Chapter-2
Management of Fisheries and Institutional Dynamics- An Overview

2.1 Fisheries Management Institutions

The term “institutional framework” therefore denotes the range of institutions that together form the decision-making environment, so helping to shape broad policies and specific instruments for governing fisheries. It will include particular organizations and the systems of beliefs, law, science, and social organization that legitimize, inform, and uphold it, as well as the outputs in the form of rights, responsibilities, and regulations (Symes, 2007). In a broader sense, the institutions may comprise the various sets of relations between individuals or groups of interested parties and the State or States which define their respective rights and responsibilities. These may include rules, mechanisms and the organisational support structures that develop and implement the rules affecting the use of fishery resources (FAO, 1997).

The governance of fisheries - the sum of the legal, social, economic and political arrangements used to manage fisheries, has international, national and local dimensions. It includes legally binding rules, such as national legislation or international treaties, and it relies on customary social arrangements as well as on the respective national framework provided for all economic activities. Since the 1950s, fisheries management has benefited from considerable development of institutions - the sets of rules used for the management of fisheries - and the processes and the organizations that develop and implement these rules. There has been a massive urge from policy makers as well as other stakeholders especially fishing communities for developing a sustainable resource management system in the marine ecosystem of the world.

Fortunately, there appears to be a growing international consensus supporting conservation of fisheries resources. At an international level, the sets of rules are treaties, both multilateral and bilateral, and other non-binding instruments which are being used by states. The FAO World Conference on Fisheries Management and Development was held in Rome from 27 June to 6 July 1984. The Strategy endorsed by the 1984 World
Fisheries Conference placed primary emphasis upon the need for better use and management of the world's fishery resources. It drew attention to the fact that the successful exercise of national authority to extract greater benefit from fish resources depends in large measure upon the ability of coastal States to manage their resources more effectively. It underlined that rational management is the essential basis for sound, sustainable development of fisheries.

The Declaration of Cancun (May 1992) made at the International Conference on Responsible Fishing, helped to set the stage for the UN Conference on Environment and Development (UNCED) and for further enunciation of the concept of the sustainable development of fisheries and other marine resources. The fisheries policy framework has significantly improved with the entry into force of the UNCLOS 1982, the 1993 FAO Compliance Agreement, the 1995 UN Fish Stocks Agreement and the 1995 FAO Code of Conduct. Additionally, a number of new fisheries commissions have been established, thereby putting practically all the world resources, including in the high seas, under some sort of management framework. Members to FAO are showing a greater awareness of fisheries issues and a commitment to act to resolve them both with International Plans of Action (IPOAs) on capacity, sharks, by-catch of birds, illegal fishing that have been endorsed by the FAO Committee on Fisheries and with requests for radical improvements to national fisheries policies and legislation.

Central to these international instruments in fisheries governance is the 1982 United Nations Convention on the Law of the Sea (UNCLOS), a comprehensive treaty covering all aspects of ocean governance, including fishing gave coastal states around the world to come under the jurisdiction of new EEZ. The need for a strengthened emphasis on the management of world fisheries led to major FAO inputs in the 1992 International Conference on Responsible Fishing in Cancun, Mexico, and the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro. Another important achievement during this period was FAO approval in 1995, for the Code of Conduct for Responsible Fisheries, which sets principles for countries in the world on how they could develop appropriate fisheries management policies based on sustainable
harvesting of fisheries resources. The precautionary approach prescribed here is also implemented in concrete management rules as minimum spawning biomass, maximum fishing mortality rates, etc. In 1993 FAO compliance Agreement to promote compliance with International Conservation and Management measures by Fishing Vessels on the High seas enable the States to flag State vessels that are authorized to fish on the high seas and thus they operate in accordance with international conservation and management measures as well and exchange information on high seas fishing and their activities. The 1995 Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks (UNFSA) was one of the concrete results to UNCED. It elaborates the fundamental principle that States should cooperate to ensure conservation and promote the objective of the optimum utilization of straddling and highly migratory fish stocks both within and beyond the EEZ (FAO, 1999).

There are four International Plan Of Action’s (IPOA) which are voluntary instruments within the framework of the CCRF. Three IPOAs were adopted by Committee On Fisheries at its 23 Session in February 1999 and include the IPOA on Seabirds which concerns the reduction of incidental catch of seabirds in longline fisheries, the IPOA on Shark which concerns conservation and management of sharks, and IPOA on capacity which concern the management of fishing capacity the subject of management of fishing capacity. The fourth IPOA, addressing IUU fishing was adopted at Committee On Fisheries the 24 Session 2001 (Mathew, 2009).

In addition, there are a large number of bilateral agreements and regional multilateral agreements which form part of the international set of rules governing fisheries. In December 1995, 95 states met in Kyoto, Japan, to hold the International Conference on the Sustainable Contribution of Fisheries to Food Security. The principles of the Kyoto Declaration, if fully implemented, would bring the world’s fisheries much closer to their full potential. Johannesburg Summit 2002 – the WSSD target’s to maintain or restore depleted fish stocks to levels that can produce the maximum sustainable yield on an urgent basis and where possible by 2015; and to achieve by 2010 a significant reduction in the current rate of loss of biological diversity. A brief picture of International framework on fisheries is presented in table 2.1.
Table 2.1 International Framework on fisheries

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<th><strong>Legal framework</strong></th>
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<tr>
<td>1982 UNCLOS</td>
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<td>1995 UN Convention Agreement on Straddling Fish Stocks and High Migratory Fish Stocks</td>
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<th><strong>Institutional Framework</strong></th>
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<tr>
<td>1993 FAO compliance Agreement to promote compliance with International Conservation and Management measures by Fishing Vessels on the High seas</td>
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<td>1995, for the Code of Conduct for Responsible Fisheries</td>
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<tr>
<th><strong>Political framework</strong></th>
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<tr>
<td>Agenda 21 of 1992 UNCED</td>
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<td>Johannesburg Summit 2002- World Summit on Sustainable Development (WSSD)</td>
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<th><strong>Regional framework</strong></th>
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<tr>
<td>RFMO/ As</td>
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<tr>
<td>Indian Ocean Tuna Commission (IOTC)</td>
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<tr>
<td>Asia Pacific Fishery Commission (APFC)</td>
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<tr>
<td>Commission for the Conservation of Antarctica Marine Living Resources (CCAMLR)</td>
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<td>INFOFISH</td>
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Source: Mathew, 2009

Institutional development during the last few decades has included the establishment of fishermen cooperatives, professional associations (including non-governmental organizations), international regional fishery bodies, intra-national regional fishery councils and the International Tribunal of the Law of the Sea (ITLOS). For the national governance of fisheries, these sets of rules may take a number of forms, such as national legislation, local regulations or long-standing customary arrangements.

### 2.2 Trends in Fisheries Resource Management

Fisheries management experts recognise that the underlying cause of over-exploitation in the marine fisheries are often of social, economic, institutional and political in origin. The prime concern of fisheries management, therefore, should address the relationship of
fisheries resource to human welfare and the conservation of the resources for use by future generations. It is thus, has become increasingly evident that fisheries management cannot be effective unless the people who harvest the resources (communities and fishers) are effectively involved in the management process. A sound fisheries management requires: 1) a clear definition of policy goals for the fishery such as long term biological sustainability and maximization of sustainable economic returns; 2) a set of institutions for achieving these goals. Without these policies and institutions, there is likely to be resource conflict and over exploitation, both biologically and economically (Peterson, 2006).

