

India's Marine Fisheries Sector: An Overview

With a coastline of over 8,118 km, and an exclusive economic zone (EEZ) of over 2 mn sq km, India has a significant marine fisheries sector that has long been an important source of occupation and livelihood for the coastal communities of the country. It is estimated that at least 3 mn people derive their livelihood from marine capture fisheries in the over 3,600 fishing villages situated along the Indian coastline (see table below). Other estimates put the number of people dependent on marine fisheries as much higher. The majority of those in the sector are small-scale and artisanal fishworkers, who derive their livelihoods from fishing, gleaning, artisanal processing and small-scale trading activities.

Table

Marine fishermen population	3 mn
Marine fishermen households	0.50 mn
No. of active fishermen	1.025 mn
Marine fishing villages	3,638
Fish landing centres	2,251

Source: CMFRI (www.cmfri.com)

The eastern coast (Bay of Bengal) differs from the western coast (Arabian Sea). The eastern coast is characterized by a narrow continental shelf. The rivers are long, slow-moving and have extensive delta formations. In addition to the monsoon, the east coast is subjected to severe storm surges which cause extensive coastal damage and flooding of low-lying areas.

The western coast has a broad continental shelf and short, swift-flowing rivers, with little delta formations. The wind and current pattern, together with the heavy runoff, from several rivers flowing into the Arabian Sea cause a nutrient-replenishing coastal upwelling, and account for the high productivity of the waters. In addition, there are the unique phenomena of mud-bank formations, areas of extreme calm, where fishes and shrimps aggregate in large numbers.

The coastal ecosystem comprises coastal wetlands, coral reefs (about 2,300 sq km), mangroves (about 6,700 sq km, of which 1,506 sq km are protected), lagoons and estuaries. Extensive seagrass beds are found in south India.

Besides performing vital coast protection functions, these ecosystems provide rich spawning and breeding grounds for fish and other aquatic organisms. It is in the shallow inshore waters that much of the primary activity in the fisheries food chain

takes place, and a significant proportion of marine fish landings are from inshore waters. Three-fourths of the total marine capture fish production is estimated to come from coastal waters. The higher productivity of coastal, inshore waters is also the main reason why maximum fishing effort is concentrated there. Efforts to protect the fragile and highly productive coastal ecosystems have been undertaken, and, at present, there are several marine sanctuaries, including the Gulf of Mannar and the Gulf of Kachch.

India's marine fish production has increased more than five times, from 0.53 tonnes in 1950-51 to 2.81 tonnes in 2000-01, even as exports of fish and fish products increased from Rs 35 crore in 1970-1971 to Rs 5,815 crore in 2001. Approximately two-thirds of total production is from mechanized fishing units (using trawls, gill-nets and purse-seines), while the rest is from motorized fishing units (using gill-nets, lines and purse-seines with outboard motors) and from unpowered fishing units. Available reports indicate that fisheries resources in several parts of the country are under stress, with most of the major commercially exploited stocks showing signs of overexploitation. This has repercussions for the livelihoods of those dependent on these resources, and better management of resources is clearly called for.

Administrative Responsibility

The responsibility for fisheries and the marine habitat is spread over several agencies and Ministries at the Central and State levels, according to the Seventh Schedule of the Constitution of India, which specifies subjects that are on the Union List, the State List and the Concurrent List.

Fish production from the EEZ or 'deep sea'—the marine space beyond the 12-nautical mile territorial sea up to 200 nautical miles from the baseline—as well as major fishing harbours, fishing vessel industry, seafood export trade, and marine and inland research and training are on List I, or the Union List, which makes them the responsibility of the Union Government. The Indian Parliament has exclusive power to make laws with respect to any of the matters enumerated in List I. Items under List 1 are dealt with by several agencies.

In the case of inland fisheries, aquaculture and marine fisheries in the territorial waters—the marine space up to 12 nautical miles (22 km) from the baseline—it is the State governments that have jurisdiction over them, as they are on List II, or the State List. The Union Government, however, also advises States on enactment of legislation for fisheries under their jurisdiction. For example, the Marine Fishing

Regulation Act (MFRA) was adapted by all maritime States, from a Bill that the Union Government had prepared and circulated in 1979. There are also several Central Government schemes for fish production and fishers' welfare that are implemented by the State Fisheries Departments.

