FISHERY COUNTRY PROFILE	Food and Agriculture Organization of the United Nations	FID/CP/IND
PROFIL DE LA PÊCHE PAR PAYS	Organisation des Nations Unies pour l'alimentation et l'agriculture	July 2006
RESUMEN INFORMATIVO SOBRE LA PESCA POR PAISES	Organización de las Naciones Unidas para la Agricultura y la Alimentación	

THE REPUBLIC OF INDIA

GENERAL ECONOMIC DATA

Area:	3.29 million km^2
Shelf area (to 200 m):	0.53 million km^2
Exclusive economic zone:	2.02 million km^2
Length of coastline:	8,118 km
Population (2004):	1,1 billion
GDP (2004):	US$ 691.2 billion
GNI per capita (2004):	US$ 620
Agricultural GDP (2004):	21.1% of GDP

FISHERIES DATA

2003	Production	Imports	Exports	Total food supply	*Per caput* supply
	t live weight				kg/year
Fish for direct human consumption	5,556,265	5,029	461,989	5,099,305	4.8
Non-food uses	348,319	–	–	–	

Estimated employment (2003):	
Primary sector: Total adult fisher population:	8.7 million
Full time fisher folk:	0.93 million
Part time:	1.07 million
Ancillary activities (net making, processing, fish vending and others):	3.96 million
Total	**14,66 million**
Secondary sector:	n.a.
Gross value of fisheries output (1997-98) (at ex-vessel prices, estimate):	US$ 4,845 million (= 1.47% of GDP)
Trade (2004):	
Value of imports:	US$ 47,261,000
Value of exports:	US$ 1,365,495,000

STRUCTURE AND CHARACTERISTICS OF THE FISHING INDUSTRY

With a total fishermen population of about 14.5 million (Livestock cesus, 2003) and rich marine and inland water resources, fisheries and aquaculture forms an important sector with regard to employment, livelihood and food security. Fish products also form a significant commodity for overseas trade. During the past decades the Indian fisheries and aquaculture has witnessed improvements in craft, tackle and farming methods. Creation of required harvest and post-harvest infrastructure has been receiving due attention of the central and state governments. All this has been inducing a steady growth.

Marine fisheries

India’s estimated marine resources potential is 3.93 million t. as per the latest update of 2000. During 2004, the marine fish catch was 2.81 million t, of which 63% was taken from the west coast and the rest from the east coast. The fishing units consist of 208000 traditional craft, 55000 traditional motorized craft, 1250 mechanized boats and about 100 deep-sea fishing vessels.

There are 3827 fishing villages and 1914 traditional fish landing centers. 79% of the fulltime fishers and 72.3% of the part time fishers are from the coastal states and union territories. A wide range of fishing gears, including trawls,seines, lines, bag nets, stake nets and lift nets are deployed.

During the ten-year period of 1995-04 marine capture production remained stable around 2.80 million t per year, with a minimum of 2.66 million t in 1995 and a maximum of 2.96

million t in 2002. The marine fish landings consist of about 65 commercially important species/groups. Pelagic and midwater species contributed 51.6% of the total landings. Indian oil sardine *(Sardinella longiceps)*, Indian mackerel *(Rastrelliger kanagurta)* and anchovies constitituted the main bulk of pelagic species caught followed by Bombay duck (Harpodon neherrius), Seer fish (Scomberomorus spp.), tunnies and cephalopods. Sciaenids, Carangids, Perches, Elasmobranchs and Marine shrimp forms main bulk of demersal resources harvested. Although contributing only 10% of the total marine landings, commercially shrimp is still the most important variety due to its export potential.

Development of marine fisheries sector is taken up with a focus on sustainability through empowering the traditional sector, enhancement of sea safety, rational exploitation of untapped deep-sea resources etc. for achieving employment generation, social security of fishers, increased food security and augmenting sea food exports. Development of adequate infrastructure for harvest and post-harvest operations with due consideration of the principle of minimizing post-harvest losses and ensuring enhanced food safety has been embarked upon. Under this programme a chain of 6 major and 45 minor fishery harbours and 158 modern Fish Landing Centres have been commissioned and as many as 18 harbours and 46 landing centres are at various stages of construction. Inorder to improve the domestic marketing of fish in the country, improved fish markets and chilled /refrigerated transport are being provided and low cost technologies for processing are being popularized. With these endeavors the annual per capita consumption of fish has been growing steadily and the national average during 2004 stood at5 kg, though the consumption pattern along coastal belt stood much high.

