

Contributions of fisheries and aquaculture in the Asia-Pacific region

The capture fisheries and aquaculture sectors are of fundamental importance to the Asia-Pacific region in terms of food security, revenue generation and employment. In many countries, catching or farming aquatic resources forms a vital part of rural people's livelihoods. In cultural terms, aquatic resources mean more than a mere source of income or food supply; traditional fishery products such as fish sauce and fish-based condiments are important ingredients of people's daily diet, which are not easily substituted. People utilise all sizes and types of fish and there is very little discard or wastage of this valuable resource. It is only now becoming apparent that fish play an important role in both the food security and nutritional security of many rural and coastal populations.

1.1 Contribution to national economies

Fisheries and aquaculture production is a clear contributor to national economies across the Asia-Pacific region. Crude estimation of capture production value¹ indicates that the contribution of capture fisheries to GDP² accounts for more than one percent in many States in the region (Table 1). Capture fisheries are particularly important in Small Island Developing States (SIDS), where fisheries sector plays a critical role in the national economies. The economic contribution of fisheries production is less in South and Southeast Asian States, yet there are still ten of these States to which fisheries contribute more one percent of GDP. It is also worth noting that these figures for fisheries value are also probably underestimated and do not adequately value the artisanal part of the sector. Overall it is clear that more policy attention should be paid to this important production sector. According to the official reports of Cambodia, fisheries production is more valuable than the rice crop production in the country.

Aquaculture also makes an important contribution to GDP. In Asian states which are the production centre of aquaculture, aquaculture production accounts for over one percent of GDP in seven States. Statistics related to the export

¹ The data to quantify the value of capture production are not readily available for many States. As indicative figures, unit value of 0.8 US\$ per kg was applied for this estimation of capture production value.

² GDP values in 2001 calculated from the ESCAP official statistics except Taiwan POC. The data of States marked with asterisk mark are of 2000

income from aquaculture products are not generally available and this affects the estimation of the contribution to foreign currency earnings through exports of aquaculture products.

Table 1: Contribution of capture fisheries and

Production value as percent of GDP			
Country	Capture	Country	Aqua-culture
Kiribati	33.549	Lao PDR	5.775
Marshall Is	28.378	Viet Nam*	3.497
Maldives	17.294	Bangladesh	2.688
Cambodia	10.030	Philippines	2.633
Solomon Is*	7.787	China PR	2.618
FSM	6.603	Thailand	2.071
Samoa	4.239	Indonesia	1.662
Viet Nam*	3.702	Cambodia	0.893
PNG	3.306	Kiribati	0.752
Vanuatu	3.294	India*	0.540
Tonga	2.865	Sri Lanka	0.468
Indonesia	2.350	Malaysia	0.366
Philippines	2.184	Nepal	0.345
Fiji Islands	2.046	Taiwan POC	0.324
Thailand	2.044	New Zealand	0.189
Bangladesh	1.884	Myanmar	0.167
Lao PDR	1.432	Korea RO	0.145
Sri Lanka	1.428	Japan	0.108
China PR	1.132	Iran	0.105
Malaysia	1.128		

aquaculture to GDP

It is clear that the State listings above also closely match those States which also export considerable amounts of aquaculture products (particularly shrimp). China PR is an exception in this case, since the majority of aquaculture products it produces are consumed domestically, although there is an increasing trend towards export focussed products.

1.2 Contribution to food security

Importance of fish in human nutrition

Fish is a food of excellent nutritional value and it makes a very significant contribution to the diet of many fish consuming communities in both the developed and developing world.

Fish provides high quality protein and a wide variety of vitamins and minerals, including vitamins A and D, phosphorus, magnesium, selenium, and iodine, especially in marine fish. Fish is also a valuable source of essential fatty acids and its protein is easily digestible.