Arnason (2001) argues that, a management system that is based on property rights is a promising one in developing countries since this reduces or eliminates the incentives for over - exploitation in the open access fishery. Recently it has been recognized that a community based management system, which is based on property rights approach is a viable option for sustainable resource use and improving the lot of fishermen (Wilson, 2001; Pomeroy and Berks 1997).

Cooperative management as shown in figure 2.1, idealize the formulations predicated on interaction between equal partners in decision making, each of whom retains distinct identity and independence throughout the process of cooperation. Community-based management engages with both the concept of shared management and the parallel movement toward community-based decision making. It significantly people centered; is often considered alongside concepts such as self-determination, self-government, autonomy, and sovereignty; and has considerable initial appeal for indigenous groups. Collaborative management draws heavily on the wider principles of collaboration. Participation in the process of decision-making and an emphasis on power sharing are closely aligned with the process of collaboration (Tipa and Welch, 2006).
2.2.1 Right-Based Fisheries Management

The concern of marine resource management is how to maintain species of fish at an ecologically sustainable level while at the same time, assuring the livelihood of those who depend on marine resources. There is no specified set of users or rules governing the management of natural resource and an attempt could be made to solve the problem is through the allocation of rights among stakeholders, and thereby invoking their accountability. The choices for an Indian system of rights based fisheries management, can be limited to: 1) Individual (tradable) fishing rights (IFRs) where each traditional fisher family is individually given the percentage share of MSY calculated the first time around as a right, the actual amount of fish varying depending on the MSY calculated every year. 2) Community fishery rights (CFRs) entitle communities to their share of rights in the TAC, depending on the number of members of the community at the time of primary allocation.
The adoption of an ecosystem-based approach to fisheries management may also provide the opportunity for creating closer links between fisheries science and local ecological knowledge generated through the practical experience of fishers (Symes, 2007). An ecosystem approach could help manage fisheries by the (i) Conservation of fisheries resources, protection of fish habitats, and allocation to fishers are the three most important considerations in fisheries management. (ii) The approach can facilitate a better understanding of the tropho-dynamics in an ecosystem, and also the impact of fishing gear selectivity on marine living resources (Mathew, 2001).

### 2.2.2 Community Based Management in Fishery

Market failure, high excludability being a public good and unsuccessful conventional centralized management, were the immediate cause of the emergence of Community Based Resource Management in fishery resource of the world. The idea that the resource users and resource based communities should have primary responsibility for managing their resources is what makes Community – Based Fisheries Management different from other source of management approaches which has very less involvement of resource dependent people and communities. The inherent idea that resource users should give the primary responsibility of managing the resource base is that, they will have the willingness to do so, since any mismanagement will adversely affect their livelihood. Again they have the capacity to better manage the resources since they know the resource better. They know the systems productivity, need for conservation, extent of resilience, adaptability to shocks and stress etc. Thus community based fisheries management does not aim solely on harvesting the benefits rather they must strive to achieve ecosystem’s health and promote conservation and sustainable use of the resources.

Community-based management systems have the potential of solving the commons dilemma by internalizing the high information and transaction costs. The community has a built-in incentive of social capital that can be used to overcome the problem caused by asymmetrical information and lower opportunity costs of their time than that of state machinery. The community also has at its disposal the requisite social coercive
mechanisms to force compliance with expected harvest (Grima and Berkes, 1989). Two basic aspects are prone in the case of Community Based Fisheries Management (CBFM) is the empowerment aspect and the capacity building aspect. In the former case it empowers the coastal communities and resources users to gain greater economic, social and political power. The latter case, it equip them to develop certain skills and brings new innovations in the management of fishery resources.

2.2.3 Basic principles of CBFM

In 1998, a grass roots project known as ‘Writing the rules’, developed two fundamental fisheries management principles. They are 1) Stakeholders must hold the authority in Management and 2) Management decisions should be made at the most local level possible. The Stonington Fisheries Alliance in Stonington, Marine later added two additional principles. 1) Authority comes with participation and 2) Rules must protect both resource and community. The general principles of community – based fisheries management adapted from IIRR (1998) are Empowerment, equity, Ecosystem Based Management, Respect for local Knowledge and inclusiveness. It is believed that these principles in operation will reduce poverty and sustainable resource use.

2.3 Institutions in Community Based Resource Management

2.3.1 Institutions: Theoretical and Operational definitions

Institutions are rules of the game: the humanly devised constraints that structure human interaction. These are structures and mechanisms of social order and cooperation governing the behavior of a set of individuals. Institutions are identified with a social purpose and permanence, transcending individual human lives and intentions, and with the making and enforcing of rules governing cooperative human behavior. The term, institution, is commonly applied to customs and behavior patterns important to a society, as well as to particular formal organizations of government and public service. Actors, the players of the game, may be individuals or organisations. According to North (1995), organisations ‘consist of groups of individuals bound together by some common objectives’, and he identifies economic, political as well as social organisations.
2.3.2 Formal and Informal Institutions

Formal institutions are made up of formal constraints (such as rules, laws, constitutions), and informal institutions are informal constraints (such as norms of behavior, conventions, self-imposed codes of conduct), and their enforcement characteristics (Coase, 1988). Thus, there are formal rules, such as constitutions, laws and regulations, and informal ones – behavioral norms, codes of conduct and routines. The institutional dimensions presented in table 2.2 will essentially increase ones understanding on institutions.

Table 2.2 Institutional dimensions

<table>
<thead>
<tr>
<th>Institution type</th>
<th>Meaning/Description</th>
<th>Examples</th>
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<tbody>
<tr>
<td>Associative</td>
<td>Institutions as mechanisms facilitating prescribed or privileged interaction among different private and public interest.</td>
<td>Business networks, kinship groups, social classes, associations, interest groups.</td>
</tr>
<tr>
<td>Behavioral</td>
<td>Institutions as standardized (recognizable) social habits – manifested in activities of individuals and groups as reflections of social norms.</td>
<td>Habits, routines, artifacts, ways of doing things, shared beliefs, theories in use, &quot;how the game is played.&quot;</td>
</tr>
<tr>
<td>Cognitive</td>
<td>Institutions as mental models and constructs of definitions – manifested primarily in what society expects of individuals.</td>
<td>Cultural and social values, superstitions, &quot;wisdom&quot;, “how the game ought to be played.”</td>
</tr>
<tr>
<td>Regulative</td>
<td>Institutions as prescriptions and proscriptions.</td>
<td>Written and unwritten “rules of the game”; state as rule maker, referee, and enforcer.</td>
</tr>
<tr>
<td>Constitutive</td>
<td>Institutions setting the bounds of social relations</td>
<td>Collective actions initiated by the state agencies, firms, unions, or citizens groups; language; property rights structures; agreements; arrangements; marriage; family</td>
</tr>
</tbody>
</table>

Source: Parto, 2005
2.3.3 Formal and Informal rules

An enabling policy and legal framework ensures that, where there is political will, governments can facilitate and support management. Typically, the state is entrusted with the management of the fishery resource, but it can assign responsibility to local communities/individuals to manage at the local level, or recognize their competence in this respect. Local ownership improves compliance with locally agreed rules and greatly improves the alignment of these rules with national legislation. It is essential that governments (either locally or nationally) demonstrate a willingness to change policy, involve communities and help define the roles and responsibilities of the different players. Communities involved in management must be empowered to ensure effective participation and sustained involvement. The strengthening of organizations and institutions so that they fully recognize their role in the management process is a prerequisite for success of community based management.