Inland fisheries

The country′s fresh water resources consist of 195210 kilometers of rivers and canals, 2.9million hectares of minor and major reservoirs, 2.4 million hectares of ponds and lakes and about 0.8 million hectares of flood plain lakes and derelict water bodies.During the ten-year period of 1995-2004 inland capture production grew from 600,000 tonnes to 800,000 tonnes and at present contributes to 13% of total fish production of the country.

Freshwater aquaculture

Inland aquaculture (2,352,000 tonnes in 2004) has emerged as a major fish producing system in India, with the governmental initiatives in the past three decades. Fish Farmers Development Agencies (FFDA) were set up in each district for delivering a package of technologies, practices, training and extension besides financial assistance to the beneficiaries. So far 429 FFDAs functioning in the country has brought about 0.65 million ha of water area under fish farming and reached out to 1.1 million beneficiaries and imparted training to about 0.8 million. Currently the average annualyield is around 2.2 t/ha.India produces over nineteen thousand million fry per year. Necessary capacity for feed production also exists. Carp accounts for over 80% of farmed fish. Major species cultured are rohu (*Labeo rohita*), catla (*Catla catla*), mrigal carp (*Cirrhinus mrigala*), grass carp (*Ctenopharyngodon idellus*), common carp (*Cyprinus carpio*), silver carp (*Hypothalmitcthys molitrix)*, catfish (*Clarius batrachus*), singi *(Heteropneustes fossilis)*, rainbow trout (*Onchorhynchus mykiss*). Giant fresh water prawn (*Macrobrachium rosenbergii*) has emerged as a new species for farming with promising results. The potential for farming in running cold waters and reservoirs is also being developed.

Brackish-water aquaculture

The estimated area of brackish water available for aquaculture is about 1.2-1.4 million ha, of

which, about 14% area has been brought under farming. Both traditional and scientific shrimp farming are practiced with yields varying from 300 to 1000 kg/ha/year. Shrimp farming is predominantly a small-scale farming activity, with 91%of the growers holding only water spread area of 2 hectares and below and another 6% holding 2-5 ha. Due to high commercial value, giant tiger prawn (*Penaeus monodon*) is the dominant species cultured followed by Indian white prawn (*Penaeus indicus)*. Shrimp production from coastal aquaculture during 2004 stood at approximately 120,000 tonnes. Farmed shrimp accounts for about 60% of shrimp exported from the country.

There are about 260 shrimp hatcheries in the country with an aggregate production capacity of 11 billion, of which 200 are in operation with an output of 7 billion shrimp larvae. There are 33 feed mills with an installed capacity of 150 000 tpa. The sector is providing direct employment to about 0.3 million people and ancillary activities provide employment to 0.6-0.7 million people. Coastal farming of bivalves and seaweeds have made a modest beginning in the country in recent years.

Utilization of catches

About 81% of the fish catch is marketed as fresh or chilled and forms staple food along the coastal and inland landing centres. About 6% of the catch goes for drying and curing. Frozen fish production accounts for 5.2%, while 4.7% goes for reduction to fish meal, 0.7% for offal reduction and 0.53% for other miscellaneous purposes. The utilization by fish canning industry is only 0.6% of the total catch. Value added products of different descriptions are slowly becoming popular as 'convenience food' in the wake of changing life styles. Though basically aimed at export market, these also have a promising potential in the domestic market. The range of value added products include extruded products, battered and breaded products, surimi and derivatives, pickles and curried products in retortable pouches.

State of industry

The fish processing industry is well developed in the country. There are about 625 registered exporters (380manufacturer-exporters and 240merchant-exporters). The post-harvest infrastructure includes 215 ice plants, 481 shrimp peeling plants, 371 freezing plants, 495 cold storage units, 7 canning plants, 16 fishmeal plants, 11 surimi plants, and one agar-agar production unit. 95% of the seafood processing units are concentrated in 20 major clusters in 9 states. All processing plants, which are export-oriented, are HACCP certified.

