

# **CENTRE FOR CIVIL SOCIETY**

## **Briefing Paper on Fisheries Policy** **Resource Rights of Individuals & Communities**

*For the Terracotta Summit*  
*Beyond NEP 2004: Institutions, Incentives and Communities*

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**H B Soumya and Parth J Shah**



Centre for Civil Society  
K-36 Hauz Khas Enclave, New Delhi 110016  
Phone: 2652-1882; Fax: 2651-2347  
[www.ccsindia.org](http://www.ccsindia.org)  
[parth@ccsindia.org](mailto:parth@ccsindia.org)

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## **Background**

### **Introduction**

#### **A) Issues pertaining to fisheries**

- Ensuring sustainability of fish population
- Securing livelihood of people dependent on it (about 6 million people in the primary sector in India, FAO 2000)

#### **B) Division of powers between the Centre and States**

- Under the Constitution of India, fisheries within the territorial waters, which extend up to a distance of twelve nautical miles from shore, is a state subject and the primary responsibility of its development rests with the state government.
- The central government is responsible for all fishing activity that takes place beyond this limit- the deep sea or EEZ (exclusive economic zone) than extends up to a distance of 200 nautical miles.
- There is no ministry of fisheries at the central level, and the two bodies of the Ministry of Agriculture - Department of Animal Husbandry and Dairying and the Indian Council for Agricultural Research- handle fisheries activities.
- The state government has command over the fisheries, which are in the territorial waters of 12 miles, over communities that are dependent of the fisheries in the area and the marine resources in the area.

#### **C) Modernisation of fisheries post independence**

- Indo- Norwegian program provided for mechanization of small crafts, switching on later to European type small boats. Gill nets that were made of nylon replaced cotton and hemp (Haastrecht & Schaap, 2003, pp. 19-25). It is important to recognize that these policies were put into place to aid deep-sea fishing. However, what ended up were fisher boats fishing in territorial waters, since deep-sea fishing is more expensive and riskier.
- With the third plan and thereafter, focus shifted to help the poor to increase their capacity of production. This led to attracting investment in fishing from communities other than those of the traditional fishermen. At this stage, the prawn market became very profitable and bottom-trawling methods were introduced.
- The traditional fishermen also started to mechanise their traditional craft with engines- these were also facilitated by the government, by making available engines and fuel at cheaper rates.

This kind of development course resulted in two extreme sectors: the modernized trawler boats, and the traditional fishermen, using catamarans and vallams. Since the trawlers use active gears and have higher capacity to catch fish, there is inevitably a conflict between the two groups.

### **Part I: The regulatory approach**

#### **A) Command and control methods**

There is no all India policy for fishery management, the centre handles deep sea and the states deal with coastal fishing. Governments have tried to conserve fish population by

resorting to command and control methods- dictating periods and time of fishing, imposing bans, specifying size of nets and kind of gear. The following examples give an idea about the command and control methods that have been previously and currently toyed with:

- Setting apart inshore waters up to a depth of 20 m for the exclusive use of the traditional fishermen.
- The government has banned the use of certain methods of fishing. For instance, in 1993, the Supreme Court banned the process of bottom trawling in the monsoon seasons.
- In Goa in 2000, all licenses of trawlers registered with the fisheries department of Goa were suspended. However, this could not be sustained on a long term basis.
- A 45-day ban on the east coast of India is in place.
- Banning of midnight trawling in certain parts of Tamil Nadu and Andhra Pradesh.

## **B) Central government policies**

### **• The 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

### **• 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 fisher people.

### **• 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,
- Upgrade 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,
- 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 Central Cabinet, GOI, had accepted all the recommendations on 28th of September 1997. The Minister of Food Processing Industry nominated a small committee from the National Fisheries Action Committee against Foreign Fishing Vessels to oversee the implementation of Murari Committee recommendations. The committee met several times and worked together with the Food Processing Ministry and transferred the Deep Sea Fishing from the Ministry of Food Processing to the Ministry of Animal Husbandry. Since then, the Ministry of Animal Husbandry never called the committee who was indeed responsible for the transfer. Now the Ministry of Animal Husbandry is not implementing the Murari Committee recommendations, but has started giving new licenses and importing fish like Bombay ducks, sardines and mackerels.

### **C) Some state government policies**

- **The Tamil Nadu Marine Fisheries Act, 1983**

The act was formulated to regulate fishing activities, protect interest of different sections, conserve fish and resolve law and order at sea. The acts call for the following:

- Three nautical miles to traditional fishermen, beyond that mechanised boats to carry operations.
- Mechanised fishing boats to leave only after 5 am and come back not later than 9 pm.
- Registration and licensing of all vessels.
- Regulations on gear and mesh size

- **Kerala and its policies**

Kerala passed the Marine Fishing Regulation Act in 1980 based on the recommendations of the Majumdar Committee and banned trawlers during monsoon period June-August in 1981. But because of the pressure from the boat owners, the implementation of the act has not been tight.

The Babu Paul Commission submitted its report in 1982 with 16 unanimous decisions like ban on pursesien, seasonal ban up to ten kilometers on trawling etc. but this could not be implemented.

