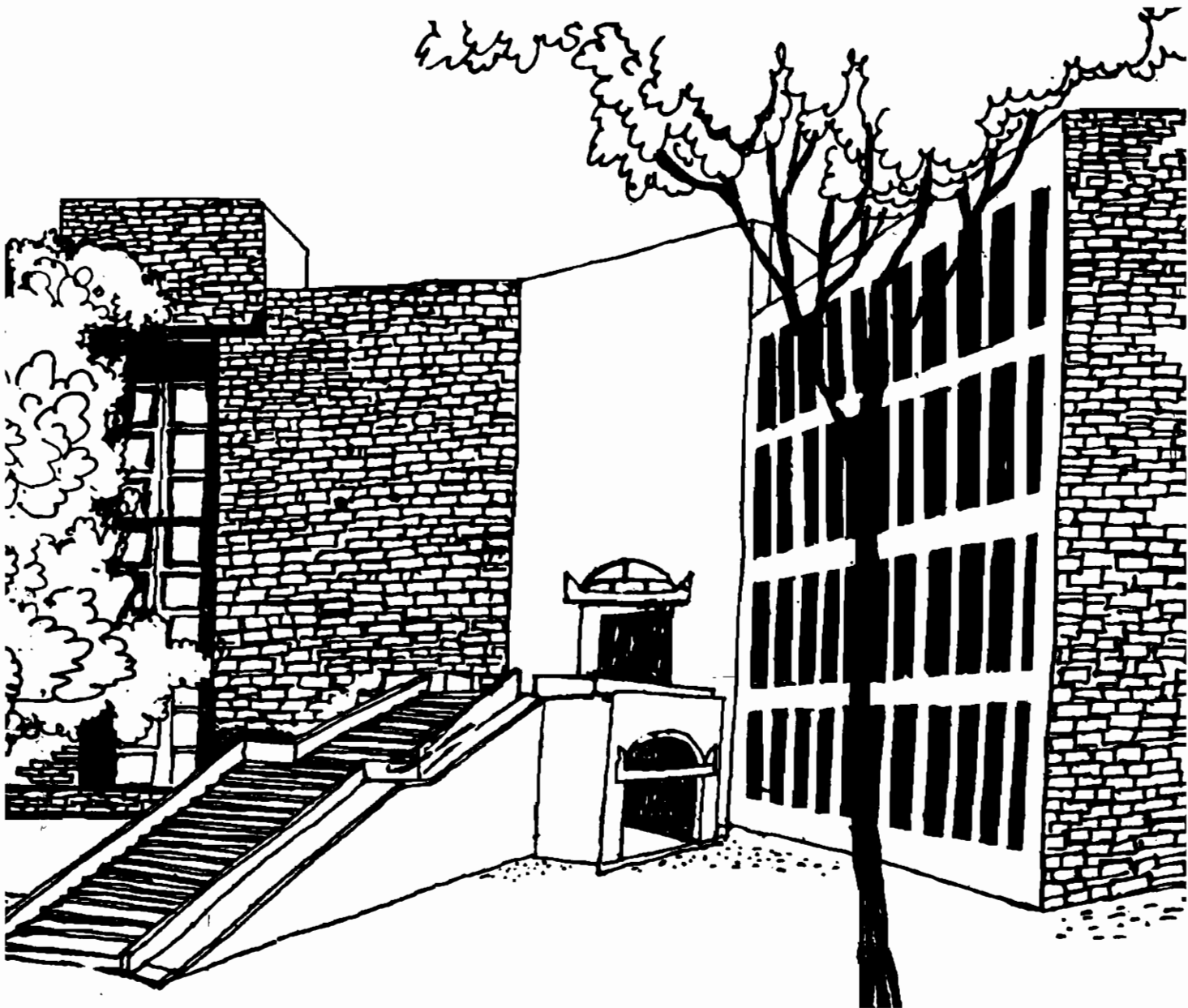




# Working Paper



PROPERTY RIGHTS AND POLICIES FOR  
SUSTAINABLE MANAGEMENT OF MARINE FISHERIES:  
THE INDIAN SCENARIO

By

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# **Property Rights & Policies for Sustainable Management of Marine Fisheries : The Indian Scenario**

