Aquatic Resources Sector : Contribution to the GDP and the Economy

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Aquatic resources include living and non-living resources in the aquatic environment. The latter includes deposits of heavy-minerals, dead corals lying buried in the beach, shoreline areas and in the sea, which are mined regularly as sand and source of lime, for construction purposes.

Rutile/illmenite deposited on the seashore, is extracted and exported by Sri Lanka. Minerals such as manganese and other forms like petroleum and gas, are found offshore and in deep waters. Freshwater itself is perhaps one of the most important non-living natural resource for all living beings. The degree of rational utilisation and conservation of these living and non living resources will not only determine the quality of human life on earth but also the sustainability of their contribution to the economy of the country. However, there is a fundamental difference between these two kinds of resources, in that the living resources are self-renewing while the non-living resources are fixed. This article deals with the living aquatic resources only.

Socio-economic Aspects

For an estimated total population of about 1.2 billion, there are about 5 million fishers and around 20 million fisherfolk, in the SAARC region, including full-time and part-time fishermen, i.e. less than 1% of the population is dependent on fishing, in any one of the SAARC countries and more than 50% of the estimated number of fishers are in India alone. The human development index' which is a composite index based on life expectancy, education, income (given equal weightage), in these countries varies between 0.305 - 0.704 (1992) and Sri Lanka is at the higher end of that range. This reflects the quality of life, nutritional deficiency (< 3000 calories, prevailing in everyone of the countries of this sub-region. Some of the "poorest of the poor" may be found in the fisheries sector of South Asia. In Sri Lanka, the available figures indicate that the population actively engaged in fisheries (marine and freshwater) is more or less stagnant for many years, around 140,000. There is no estimate of the numbers involved in other related activities of this sector. Probably there is a continuous exodus of fishermen into other vocations both locally and abroad. However, a proper census the results of which can clarify this situation is long over due. In this region, at least 5 million people are engaged directly in the fishing activities; viz., capture or culture fisheries, either on a full-time or a part-time basis, and both in small-scale and commercial capture fisheries and in fish farming. The estimated number of persons employed in the fisheries-related industries such as processing, distribution and trade amounts to at least double that number. In the land locked country like Nepal too a fair size of its population is dependent on fisheries, for employment and liveli-hood. The policy of the states in this region, is to achieve higher employment in the fisheries sector.

During the last decade, the population growth rate in these countries has slowed down by 2 - 3%, which is welcome, but the literacy levels have not improved very significantly. Sri Lanka's GDP growth rate has slowed down from 6.9% in 1993, to 5.6% in 1995. The sectoral composition of GDP indicates a 5.9% drop in fisheries and agricultural activities and 2.9% drop in manufacturing and mining activities but there was 8.8% increase in the services sector, between the 1980s and 1994. In Sri Lanka, fisheries contributes around 2% to the national GDP. Fisheries contribute around 1- 2% of the GDP of the countries in the region, except perhaps in the Maldives where fisheries and tourism are the two equally important industries, contributing to the economy of that country.

South Asia received 230903t (average, 1.6 kg per capita) of food aid from the World Food Programme, in 1995 and Sri Lanka's share was 6.7%. This value has declined from 4kg. per capita, received in 1988. South and South-east Asia remained the largest recipient sub-regions with about 51% of the 2.5 million tonnes of the total food provided by the programme. Bangladesh was an important recipient with more than 27% of the tonnage. Organisations such as FAO, UNDP, SIDA, DANIDA and NORAD, have provided considerable technical assistanc support services to the fisheries ministry, department and national research institution, in the areas of fisheries statistics, census, extension, management and resources and socio-economic surveys. In most cases, the follow up programmes have not been satisfactory.

Contribution by Fishing and Fish Farming Activities

In Sri Lanka, about 80% of the marine production (224,000t) has been from the coastal resources and 20% from the offshore. Of the small scale fishing crafts, around 50% are motorised. Some of these motorised crafts (28' - 38' class) are engaged in offshore

tuna and shark fisheries. New class of offshore fishing crafts, 40' - 52' in length, fabricated by local boatyards, according to the choices of the fishermen, are being introduced for long voyages into the offshore range, for catching large pelagics (tuna, billfish and sharks). Some of these crafts are owned by small scale fishermen who purchase them, using their own capital/assets, funds borrowed from banks or with financial assistance from "middle-men" in the fishing industry. Crew members in offshore fisheries may earn around Rs. 10 to 25 thousand per month, while the owner realise Rs. 60 - 150 thousand per month. System of crew working in shifts and appointment of a shore manager, to take care of the catch and get the craft ready for the next trip, with the shortest possible turn-around time, prevail in this small scale type of fishery. In contrast to this situation, the traditional fishing methods provide around a couple of thousand rupees, to each fisherman, per month. This divergence in earrings has contributed to significant heterogeneity in income levels, within the fisherfolk community in the country. This has serious implications on management of fisheries, particularly the incidence of difficulties in maintaining traditional systems of management which generally function well within a reasonably homogeneous community.