Numerous examples of coastal communities around the world have evolved, often-unwritten rules to regulate their fisheries. The Cocamilla people in the Peruvian Amazon, observing that their lake was being over-fished by commercials from other regions, ruled that only subsistence fishermen be allowed to fish there. In Newfoundland and Japan, some communities hold annual lotteries for the best fishing areas. Among the Cree people of St. James Bay, Canada, and in Donegal, Ireland, fishermen competing for particularly good spots agree to fish in turns. The Boston-based Conservation Law Foundation is currently working with fishermen in developing economic structures for them to take on greater responsibility as ecosystem managers (Simon, 1995).

The call for developing countries to make the best use of the EEZ regime introduced in the 1970s played an important role towards fisheries management. Many fisheries administrators were saddled with the problem of over-capitalisation, resource rehabilitation and resource conservation for sustainable use. To meet the demand, a host of integrated fisheries management regimes were instituted to further reduce the excessive fishing effort. The major policies targeted to reduce effort reduction include limited licensing programme, gear restriction, area closure and to restraints on mesh size.
One of the most effective tools used during the period was the zone regulation, which specified the fishing areas. Fisheries legislations and systems prevalent in Asian countries were highlighted in table 2.3.

Table 2.3 Fisheries legislations and systems in Asian countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Type of system</th>
<th>Current legislation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>Centralized</td>
<td>Marine Fisheries Ordinance of 1983.</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>Centralized</td>
<td>Fisheries and Aquatic Resources Act of 1996 and Fisheries (Regulation for Foreign Fishing Boats Act) of 1979.</td>
</tr>
<tr>
<td>Thailand</td>
<td>Centralized</td>
<td>Fisheries Act B.E. 2490 of 1947</td>
</tr>
</tbody>
</table>

Source: FAO, 2006

Restricted fishing zones were also introduced in countries such as Thailand, and Myanmar. In Thailand, its 12 mile territorial water remained closed to trawlers. The centralized management approach focused on open access, production and only large mobile fisheries was being countered by the need for the government to take responsibility for its fishing fleet outside its waters and to regulate its fleet inside in order to prevent increased conflict and pressure on coastal resources. The new Fisheries Law under the consideration of the Parliament intended to move towards sustainable fisheries and encourage greater stakeholder participation.

India’s coast had a split management strategy because of the devolved coastal management authority to the states. This strategy resulted in a high variance of management systems in zoning and the adoption of regulatory measures (eg: differing
coastal definitions, licensing regime and closed seasons). Minor gear restrictions and spatial restrictions were in place but enforcement appeared to be ad hoc. In areas of national jurisdiction, the focus was on eliminating illegal foreign fishing with little compliance of local vessels. India have a significant track record in the use of NGOs as a management tool ensuring participatory consultation at the state level with fishers who were well represented by associations and community groups.

2.4 Institutional Dynamics in Indian Fisheries Resource Management.

In most of the countries, however, the production trends in respect of the commercially important fishery resources have been showing gradual decline. The situation is no different in India. The phenomenal increase in production was achieved through adoption of modern methods for exploitation and extension of fishing from the traditional near shore waters to deeper regions. This has also brought in its wake regional and sectoral imbalances in the exploitation of the common resources. India distinguishes between two types of marine capture fisheries (coastal and deep-sea fisheries), each one ruled by its particular legal regime. Coastal fisheries fall under state jurisdiction and take place within the first 12 nautical miles from the base line to the sea. Deep-sea fisheries are those operations taking place between 12 nautical miles and the outer boundary of the EEZ, falling under the jurisdiction of the union government. Fisheries management in India can be categorized into management of fisheries in the EEZ and in the territorial waters. According to the Constitution of India, the Central (Federal) government has jurisdiction over the fisheries in the EEZ, while the State (Provincial) governments have jurisdiction over fisheries in the territorial waters (ICSF, 2009).

It follows that control and regulation of fishing and fisheries within territorial waters is the exclusive province of the State, whereas beyond the territorial waters, it is the exclusive domain of the Union. The Ministry of Agriculture as per its allocated business, helps the coastal States and Union Territories in development of the fisheries within the territorial waters, besides attending to the requirements of the sector in the EEZ. Therefore, management of fishery resource in the country, including exploitation in the EEZ requires a retrospection in terms of the present policy and legal framework.
supporting fisheries sector and also a close coordination between the Centre and the States.

2.4.1 State Level Fisheries Management

- Fisheries management is undertaken mainly through licensing, prohibitions on certain fishing gear, regulations on mesh size and establishment of closed seasons and areas, under the Marine Fishing Regulation Act (MFRA).
- Zones are demarcated by each State based on distance from the shoreline (from 5 km to 10 km) or on depth. These inshore zones, where trawling and other forms of mechanized fishing is not permitted, are perhaps the most important space-based fisheries management measure in place.
- The closed season or ‘monsoon fishing ban’ is another important ‘temporo-spatial’ management measure implemented on both the east and west coasts of India for a period of 47 days and 65 days respectively, during, what is considered to be the spawning and breeding season.

2.4.2 Global Fisheries Mandate and Initiatives-India’s Role

The 1990s have witnessed important international agreements and accords relating to the intentions of the international community to achieve sustainable fisheries and to which India has been a party. These agreements represent milestones in international efforts over many years and include Chapter 17 of Agenda 21 of the UN Programme of action which includes programme areas relating to coastal areas and the oceans; the 1992 International Conference on Responsible Fishing (held in Cancun, Mexico) and the 1993 Agreement to promote compliance with International Conservation and Management Measures by fishing vessels on the high seas. All these contemporary global initiatives to which India has been a signatory, call for concurrence and compliance and a greater interaction with the countries in the sub-region, region and at the international level.

The participation of India in the global and regional level can be summarised under the legal and legislative framework, and the policy framework including appointment of committees by the government. India signed the UN Convention on the Law of the Sea
(UNCLOS) in 1995 and ratified the convention in 1996. It has also ratified the UN Fish Stock Agreement in 2003, but has yet to ratify the UN Compliance Agreement. India also takes an active interest in and participates in the global fisheries initiatives at a policy level, including taking up of challenges represented by a host of International Programme Of Action (IPOAs) that have been launched by FAO under CCRF in 1999. A coordinated project for the Conservation and Management of Coastal and Marine Biodiversity was launched in 1999-2000. However with the advances in policy development, Code of Conduct for Responsible Fisheries have not been incorporated into national or state fisheries legislation (FAO, 2006).

2.4.3 Participation in Regional Fishery Bodies

India is party to a number of regional bodies, programmes, and projects dealing with fisheries management and the protection of coastal habitats, communities and resources (FAO, 2006). These include:

- Bangladesh-India-Myanmar-Sri Lanka-Thailand Economic Co-operation (BIMSTEC)
- Bay of Bengal Large Marine Ecosystem (BOBLME)
- Bay of Bengal- Inter-Governmental Organisation (BOBP-IGO)
- Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)
- Indian Ocean Rim Association for Regional Cooperation (IOR-ARC)
- The South Asian Association for Regional Cooperation (SAARC)

2.4.4 Indian Fisheries Legislation

The need for fisheries legislation was emphasized as long back as in 1873 when the attention of the Government of India was drawn towards widespread slaughter of fish, fry and fingerlings. The Government of India enacted the Indian Fisheries Act in 1897 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, restricting the creation and use of fixed engines for catching fish, the construction of weirs, to put a
limit on mesh size, size of fish and catch and the declaration of closed season and sanctuaries. The Indian fisheries legislation, in general, seems to target the fishing vessel rather than the fishery per se. For sustainable development of the marine resources, India amended its Constitution in 1976. The Indian Parliament enacted the Territorial Sea, Continental Shelf, Exclusive Economic Zone (EEZ) and other Maritime Zones Acts in 1976, pursuant to which a 200 nautical mile EEZ was established with effect from 15 January, 1997 (Sathiadhas, 2005).