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## **ABSTRACT**

*India enjoys a vast and versatile resource base in respect of her fisheries. However, the country presently has reached a crossroad so far as sustainable tapping of this resource base is concerned. By defining sustainability not merely as economic viability but also in terms of ecological and social compatibility, this paper looks into the problems and prospects of sustainable management of Indian marine fisheries. It analyses the various types of negative externalities arising out of a lack of clearly defined 'property rights' regime, both from within and outside of this sector. A future policy perspective is developed through a critical examination of the Code of Conduct for Responsible Fisheries and the famous Supreme Court Judgement of December 1996 on coastal aquaculture, and then comparing the Common Fisheries Policy of the EU with the existing National Fisheries Policy in respect of their capabilities in striking the necessary balance between economic needs and socio-ecological requirements. The paper highlights the need for evolving a network of 'brotherhood' type organisations institutionalized at local stakeholders' level.*

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## Section I: Introduction

The following news report published in *Newstime* on January 11, 1998 (p.10) under this headline 'Scientists' SOS for Marine Life' highlights the need for a balanced fisheries policy in each and every corner of the globe:

*"Marine scientists around the globe, declaring there is a serious threat to life under the sea, have called for decisive action to end the destruction of the world's oceans."*

*More than 1600 scientists signed a statement, released here on Tuesday at the outset of the UN's international year of the ocean, that urges the international community to take five steps to combat the danger to marine life.*

*These included: ending all government subsidies that encourage overfishing, increasing the number of marine protected areas, and modifying or halting certain fishing methods such as bottom trawling that threaten species and disrupt marine ecosystems.*

*The signers, representing scientists working in 65 countries, also called on US President Bill Clinton to host a White House conference on the marine environment to highlight the growing crisis in the seas.*

*"Because few of us spend time below the surface, it is easy to overlook signs that things are going wrong in the sea," said Dr. Elliott Norse, president of the Marine Conservation Biology Institute (MCBI), based in Washington state, which spearheaded the effort. "But the scientists who study Earth's living systems are far more worried than the public and our political leaders."*

This present paper attempts to put together the ingredients for development of a balanced Indian marine fisheries policy in the light of the above-stated SOS by the scientists.

Although India has vast and versatile resource base to produce almost any kind of fish (including coldwater varieties) and although the projected world scenario with respect to fish supply and fish demand is quite in favour of the country's inherent advantages, the country has so far been able to tap only a small fraction of its potential advantages in terms of export earnings and income and employment generation. For a number of reasons arising from both within and outside of this sector, Indian fisheries today is at the crossroads of development. All the three major segments of fisheries - namely, marine, brackishwater and freshwater - are confronted with the same problem of sustainability, although in varying degrees. As this sector deals with live aquatic animals, maintenance of the quality of water is a basic requirement. Unfortunately, the typically poor and backward fishing communities have little

control over the vast multitude of economic activities around the country, which have both visible and invisible telling effects on the quality of water and the habitats of fish in reservoirs, lakes, rivers, swamps, lagoons and the oceans. Highly commercialised fishing units - whether in deep sea, or in brackishwater, or even in rivers, reservoirs and lakes - tend to take a very short-term view of things in their craze for profits, and thus produce negative externalities not only for the small and artisanal fishing community, but also for a number of other regular economic activities including agriculture around the water bodies. In the absence of a sound policy framework for this sector, the sudden and mushroom growth in fishing vessels and aquaculture units in the early nineties could not be sustained - not only because of too intensive efforts over a limited resource base (thus challenging the technologies being used), but also because of a broader problem of social and ecological incompatibility of such activities with the means and livelihoods of the local fishing community. As a result, after a very short-lived boom in the early nineties, the Indian aquaculture industry has been struggling to achieve long-term commercial viability, especially after the famous Supreme Court judgement of December 1996. The situation is even worse in the marine segment - not only because of the rapidly dwindling stock, but also because of the strong conflict between the predatory technology of strong commercial interests, on the one hand, and the indigenous or at best the improved indigenous technology of the traditional fishing communities, on the other. Although things are relatively better in the freshwater segment because of lesser externality effects and better property rights, there too the sustainability issue is looming large, unless socio-ecological balance is restored between fishing and non-fishing activities through a thorough redefinition of property rights on such resources. The property rights question is thus a common problem for all the three major segments of Indian fisheries - whether it is marine, brackishwater or freshwater in type.