The total installed freezing capacity of 10 700 t/day, is fully utilized only during peak fishing season. The current production is little over 378 000 t/yr. Commercial production is mostly directed towards export. Total exports of fish and fishery products were 163,000 tonnes in 2004 (product weight, about 500,000 tonnes in live weight equivalent). The country exports twelve major commodity groups to over 40 countries. Shrimp products accounts for 65-70% of the export earnings.

Economic role of the fishing industry

Fisheries play an important role in the national economy, providing full-time or part-time employment to 14,66 million people. The contribution of fisheries to GDP at the current prices (2003-04)is 1.07%. There are 11 800 registered primary fisheries societies in India, with a membership of 1 917300 beneficiaries It is also a major contributor to foreign exchange earning fetching US$ 1,365 million during 2004.

DEVELOPMENT PROSPECTS

Marine fish production from near shore waters has reached almost a plateau and, at best, only marginal increase is predicted from this zone. Major gap in total fishable potential and present production exists in deep sea and off shore pelagic resources. Good potential exists for coastal aquaculture and Mari culture. Resource enhancement measures in coastal waters also need be taken up. In contrast, inland fish production has been showing rapid growth of about 6% per annum and has great potential for further development. Area expansion, diversification of farmed species and augmenting productivity from the existing farms in a sustainable manner are possible strategies in this sector. A substantial portion of the future additional demand for fish will have to be met from aquaculture.

Objectives for future fisheries development include enhancing fish production and productivity, generating employment, improving socio-economic conditions of fishers, increasing marine products for export, and increasing *per caput* availability of fish to about 11 kg/yr. These objectives are sought to be achieved through intensification of aquaculture, qualitative and quantitative improvement in farming, introduction of more economic varieties, improving productivity of reservoirs and lakes and horizontal expansion of farmed area. Combating diseases, popularizing organic farming and implementing sustainable farming practices would be taken up. Developing policy and legal framework with required safeguards for introduction of exotic varieties would receive attention. In the marine sector besides intensifying coastal aquaculture, sea farming, intensification of deep-sea fishing, better management of coastal fisheries with application of principles of sustainability and stock enhancement measures would be practiced for maximizing the returns. Considering the massive processing facilities created and the skilled manpower in hand, import of raw material for processing, value addition and export has good prospects.

FISHERIES MANAGEMENT

Indian marine fisheries faces frequent fluctuations as cyclic and climatological effects influence the pelagic stocks. All the coastal federal states have enacted their Marine Fishing Regulation Act with jurisdiction over their territorial waters. Management measures such as closed seasons, delimitation of fishing zones for different categories of fishing craft etc. are implemented for ensuring sustainability. Capture of non-targeted species and rejection of by catches are discouraged through awareness programmes involving stakeholders.

The country has been associated with development of several international instruments for management of marine fisheries, so also actively participated in the debates for finalization of the IPOAs. The UN Fish stock Agreement has been accessed and a national level Committee is overseeing the progress of implementation of the Fish Code. The Code has already been translated in to all the regional languages spoken along the coastal belt. Work on improving the legal and institutional framework to enable implementation of the provisions of these international instruments is in progress.

The Central government, which has jurisdiction over the fisheries in the EEZ, has brought out a comprehensive marine fishing policy to achieve harmonious growth of different sectors with least inter-sectoral conflicts and on the principle of stakeholder participation. An inter-ministerial Empowered Committee looks after management and development of fisheries in the EEZ. Instituting an effective monitoring, control and surveillance system (MCS) is in progress. A Vessel Monitoring System (VMS) is being introduced in the deep sea sector. Uniform fishing holidays in the EEZ along east and west coasts are in place. Limiting access for fishing through permits has ensured capacity management in the EEZ. The number of vessels that would be permitted in the EEZ during the next five years in each resource specific category has been worked and notified. The Coast Guard is vested with powers for

policing the EEZ.