In the marine sector, the enactments include Merchant Shipping Act 1958, Marine Products Export Development Authority Act 1972, Indian Coast Guard Act, 1978, the Marine Fishing Regulation Act of the Maritime States 1980 as well as the Maritime Zone of India (Regulation of Fishing by Foreign Vessels) Act 1981, the Environment Protection Act, 1986; the Coastal Aquaculture Authority Act, 2005, etc. The main emphasis of MFRAs of maritime states of India is on regulating fishing vessels in the 12-nautical mile territorial sea, mainly to protect the interests of fishermen on board traditional fishing vessels. Kerala and Goa were the first to enact the Marine Fisheries Act in 1980, followed by Maharashtra 1981, Orissa 1982, Tamil Nadu 1983, Karnataka 1986, West Bengal 1993 and Andhra Pradesh 1994. Gujarat as well as Andaman and Nicobar islands enacted the Act in 2003 while Lakshadweep in 2004. The Government of Pondicherry has issued executive orders. Conservation and management of fisheries resources should go in hand with the protection of fish habitat. The Water (Prevention and Control of Pollution) Act, 1974 has provisions to protect the coastal sea from land-based sources of pollution but subject to the discretion of the State Government. This Act, in conjunction with the Coastal Regulation Zone Notification of 1991 under the Environment (Protection) Act, 1986, could contribute to regulating land-based sources of pollution in the coastal waters up to a maximum distance as decided by the State Government (Silas, 1996; Malhotra and Sinha, 2007). An overview of legislative framework in India is given in figure 2.2.
Figure 2.2  Marine Fisheries: Legislative Framework

<table>
<thead>
<tr>
<th>LAND</th>
<th>TERRITORIAL</th>
<th>OCEAN</th>
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<tbody>
<tr>
<td>COASTAL</td>
<td>ZONE</td>
<td>WATER</td>
</tr>
<tr>
<td>Coastal</td>
<td>State-level</td>
<td>Marine Fishing</td>
</tr>
<tr>
<td>Regulation Zone</td>
<td>Regulation Acts</td>
<td>The Maritime Zones of India</td>
</tr>
<tr>
<td>Notification, 1991</td>
<td></td>
<td>(Regulation of Fishing by Foreign Vessels) Act, 1981</td>
</tr>
</tbody>
</table>

- Territorial Waters, Continental Shelf, Exclusive Economic Zone and other Maritime Zones Act, 1976
- The Coast Guard Act, 1978
- Merchant Shipping Act, 1958
- Offshore Areas Mineral (Development and Regulation) Act, 2002
- Indian Ports Act of 1908
- Major Port Trusts Act of 1963
- Environment (Protection) Act, 1986
- The Indian Wildlife (Protection) Act 1972 and Amendment Act, 2002
- The Water (Prevention and Control of Pollution) Act, 1974
- Biological Diversity Act, 2002
- Indian Forest Act, 1927 and its Amendment Act, 1984
- Forest (Conservation) Act, 1980
- The National Environment Appellate Authority Act, 1997
- Mines and Minerals (Development and Regulation) Act, 1957

Source: www.ICSF.net
The Central government has brought Biological Diversity Act, 2002 with the purpose to regulate access to biological resources of the country, to conserve and sustainably use biological diversity and in securing equitable share in benefits arising out of biological resource etc. The Coastal Aquaculture Authority Act, 2005 encompasses the farming of shrimp, prawn, fish or any other aquatic life under controlled conditions in ponds, pens, enclosures or any other brackish water bodies, but excludes fresh water aquaculture. The Act is expected to give an impetus to sustainable development of aquaculture and to an environment conducive for species diversification. Besides, Government of India is also planning to introduce Model Bill for Inland Fisheries and Aquaculture Sector. Code of Conduct for Responsible Fisheries is also being introduced at the state level so as to carry out management aspects in the fisheries in a responsible manner (Ayyappan and Diwan, 2006).

2.4.5 Appointment of Expert Committees and Policies

2.4.5.1 Majumdar Committee (1976)
The committee was appointed to study the situation regarding conflicts between traditional and modern workers. It proposed the Marine Fishing Regulation Bill, and suggested a seasonal ban on trawlers. The committee suggested the bill should be passed by the Parliament. The Government shifted the responsibility to the state and for state it became a problem because whenever there was a ban it was challenged on the grounds that they were fishing beyond 22 kilometers.

2.4.5.2 New Deep Sea Fishing Policy (1991)
In March 1991, the Indian government announced NDSP as part of the economic reforms programme. The policy involved three schemes - leasing out of foreign fishing vessels to operate in the Indian EEZ, engaging foreign fishing vessels for test fishing and forming joint ventures between foreign companies and Indian companies on 49:51 equity basis in deep sea fishing, processing and marketing. Government of India started giving licenses to joint venture, lease and test fishing vessels. This was opposed by millions of fishers all over the coastal states.
2.4.5.3 Murari Committee (1995)

The committee studied the proposal of the NDSP and the opposition that was made to it. The parliament members from all the political parties were members of the Committee. It came up with 21 recommendations, some of them being:- No renewal, extension or new licenses be issued in future to joint venture/ charter/ lease/ test fishing vessels; The present licenses be cancelled as per going through the legal procedures; Up grade the skill of the fishing community to equip them with exploiting the deep sea resources; Stop pollutions; Supply of fuel at subsidised rate; Fishing regulations in the entire EEZ; A separate ministry to deal with the entire fisheries and Monsoon trawl ban. The area already being exploited or which may be exploited in the medium term by fishermen operating traditional craft or mechanized vessels below 20m size should not be permitted for exploitation by any vessels above 20m length except currently operated Indian vessels which may operate in the current areas for only three years.

The Deep Sea Fishing Policy of the government of India was opposed by various organizations of the fishers as well as mechanized fishing vessel owners in the country because their operational area was being encroached upon by the larger chartered vessels and the vessels operating through joint ventures, lease etc; there was over-exploitation of resources by these large mechanized vessels and under-reporting of catch. These also caused damages to the craft and gear of traditional fishers. The government appointed the Murari Committee to review the deep-sea fishing policy, made 21 recommendations, which were approved by the cabinet in 1997. These included placing limits on the operation of shrimp trawlers, deep-sea fishing regulations for the conservation and management of marine resources, assistance for the traditional and small mechanized sector by providing fuel subsidies, and no renewal or issue of fresh licenses to charters or JVs. However, few of these recommendations have been implemented. In 1999, an expert group led by K. Gopakumar, then Deputy Director of Fisheries, Indian Council of Agricultural Research, was constituted to elaborate a comprehensive marine fisheries policy. The report was submitted to government in late 2001 (FAO, 2006).
The Sudershan committee had also called for regulation of deep-sea and coastal fishing, mandatory catch-reporting system for deep-sea vessels operating in India’s exclusive economic zone (EEZ), comprehensive legislation covering conservation and utilization of marine fishery resources and a code of conduct for fishing vessels, at the state and national level. New guidelines for fishing operations in the Indian EEZ, issued in November 2002, allow large deep-sea fishing vessels to employ foreign crew, do not require them to land with their catch in Indian ports, have no specifications regarding age of the vessel and have no quotas or fees to judge the value of the haul. In July 2004, an expert committee headed by Prof. M.S. Swaminathan to carry out a comprehensive review of the CRZ and submitted its report in February, 2005. The Committee had observed that CRZ legislation should be established and recognized the traditional rights of the fishing community. It recommended the expansion of Coastal Zone to include the territorial waters. It also recommended to introduce Coastal Management Zones by replacing the concept of Coastal Regulation Zones. The zone demarcation proposed by Swaminathan Committee could not be accepted by a state like Kerala where the population density is high. The new coastal regulation guidelines (CRZ) have not met with the approval of the traditional fishermen community of the Kerala coast for different reasons. One of the reasons for the opposition of these communities to the guidelines is their fear that they might impact on their traditional systems of livelihood (Damodaran, 2003). The Kerala Government has also been for changing and relaxing the plan. Some important issues regarding the CRZ highlighted by the fishermen are as follows:

• CRZ precludes the possibility of obtaining title deeds and allotment of numbers by the panchayats to fishermen settlements situated on the shore adjacent to the sea;
• Since setting up or renovating fish processing units in the coastal area is prohibited by the CRZ notification, the small-scale industrial units in the fisheries sector are facing many practical problems;
• The housing and colonisation schemes and schemes for construction of schools and hospitals for the fisherfolk, sponsored by the central and state governments, are facing practical difficulties in their implementation;
• The permission granted in the CRZ notification for the mining of sand from the coastal areas leads to indiscriminate removal of sea sand, thereby resulting in severe sea erosion problems,
• The prohibition of extracting ground water using pumps from the coastal areas adversely affects the drinking water schemes for the fisherfolk,
• Bunding and construction of barriers for saltwater extrusion permitted in the CRZ leads to large-scale reclamation of water bodies and damage to the ecosystem and aquatic biota, and
• Brackish water aquaculture will be adversely affected by CRZ restrictions.

Marine fishing policy (2004) adopted the strategy 1) to augment marine fish production of the country to the sustainable in a responsible manner so as to boost export of sea food from the country and also to increase per capita fish protein intake of the masses, 2) to ensure socio-economic security of the artisan fishermen whose livelihood solely depends on this vocation, 3) to ensure sustainable development of marine fisheries with due concern for ecological integrity and biodiversity. It also highlighted to promote exploitation in the deep-sea and oceanic water for reducing fishing pressures and resources within 50m depth zone are showing the symptoms of depletion. Stringent fishery management system is needed.

In January 2004, Government of India, Ministry of Agriculture, Department of Animal Husbandry, Dairying and Fisheries constituted a national level committee under the chairmanship of Prof. Mohan Joseph Modayil, Director, CMFRI, Kochi to study and report the impact of closed fishing season, on the marine fishery resources of the country. The committee was of the strong view that a closed season is very essential for the recovery of the fish stock as well as biota and recommended a mandatory closed season shall be imposed along the west coast of India from 15th June to 31st July (47 days) and 15th April to 31st May (47 days) every year along the east coast of India. The committee also recommended that only sustenance fishery using traditional non-motorised or motorised with OBM/IBM of less than 10 HP vessels should be permitted for fishing during the closed season (Kurup, 2006).
Establishment of the National Fisheries Development Board (NFDB) during the Tenth Plan is a major fillip to the Indian fisheries sector. NFDB was formed by a decision of the Union Cabinet on June, 2006. It has been registered under the Andhra pradesh Societies Registration Act, 2001. It aims to increase fish production from aquaculture and culture based fisheries, to enhance the value of fish output through better post harvest practices, and to provide effective marketing prospects and employment opportunities. It also intends to undertake conservation and management of fisheries resources, as well as to provide diversified income earning opportunities for fishers, especially women (Sebastian, 2006). It reflects the keen interest of the Government as also the potentials that the sector holds in ensuring domestic nutritional security. The proposed outlay for fisheries development during the XI Plan is Rs 4,013 crores, intended to also include the budgetary allocation made to the NFDB to the extent of Rs 2,069 crores for the XI Plan period. There is a clear delineation of the functions with the Department to focus on marine fisheries programmes, Database and Information networking, Quality brood bank and seed certification, policy and welfare programmes, whereas the Board would address the production-consumption chain, with an emphasis on marketing, in partnerships with Government and private agencies (GOI, 2006).

### 2.4.6 Community-led Initiatives

Community-level institutions also play an important role in fisheries governance along the coast. Examples that have been documented include the Kadakodi system of northern Kerala, Pedhaloo in southern Orissa, and the federated structure of the traditional Panchayat system of the Pattanavars community of Tamil Nadu/Andhra Pradesh coast (ICSF, 2009).

Some of the community-led initiatives include

- Alternate-day fishing regulation in the Gulf of Mannar and Palk By areas of Tamil Nadu.
- Self-regulation by women seaweed collectors in the Gulf of Mannar region of Tamil Nadu seaweed collectors.
- Maharashtra fishing community initiatives on conserving coastal and marine resources.
- Community-based fisheries management in Nagapattinam District, Tamil Nadu.
2.5 Institutional Dynamics in Kerala’s Fisheries Sector

2.5.1 Government Interventions

The governance of the fisheries sector is vested with the Ministry of Agriculture and the chief executive is the Secretary to the Government (Fisheries). However, it is the State Department of Fisheries that carries out all the development and management programs envisaged in the fisheries sector. The Director of Fisheries heads this department which is structurally stratified and organized under Executive Officers whose responsibilities and functions. Among modern state institutions, the Department of Fisheries is a key asset for the coastal fishing communities and its various layers are hierarchically outlined in table 2.4. There are various agencies functioning under the Department of Fisheries. They are Matsyafed, Kerala Fishermen Welfare Fund Board (KFWFB), Agency for Development of Aquaculture, Kerala, (ADAK); Fisheries Resource Management Society (FIRMA); Brackish water Fish Farmers Development Agency(BFFDA); Fish Farmers Development Agency (FFDA); National Institute of Fisheries Management and Administration (NIFAM); Costal Area Development Corporation (CADC); Society for Assistance to Fisher Women (SAF).

Table 2.4 Functions of different layers of Department of Fisheries

<table>
<thead>
<tr>
<th>State</th>
<th>Directorate of Fisheries headed by the Director of Fisheries and Additional Director of Fisheries (Technical)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zonal Level</td>
<td>Joint directorate of fisheries (has three zones - south/central/north and are headed by a joint director each for each zone)</td>
</tr>
<tr>
<td>District</td>
<td>Deputy Directorate of fisheries (headed by 14 deputy directors)</td>
</tr>
<tr>
<td>Panchayat</td>
<td>Matsyabhavans (spread around the entire coast and are headed by about 200 Matsyabhavan officers)</td>
</tr>
</tbody>
</table>

Source: Adapted from www.Department of Fisheries, GOK.com

Marine Fisheries in Kerala has been, for the last many years, in the grip of a turmoil. At stake are the interests of the traditional fishers whose sole means of livelihood is fishing. The technological advancement have unleashed unhealthy competition with the traditional fishing methods essentially owing to the open access nature of the resources. The overall decline in total fish landing during the late seventies resulted in growing conflicts between the fishermen belonging to the mechanised and non-mechanised...
sectors, for fishing time, space and resources. Trawling, purse seining and ring seining, were identified by the traditional fishermen as the major destructive fishing methods which led to clashes and confrontations among the fishermen. The artisanal fishermen engaged in fishing by means of their traditional craft and gear protested collectively against mechanised means of fishing and demanded total ban on such fishing methods.