Three major ingredients of perfectly enforceable private property rights are: (1) Residual control by the owner, (2) Flow of residual return to the owner, and (3) Perfect pairing between residual control and return [see, for example, Milgrom & Roberts(1992), Chapter 9]. Since these fairly stringent conditions are hardly fulfilled in cases of most assets and especially in cases of fishery resources - which are mostly in the nature of either open-access or closed-access common property resources, evolution of an appropriate property rights regime is not at all a simple task. The major factors which generally create complications in the enforcement of property rights are identified as follows:

- Involvement of a number of stakeholders with conflicting aims, even though formal ownership is often vested with the government;
- The means of livelihood of traditional fishermen community are involved;
- All the dimensions of the fishery resources are not yet known, not to speak of their measurability and awareness about them in the minds of the fishermen

communities, even though they are believed to have the maximum stake in sustainable use of such resources;

- Most of the resources have alternative uses, each having its own economics - both short-term and long-term, depending upon technology and as well as its socio-political and environmental implications;
- Almost all fishery resources are both generators and recipients of externality effects, which run across generations, so that in ultimate analysis almost the entire mankind - whether past, present or the future. has a stake in these resources;
- Most of these resources are so vast and indivisible that assigning individual ownership on such resources is hardly possible (except in very negligible cases of small tanks and ponds); and
- Absence of law and order interferes with the enforcement of private property rights, even if such rights can be applied to a small sub-set of the fishery resources (especially in the inland sector).

As the system of private property rights fails with respect to most fishery resources, contracting across stakeholders becomes the rule rather than an exception. However, the Coase theorem conditions for a value-maximizing set of contracts are hardly observed in reality. So, almost invariably one has to look for second-best results in the presence of constraints of one kind or the other on complete contracting. Although the Coase theorem thus becomes invalid, one can still in the spirit of the Coase theorem look for institutional mechanisms to facilitate trade in property rights on fishery resources within the framework of a democratic participatory process. Naturally, given this framework, attempts to measure the economic gains and losses from alternative uses of water bodies, have to be there - at least in qualitative terms.

The paper has been organised as follows. The next section spells out in precise terms the objectives of this paper. Section 3 documents some evidences to highlight economic, social and ecological sustainability problems of Indian marine fisheries togetherwith their externality effect implications in terms of dilution of property rights. Section 4 attempts to define the various dimensions of a well-balanced fisheries policy - especially in the context of marine fisheries. The next section takes a relook at the UN-sponsored Code of Conduct for Responsible Fisheries in order to bring out its implications for Indian policy-making. Section 6 brings out the features of the EU's Common Fisheries Policy in the hope that it would help derive suitable parallels in the Indian context. Section 7 makes a brief discussion on the Indian Fisheries Policy before coming up with the recommendations of this paper in the concluding section.

## **Section II: Objectives**

Against the above-stated general background, the present paper proposes to set out for itself the following objectives:

- To enlist the sustainability problems of the marine segment of Indian fisheries in terms of its long-term economic viability and socio-environmental compatibility;
- To recast the problems of this segment in terms of a property rights framework;
- To examine the Fisheries Policy of Government of India and the United Nations' Code of Conduct for Responsible Fisheries in the light of the above-stated framework;
- To develop a comparative perspective between the Indian Fisheries Policy and the EU's Common Fisheries Policy.
- To suggest ways and means of evolving, as in the case of the EU, a Fisheries Policy, which will be based on the premises of a civil society.

### **Section III: Some Evidences on Sustainability Problems of Indian Marine Fisheries**

Some reported evidences are put together below to highlight loss of economic, social and ecological viability of Indian marine fisheries:

- \* Indian marine fish production seems to have reached the maximum sustainable yield level, which is defined as 50% of the resources. Obviously, there are reported cases of over-exploitation and depleting of stocks of certain species (ASCI, 1996).
- \* In India, marine fishing efforts are largely concentrated within the 0-50 m depth zone, where the shrimp population is the largest. The under-exploited resources beyond 50 m depth are estimated to be 1.7 million tons, but the resources being thinly spread in this region, productivity is less than 1 ton per sq. km whereas the corresponding figure for onshore waters is as high as 11 tons. Moreover, a large percentage (as high as 85%) of the resources beyond 50 m depth are low valued materials. An important comparative disadvantage of Indian sea is that it has a large number of thinly distributed species, whereas the temperate regions have large volumes of a relatively few species. This makes catching them selectively without destroying commercially less important but ecologically important species an extremely difficult proposition(ASCI, 1996).
- \* A case study (Zacharia *et al*, 1996) carried out in regions around Mangalore and Malpe in the state of Karnataka distinguishes between performances of single day fleet (SDF) and multi-day fleet (MDF). Whereas the SDF are characterised by old day traditional boats, MDF refers to the trawlers