Conservation of aquatic resources and genetic bio-diversity is another thrust area for the next millennium. The country is party to the Convention on Biological Diversity and Biosafety protocol. Necessary safeguards are put in place for regulating cross-boarder movement of live aquatic organisms.Attention is paid to protect endangered marine species such as Olive Ridley turtles by declaring marine sanctuaries and no-fishing zones along their nesting sites. Turtle Excluder Devices have been made mandatory for trawlers in the vulnerable areas. Fishing for endangered species of finfishes, crustaceans and molluscs listed under IUCN is banned and studies on the vulnerable species have been taken up. Apart from areas listed under Ramsar sites, other ecological hotspots are identified for abetting pollution and restoration of fishery etc. Fighting land-based pollution and implementation of Integrated Coastal Zone Management has high priority on the country's agenda. Apart from Environment (Protection) Act, 1986 and Rules framed there under, a landmark Coastal Regulation Zone Notification and a National Coastal Zone Management Authority for regulating the activities in the CRZ are in place.

In the aquaculture front, an aquaculture authority backed by Coastal Aquaculture Authority Act has the mandate to regulate coastal shrimp farming. As such intensive shrimp farming is banned, and only modified, improved traditional and extensive farming are permitted, with a productivity of around 2 to 2.5 t/ha/yr. Farming activity is regulated through permits so as to ensure that the activity is environment friendly.

RESEARCH

Fisheries research in India is coordinated by the Indian Council of Agricultural Research (ICAR), an autonomous organization under the Ministry of Agriculture, the Agricultural Universities, and institutes under the Ministry of Agriculture. Researches for genetic improvements in the commonly farmed species, domestication and breeding of new species, developing improved farming techniques, early diagnosis of diseases in aquatic organisms and their management, developments in harvest and post harvest technologies, and human resource development are some of the main topics researched. The mandates and addresses major research institutions are provided in the section on *Links to further information*.

INTERNATIONAL COOPERATION

Besides its active involvement in the fisheries developmental initiatives of FAO's COFI and its subcommittees, India is associated with various other global and regional bodies dealing with fisheries such as Convention for Conservation of Antarctic Marine Living Resources (CCMLR), Commission for International Trade on Endangered Species (CITES), International Whaling Commission (IWC), Indo-Pacific Fisheries Commission (IPFC), Indian Ocean Tuna Commission (IOTC). Among the regional fisheries management initiatives, India hosts the eight-member Bay of Bengal Large Marine Ecosystem (BOBLME) programme in Chennai, the first phase of which has been completed. Another four country regional initiative, namely the Bay of Bengal Programme - Inter-governmental Organization (BOBP-IGO) is also hosted by India and is situated in Chennai. Fisheries issues are also actively debated in other regional fora such as SAARC, BIMSTEC-EC, IOR-RC etc. in which India is member. India is partner in a number of bilateral assistance programmes for development of fisheries. The India technical assistance Programme (ITEC) has included fisheries as one of the subject fields for extending bilateral assistance.

AID

India has received substantial aid in the past from several international organizations,

including the World Bank, UNDP, DANIDA, NORAD, ODA UK, France and Japan. In 1998, the World Bank granted a loan of US$ 800 million for a National Agricultural Technology Project (NATP), and under this programme several projects have been implemented under ICAR, Ministry of Agriculture and State Agricultural Universities. The areas covered include marine fisheries, aquaculture, pearl culture, development of cold-water fisheries, and conservation of germplasm. Through yet another World Bank assistance programme a Shrimp and Fish Culture Project was implemented during 1992-1999. The Project covered the states of Andhra Pradesh, Bihar, Orissa, Uttar Pradesh and West Bengal. Six brackish water farms with a total area of 797 ha have been developed for shrimp culture operations. A total of 101 reservoirs and 22 oxbow lakes have been developed for fish culture.