Kerala Government appointed the Talwar Committee to enquire into the matter pertaining to conflict between the two sectors- traditional and mechanised. This report submitted in 1985 asked for the reduction of number of existing 5000 trawlers in Kerala to 1145.

- **Bans in states:** The ban periods used to differ from state to state, causing conflicts when fishermen intruded from different states. This led to a uniform ban along the coasts during the S-W monsoon months of June- July. While this may make some sense with respect to the west coast, this is not too good news for the east coast- particularly Tamil Nadu, since it is affected by the north east monsoons. But due to increased pressure and conflict between Andhra and Tamil Nadu fishermen, the uniform ban was imposed, in spite of resistance from affected fishermen.

## **D) Taking a closer look**

- **Problem of fisheries is the problem of the tragedy of the collective:**  
There is no specific owner of the resource. Traditional fishermen have no legal say. Their rights cannot be upheld, because they don't have any rights to begin with. Their demands on kinds of gears, motorization etc has no way of being secured, since all overriding rights rest with the governments.
- **Regulation has not been successful in alleviating the problems:** Numerous central and state legislations have not led to resolving conflict between the two sectors, nor have they secured the numbers of the species of fish.
- **Regulation may be responsible for perpetuating the problem:** Different governments put into place different policies, which clash with the interests of the traditional fishermen. There is no commitment from the government to stick to a regulatory framework, just like the recommendations of the Murari committee, after being accepted, were not implemented. This leads to a loss of faith in the authorities.

## **PART II: Informal management systems**

The most effective way to solve the problem is to allocate rights to stakeholders. Traditional fishing communities should be given the right to fishing. Management of fisheries should be entirely in the hand of the communities, with governments serving only as technical advisors, if needed by the communities.

People who press for nationalisation of fisheries subscribe to the Tragedy of the Commons argument (Hardin, 1968) to defend their stand. However, it is important to realise that Hardin Actually meant the tragedy of the collective- when there is no specified set of users or use rules that govern the management of the resource, where entry is free and open to all, without any accountability. Community managed systems on the other hand, have a defined set of users and have in place intricate rules, norms and sanctions that govern use, entry and conflict resolution.

There are already many informal community management schemes that are in place in many parts of India. Most of these are **micro commons**<sup>1</sup>- they cover small areas. A description of a few such management systems follows.

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<sup>1</sup> Examples of micro commons outside India are the Lofoten islands in Norway and Alanya in Turkey.

The Lofoten islands were characterised by many rules and regulations that hoped to resolve the conflict among fishermen using different fishing techniques. These regulations included gear and net specifications and timings for fishing, but could not ease the conflict. The rules were made and withdrawn repeatedly, as pressure from different groups increased. Ultimately, it was recognised that the only way to reduce the conflict was to hand over the decision making process to the fishing community. Today, the seas of Lofoten are divided into fishing grounds that are meant for different types of gear- longlines, gillnets and Danish seines. The division of the fishing grounds is determined by the fishermen themselves. Boats are required to remain strictly in their area, and the fishery inspectors help the community by patrolling the areas to ensure that boats do not stray.

Alanya in Turkey is yet another example of how communities are able to resolve the problem of overfishing and livelihood opportunities effectively (Berkes, 1986, pp. 215-29). The fishermen draw lots for fishing locations at the beginning of each fishing season, and then rotate to a new position each day. This ensures that the number of fishermen on a spot is controlled, at the same time ensuring equitable opportunity to all. Use rules govern the behaviour of the fishing

**A) Vallarpadam Island, Kerala** (Lobe and Berkes, 2003, pp. 271-281)

**Description:** There are 7 fishing grounds in the area. There are a total of 288 stake nets, and 126 fishers utilizing them. Of these 126, 48 have state sanctioned licenses and the remaining 78 don't. Four of the *padu* grounds consisting of 144 nets are used solely by the licensed fishermen. The sites in these 4 grounds are allocated to specific fishers and are never changed- license is specific to site of the ground. The remaining three *padus* consists of 144 fishing sites and is used by 78 unlicensed fishers (Kodipadu 43 stakes, 21 fishers, Muruganpadu 39, 26 and Ayapenpadu 62, 31) and it is in these parts that the *padu* system is followed.

These 3 grounds operating with the unlicensed fishermen use a system of rotational access. Each of the 3 grounds has its own cooperative, called *sangham*. The three *sanghams* are not linked to each other, even though they follow a common system of fishery management and fish the same water with the same gear. The *sanghams* are registered with the state's registrar's office, but are not recognized by the state fisheries department. Members of the *sangham* belong to the vala caste.

In 1967, the Kerala Fisheries Department became autonomous and attempted to introduce licensing, replacing an older system of land and fishing site holding, *pattayam*. Beginning 1974, state legislation required all fishers to have a state sanctioned license. By officially replacing the *pattayam* system, licensing led to the problem of open access. Thus there arose conflict between traditional fishers and new license holders.

**General Structure:** Each *sangham* has a president, a vice president, treasurer and secretary who are elected annually by the *sangham* members- the fishers that fish in that *padu*. Formal meetings are held several times a year, during which issues related to the *sangham* are discussed, fishing locations assigned and rules made. There are three issues that the *sangham* tries to resolve: equitable access, providing collective social responsibility and mechanisms for conflict resolutions.