which since the late seventies and early eighties began extending their stay in the sea beyond the night time into the day time and then onto the next night and so on presumably to reduce the fuel cost. Since then MDF attracted attention from an increasing number of trawlers with expanded length and horsepower. Even a good number of purse seiners have also been converted into multi-day trawl boats. The SDF operations are found to be confined within 10-15 km from the shore for about 125-200 days per year. MDF on the other hand operates over a wider area for about 220-270 days annually. The insights provided on the economics of SDF and MDF by this study seem to suggest a higher net income per unit of MDF, presumably because of higher catch per unit per year and higher prices for their catch. However, to be fair, we are required to compare the efficiency parameters of the two types of trawl fishing to come out with their comparative economic advantage. The key economic efficiency indicators as estimated in the study are given in Table 1 below. It appears that the MDF have shown a greater economic efficiency than SDF in terms of rate of return, return to capital, price earned per kg., profit per kg. and monthly income per worker. However, the production cost per kg of fish appears to be considerably higher for MDF than that for SDF. Table 2 shows the difference in catch composition for MDF and SDF and the relative increase in MDF catch over time in the region under study. In terms of price-realisation also, the MDF catch appears to be economically far more valuable. The increase in fleet size in respect of MDF points towards an apparent feasibility of off shore fishing in the Indian marine sector.

\* Table 3 below provides the trend in total catch for MDF between 1980 and 1995. The figures appear to be quite encouraging as we observe about nine-fold increase in the quantity landed over the period. In terms of value, the achievements are further encouraging, recording an increase to the tune of about 450%. However, these information do not throw any light on the 'sustainability' aspects of marine fisheries through mechanised multi day trawling operations. Incidentally, the same study reveals that catch rate in kgs per hour of fishing activities has been showing a continuously declining trend between 1988-89 and 1994-95 and that SDF enjoys a higher catch rate than their MDF counterparts (Table 2). Further, whereas the MDF has been showing an almost continuous decline in catch rate, that for SDF is rather showing an upward trend. Consequently, doubts have been raised about the long run commercial viability of marine fisheries if these are to be carried on in the same manner as are being done today. In spite of the tall claim made in the draft National Fisheries Policy that 'there is a scope for exploitation of the sea to achieve higher levels of production', studies show that it is not economically viable to fish in the EEZ beyond 50 metres depth as the fuel costs become prohibitively high (around 60-70% of the running costs) (ASCI, 1996, p. 25). Add to this the fact that the density of fish resources is very low in deep sea, around 1 ton per square kilometre, compared to that for the in-shore areas (11 tons per square kilometre) (ASCI *op cit.*, p 6). Thus it may be argued that deep sea

fishing is not expected to be economically sustainable in the long run if we stick to the policy of fishing beyond 50 metres depth with deep sea trawlers. (See Box 1)

We mentioned about the concept of externalities before. Let us identify the economic externalities involved in off shore fisheries in India. They are listed in Table 4. It will be interesting to locate the impact of these externalities on the off-shore fishery sector of the country:

- As of the working of deep sea fishing in Vishkhapatnam, the fleet size increased from 59 in 1981 to 180 in another ten years. Total shrimp catch declined from 1649 to 1565 tonnes. Majority of the trawlers are in the red.