Most of coastal resources in Sri Lanka are being exploited more or less at the maximum sustainable level or exceeding it. Very few pockets of underutilised resources remain to be exploited though these may not make a significant economic impact yet appropriate management of all aspects of this coastal component, can make worth while economic contribution to the fishing industry

The offshore and oceanic fisheries can contribute to the expansion of fisheries increase the production of higher value species and even promote export. However, the success in the enhancement of national level management, in the contract of management policy of the Indian Ocean Tuna Commission, will determine the extent of the realisation of economic benefit. The allocation made for Sri Lanka, will have to be distributed among the Sri Lankan fleet. The licensing of tuna boats, the numbers to be licensed, the quota to be allocated to each of them and the rent to be collected, etc., will determine the economic benefit from this offshore fishery.

Inland Fisheries Sub-sector

Few years ago, the Government of Sri Lanka adopted a policy decision to stop supporting freshwater fisheries development, on religious grounds. Production and revenue declined significantly and the conditions of this sub-sector deteriorated. However, this decision has been reversed by the present government and development activities are being pushed towards a revival of the fisheries in this subsector. Its development is very significant, in terms of providing animal protein through ample cheap fish to the lower income groups.

Aquaculture Sub-sector

From an economic point of view, aquaculture development in Sri Lanka concentrates primarily on shrimp, in the brackishwater sub-sector. Production from aquaculture has been reported to have increased from 3000t in 1984, to 6000t in 1989 and then declined to 4000t in 1994. This probably includes some production from the cultured based capture fisheries in freshwater cultured shrimp, ornamental fish declared to the Customs, as cultured fish, mud-crab that were fattened in captivity, etc. In India, aquaculture production increased from about 1.20 to 3.0 million tonnes, between 1984 and 1993 (14.8% per annum). India's contribution was close to 50% of the total for the Indian Ocean region. Only India, Indonesia, Thailand, Bangladesh and Malaysia produced more than 100,000t, each. Cyprinids and cichlids are the most predominant freshwater species groups cultured in other SAARC countries. Mariculture for finfish and edible oysters, mud crab, etc., actively practised in the ASEAN countries, is still in its infancy in the SAARC countries. The situation is similar in the case of ornamental fish species also.

Precise data regarding quantities of shrimp species cultured is not readily available but the quantity exported (includes captured shrimps for which too there is no estimate) annually reached a peak of 2598t in 1989 ($1,667,390) and declined to 1426t ($1,756,520) in 1993. Shrimp culture development was very rapid due to the quick and enormous profit from it. However, the avaricious investors, failed to ensure proper management of the water to and from the culture ponds, particularly under the intensive culture programme.

The successful development of the, enormous potential for culture of finfish and shellfish in the freshwater, brackishwater and marine environments in Sri Lanka, should make the most significant impact on availability of cheaper freshwater for the lower income groups and increase export of high value species of finfish and shellfish. This is the sub-sector that will have the largest economic impact, provided all the serious problems concerning management of environment and aquaculture farms, are properly resolved through very stringent regulations.

Fish Trade

Sri Lanka's fish imports assume a significant place in meeting the demand for fish but her export earnings may not be more than 2% of the GDP. Exports and imports of fish and fish products by SAARC countries, were 448,414t ($ 1.22 billion at Av. Price of $ 2728/t.) and 42028t ($39 million, at Av). Price of $935/t), respectively. In 1993, Sri Lanka imported 38190t ($34468000)and exported 4447t ($31378000), of fish and fish products. Dry fish accounted for 82% followed by canned fish (9%) and fish meal (7%). Exported items were mainly frozen fish (56%), crustaceans (shrimp and mud-crab) and molluscs (squid & cuttlefish) (38.5%), driedfish and cannedfish (2% each). It is noted that Sri Lanka imports almost 90% of the fish and fish products from the region. This is mainly to meet the shortfall in the domestic supply and to compensate for the significant decline in production from the northern and eastern provinces. Among the exporters of fish and fish products india's share in the regions exports was 57%, and the shares of Pakistan, Bangladesh and Maldives were 20%, 17% and 5%, respectively. Sri Lanka exported approximately 1%, of the total from the region. In terms of revenue 77% was from the export of crustaceans & mol-

luscs. Sri Lanka imported dried-fish at the rate of $867/t the export price of dried-fish from this region was $ 1218/t, in 1993. India, Sri Lanka and Pakistan imported 5983/t of fish meal at $773/t but India and Maldives exported 3854t of this item at $1568/t.