Other areas related to fisheries, such as the protection of wild animals and forests, including endangered species of wild fauna (for example, whale shark, marine turtles, several species of bivalves) and flora (for example, mangroves), protection of coastal zone and marine biodiversity, and prevention of land-based sources of pollution are on List III, or the Concurrent List, which places the responsibility on both the Union and the State Governments. List III also includes all ports other than major fishing harbours. Both the Indian Parliament and the Legislature of any State have powers to make laws with respect to the items in List III. The Ministry of Environment and Forests (MOEF), at the national level, and the Department of Forests, at the State level, are responsible for the protection of wild animals and forests, and marine biodiversity. Minor fishing ports are under the Ministry of Shipping, at the Centre, and the Port Departments, at the State level.

It is worth mentioning that the 73rd and 74th amendments to the Constitution of India provide *panchayats* (local governing councils) with the powers to perform functions mentioned in the Eleventh Schedule of the Constitution, in 29 subjects, including fisheries.

Role of the Union Government

In the Union Government, the following ministries play important roles in the fisheries sector—Ministry of Agriculture, Ministry of Commerce and Industry, Ministry of Environment and Forests, Ministry of Food Processing Industries, and Ministry of Defence.

The various departments under the Ministry of Agriculture (Department of Animal Husbandry and Dairying <http://dahd.nic.in/> , Department of Agriculture Research and Extension <http://dare.nic.in>, and Department of Agriculture and Co-operation <http://agricop.nic.in>) are responsible for fisheries in the EEZ, survey and assessment of fisheries resources, exploration of resources in EEZ, fisheries development, fisheries technology and fisheries management, in addition to education, research, training and extension, as well as for aquaculture development.

The Ministry of Commerce and Industry (<http://commerce.nic.in>) is responsible for the development and promotion of exports of fish products, quality control and for setting standards for the processing units. The various departments and agencies under this ministry related to the fisheries sector are the Department of Commerce, Directorate of Foreign Trade, Export Inspection Council, and the Marine Products Export Development Authority (MPEDA).

The Ministry of Food Processing Industries (<http://mofpi.nic.in>) deals with fish processing (including canning and freezing) and is responsible for providing technical assistance and advice to the fish processing industry.

The Coast Guard (<http://www.indiancoastguard.org>), under the Ministry of Defence, provides assistance and protection to fishermen at sea while in distress, regulates fishing by foreign fishing vessels in the maritime zones, and preserves and protects the marine environment from pollution. The Coast Guard also has a mandate to protect endangered marine species under the Wildlife Protection Act, 1972.

The Ministry of Shipping (<http://www.dgshipping.nic.in>) is in charge of the fishing vessel industry and fishing harbours.

The Ministry of Environment and Forests (<http://envfor.nic.in>) protects and preserves the coastal and marine ecology and environment (excluding the marine environment in the EEZ). The MOEF also looks into coastal habitat protection issues. It is the national focal point for the 1972 Wetland Convention or the Ramsar Convention; the 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, or the Washington Convention), which applies to marine turtles and whale shark in the Indian waters; the 1979 Convention on the Conservation of Migratory Species of Wild Animals (CMS or Bonn Convention), which applies to species of marine turtles and shark species in the Indian waters, and the 1992 Convention on Biological Diversity (CBD), which has a marine biological diversity component called the Jakarta Mandate. The MOEF is also the nodal agency for the United Nations Environment Programme (UNEP).

The Department of Ocean Development (<http://dod.nic.in>), under the Minister for Ocean Development, holds the responsibility for the preservation, protection and conservation of the marine environment in the EEZ, development of technology, mapping of resources and for the establishment of the ocean commission, which will draft policies and legislation relating to ocean and ocean resources.