Experts agree that, even in small quantities, fish can have a significant positive impact on improving the quality of dietary protein intake by complementing the essential amino acids that are often present in low quantities in rice and vegetable-based diets that are typically consumed in many developing States. In particular, fish is a rich source of lysine which is an essential amino acid that is often deficient in animal protein deficient rice diets.

Recent research shows that fish is much more than just an alternative source of animal protein. Fish oils in fatty fish are the richest source of a type of fat that is vital for brain development in unborn babies and infants. Closely spaced pregnancies, as often seen in developing States, can lead to the depletion of the mother's supply of essential fatty acids, leaving younger siblings deprived of this vital nutrient at a crucial stage in their growth. This makes all fish and especially fatty fish, such as tuna, mackerel and sardine, particularly good components of the diet of pregnant and lactating women. It is therefore apparent that fish makes a valuable contribution to the nutritional quality of the diets of the populations of many developing countries in the Asia-Pacific region.

Trends in fish consumption

Taken globally about one billion people rely on fish as their main source of animal protein, especially in coastal areas where the dependence on fish is typically high. About 20 percent of the world's population derives at least 20 percent of animal protein from fish, and some small island States depend on fish almost exclusively. For instance, fish contributes more than, or close to, 50 percent of total animal proteins in some small islands states and in Bangladesh, Cambodia Indonesia, Japan and Sri Lanka.

Asia and the Pacific represent the most important region for fisheries and aquaculture production. It has a number of States with the highest per capita consumption. The source of fish in the diet of rural people in this region is gradually changing. Rural populations that were once almost entirely dependent upon inland capture fisheries for their food have seen the decline of fisheries resources through environmental changes and changing water management regimes. Aquaculture fish has become an increasingly viable alternative to inland capture fish as cheap wild fish becomes less available. This trend is also accompanied by rising prices for fish.

Fish consumption in selected Asian States

Globally 100 million tonnes of fish were available for consumption in 2001 and two-thirds of this total was consumed in Asia. Of this, 36.2 million tonnes were consumed outside China PR (14.0 kg per capita) and 42.6 million tonnes in China PR alone (25.6 kg per capita). Per capita consumption in Oceania was of 23.0 kg. There are still considerable intra-regional variations according to access to inland and marine capture fisheries and suitability of environments for aquaculture.

Existing estimates of food consumption are derived from food balance calculations based on reported catches. These provide statistics of total and per caput fish supply in live weight and contribution of fish to animal protein supply by State. However, as with production data, their reliability has often been questioned. In this review, fish consumption of selected States where survey data are available was examined.

Cambodia

Studies carried out in the late 1990's recorded a fish consumption of 38-58 kg per capita per year in Southeast Cambodia. Another estimate puts the per capita consumption of fish in Cambodia as high as 67 kg per year.

Bangladesh

The availability of non-cereal protein food in Bangladesh has reportedly increased significantly and has had a sustained growth rate of over eight percent per annum in the fishery and livestock sectors in recent years. National nutrition surveys of Bangladesh during 1995-1996 indicated the average fish intake as 11.7 – 13.5 kg/capita/yr for rural and urban populations, with a national average of 12 kg/capita/yr.

Lao PDR

Fish and aquatic animals are very complementary to the rice-based diet, providing high levels of lysine, minerals (particularly small species which are eaten whole), and in some cases vitamin A (particularly if the eyes are eaten). Consumption of fish varies greatly ranging from 15 to over 57 kg/person/year. An overall average for most of the provinces lies between 15-25 kg/person/year.

India

Diet surveys in India in 1996 showed that the intake of fish and meat is very low (6.9 and 4.0 kg/capita/yr) in the diets of the urban and rural poor.

Viet Nam

According to nutritional surveillance data in Viet Nam, the food consumption of animal foods is noted to be increasing. In 1995, fish and sea food

consumption in three areas (Red River, Northern Central and Mekong delta) were 15.6, 17.9 and 29.2 kg/capita/yr, respectively.