Both formal and traditional mechanisms for consultation and conflict resolution are in place; fisheries management is devolved to State control within territorial seas, and Union control outside territorial seas; legislation focuses on production, and sustainable fisheries management principles are not yet fully included in the fisheries law. The Government of Kerala adopted a multi-faceted strategy to improve fisheries and fishermen’s life under pressures from the fishermen’s union. The measures included enactment of Kerala Marine Fishing Regulation Act (KMFR Act of 1980), The Kerala Fishermen Welfare Societies Act (KFWS, 1980), Enactment of Kerala Fishermen Welfare Fund Act, (1985).

The Kerala Marine Fishing Regulation Act (KMFR Act) the first of its kind in the country, was based on the ‘draft bill’ of the Majumdar Committee constituted by the government of India in 1976 for examining the question of delimiting the areas of fishing for different types of boats. This act provides for a regulation of fishing in the territorial sea along the coastline of the State through registration and licensing, mesh size regulation, prohibition of certain fishing methods, delimitation of fishing zones and declaration of closed seasons. Under the provision of the KMFR Act, the coastal waters up to 20 m depth from the shore north of Quilion to Manjeswar (about 512 Km coast) and 30 m depth south of Quilion (78 Km) were declared to be the exclusive reserve of the artisanal craft while the mechanized boats were to operate beyond this depth and the purse seiners were banned from operating in the territorial waters. The KMFR Act aimed at protecting the interests of the artisanal fishermen, establishing law and order in the sea and ensuring regulation of marine fishing and conservation of resources.

The KMFR Act provided for a grass root level nodal agency of the fishermen to organize production, marketing, welfare and credit in order to provide a real thrust to artisanal
fishing. Accordingly, the coastal villages were delimited into 222 villages and an equal number of Fishermen Welfare Societies (FWS) were constituted, one for each fishing village. Each society was conceived as an autonomous body to administer the activities and a fishery official was posted as its Secretary. A nominated Managing Committee drawn of fishermen's representatives was made responsible for its management. For want of development funds, the activities of the FWS during the first 2-3 years confined to merely distribution of welfare funds previously handled by the Department.

In 1984, a Kerala State Cooperative Federation for Fisheries Development Limited (MATSYAFED) was set up under the Kerala Cooperative Societies Act to activise, coordinate and guide the working of the village societies. Three District Cooperative Societies were registered as primaries to the federation as the FWS were formed outside the Cooperative Societies Act. Although the National Cooperative Development Corporation (NCDC) initially provided certain funds for the working of the FWS, they insisted on the reorganization of the welfare societies under the Cooperative Societies Act for easy inflow of cooperative funds. Accordingly the FWS were replaced in 1988 with 81 Fishermen Development Welfare Cooperative Societies covering the entire coast of Kerala. The State Government also enacted another legislation viz. the Kerala State Welfare Fund Act (1985) to implement all the welfare schemes handled by the Department. Old age pensions, lump sum grant to fisher children, compensation against loss of life and other welfare schemes were brought under Welfare Board.

2.5.2 Recommendations of Various Committees

Kerala's annual monsoon trawl ban follows international trends in fisheries resource management, where fishing closures are used to revive nearly collapsed fisheries or sustain potentially over-fished fisheries. Honduras, Peru and Indonesia are some of the countries where such annual fishing bans are in position (Kumar, 2006). The State of Kerala is very much concerned about the protection of the marine fishery resources and to achieve the said object, Kerala has introduced trawling ban as early as in 1988. Kerala is the first State in the country to introduce a trawling ban. The trawling ban thus
introduced was pursuant to various scientific studies carried out by Expert Committees, appointed by the Government of Kerala is presented in table 2.5.

Table 2.5 Expert Committees appointed in Kerala

<table>
<thead>
<tr>
<th>Name of Committee</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Babu paul Committee</td>
<td>1981</td>
</tr>
<tr>
<td>Kalawar Committee</td>
<td>1985</td>
</tr>
<tr>
<td>Balakrishnan Nair Committee I</td>
<td>1987</td>
</tr>
<tr>
<td>Balakrishnan Nair Committee II</td>
<td>1990</td>
</tr>
<tr>
<td>P.S.B.R. James Committee</td>
<td>1993</td>
</tr>
<tr>
<td>Silas Committee</td>
<td>1994</td>
</tr>
<tr>
<td>Balakrishnan Nair Committee III</td>
<td>1999</td>
</tr>
<tr>
<td>D.K. Singh Committee</td>
<td>2006</td>
</tr>
</tbody>
</table>

There have been frequent clashes between the fishermen belonging to the traditional and mechanised sectors leading to very serious law and order situations and even loss of life and property. Committee appointed under the Chairmanship of Shri. D. Babu Paul, I.A.S, the then Government Secretary to Fisheries was appointed in 1981. The committee was of ‘unanimous opinion’ in respect of recommendations of general nature for the conservation and management of fishery resources of the state. But with regard to the specific need for adopting a closed season for trawling boats as a management measure, the opinion of the Committee was divided. Some of them recommended that trawl fishing should be banned in the territorial waters of Kerala during the months of June, July and August. A few members of the committee impugned the imposition of closed season as a management measure maintaining that there was no sign of biological over fishing but there were indications of economic over-fishing owing to the unregulated entry into fishing and insufficient management measures. The Babu Paul Commission Report was submitted the following year. The report did not recommend a ban on bottom trawling during the Monsoon months. The Commission's main recommendations were - Mesh size of the trawl nets should not be less than 35mm, the Marine Regulation Act of 1980 should be strictly enforced, registration of all the trawling boats should be ensured, purse
seine, ring seine, pelagic and mid-water trawls should be banned within 22 km of the in-
shore waters. As the Commission was silent on the issue of the ban on bottom trawling
during the monsoon period, which essentially meant that the harmful fishing practices
during the spawning season would continue leading to the peril of the marine eco-system,
the Federation launched a series of agitations from 1982 to 1983.

Considering the persistent unrest in the artisanal fisheries sector the Government of
Kerala constituted in 1984, another Expert Committee (Kalawar Committee) consisting
of three Fishery Experts from outside the State. The Committee studied the ban issue
with special reference to the breeding season of prawns and they opined that since the
breeding season of prawns is protracted, shrimp trawling during June, July and August
need not be banned but strongly recommended to limit the number of trawling boats in
the state to 1145 with a strict regulation of the mesh size of the cod end of trawl nets to be
not less than 35 mm. It recommended that only 1140 number of trawlers are required in
Kerala for exploiting the fishery wealth while the permitted fleet size of OBM fitted
canoes and traditional canoes was 2620 and 20000 respectively. The committee also
recommended in unequivocal terms that shrimp trawling during monsoon season (June,
July, and August) be permitted, but restricted to daytime and beyond a depth of 20m.