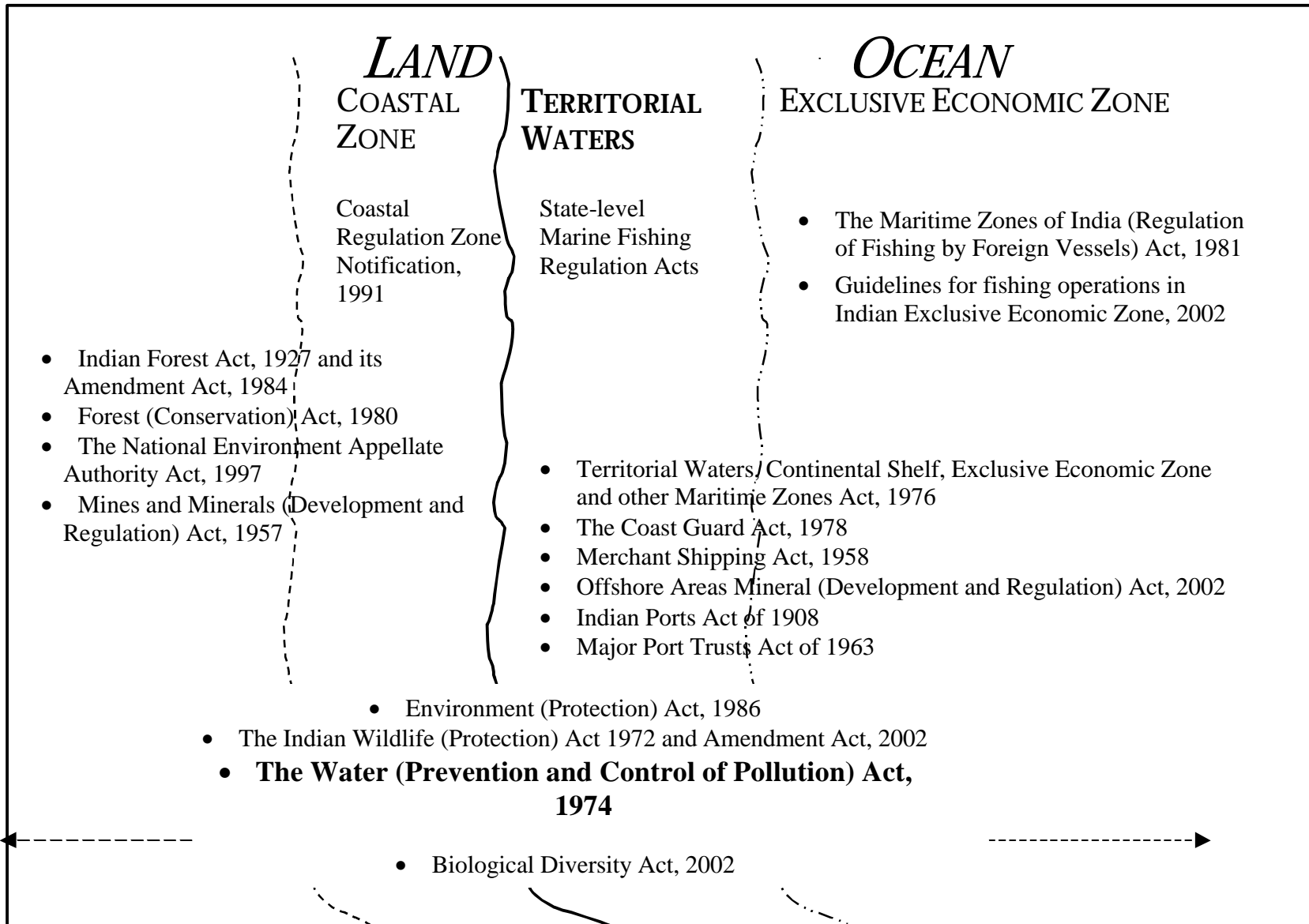
The Ministry of External Affairs (<http://meadev.nic.in>) is responsible for negotiations on the Law of the Sea matters, including the 1995 UN Fish Stocks Agreement. However, it is the Department of Ocean Development that is the nodal agency for implementing the provisions of the 1982 United Nations Convention on the Law of the Sea (UNCLOS or 1982 Convention), including the provisions related to the protection and preservation of the marine environment.

The Planning Commission (<http://planningcommission.nic.in>) is responsible for the formulation of the Five-Year Plans for the most effective and balanced utilization and allocation of resources, while the policy and details of specific schemes are dealt with by the respective Ministries and departments.

A Diagrammatic Representation

The diagram on the next page identifies legislation important from a marine fisheries perspective. Whether the legislation is specific to the marine/ oceanic side or to the landward side, or whether it a broad-based environmental legislation applicable across the land-sea boundary, is indicated. For example, some acts of legislation, such as the Environment (Protection) Act, 1986, and the Wildlife (Protection) Act, 1972, straddle both the land and the marine side.

Diagram: Marine Fisheries: Legislative Framework



Legislation Directly Relevant to Marine Fisheries

This section identifies legislation of relevance to the marine fisheries sector, specific mainly to the marine side, while the section that follows identifies other related legislation with a direct bearing on the marine fisheries sector. Selected pieces of legislation have been identified for discussion.

The Indian Fisheries Act, 1897 is meant to regulate riverine fisheries and fisheries in inshore waters, to prohibit the use of poisons and dynamite in fishing, and to protect fish resources in selected waters through regulation of, among other things, the erection and use of fixed engines (the reference is to nets, cages, traps, etc.), the construction of weirs, the use of nets of certain types and dimensions, etc.