**Equitable access to fishing grounds:** Location of row is important, but equally important is the location of the net in the row. Thus, a lottery system ensures rotational access to fishing grounds so as to ensure equal access to prime fishing locations.

Meetings are called once a year by the *sangham* for all members to draw lots. Participation is very high, since this is an important element in determining the earning of the fishermen through the year. The name of each fisher is written on a small piece of paper, folded and put into a brass pot. A second pot is filled with chits with numbers on them, corresponding to the number of fishermen. Twenty-one fishermen in Kodipadu mean 21 chits with the names of the 21 fishers on them in pot 1 and the numbers 1-21 on the chits in pot 2. Then each fisherman draws a name and number chit. If fisherman A draws 1, he would fish at location 1 and 22, and so on.

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cooperative. The management system requires no outside regulation. Each fisherman has an incentive to report if any rule is being broken by his fellow fishermen, since he has a stake in the future of the fishery.

Interesting variations of these are used in the other sites, which are an indication of the adaptability of such systems. In Muruganpadu, due to increased sedimentation, 13 nets were affected and these had to be removed- leaving 39 locations to share among 26 members. It was decided that locations 1-26 would be decided in the usual lottery style, but nets from 27-39 would be rotated between 2 fishermen who would share access to the location. That is fisherman, A, fishing at site 1 and B fishing at site 2 would share access to site 27. On any given day, fisher A would tie his net at site 27 and the following day fisher B. Though the decrease in the number of nets meant less income, the decision was collectively arrived at, and the promise of equity ensured cooperation.

**Providing collective social responsibility:** Each *sangham* has an element of collective social responsibility incorporated in its structure and function.

Kodipadu and Muruganpadu incorporate an additional net in their rows, which is owned by the *sangham*. It is auctioned to members every fifteen days, the auction carried out at a time when all members are present-. The bid is silent, the bid amounts depending on the season and recent catch- information that fishers have. The auction winner fishes at this site for 15 days. If he does not pay the *sangham* for his bid before the day of the next auction, one of his locations would be bid for the next 15 days, to make up for the amount owing. The money collected from this auction is used for the functioning of the *sangham*. It provides bonus to all families during the festival season, funds for the temple and the functioning of the community school. Also funds are provided for a family in the event of death or a marriage.

Ayapenpadu collects money for the *sangham* through informal collections from the *sangham* members. Additional funds are collected by charging a fee for renting out fishing locations. The location can be rented out to other members of the *sangham* on a yearly basis. The renter and owner must pay the *sangham* Rs 1000 each to facilitate the transfer, which must be provided for in writing to the *sangham*, thus allowing for short-term work, without giving up membership of the *sangham*. Now transfers are allowed even to non-members, provided that they belong to the *vala* caste.

*Sangham* members also bear the collective responsibility of maintenance of rows. In all of the *sanghams*, a committee is appointed for row maintenance and stake replacement. At the time of the year when locations are assigned, the *sangham* determines the state of repairs of the stakes. Fishers are asked which stakes are in need of repair and then a day is set for repair or replacement of the stakes. The process for replacing stakes requires 2 canoes and 6 persons. The *sangham* pays for the cost of the boat rental (if required) but the costs of the stake (Rs 175) & the wages for the committee member workers (Rs 50 per person) are paid by the individual who has been fishing at the location. The replacement takes one to two hours and is carried out when there is no tidal activity.

**Providing mechanisms for conflict resolution and rule making:** The *sangham* resolves internal conflicts among its members and makes rules to facilitate operations.

Conflicts within the *sangham* are dealt with meetings. Issues are present orally or in writing, and often centre on the allocation of fishing sites, more specifically the right to use another fisher's location should he be absent at the time when the nets are set. When disputes

between two parties cannot be resolved, the *sangham* leaders serve as arbitrators. This conflict resolution mechanism applies only to fishers of the same row.

Ayapenpadu deals with the problem of fishing rights to location in the absence of right holders by allowing the boat partner of the absent fisher to set his nets at the location and keep the catch. If a member were sick and unable to set his nets, other members would set his and collect his nets, giving his family the full catch. A written application from the sick member to the *sangham* to facilitate the process is required. In Kodipadu, a rule was made that when a fisher is absent, the fisher at the neighbouring location (higher location) has the right to fish at that location.

Along with ensuring equitable access, the *padu* system also prohibits fishing during incoming tide when shrimp are migrating from the sea to the backwaters. Sanctions to impose this rule are different in each *sangham*, ranging from written warnings to fines of Rs 100. In case of repeated offenders, they are expelled from the *sangham*.