Intra-regional trade within the SAARC countries has potential for growing in the future. In the past, the main trade was the import of 'Maldives fish' from the Maldives, dried small sardines and anchovies, by Sri Lanka, from India and Pakistan and frozen fish from Pakistan. All these declined to almost zero, by the late 1960s or early 1970s. During the last decade, with the opening up of the free market economy, Sri Lanka recommenced import of Maldive fish, dried reef fish and shark from the Maldives, dried shark from India and Bangladesh, Sri Lanka also imported marine ornamental fish from the Maldives. The export of chank from Sri Lanka to Bangladesh, appears to have declined in recent years.

Inter-regional trade in fish, between South Asian and South-east Asian countries has been growing. Tuna from Maldives to canneries in Thailand; ornamental fish from Sri Lanka and Maldives to Singapore; shrimp from any of the South Asian countries to Singapore and Malaysia; dried anchovy from Thailand to Sri Lanka; 'Isinglass' (dried gas bladder of croakers) from Bangladesh to Hongkong; beche de mer (dried sea - cucumber) from India and Sri Lanka to Singapore and Hongkong; mud-crab from India, Bangladesh and Sri Lanka, to Singapore, Malaysia and Thailand, are some of the items known to be traded. Export of shrimp seeds from hatcheries in ASEAN countries to shrimp culturists in SAARC countries and export of grouper larvae from SAARC countries to ASEAN countries also expanded in the recent past. Besides these, high value finfish and shellfish species are also being exported by South Asian countries particularly India to Japan, USA and the EEC and to the Middle-east countries and other areas. export of only crustaceans, by South and South-east Asian countries, in the Indian Ocean, is estimated to be 680,000t valued at $128 million (Av. price of $ 5900/t) .. **Intra-regional trade agreements and increased trading in fish and fish products, within the region, would be in the interest of the economy and food security of the region.**

Since the slump in the export of shrimp in 1989, South Asia has tended to move towards reliance on exports to non-traditional importers who are in the region itself. This has been facilitated by the high economic development in South-east Asia, increased demand from the growing middle class people in these countries, abolition of import restrictions by Taiwan and Korea, introduction of market oriented economy in China and Vietnam, duty-free imports by Singapore, Hongkong and Malaysia, increased supply of shrimp and also by the higher per capita consumption of sea food in ASEAN countries.

The potential of ornamental fish, fisheries and culture has not yet been harnessed. If the development and management of this component is well organised, it could be another important contributor to the economic growth of the fisheries sector. Captured marine ornamental fish exports from the Maldives are routed through Sri Lanka, to other markets. The markets in the developed countries offer very good prices but fair amount of the fish from the countries in this sub-region, including Sri Lanka, get routed through intermediate marketing nations, like Singapore. In dealing through intermediate market or 'middle-men', the producers do not always receive the benefit of the higher prices in consumer markets. Again, considering the volume of the products presently available, a collective approach to the production of wide range of varieties, improved quality of the species and the better handling and packing for export, will enhance the exports and earnings from this component of the fisheries industry.

Demand and Supply

Per capita availability of fish for consumption in Sri Lanka was the second highest in the SAARC region, with a volume of 16.19 kg/ person, in 1993/94. The highest was in the Maldives, with a value of 123.0 kg/ person and those of other member countries were less than 6kg/person.

In spite of the low per caput consumption, compared to the world average, the South Asian region has been a fish deficit region and has not been able to meet the needs of the population. Pakistan is considered to be the only country in the region, with a fish surplus. Countries in the sub-region export 2-52% of their productions. Sri Lanka has the lowest percentage exported (2%) and Maldives and had the highest (52%), with Pakistan (16%), Bangladesh (7%), and India (5.6%) falling in-between.

Outlook for the Future

The annual growth rate of the population in Sri Lanka was 1.4% in 1996, which was perhaps the lowest in the SAARC region. The production level required in Sri Lanka, to maintain the present level of per capita consumption of fish, by the projected population of 21.66 million, in the year 2010, will be around 400,000t. The per capita consumption is very low in the land-locked countries and also in Bangladesh (6.5 kg/ caput) India (4.4kg/ caput) and Pakistan (3.6kg/ caput) but much lower in Nepal (0.8 kg/caput) and Bhutan (0.02 kg/caput). Overall, the annual total production will have to increase from around 6.5 million tonnes, to 7.8 million tonnes to maintain the contribution of fish to the food supply. The consumption rate is far below the average for the world, in at least 5 of the SAARC countries, and the estimated production required to attain 13 Kg per caput, by 2010, by the 5 countries other than Maldives and Sri Lanka, will be in the region of 20 million tonnes ! This level may be unattainable without miracles. It is anticipated that the per capita consumption rate in the Maldives is very high and it may decline to a more reasonable level, if the rate of increase in fish production does not keep up with the population growth rate and the demand in the year 2010 may be realized at a lower level of production than the projected level. Maldives can attain that level of production of not for the fact the she relies almost entirely on the tuna stocks which are being exploited by too many countries in the Indian Ocean region and outside it. The efficient functioning of the Tuna Commission, allocation of catches and sustaining the exploitation of the tuna resources will determine the extent of increase in production. India's fish consumption rate has been diluted by the large