In 1987 the Government appointed yet another Commission - the Prof. Balakrishnan Nair
Commission to study the issue of trawl ban. In 1988, the Commission recommended a
ban on trawling during the monsoon period, of 90 days, on an experimental basis for
three consecutive years. The Commission suggested that the impact of the ban should be
studied subsequently. Though the Government accepted this recommendation in
principle, the spirit of the recommendation was diluted by announcing a partial ban for 45
days. However, since 1997, the duration of the ban became uniform for all the years
which lasted for a period of 45 days barring 2006 during when the ban was extended to
62 days in compliance with the verdict of the Supreme Court. The Committee
recommended a mission oriented study called Save Coastal Resources Project (SCORP).
The Government of Kerala constituted two more committees under the chairmanship of
Prof. Balakrishnan Nair during 1990 and 1999 to make scientific evaluations on the
impact of trawling ban along Kerala coast. These committees were of the view that the
ban on trawling during monsoon should be continued it was found to be an effective measure for enhancement of marine fisheries resources of Kerala. The other expert committees constituted in between Prof. Balakrishnan Nair 1 and 2 committees were P.S.B.R.James committee in 1993 and Dr.E.G.Silas committee in 1994. The Silas Committee recommended the demarcation of a separate zone as an artisanal exclusive fishing zone (EAFZ) for the exclusive fishing of non motorised and motorised crafts of less than 15 HP and standardization of overpowered artisanal fishing gears like mini trawls and ring seines (Kurup, 2006).

The Aquarian Reforms Committee (2000) headed by Dr K Ravindran, constituted by the Kerala government to recommend basic reforms in the fisheries sector submitted their report to the State Fisheries Minister S Sarma. The Committee, in its report said 'the state government shall adopt and implement some basic reforms in the fisheries sector for securing the livelihood and occupation of bona fide traditional and artisanal fisher folk and for assuring sustainable growth and development of the sector through effective and participatory management and good governance'. The objective for such an enactment was to protect the water bodies and to conserve the natural fisheries resources at sustainable levels, to ensure the rights of traditional/artisanal fisher folk for occupation and livelihood in the fisheries sector, to establish a 'regulated marketing system' in Kerala and to ensure availability of appropriate quality and quantity of fishes to the consumers in the state. Other objectives of enactment were to bestow legally, the right of fishing in the inland and territorial waters exclusively to the traditional/artisanal fisher folk, to evolve an appropriate and to reserve legally, the right of first sale of raw fish caught by fishermen exclusively to those who fish and to reserve the right of ownership of fishing crafts and gears being deployed for fishery in the inland and territorial waters exclusively for the traditional/artisanal fisherfolk (Suchitra and Venugopal, 2006).

The latest study by the 12-member committee headed by T.K. Singh to study the extent of habitat destruction and evaluate the suitability of introducing uniform fishing ban along Kerala coast taking into consideration the magnitude of monsoon fishery prevalent in Kerala and livelihood and employment associated with this sector. The report
submitted in July 2007, recommended for the continuation of the present 47-day ban. The purpose of Kerala Monsoon Fishery (Pelagic) Protection Act, 2007, is to grant traditional fishermen the right to conduct pelagic fishery during the monsoon season using traditional and modified traditional crafts and gear within the territorial waters. Authorized officers may enter, search and confiscate any vessel if they have reason to believe that the misuse of such fishery has been harmful to fish breeding and fish wealth, and the Government may order to ban the right to conduct pelagic fishery. A snapshot of various institutional dynamics is highlighted in the table 2.6.

Table 2.6 Snapshots of the various Institutions in Kerala Fisheries

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>The Indo-Norwegian Project (INP) for Fisheries Community Development in the States of Travancore-Cochin signed by the UN, India and Norway. The INP is the world’s first bilateral development assistance project to focus on technology.</td>
</tr>
<tr>
<td>1950s</td>
<td>Shrimp export boom in Kerala. INP introduces bottom trawling-techniques to increase productivity and opens large-scale freezing plants.</td>
</tr>
<tr>
<td>1970s</td>
<td>Competition between traditional and mechanized fishing gives rise to the fishermen’s movement.</td>
</tr>
<tr>
<td>1976</td>
<td>The Majumdar Committee appointed to study the conflict between traditional and mechanized fishers.</td>
</tr>
<tr>
<td>1978</td>
<td>The leaders of the fishers’ movements in Kerala, Tamil Nadu and Goa form the National Fishermen’s Forum to press for the rights of traditional fishermen and for the conservation of marine wealth.</td>
</tr>
<tr>
<td>1980</td>
<td>The Kerala Independent Fish Workers Federation (KMSTF) formed.</td>
</tr>
<tr>
<td>1980</td>
<td>Kerala Marine Fisheries Regulation Act passed based on the recommendations of the Majumdar Committee. The Act sets out rules on trawlers’ access to inshore waters, provides for seasonal closure of fisheries for the sake of resource conservation, and entrusts protection of the exclusive fishing zone to the police and coastguard.</td>
</tr>
<tr>
<td>1988</td>
<td>After many years of protests by the fishermen movement, the Kerala government announces a partial ban on monsoon trawling throughout the state.</td>
</tr>
<tr>
<td>1989</td>
<td>Based on the report of the Balakrishanan Nair Committee Kerala government imposes total monsoon trawling ban, initially for a period of three years. The length of the ban becomes the object of new struggles between artisanal and mechanized fishers in the following years.</td>
</tr>
<tr>
<td>1991</td>
<td>Congress Party returns to power. India’s new economic policies focus on liberalization, deregulation and privatization.</td>
</tr>
<tr>
<td>1991</td>
<td>New Deep Sea Fishing Policy (NDSP) grants permits for deep-sea fishing to foreign vessels. Artisanal fishers, trawler owners, and fish merchants form the National Fisheries Action Committee Against Joint Ventures and stage nationwide protests against the new policy.</td>
</tr>
<tr>
<td>1994</td>
<td>Kerala formulates a fishing policy focusing on resource sustainability, economic viability of the industry, the provision of a decent level of living to the workers, and a good supply of fish for local consumption and export. Implementation, however, remains imperceptible in the years following the report.</td>
</tr>
</tbody>
</table>
1995 Central government appoints the Murari Committee to study the NDSP and the opposition to it. The committee’s recommendations include a cancellation of the joint-venture policies, and a ban on future licenses.

1997 Central Cabinet accepts all the recommendations of the Murari Committee, although they remain unimplemented.

2002 Biological Diversity Act aims to promote conservation, sustainable use, and equitable sharing of the profits of India’s biodiversity resources.

2004 Draft New Environmental Policy (NEP) released by the Ministry of Environment and Forests. NEP does not contain any direct discussion on fisheries management.

2004 Comprehensive Marine Fishing Policy announced. This is the first national fishing policy to cover both coastal and deep-sea water fishing. The policy aims to 1) increase fish production 2) ensure the socio-economic security of artisanal fishermen 3) ensure the sustainable development of marine fisheries with due concern for ecological integrity and bio-diversity. The new policy proposes a review of the existing legal framework on fishing, and the introduction of new fishing legislation in areas such as resource conservation, limited access fishery, fishery harbor management etc.

2.6 Evolution of Community Based Institutions in Kerala Fisheries

The presence of well-established fishermen organisations is a unique and important feature of the Kerala fisheries. Artisanal fishermen in various part of Kerala have organised themselves into independent trade unions which has helped in confronting and pressurizing the state and mechanised sector. This has resulted in various positive responses from the state in favour of the artisanal sector, such as the ban on fishing by trawlers during monsoon for three months.