FAO UNDP Bay of Bengal Programme (BOBP), a regional initiative covering seven countries bordering the Bay of Bengalstarted in 1979 was concluded during 2003 Assistance was received under the Programmein the development of small-scale fisheries, including enhancing the socio-economic conditions of the fishing communities in the region. ODA UK has provided technical aid for prevention of post-harvest losses in marine fisheries. Processing sector has largely benefited from the FAO programme for technical assistance in implementing HACCP in seafood processing industries, NORAD assistance for developing deep sea fisheries and cold water fisheries, DANIDA assistance in coastal fisheries development and man power training in marine fisheries, Japanese assistance in development of deep sea fishing, acquisition of modern dredging equipment, manpower training and capacity addition in net making and French assistance in fresh water prawn farming has helped development of these sub sectors.

Present

Presently an FAO assisted programme for controlling shrimp disease is under implementation in Andhra Pradesh. A programme for developing cleaner fishing harbours with FAO assistance is under finalization.

Future needs

India’s future fisheries development plans are aimed at making substantial contributions to doubling of food production, improving the welfare of fishers, promoting exports and providing food and livelihood security to tits rural population. The per capita availability and consumption of fish is to be increased to a level of 11 kg per annum for the fish eating population for which production and distribution has to be scaled up appropriately. All this requires scientific and technological back stopping and capacity building in key areas.

Aquaculture is recognized as an important source for meeting future demands for protein food in the country. A number of schemes have been instituted by state and central sectors to augment production from brackish-water and fresh water aquaculture sectors. The private sector has emerged as a major player in brackish-water aquaculture, particularly in shrimp farming. Responsible aquaculture and prevention and management of aquatic diseases, organic farming, cage farming, induced breeding and fattening of select species are some of the challenges to be addressed in this sector for improving productivity.

Considering the growing global demand for seafood, developing the export production with due care for food safety and product competitiveness has been embarked upon. As a backward linkage for improving hygiene and sanitation in fish handling, centrally sponsored schemes have been launched to upgrade the existing infrastructure at fishing harbours and landing centres and shrimp pealing yards. Quality up gradation in post harvest and domestic marketing sectors requires concerted efforts.

A number of schemes have been initiated by Central Government for the welfare of the fishing community, so as to provide them livelihood security through housing, insurance, and sea safety. Training, micro credit and increased participative management by the stakeholders need to be ensured. Another immediate requirement is to update the national preparedness for handling situations such as the recent tsunami, which has profound impact on the coastal communities and their livelihood. Improvements in database management and development of linkages in all sub sectors are another felt need.

INTERNET LINKS

Department of Agriculture & Cooperation	http://agricoop.nic.in
Department of Animal Husbandry, Dairying & Fisheries	http://dahd.nic.in
Department of Agricultural Research & Education (DARE)	http://dare.nic.in
Ministry of Food Processing Industries	http://mofpi.nic.in
Ministry of Commerce	http://commerce.nic.in/
Department of Ocean Development (DOD)	http://dod.nic.in/
Department of Bio-Technology	http://dbtindia.nic.in/
Indian Council of Agricultural Research (ICAR)	http://www.icar.org.in
Central Institute of Brackishwater Aquaculture (CIBA)	http://www.ciba.tn.nic.in/
Central Inland Fisheries Research Institute (CIFRI)	http://cifri.gov.in/
Central Institute of Freshwater Aquaculture (CIFA)	http://www.soft.net/cifa
Central Institute of Fisheries Technology (CIFT)	http://www.cift.res.in/
Central Marine Fisheries Research Institute (CMFRI)	http://education.vsnl.com/cmfrihqr
Central Institute of Fisheries Education (CIFE)	http://www.fisheries.university.org
National Bureau of Fish Genetic Resources (NBFGR)	http://www.icar.org.in/nbfgr/tmp/
National Research Centre on Coldwater Fisheries (NRCCF)	http://www.icar.org.in/nrccf/
Fishery Survey of India (FSI)	http://dahd.nic.in/fish/fsi.htm

Integrated Fisheries Project (IFP)	http://dahd.nic.in/fish/ifp.htm
Central Institute of Fisheries, Nautical & Training	http://dahd.nic.in/fish/cifnet.htm
Central Institute of Coastal Engineering for Fisheries	http://dahd.nic.in/fish/cicef.htm
Coastal Aquaculture Authority	http://aquacultureauthority.in.nic.in