However, the legal protection for the management system is weak. They neither have the license or the legal authority to manage the fisheries. There is no mechanism for the three groups of illicit fishermen to coordinate with one another. While each *sangham* is limited in its own membership, there is no overall control of fisher numbers as a whole, or on those who may want to fish the waters. These three *sanghams* do not interact with licensed fishermen, or with various levels of the government. The *sanghams* deal with the problem of subtractability through elaborate and well-enforced rules. It does a fine job of coordinating its members. But the lack of legal recognition and cross scale coordination may threaten the sustainability of such a system.<sup>2</sup>

## **B) Veerapandianpattinam, Tamil Nadu (Haastreht & Schaap, 2003, pp. 74-76)**

Local management addresses three vital problems:

- Damage caused by mechanised boats to fishing gear of traditional fishermen- financial loss
- Danger posed by mechanised boats to the fishermen- collisions, injury

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<sup>2</sup> There are other examples of padu based management systems. One is that of Pulicat Lake, Kerala (Mathew, 1991; Panini, 2002, pp. 63-74).

Three villages share access to the fishing grounds. There are a total of 558 eligible male members. Members are of fishing the cast *pattanavar*, both Christians and Hindus. Sharing of fishing grounds among the three villages is determined by caste organization. Individual villages operate lottery independently. Three main fishing grounds are further divided into 25 sites and accommodate 56 nets. The three villages rotate access to the fishing sites on a daily basis within a monthly cycle of assigned days; the lottery is yearly.

The *padu* system here links across several scales. The panchayat facilitates the *padu* system of the three villages. The elaborate system allocates rights amongst the three villages, but is coordinated at the level of fishing caste organization. This addresses and resolves the competition for the limited number of fishing grounds.

This system too lacks legal recognition. They have the right to organize, but have no territorial use rights on the *padu* grounds. The entry into the fishery at both village and lagoon level are dealt with, but the problem of exclusion remains. There is pressure on the fishery from non-locals due to the shrimp boom, and this interferes with the ability of the fishers to impose their rule.

- Downgradation and damage to the marine resources due to the expanded reach and indiscriminating nature of trawling activities.

Mechanised boats operate only between June and October, and are docked for the rest of the year in the Tuticorin harbour by local agreement. Traditional boats operate all the year. Many crewmen working on the mechanised boats also work on traditional boats in the remaining part of the year. For this they have to ask permission from the traditional fishermen. Moreover, they are only allowed to operate their boats from Tuticorin harbour, since the boats have to be docked there between November and June.

Fishing is carried out 6 days a week. All boats leave at 6 am and are back by 9:30 pm. No night fishing is undertaken. Mechanised boats use bottom trawling, sometimes with hook and line. Some fishermen use only one type for both prawn and finfish. (30 mm between knots at cod end, and 130 mm between knots at upper end). Others use nets for demersal fish, which have bigger mesh size than those for prawn and finfish.

The fishing grounds used by the fishers of Veerapandianpattinam are used by the mechanised boats of Tuticorin and other areas. The fishing grounds have shifted further off shore.

There are rules for spatial distribution of the mechanised and traditional boats. Mechanised boats are not allowed to fish close to the shore, and are restricted to areas where the bottom is at least over 5.75 meters below water surface. In their turn, the traditional boats have to stay close to the shore and can't venture into the grounds of the mechanised boats.

Local arrangements are arranged between the cooperative fishermen society (for traditional fishers) and the mechanised boat fishermen in the presence of the panchayat. Whenever possible, most disputes are solved directly amongst themselves.

There exists a set of local agreements between fishermen from Veerapandianpattinam, Tuticorin, Singhithurai and other villages, with the following rules:

- Mechanised boats will carry operation between May 1 and Nov 30 from 5 am to 12 am, before which they return to the Tuticorin harbour on the south side of the fishing area.
- Mechanised boats will operate in the northern part of the fishing area.
- When fishing at the north side, the mechanised boat will not fish within 8 km of the shore.
- When fishing at the south side, the mechanised boat will not fish within 8 km of the shore.
- Pair trawling will not be used under any circumstance.
- If the country boat fishermen damage mechanised boats and their fishermen, the country boat fishermen will be responsible for the damage and the losses.
- If any mechanised boat is found fishing near the shore, they will be ceased for the period of one month.
- All mechanised boats will have their register number in the mentioned size.
- All mechanised boats will not go fishing in November so as to allow the fish to breed.

- If any mechanised boat goes beyond the fishing agreement and performs fishing activities according to government rule, then the boat owners association and fisherman association will stop the boat from fishing.
- In order to ensure that the treaty is kept, the government will appoint surveillance boats; this is the demand of both parties.
- If mechanised boats do not return after 12 am, then they will be banned for the next 5 days.<sup>3</sup>

It is important to recognize the importance of such systems. When people form rules for themselves, they are most likely to follow them. Also, fishermen want to ensure that the fish population survives, so that they have a source of livelihood tomorrow. When they are given the right to take decisions for the resources that they are dependent on, they would automatically make sure that the resource in question is sustained. It gives them every reason to practice wise use. It also makes them secure about their rights, thus encouraging them to take the time to ensure that their management practices are enforced. Thus it becomes important to ensure that the rights have legal standing and recognition.<sup>4</sup>

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<sup>3</sup> Near Veerapandianpattinam, the example of Tharuvaikulam also demonstrates local initiative (Case study conducted by the Centre for Civil Society).

Local management provides solutions for the same three vital problems, as mentioned in the Veerapandianpattinam.

Mechanised boats are not employed all the year around. During the rough season- NE monsoons-, the ban period- April and May- and the rainy days, the mechanised boats don't operate. Traditional fishermen operate boats throughout the year.