The Territorial Waters, Continental Shelf, Exclusive Economic Zone and other Maritime Zones Act, 1976 recognizes the sovereign rights to conservation and management of living resources in the Indian EEZ, in addition to their exploration and exploitation. Section 15 (c) further gives powers to the Central Government to make rules, *inter alia*, for conservation and management of the living resources of the EEZ, and Section 15 (e), for the protection of the marine environment.

Following this Act is the Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Act, 1981 and the Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Rules, 1982. It is noteworthy that there is no mention of fisheries conservation and management in The Territorial Waters, Continental Shelf, Exclusive Economic Zone and other Maritime Zones Act, 1976.

Fisheries within the 12-mile territorial limits are managed under the Marine Fishing Regulation Acts (MFRAS) of the maritime States of India. The Act is based on a model piece of legislation prepared by the Ministry of Agriculture, Government of India, in 1979, in response to demand from fishers operating unpowered fishing vessels to protect their fishing space and equipment from bottom trawlers. In general, the main emphasis of MFRAS is on regulating fishing vessels in the 12-nautical mile territorial sea, mainly to protect the interests of fishermen on board traditional fishing vessels. Thus, the Act has been mainly used for the purpose of maintaining law and order at sea.

The MFRAS were first implemented in the States of Kerala and Goa in 1980. They were subsequently enacted in other States, the latest being in 2003, in Gujarat. While the earliest MFRAS were enacted only for regulation of fishing vessels along the coastline of the State, the Gujarat MFRA provides for protection, conservation

and development of fisheries in inland and territorial waters of the State of Gujarat and for regulation of fishing in the inland and territorial waters along the coastline of the State. It is under the MFRAS that coastal States declare a closed season for fishing to protect fish resources.

The Merchant Shipping Act, 1958 aims to ensure the development and efficient maintenance of an Indian mercantile marine sector in a manner best suited to the national interests. It established a National Shipping Board and a Shipping Development Fund, to provide for the registration of Indian ships and generally to amend and consolidate the law relating to merchant shipping. The Act defines “fishing vessel” as a ship fitted with mechanical means of propulsion, which is exclusively engaged in fishing for profit. Section 76 (4) specifies competency requirements for officers on fishing vessels of 25 GRT and above.

An amendment in 1983 to section 435 (on Power to make rules respecting sailing vessels), led to the insertion of part XVA on fishing boats. This amendment lays down the procedures for registration of fishing boats. It applies to fishing boats of 20 m and above, while specifying that the Central government will have the power to declare that boats of less than 20 m shall be required to be registered under The Merchant Shipping Act, 1958.

The Coast Guard Act, 1978 provides for the constitution and regulation of an Armed Force of the Union for ensuring the security of the maritime zones of India with a view to the protection of maritime and other national interests in such zones. Among other things, it provides for safety and protection of islands and offshore structures; protection and preservation of maritime environment and endangered species; prevention and control of pollution in the maritime zones; assistance to fishermen in distress at sea; safeguarding life and property at sea; preventing poaching in Indian waters; assisting in ocean research-related activities; enforcing maritime law; and carrying out other duties as and when assigned by the Government of India, without duplication of efforts.

The Indian Ports Act, 1908 confers the power of administering major ports to the Central Government and lays down rules for safety of shipping and conservation of ports. The Major Port Trusts Act, 1963 specifies that the administration, control and management of major ports lie with the respective Port Trusts.

It is under the Indian Wildlife (Protection) Act, 1972 that marine protected areas/sanctuaries are declared, like the marine parks in the Gulf of Mannar and the Gulf of Kachch. It is also under this Act that certain marine species are declared as

protected. For example, 10 species of shark, seahorses, sea cucumbers, giant grouper and some mollusc species have been listed in Schedule I of the Act, which prohibits hunting and trading in these species. The Act thus adopts a two-pronged conservation approach: *specified* endangered species are protected regardless of location, and *all* species are protected in designated areas, called sanctuaries and national parks.

Section 26A of the Indian Wildlife (Protection) Act, 1972 recognizes the need to protect the occupational interests of fishermen, while declaring a sanctuary in territorial waters. It also specifies that the right of innocent passage of any vessel or boat through the territorial waters shall not be affected in this process.

The Act was amended in 1993 and subsequently in 2002 through The Wild Life (Protection) Amendment Act, 2002. In this amendment, fish has been included in the definition of animals. The amendment also includes a clause on settlement of rights while declaring a sanctuary: “Till such time as the rights of affected persons are finally settled under sections 19 to 24 (both inclusive), the State Government shall make alternative arrangements required for making available fuel, fodder and other forest produce to the persons affected in terms of their rights as per the Government records.”