**TABLE 1: KEY ECONOMIC EFFICIENCY INDICATORS OF THE TWO TRAWL FLEETS AT MANGALORE**

| Indicators                   | Multi-day Unit | Single day Unit |
|------------------------------|----------------|-----------------|
| Annual revenue / unit        | Rs. 1232000    | Rs. 425933      |
| Annual net profit / unit     | Rs. 121314     | Rs. 17401       |
| Profit over operational cost | Rs. 470904     | Rs. 210428      |
| Rate of return ( % )         | 24.56          | 18.07           |
| Percent return to capital    | 8.67           | 2.18            |
| Production cost /kg          | Rs. 15.83      | Rs. 9.90        |
| Avg. price earned /kg        | Rs. 17.56      | Rs. 10.07       |
| Profit / kg                  | Rs. 1.73       | Rs. 0.17        |
| Monthly income / worker      | Rs. 5161       | Rs. 3417        |

Source: Zacharia *et al* (1996), p. 10

**TABLE 2: TREND IN CATCH RATES FOR MFD AND SDF BETWEEN 1988-95**

| Year    | Catch (tonnes) |       |       | Effort (10 <sup>5</sup> hours) |       |       | Catch Rate (kg / hour) |       |       |
|---------|----------------|-------|-------|--------------------------------|-------|-------|------------------------|-------|-------|
|         | SDF            | MDF   | TOTAL | SDF                            | MDF   | TOTAL | SDF                    | MDF   | TOTAL |
| 1988/89 | 8868           | 22981 | 31850 | 1.78                           | 6.37  | 8.16  | 49.84                  | 36.04 | 39.05 |
| 1989/90 | 7643           | 13759 | 21394 | 1.73                           | 4.32  | 6.04  | 44.22                  | 31.87 | 35.39 |
| 1990/91 | 7753           | 18934 | 26687 | 1.71                           | 5.75  | 7.46  | 45.40                  | 32.94 | 35.79 |
| 1991/92 | 10429          | 18629 | 29056 | 2.27                           | 6.61  | 8.89  | 45.92                  | 28.16 | 32.70 |
| 1992/93 | 16449          | 17209 | 33658 | 2.63                           | 7.41  | 10.04 | 62.61                  | 23.22 | 33.53 |
| 1993/94 | 9049           | 26396 | 35445 | 2.16                           | 9.47  | 11.64 | 41.85                  | 27.86 | 30.46 |
| 1994/95 | 11497          | 34073 | 45580 | 1.94                           | 12.68 | 14.62 | 59.13                  | 26.87 | 31.17 |

Source : Zacharia *et al* (1996), p. 2

- Almost all the trawlers permitted by the government since 1978 to fish within Indian territories were found to be active in waters less than 40 fathoms (73 meter) deep. Around 50 such vessels were apprehended by the coast guards for fishing in shore. Their catch mainly comprised of typically in-shore fauna.
- Once the government banned the chartered trawlers from fishing within the 40 fathom line in 1982-83, most of the foreign trawlers have gradually withdrawn their offers, implying a probable lack of interest in fishing in deep waters. (Pillai, 1995, p. 9-10).

**TABLE 3: TREND IN TOTAL MDF CATCH LANDED AND VALUE EARNED BY TRAWLERS AT MANGALORE BETWEEN 1980 & 1995**

| Year      | Quantity Landed (tonnes) | Index of Quantity (Base 1980/81=100) | Value of Fish (Rs. million) | Index of Value (Base 1980/81=100) |
|-----------|--------------------------|--------------------------------------|-----------------------------|-----------------------------------|
| 1980 / 81 | 5221.7                   | 100.0                                | 12.5                        | 100.0                             |
| 1881 / 82 | 7804.0                   | 149.5                                | 21.3                        | 170.4                             |
| 1982 / 83 | 9295.9                   | 178.0                                | 30.0                        | 240.0                             |
| 1994 / 95 | 45580.0                  | 872.9                                | 544.1                       | 4352.8                            |

Source : Zacharia *et al* (1996), p 11

#### **BOX 1: THE STATE OF DEEP SEA FISHING TODAY**

“The past decade has seen a constant growth in world wide marine catches representing an increase of over 30% in the world wide supply of food from the sea for the world’s peoples. Providing food for thought, however, is the result of a recent research which indicates that the annual operating costs of the world fleets have greatly exceeded the total landed value of the marine catch. Operating costs including labour, fuel, maintenance, insurance, gear and supplies have been estimated at approximately \$93,000 million per year while estimated landed values of the marine catch in 1989 were around \$ 70,000 million. Hence, even without taking into account capital cost one might infer that the marine fishing in the global context is taking place at a considerable loss.”