Boats operate for 6 days a week- Sunday is rest. There is no time schedule for departure or return of boats and this depends on the targeted fish species. For example, nets for crab are set in the afternoon and collected the next day. For finfish, boats leave at 6 or 7 in the evening and return at around 6 am next day. Boats can also fish at night and can also stay out for multiple days.

Fishermen do not use trawling methods in spite of mechanized boats. Bottom trawling is not allowed under any circumstance. Two types of gill nets are used- crab nets and nets to capture demersal fish.

The fishing grounds are some 30 nautical miles away from shore. Fishing is carried out in different areas, which are frequently shifted depending upon catch. Fishing grounds of mechanised boats have shifted to areas further offshore, through tacit agreement.

There are no conflicts between the mechanised and traditional boats at Tharuvaikulam, the conflicts, if any, are between the mechanised boats of Tharuvaikulam and Tuticorin.

Fishermen from other areas- Tuticorin- are not allowed to use trawling off Tharuvaikulam. Official help is appealed to. Also, the fishermen try to minimize their encounter with those from Tuticorin. But there are no special arrangements with the mechanised boats from Tuticorin.

<sup>4</sup> In some areas, local people cut off their fishing grounds, in order to prevent outsiders from entering and defiling their fishing grounds. An example is the Ashtamudi estuary, Kerala (Muralikrishna & Onishi, 2002, pp.19-21). The system here comprises of marking off a protected area within the estuary, a first of its kind initiative in inland fisheries in Kerala. Each household has demarcated its fishing ground in the estuary by placing tree branches in the water about 20 to 50 m away from the land border of their houses. The males in the family collect the catch manually, standing chest-deep in the water, and using a small hand-net. Shells are collected in the morning, when there is an ebb tide and the water column is low.

John Kurien also talks about such management systems in his paper, 'The Blessing of the Commons: Small-Scale Fisheries, Community Property Rights, and Coastal Natural Assets, August 2003.'

## **Allocation of Fishing Rights**

The NEP 2004 surprisingly omits any direct discussion on the management of fisheries. Fisheries are a very important sector of the India economy, with scores of communities dependent on fishing for livelihood. The problem related to fisheries is two fold: how to keep species of fish at ecologically sustainable level and how at the same time to assure the livelihood of people.

A relatively new approach that provides a sustainable solution by combining the two issues is to bestow fishing rights to traditional fishing communities. **Tradable Quotas (TQs)** go far to solve the fisheries problem precisely because they have the following characteristics:

- They are exclusive which means that only those who hold them may harvest fish;
- The responsibility for their utilisation is clearly defined and lies with the identified group;
- They are divisible which enables fishermen to decide how much of them to hold at any given time;
- They are transferable which means that non-efficient players can hand over their quotas to others and still earn money.
- They are permanent, making long-term planning possible.

The beauty of the TQ is that it is able to reconcile the seemingly opposing objectives of ensuring livelihood of people and also conserving and securing the numbers of different species of fish. This is because each family has a right to catch only a fixed amount. If a fisherman were to juvenile fish, it would be counted as part of his fishing share. However, the market value of the juvenile fish is low. The fisherman can do better by catching adult fish. Thus he has every incentive to not catch the juveniles- thus greatly reducing the problem of young fish being caught. At the same time, since each fisherman has a guaranteed right to a share of the fish, he has an incentive to let the fish population grow, since more fish in the sea today, would also mean more fish tomorrow. Since TQs are calculated as percentages of the Maximum Sustainable Yield (MSY), a greater MSY means greater absolute amounts per fisherman. Since everyone has a fixed share, there is no threat of anyone eyeing another's share of fish.

Iceland pioneered the idea of a TQ. The government went about getting information on historical catch of fishing families (Gissurarsson, 2005, pp. 317-32). Using this information, they arrived at the average catch per year, and subsequently, the average share of each family in the catch of fish. This share was given as a quota to each family. The Department of Fisheries, on the recommendation of the Marine Fisheries Institute, calculates the Total allowable catch (TAC) every year. The fixed quota, on the basis of that year's TAC, converts into the Annual Catch Entitlement (ACE). These quotas or legal entitlements are permanent, fixed and also tradable; hence these are Individual Tradable Quotas. The families then formed their own system to enforce the legal quotas. The government plays an advisory and supervisory role.

In the Indian context, however, it seems that the given the number of individuals/families involved in earning their livelihood from fisheries and the wide variation in the average yearly

catch, it would be difficult to calculate and to rely on the historical catch. The model of Japanese cooperatives proves to be an interesting system, from which ideas for the Indian context can be drawn.

### **Japanese Cooperatives** (Yamamoto, 1995, pp. 21-34)

The Japanese cooperatives are an example of **macro commons**- the system applies to the entire coastline of the inlands of Japan. These are formal communal arrangements, where Fishery Cooperative Associations (FCAs) hold the rights to coastal marine resources and impose strict conservation measures on their members. FCAs have roots going back about one thousand years. There is no conceptual distinction in Japan between land holdings and land tenure and sea holdings and sea tenure, since fisheries rights have a legal status equal to that of land ownership.