2.6.1 Fishermen Struggles and Dynamics of Conflict Resolution

Kerala marine fishery sector has witnessed lot of straggles and confrontations. Confrontation with various stakeholders in the system especially community- artisanal fishing community, and mechanised trawl operators are often, and this has resulted in persistent unrest in these area. The conflict among various stakeholders, are for the access to resources. There is always a trade off between economic profit and resource sustainability. Industrialisation of fishery which taken place in the marine fishery of the state at the end of 1970s, the traditional/artisanal sector, who is concerned more about sustainability than on economic profit, is in confrontation with mechanised sector- the mere rent seekers.
Phase I
There was firstly a formative period in the 1960s and 1970s when the fishers' organisations- at a district, state and national level - were being formed. This was a period which was to have important implications for leadership and direction in the Kerala movements because of the close connection between these movements and the Roman Catholic Church.

Phase II
The second period was the period of agitation and struggle in the 1980s and into the 1990s as the fishers brought pressure on successive Kerala governments - and, on occasion, on the central government - to address their concerns. In these campaigns they particularly targeted the impact which mechanised fishing made both on their livelihoods and on fish resources. It was a period in which they experienced great difficulty in combating vested interests in the state and in getting an adequate response from the coalition governments which were a feature of Kerala politics throughout the period.

Phase III
The last period comes in the 1990s when the issues which the Kerala fishers had been fighting for increasingly become national issues. In this third period the national-level organisation formed in the 1970s, an organisation in which Kerala fishers and their supporters are leaders, has come to play an increasingly militant role on fisheries' policy, to the extent that the Government of India has been forced to consider how to meet the political opposition and how to protect fish resources (Revees, et al., 1997).

2.6.2 Collective Action
Faced with failing fish production and heavily exploited resources, the fishermen started forming unions of their own. A number of unions which were formed during 1970-80 functioned mostly as social service societies. In 1977 the Latin Catholic Fishermen Unions in different districts were amalgamated to form a Kerala Latin Catholic Fishermen Federation. In 1980 this federation changed its name to Kerala Independent Fishermen Federation (KIFF) in order to give it a secular colour. At this time the different castes of Hindu fishermen like Valan and Arayan joined together as one organization under the banner of All Kerala Dheevara Sabha. These unions were united under an
umbrella body, Kerala Swathantra Malsya Thozhilali Federation. This process was motivated largely by political compulsions. The Kerala Swathantra Malsya Thozhilali Federation (Kerala Independent Fishworkers Federation) is a unique movement. It is a non-party trade union with community-based organisation, working in the unorganised sector of fisheries.

The Kerala Swathantra Malsya Thozhilali Federation is affiliated to the National Fish workers Forum, which is active in all marine states of India. The National Fish Workers Forum is involved in addressing the issues faced by the fish workers at the national level. In 1978, 13 major regional fishermen unions met in Madras and set up a National Forum for cattamaram and country boat fishermen's rights and marine wealth. These unions, coordinated by the National Forum, had been protesting and striking against the deleterious fishing by large number of mechanized boats and trawlers in the already heavily exploited coastal waters (Archari, 1990).

2.6.3 Resistance of Artisanal Fishermen towards Mechanization

The Kerala Independent Fishermen Federation undertook several prolonged struggles, hunger strikes, and long marches to bring pressure on Governments. It compelled the authorities to declare several measures designed to protect the interests of the fishermen and conserve the fishery resources. Today, this union is one of the most powerful and militant fishermen's political organizations in Kerala. In the wake of this movement, all the political parties, including the Indian National Congress, Communist parties, Muslim League and Revolutionary Socialist Party, have formed their own trade unions of fish workers who constitute a good vote bank in the coastal constituencies. As the artisanal fishermen united into strong political unions, the owners and operators of the mechanized boats also formed their associations. The boat owners' and operators' associations wield a powerful lobby in Government. Between the two factions there are frequent clashes and a number of litigations are going on the courts of the State as well as in the Supreme Court (KSMTF, 2007).
The fishing industry became increasingly polarised between a 'modern' ('mechanised') sector able to make considerable profits from exports and a 'traditional' ('non-mechanised') sector confined to a domestic market with declining catches and fish stock. In the 1980s the increasing industrialisation - and internationalisation - of the fisheries by mechanisation and by trawling by still larger vessels, both by Indian companies and by trawlers of other nations, heightened this polarisation and posed dangers which threatened to do serious damage to the both the fisheries and the artisanal fishers.

2.6.4 Mechanization of indigenous craft as a mean of resilience.
To counter the challenges posed by the trawling boats, the traditional fishermen turned to mechanization. They started off with low power outboard engines and gradually to engines with 25 hp. Some even began to use two or three engines. These were not really affordable - the engines used a fuel mix of petrol and kerosene, and operational costs were quite high. But at least, they hoped, it would allow them to scoop up fish they would otherwise never be able to find by their traditional ways alone. Towards the end of the nineties, country crafts of 80 ft and more in length began to be fitted with inboard Leyland truck engines. These crafts can accommodate 50 to 55 fish workers, use ring seine nets weighing up to 4000 kg. Their high fuel capacity enables the craft to go farther out into the sea, cutting the operational costs greatly.

2.6.5 Worker Peasant Alliance: Involving Trade Union to Resolve the Issue
The formation of the All India Fishers and Fisheries Workers’ Federation (2001) is a remarkable effort to develop worker peasant alliance in the country, at the initiative of the CITU and the AIKS. The Kerala State Matsya Thozhilaly Federation (CITU) is affiliated to All India Fishers and Fisheries Workers Federation is a federation of 22 registered unions of fishers in Kerala. The federation is not registered, but all the 22 affiliated unions are registered under the Trade Unions Act. The total; membership of the state level federation is 75,999. the federation mainly tries to bring the fishers into the fold of the trade unions. Earlier, the fishers in Kerala were under the control of religious and communial organizations. The Kerala Fisheries Coordination committee is functioning under the leadership of the federation (Shasheendran, 2007).
2.6.6 Resistance of mechanised trawl operators and the resultant unrest in the area.

The motorised sector is subdivided into small-scale motorised sector using low engine power and the other using bigger crafts with inboard engines for ring seine operations and is often comparable with boats. Such bigger fishing units which fall beyond the jurisdiction of zoning restriction, are attracting huge investment and could pose threat not only to small scale fishing units, but also to resource conditions as well. Although zoning was intended to provide an equal entitlement to a uniform group of technology users (traditional sector), but exogenous technological progress has brought in heterogeneity and economic inequality within the traditional sector (Joe, 2008).

Trawling and Purse seine boat owners approached the High Court against trawl-ban and Purse seine ban. Trawling boat owners strongly argue that the 500-odd crafts with inboard engines should also be banned. The KSMT Federation fought this legal battle and won it in 2007. When they approached the Supreme Court, again the Federation fought at the national level and the final verdict favoured the ban (KSMTF, 2007).

Since there is less incentive for the mechanised sector for adhere the rules, often there is a care of violence. Till last year, the majority of the Kerala-based mechanized boats had not taken the license from the Fisheries Department seriously. They were mainly operating on the basis of registrations issued by the MPEDA. Under the KMFR Act, a specific registration from the department was mandatory. Fishing license will allow mechanized boats to fish only in the deep sea to fish in Kerala’s territorial waters, which is already crowded might lead to unrest between two sections of workers (Basheer, 2008). From a policy perspective, it is imperative to comprehend the ongoing divisions within the traditional sector also. The revision of zoning regulations becomes crucial for including some of the traditional sector units within its framework. In order to further enhance the benefits of zoning it is suggested that the period and duration of temporal zoning should be decided in a manner that would facilitate the maximum regeneration of resources and their economic worth (Joe, 2008).