquaculture development**, involving the establishment of regional research and training centres. The objective of the fourth Programme, on **international trends in fish and fishery products**, is to help developing countries increase the benefits they derive from the fisheries trade, in conjunction with relevant regional and international organisations. This will involve the setting up of further regional fish marketing information services along the lines of INFOPECA in Latin America and INFOFISH in Asia and the Pacific. A system to produce up to date information on the major fishery commodities is planned together with a multilateral framework for consultation on international trade in fisheries. The fifth Action Programme is intended to promote the **role of fisheries in alleviating under-nutrition**, by providing information and statistics to governments, helping to improve fish utilisation, in part by better marketing, and in addition, establishing regionally based co-operative programmes in fish technology research.

However, implementation of fisheries development on the scale envisaged as necessary by FAO to meet Third World nutritional and other needs, demands a level of investment which, on current trends, is unlikely to materialise. In 1981 the total of capital and technical assistance to fisheries sectors of developing countries was estimated at \$400 million, in real terms a 50% increase since 1974. But there was a decline of 5% in capital aid in 1982 and additionally — continuing a trend — a decline of 9% in technical assistance (much valued by FAO). Funds allocated to the FAO programme to support fisheries development in EEZs have fallen from \$3.5 million in 1981 to \$1.2 million in 1982.

Perhaps more encouragingly, the pattern of donor investment in fisheries has shifted from large-scale industrial fisheries projects to smaller projects favouring artisanal fisheries and aquaculture. The Inter-American Investment Bank, for example, now concentrates its support on small-scale projects, while the World Bank and the Asian Development Bank are attaching particular importance to small-scale and aquaculture projects. Yet the scale of the problem facing the World Fisheries Conference, to find ways of meeting the expected rise in world demand for fish over the next fifteen years, particularly from developing countries, is immense. It will require the commitment of developed and developing states, and will only be achieved, through a major stimulus to developing country fish production.

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