“.....the implications for sustainability of the resource arising from this over capacity of global fleet should be cause for concern. Then one comes back to the question of better management of resources and the inescapable conclusion that a planned reduction or redirection of fishing effort must be the appropriate response”

Source: Editorial comments in *Infish*, 2/1993, quoted in Pillai, 1995, p 11-12

**TABLE 4 : ECONOMIC EXTERNALITIES IN MARINE FISHERY SECTOR OF INDIA**

| <b>Externalities</b> | <b>Manifestations</b>                      | <b>Remarks</b>   |
|----------------------|--|--|
| Crowding             | Overcapacity                               | Efforts of each fisherman reduces the stock of fish thereby requiring increased efforts from other fishermen.              |
| Stock                | Overexploitaion of the high price species. | Harvest activity of each fisherman reduces the stock of fish thereby increasing the cost of harvesting of other fishermen. |
| User cost            | High cost of harvesting                    | same as above  |
| Gear                 | Increased capitalization                   | same as above  |

As we shall see below, the negative economic externalities also generated a host of negative ecological and social externalities. Table 5 outlines the ecological externalities vis-à-vis off shore marine fishery in the country and Table 6 does the same in respect of the social externalities. We take up the ecological problems first:

- As we have already noted, the trawl fishing had been operating profitably so long as they could fish in regions having a depth of less than 40 fathoms. The traditional fishermen, with their mechanized or non-mechanized boats, also fish extensively in this region. We have also noticed the increase in the number of trawlers even today in regions where trawl fishing is still remunerative, although with an overall decline in catch per hour of effort. If such a practice is continued unabated further, there are every possibilities that the availability of fish stocks will decline beyond its regenerative capacity, leading to ecological disasters.
- The Indian sea waters have a large number of species in smaller quantities, unlike its temperate counterpart, where one finds less species variety but in large volumes. Hence it is extremely difficult to catch the species selectively without destroying commercially less important but ecologically crucial species. (ASCI, 1996, p. 6).
- Zacharia, *et al* (1996, p. 11-12) observed that the MDF boats are trying to increase their catch rates through reduction in the mesh size of their nets. This phenomenon may also have a negative impact on the conservation of bio-diversity in the longer run.
- According to the Coastal Ocean Monitoring and Prediction System (COMAPS) high levels of biological oxygen demand and nitrites have been found off the coastal waters of Porbandar. Pollution from heavy metals has also increased. High levels of dissolved petroleum hydrocarbons are noticed in coastal water off West Bengal and Kerala. (ASCI, 1996, p. 8).

**TABLE 5: ECOLOGICAL EXTERNALITIES IN MARINE FISHERY SECTOR OF INDIA**

| <b>Externalities</b> | <b>Manifestations</b>   | <b>Remarks</b>  |
|----------------------|---|---|
| Crowding             | Hydrocarbon pollution in coastal waters due to intensive coastal fishing.                 | Possible cause for decline in fish population, loss in bio-diversity. |
| Stock                | Possibility of extinction of certain high value species.                                  | same as above   |
| User cost            | Higher cost of harvesting associated with lower catch rate leading to more intense effort | Harvesting beyond the sustainable yield.                              |
| Gear                 | Increased capitalization leading to greater effort  | same as above   |

In the context of social externalities we observe the following:

- Not many of SDF boats are being made in the boat-building yards of the country. Further, a good number of the existing ones are non-operational for larger part of the season. Even a good number of traditional fishermen have been forced to give up their traditional occupation and emigrate elsewhere. (Zacharia, *et al*, 1996, p. 11)
- The apparent decline of the importance and share of traditional artisan fishery in the total fish catch will have considerable impact on the income and employment prospects of the local fishing community. The fish available for local consumption at a cheaper price will also show a tendency to drift away from the purchasing capacity of the local people. (Kurien & Achari, 1990 and Kurien, 1995a). One must not forget that around 8 lakh of coastal population in Indian maritime states were actively engaged in fishing activities in 1993 (Sathyadhas *et al*, 1995, p.4).
- The decline in availability has made the traditional fishermen desperate in their search for catches and very often they are found landing up in the prisons of the neighboring countries for alleged infringement into neighbor country's territories. There being no institutional mechanisms to ensure their speedy release from captivity as well as to provide support to their families back home during the period of their absence due to arrest, both the fishermen and their dependents have to pass through some harrowing experiences some times even for years.(see, SALF, 1997 for a detailed description of the problem).
- The vulnerability of the local artisanal fishermen to the possible future uncertainties in respect of the continuance of their source of livelihood is bound to lead to considerable conflicts and tensions as are evident through the agitational activities carried out by different fishermen's organisations over the

last few years in support of several of their demands. (see *Labour File* , July-August, 1996)