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population but in real terms it may be double or even greater, if it is based only on the country's non-vegetarian population. However, the proportion of non-vegetarians is steadily increasing in the urban areas and a significant increase in demand and price of fish is already evident.

Overcoming the constraints in the supply of fish, meeting the domestic demand, increasing exports and increasing the contribution by the fisheries sector to the GDP, depend on attention given to major issues such as the following:

(a) Considering the prevailing political will, economic conditions and the achievements in the area of fisheries management in this region, it is more likely that the progress in the developments referred to above may get closer to the goal, between 2005 and 2010. More efforts than those until now will be required to attain that target and to sustain it. These efforts should focus on reorganization unification, collaboration and strengthening of the various fisheries and fishery related units, creation of new units, engaging in specific development and management oriented research, planning of the development programmes in their entirety (not piece-meal), establishing revising legislation, to enable it to adopt new approaches to rational development of aquaculture, protection of environments, integrated coastal management as well as community-based management/co-management.

(b) Changes in the traditional fish-eating habits and in the demand for selected species and creation of demand for new fish species and new fish products from the resources of non-traditional fish/shellfish species that are available, must be achieved. The demand and preference for freshwater species should be increased to equal that for marine species, as in the ASEAN region. This would also involve extension work for popularisation of cooking recipes ideal for freshwater species.

(c) The accelerated implementation of liberalisation of trade and deregulation policies in the SAARC countries will facilitate and significantly expand fish trade within the region. A collective approach within the sub-region, will be favourable for exporting to other sub-regions, certain kinds of fish and fish products for which there is very strong competition from many nations outside this sub-region.

(d) Measures to increase private sector involvement in the development of offshore/ oceanic fisheries, in brackish- water aquaculture, mariculture, proce- ssing and marketing of fish and fish products, including exports and imports.

(e) Amendments to the NARA Act to strengthen its structure and function as a fisheries management oriented research institution as well as to strengthen co-ordinated fisheries research capabilities of the divisions within NARA and also among the institutions - NARA, Universities and other organisations, conducting fisheries related research, in Sri Lanka. Approval of national level fisheries research programmes for each subsector, for execution by all the national institutions engaged in fisheries related research. This is to ensure implementation of fisheries research projects according to the priorities of the industry, specialities available in each institution and to avoid/reduce duplication and waste of scarce financial and skilled manpower resources (Sivasubramaniam, 1995).

(f) Though responsibility for the protection of the aquatic environment, conservation of water and the life in them, prevention of pollution by domestic and industrial wastes and maintenance of the quality of such environment rests with the National Environment Authority, it is vital that very stringent regulations providing for very severe punishment for offences, should be made under the relevant provision in the Fisheries and Aquatic Resources Act of 1996. This is essential, and important for smooth and efficient management, development and expansion of fisheries activities, without interruptions due to limitations in the regulatory mechanisms that are external to the fisheries ministry.

(g) Regulation of private sector investments, should be stringent enough to prevent offences such as damaging the environment, breach of foreign exchange regulations and most importantly, failure to maintain the expected quality standards which erode the confidence of importing nations. All the coastal nations in this region, except Maldives, have been listed for exporting bad quality fish products to the United States of America.

The private sector should be the main partner to contribute to the development of capital intensive subssectors in fisheries. With the need for better shore facilities for multiday fishing boats and for maintaining the quality of exported fish items, the infrastructure facilities have to improved and expanded. Since the States cannot afford to provide funds for more of these facilities and their continued maintenance, the private sector owners of offshore fishing craft, must pay rental for the use of existing harbours and other facilities provided by the State.

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the water leading to the formation of fish food organisms.

Farming of freshwater prawns in ponds either under monoculture or polyculture along with fish will increase income of the pond fish farmer. Prawns can also be stocked in seasonal village tanks. Back yard hatcheries will be established in coastal areas for the production of freshwater prawn seed.

Farming of high value fish and prawn species in coastal areas and in marine waters on pilot scale will be undertaken and private sector investment in these fields will be promoted. Already about 2400 ha of shrimp farms have been established in the North Western Province, by the private sector. About 24,000 ha. of lands suitable for coastal aquaculture are available in the country.