According to the Fisheries Law (1949) fisheries rights in the sea area under the jurisdiction of a Fisheries Cooperative Association (FCA) are the bona fide personal property of the individual members of that association, to whom they are distributed by the association. Each FCA establishes regulations for the control and operation of various types of fishery in an equitable, efficient and sustained manner, as local conditions dictate.

Sea tenure in Japanese coastal waters operates at various levels, ranging from the national government, through the prefecture and the local FCA, to the fishing squad and finally to the individual fisherman. In present day Japan, the FCA is a vitally important intermediate organization that links the central and prefectural governments with the individual fisherman. However, an FCA belongs entirely to the local community of fishermen. Its principal functions remain planning, managing and continuing sustained development of the local sea territory to which a community has tenure.

While it may appear that the Japanese coastal fishermen are strictly bound by the detailed rules and regulations handed down through rigid hierarchical structures, an analysis of the documents in support of regulations reveals quite the opposite. The "Exclusive Fisheries Rights Documents," issued to each FCA, reveals a generality, which limits itself to a simple statement of basic principles and fundamental rules of behaviour, with wide latitude for interpretation. Detailed application of basic ministerial or prefectural guidelines is left entirely to the FCA -- in which every fisherman is ensured a voice -- and in many instances to the specialized fishery squad.

The local administration of coastal fisheries is a highly structured yet locally controlled system that evolved from deeply engrained customary village procedures. Within the overall framework of the formal regulations exists an unwritten community customary law that, more firmly than official rules and regulations, governs fishermen's behaviour according to local norms. First-comer's rights to a particular fishing spot, skill, knowledge and secrecy, pride of workmanship and community pressure to conform, all serve to balance excessive competitiveness and to ensure that all but the most intractable conflicts are resolved by informal mechanisms. Local community perceptions of social and "owned" space are one of the keys to understanding the territorial and tenurial behaviour of Japanese coastal fishermen, since community norms are flouted at one's peril and the threat of social banishment is real and horrifying. On the other hand, the anonymous prefectural regulations,

and even more those established by the remote Ministry, are generally regarded as less binding.

### **A) Working of the system**

Fishing licenses are issued to individual fishermen, who operate in sea area beyond the sea area covered by the fishing rights. Under the fishing license system, number of licenses, size of boat, area of operation, etc. are restricted for each type of fishery separately. National fishing licenses are issued by the Minister of the central government, who is in charge of fishery in two cases: a. for fisheries, where a fishing operation takes place over sea areas of two prefectures or more and b. for fisheries operating in high seas and EEZ of other countries. Prefecture governor issues prefecture fishing license to individual fishermen, when fishing grounds are confined to a sea area under his jurisdiction.

The fishing right is, in principle, granted to a fishery cooperative society. There are three categories of fishing rights as follows:

- a) Common fishing right: for sedentary resources, non-mobile gear such as small set net, bottom gill net, pot, baskets and artificial fish reef, fish aggregating devices, beach seine, etc.
- b) Large scale set net fishing right
- c) Aquaculture right

These fishing rights are granted by a prefecture governor to the respective FCAs in response to their application.

### **B) Coastal fisheries management plan at prefecture level**

A variety of fisheries resources are available in sea area around Japan, and these are caught by many different groups of fishermen employing different gears. Coastal fisheries management plan (CFMP) is a plan to make harmonious use of these resources by different groups of fishermen by means of fishing license and fishing right systems. A CFMP is renewed at the interval of 10 years, and the following procedure is followed on every occasions:

- (1) FCA's Proposal:** Every FCA makes their proposal to prefecture governor as to how to make harmonious use of fisheries resources available in sea area right off their coast by referring to the conditions of fishing license and fishing right as stipulated by the fishery law.
- (2) Regional Fisheries Coordination Committee:** At every prefecture, a regional fishery coordination committee (RFCC) has been established with 16 committee members, of whom 9 are elected among fishermen. RFCC prepares CFMP, taking into account the FCA proposals and referring to past fisheries data.
- (3) Prefecture Governor:** In response to applications from FCAs based on the CFMP, the prefecture governor issues/grants fishing licenses and fishing rights.
- (4) FCA Fisheries Management Committee:** Within a FCA, there are several different groups of fishermen who employ different gears or aquaculture. A fisheries management committee, which is established within a FCA, is responsible for allocating its fishing area and/or resources to fishermen's groups concerned, in an equitable manner.

## **C) Fisheries management organization for community based fishery management system**

**(1) The size of fisheries management organization (FMO):** There are three sizes of FMOs:

- a) A FCA is composed of several groups of fishermen employing different gears, chasing different resources. Within a FCA, a particular group of fishermen may act as a FMO.
- b) A FCA as a whole may act as a FMO.
- c) A group of neighbouring FCAs together may act as a FMO.

The majority of FMOs are either a) or b). A case, where a group of neighbouring FCA makes a FMO, is few in number. In recent years, however, there is a trend that a FMO is established at a prefecture level with the participation of all FCAs in that prefecture, focusing to a particular species like Bastard halibut, for which a marine ranching has been developed.