Given that the coastal and marine waters of India are extremely rich in biodiversity, the Biological Diversity Act, 2002 assumes great relevance. The Biological Diversity Act, 2002 provides for the conservation of biological diversity, the sustainable use of its components and, significantly, the fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and related matters.

The Offshore Areas Mineral (Development and Regulation) Act, 2002 provides for the development and regulation of mineral resources in the territorial waters, continental shelf, EEZ and other maritime zones of India. Minerals are defined to include all minerals except mineral oil and hydrocarbon resources. The Act provides for the prevention and control of pollution, and the protection of the marine environment. Significantly, pollution of offshore environment is defined as “introduction by any person, directly or indirectly, of substances or energy into the offshore environment which results, or is likely to result, in deleterious effects on living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the offshore areas, and impairment of quality of sea water for use, and reduction of amenities.”

The Environment Protection Act, 1986 is an umbrella legislation designed to provide a framework for the Central Government to co-ordinate the activities of various Central and State authorities established under previous laws, and to bring about uniformity in regulations. It has provisions to allow the making of rules for various activities and areas of concern/interest, and hence it is an 'enabling' law.

The Environment Protection Act, 1986 authorizes the Central government to protect and improve environmental quality, control and reduce pollution from all sources, and prohibit or restrict the setting and/or operation of any industrial facility on environmental grounds. Notably, for the first time, it makes provisions for citizen suits in the lower courts, allowing a citizen to prosecute a polluter by filing a complaint with a Judicial Magistrate Court.

Subsequent notifications under the Environment Protection Act, 1986 have also made it mandatory to conduct environmental impact assessments (EIAS) for specified developmental activities and have made public hearings mandatory for all developmental activities that require environmental clearance from the MOEF.

Other Legislation Relevant to the Sector

The actual act of fishing takes place in coastal and marine waters. However, fishing communities reside along the coast, and several fisheries-related tasks, including processing fish, and making and mending nets, take place on shore. They are directly susceptible to developments along the coast, such as urban expansion, developments of ports, industrial shrimp aquaculture, development of tourism and industry. Moreover, fisheries resources and the livelihoods of those who depend on them are highly susceptible to land-based activities, such as those that generate pollution and have an impact on the coastal environment.

Thus, several acts of environmental legislation, even if not directly specific to marine fisheries, have great relevance for the sector. These are summarized below:

The Indian Forest Act, 1927 establishes four categories of forests: reserved, village, protected and non-government (private). It declares as punishable certain unauthorized activities. Several mangrove forests are covered under the provisions of this Act.

The Water (Prevention and Control of Pollution) Act, 1974 aims to prevent and control water pollution, and maintain and restore the wholesomeness of water. It establishes an institutional structure for preventing and abating water pollution, and

standards for water quality and effluent. Polluting industries must seek permission to discharge waste into effluent bodies. The Central Pollution Control Board (CPCB) was constituted under this Act.

Under the Forest (Conservation) Act, 1980, the dereservation of a reserved forest, or the diversion of forestland for any 'non-forest' purpose is prohibited, as is the cutting of trees in a forest without the prior approval of the Central Government.

The Mines and Minerals (Regulation and Development) Act, 1957, and its Amendment in 1986, have provisions that call for greater environmental sensitivity while conducting mining operations. Minor minerals are regulated by the rules of the different State governments, while rare earths (atomic minerals) are regulated by the Atomic Energy Act.

The Coastal Regulation Zone (CRZ) Notification was issued under the provisions of the Environment (Protection) Act, 1986. It outlines a zoning scheme to regulate development in a defined coastal strip. The Notification defines the coastal stretches of seas, bays, estuaries, creeks, rivers and backwaters which are influenced by tidal action in the landward side, up to 500 m from the high-tide line (HTL) and the land between the low-tide line (LTL) and the HTL, as the CRZ. The CRZ has been classified into four categories for the purpose of regulating development activities. Maximum restrictions apply to the ecologically sensitive areas of CRZ-I. The Notification provides for setting up coastal management authorities at the national and State levels to identify and prepare coastal management plans.

The National Environment Appellate Authority Act, 1997 provides for the establishment of a National Environment Appellate Authority to hear appeals with respect to restriction of areas in which any industries, operations, processes, or class of industries, operations, or processes shall not be carried out or shall be carried out subject to certain safeguards.

It requires the Central Government to constitute a National Appellate Authority for hearing appeals against orders granting environmental clearance in areas where restrictions are imposed on setting up any industry or carrying on any operation or process.