**(2) The way of fisheries management developed by FMOs:** The way of fishery management developed by FMO varies from a very simple one to a quite sophisticated one. Some examples are given below:

- a) Limiting the Number of Fishing Unit:** A FCA may establish a limited entry system to a certain species like spiny lobster, for which FCA issues fishing licenses in limited number.
- b) Minimum Size of Fish for capture fishery:** Normally, prefecture governor establishes a regulation regarding a minimum size for a certain species, for which capture is allowed. However, there are many cases that the minimum size established by FMO is bigger than the one established by prefecture governor.
- c) Rotation of fishing grounds with closed season:** A sea area off FCA is divided into several sub-areas, for which fishing is allowed by rotation.
- d) Enlargement of gillnet mesh size:** The mesh size of gillnet is enlarged with an agreement of all fishermen. In this way, catch in value increases, though catch in quantity decreases.
- e) Pooling system:** A FMO leader decides day for fishing. On that day, all FMO members go out for fishing. Although catch for each member varies, catches taken by all members are pooled. The sum of catches in value minus the operational cost, which is mainly fuel cost, will be equally distributed to all members.
- f) TAC System:** Total allowable catch is determined by a prefecture fishery experimental station based on its research. The FMO concerned follows the TAC so determined.
- g) Moratorium:** Some years ago, catch of Hatahata, which is a kind of demersal fish being fished by three different gears in Akita Prefecture, heavily declined. All fishermen agreed to cease the fishing for this species for three years.

So strong are his rights, in fact, that the coastal fisherman has a major impact on other forms of coastal zone resource use. Whereas by invoking eminent domain and on payment of compensation the government can expropriate fishing grounds for, say, reclamation and industrial development, a private developer is faced with a different situation. Prior to initiating any project he must purchase all the rights that would be lost as a consequence of the development, or compensate for any reduction in the quality of the rights, or a combination of both. But if the fishermen refuse to relinquish their rights there is nothing to be

done about it, since not even the central government is permitted to intervene when an FCA is resolutely opposed to such a transaction.

## **Models for India**

Keeping the incentive structure of ITQs in mind, and the organisation of the Japanese cooperatives, the following models of fishery management are proposed for India:

- Calculate the maximum sustainable yield (MSY) along a coastline.
- The share (in weight) of each fishing family would be arrived at by dividing the MSY by the number of families
- Thus the share in percentage of each family is determined, which remains constant forever. The actual amount of fish entitlement would depend on MSY as calculated periodically.

### **A) Model I: Individual (tradable) fishing rights (IFRs)**

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. This would be an egalitarian allocation of fishing rights. Allocating the rights as percentages offers flexibility in the system, enabling authorities to revise MSY estimates according to ecological cycles and at the same time ensuring that the share of each fisherman remains the same at all times. The new communities with fishing rights would form cooperatives to monitor and enforce the legal rights.

Whether of a particular caste/ clan or not, the quotas would still bind people together. This enables the formulation of norms and rules easily. Enforcement also becomes easier in such close-knit environment. Thus, communities along a coastal belt can form their respective cooperative, which would then put into place a system of rules and regulations with respect to timing, gears, access etc, to monitor their activities and enforce the quotas, and also to resolve any potential conflicts.

All cooperatives could come together form a body that would coordinate the activities of the cooperatives, a *sansad*. Thus this would be a two-tier structure.

As regards commercial fishing, the IFRs would be given only to members of a community. In many places community members themselves operate commercial boats. No permits would be handed over to commercial companies in the primary distribution of IFRs. Those community members can fish for the commercial companies in any kind of boat as long as they follow the rules the community has set, and as long as they are themselves fishing. If a commercial fishery wants permits then it would have to buy them from the community. It would be better that for the first 15 years, the quotas are handed over to the traditional members directly, and commercial companies are required to buy the IFRs each year from the others. This gives local communities a chance to opt out of allowing commercial establishments to function in their area. If the company is able to get more than 20% of the IFRs from some community members, then it would require the permission of the concerned

cooperative to do so. In any case any company operating its fleet in the area would be bound by the rules of the community.<sup>5</sup>

**Some problems that may remain with IFRs** (these problems were raised by Parzival Copes, we answer them partially, but detailed analysis and thought would definitely be required)

Right holders may catch more than their share (Copes 1986, pp. 281-82): with monitoring done by communities that are closely knit, this problem would be lessened. Community culture, social sanctions, penalties, monitoring by fishing authorities would go far in minimizing quota busting. There would at least be some standard for concerned communities and authorities to gauge whether the fishery is being over exploited or not.

High grading (Copes, 1986, pp. 284-85): Right holders would want to go for highest price fetching fish- even current system does not promise that such a thing won't occur. With stocks set for each species there would be a way to monitor what amount is collected.

Holdings may discard by-catch (Copes, 1986, pp.285), since it would be counted in their share, but the mortality of by-catch is high: this is better than catching the by-catch and not letting it go. Communities can specify size of nets so as to avoid the problem. Since the communities are themselves stressing on passive gears and other eco- friendly methods, there is no reason to assume that they would stop thinking the same way. Also it is in the interest of communities to ensure the safety of their resource for future use.

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<sup>5</sup> IFRs/ Rights systems are formalization of existing management systems

The existing management systems work on controlling the number of people who can access the resource, by controlling the numbers of their members- the problem of exclusion. However, they have no control over what happens outside, i.e. while they can control the number of their members, they cannot have any control over others using the resource. A rights system solves this problem, since it recognizes all the users of the resource.

The management systems also try to solve the problem of subtractability by specifying the timings of fishing, seasons, the kind of gears etc. An rights system does this completely by specifying TAC.

The local management principles base their acceptance due to their promise of equitable access. Our rights model does this by giving equal rights to all fishermen, either by giving them equal quotas or giving cooperatives quotas based on their membership (discussed later), and letting them manage their affairs. Thus the rights system is actually able to deliver the promise of equality.

Some management systems like the *padu* system actually facilitate renting out a fishing ground to a member, and of late, even a non member. This makes it possible for a fisher to earn an income by renting out his *padu*, without actually fishing, and earning an income from some other activity. Thus transferability is a notion that management systems incorporate. The rights system formally enables the transferability of fishing rights. Particularly, if these transfers are subject to the rules created by the community, then this is nothing but a formalization of the local management system itself.

Local systems are based on the idea of coordination, so that everyone gets a fair share. In our model of rights, coordination is furthered since everyone knows their share of the resource. Each person also knows that while he has the right to fish, he also has the duty to behave in a manner such that he is able to fish at least the same amount every year if not more. Thus he has to behave responsibly. Thus cooperation between different stakeholders is vital to ensure the 'output' of his quota.

Local systems also attempt to resolve conflicts. In a rights system, the possibility of conflict with respect to share of fish is at least reduced, if not completely eliminated. The remaining problems regarding gear, timings can be settled by communities, as is being done now.

Seasonal variations (Copes, 1986, pp. 286): right holders may intensely fish when stocks are high- communities can put into place self imposed regulations regarding this, as is currently done. MSY would be calculated based on these seasonal variations.

There is also the problem of setting limits on harvest in a multi-species fishery (Copes, 1986, pp.285-86). Not only does setting of TAC become difficult, but also effort levels optimal for one species would not be for another.

### **B) Model II: Community fishery rights (CFRs)**

In this model fishing rights are given **to communities**, their share of rights on the TAC depending on the number of members of the community at the time of primary allocation. This model may be more feasible in the Indian context.

The two questions here would be

- How the community is defined- this could be along the lines of kinship or geography; it may also be a functional definition.
- What the agency of the community is- panchayat (politically representative) or cooperative (users)

In our opinion, the better option would be the latter. **Cooperatives** should be the body to which the rights are bestowed, who then proceed to distribute the rights amongst their members, as they deem suitable. Since most fishermen communities are generally formed into informal bodies, this would essentially mean formalisation of the existing set up. The cooperative would consist of members from each family. All rules regarding division of rights, use rules, conflict resolution and penalties would be formed by the cooperative body. Decisions would be taken by the consensus of the members. The individual's right to fish is subject to the cooperative's right to disburse the right. Thus, there would not be any danger of any unknown person entering the fray. If someone wants to leave, he could do so, and any new member, if wanting to join in, would be required to approach the cooperative and gain membership. Thus, various bodies along the coastline are responsible for the rights in their area. Representatives from each of these bodies can then form a sansad, so as to coordinate the affairs of all cooperatives. It would be worthwhile to debate whether these rights should be tradable or non tradable.

### **C) Model III: Community sea rights (CSRs)**

In this model, the community, formed into cooperatives, is given the right the sea- we call it a **community sea rights** model. Since state governments have a right to the sea up to 12 nautical miles, this would specify the length to which the cooperative can go into the sea to fish. The distance of land along the coastline would determine the width of their claim on the sea. All resources within this area would be the property of the cooperative. They would have the right to decide how to distribute their title among their members, what rules of use to put in place, what methods to employ to solve conflict and every other issue that may concern their title. They would also be empowered to stop any 'foreign' boat/ individual from entering their titled area.

### Division of Labour

The question of division of labour is yet another important consideration. Should individual owners of rights necessarily be managers and workers? Can individual owners appoint workers to fish for them, and be in a supervisory capacity themselves? Can the individual owner be an absentee one? How would these options affect the coordination between individuals, and cooperative members? Which specification would be appropriate in the three models that have been suggested? These are questions that we need to think more deeply about.

### Conclusion

Rights are a way to give legal right to fishermen. They are also a way for authorities to monitor stocks and gauge the population of fish. Rights should be implemented by local communities, forming rules and regulations that they are comfortable with, and which appeals to their good sense and wise use ideas.

|      | INDIVIDUAL                      | COMMUNITY                      |
|------|---------------------------------|--------------------------------|
| FISH | Individual Fishery Rights (IFR) | Community Fishery Rights (CFR) |
| SEA  |                                 | Community Sea Rights (CSS)     |

The paper suggests three ways to formalize fishing or sea rights. Each model has its own positives and negatives. It is possible that no single model is applicable to the whole of India. We need to match the theoretical properties of each model to local circumstances to identify the optimal combination that would lead to the protection of fish populations, their habitat and to the betterment of livelihood opportunities for fisher folks.

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