- Over time the area of operation of chartered vessels began to come close to the shore while mechanical boats started expanding their operation into deeper water. It is believed that the traditional boats and mechanised crafts are quite capable of optimally tapping India's fishing resources in the upto 200 mt. zone. No big trawler is required for this segment. Large factory ships not only act as environmental predators but also deprive the common man of low-valued fish (Pillai, 1995).

**TABLE 6: SOCIAL EXTERNALITIES IN MARINE FISHERY SECTOR OF INDIA**

| <b>Externalities</b> | <b>Manifestations</b>  | <b>Remarks</b>  |
|----------------------|--|---|
| Crowding             | Traditional fishermen out-competed by trawl fishing.                               | Reduction in employment opportunities and income.   |
| Stock                | Infringement into other country's coastal waters due to intensive coastal fishing. | Detentions and arrests in other country   |
| User cost            | Higher cost of harvesting for traditional fishermen because of lower catch rate.   | Harvesting beyond the sustainable yield, jeopardising the socio-economic future of the traditional fishermen. |
| Gear                 | Increased capitalization leading to greater effort                                 | same as above   |

#### **Section IV: Dimensions of a Balanced Fisheries Policy**

Policy, in the context of the present paper will be used to mean a supporting framework that facilitates the achievement of goals of a society composed of self-seeking individuals and/or enterprises. As we talk of the fisheries sector of the country, the goals are clear by now. They are :

- ensuring a considerable proportion of the nutritional requirements of animal protein to the vast majority of the country's population through higher production;
- ensuring employment and income to a good number of the countrymen who are directly or indirectly dependent on fisheries for earning their livelihood;
- ensuring a gradually increasing flow of foreign exchange through stepping up exports of fish and fish products in the international market; and above all

- ensuring the conservation of the bio-diversity such that the future generations never have to live in a world without fish and other associated natural resources.

How then do we achieve these goals simultaneously? Given the present day thrust on market friendly approach, there should apparently be no hesitation in suggesting the use of market in delivering the necessary supporting framework. However, as we shall see in the following paragraphs, markets alone may not be sufficient in ensuring the simultaneous achievement of all the goals.

Collin (1993) provides an excellent structure for understanding the dynamics of goal attainment. He argues that the achievement of a certain goal necessitates constraining of actions. 'Defining control as the constraining of action in order to achieve a goal', he classifies 'different modes of control depending upon when the constraint is imposed'. When a person, or an organisation with rules and plans specifies the appropriate action and directs the actor what to do, we talk of 'action control'. Control based on the consequences of action, on the other hand is termed as 'output control'. Control prior to action is characterised as premise control. Table 7 provides the different possibilities depending on the possibilities of measuring goal attainment and the degree of knowledge of the action necessary to achieve the goals.

**TABLE 7: CONTROL TYPES DEPENDING UPON KNOWLEDGE OF ACTION AND MEASURABILITY**

| Knowledge about action | Goal Attainment                  |                 |
|------------------------|----------------------------------|-----------------|
|                        | Measurable                       | Not Measurable  |
| High                   | Action control or output control | Action control  |
| Low                    | Output Control                   | Premise Control |

Source: Collin (1993), p.74

If the goal to be attained is measurable and one has prior knowledge about the possible actions to be taken, the control may be either in terms of action or output. If the goal is not measurable but there is high knowledge about the actions, Collin suggests an action control, i.e. setting up of a hierarchical institution for the purpose. A market form of control in the form of output control is prescribed when the goal is measurable with a low level of knowledge about the possible actions. In case there arise problems regarding both measurability and knowledge of actions, Collin suggests premise control and argues that 'some clan like institution is needed to deal with these conditions...' (p. 74). Such institutions call for collective action. The precise property rights problems in this context are as follows:

In the context of the controls necessary to ensure sustainability of Indian marine fisheries, we observe that the goals are neither measurable (we are yet to know the dynamics of the fish system in a precise manner), nor is it been possible to identify the correct courses of action (as we shall see them in the next section in the course of our understanding of the National Fisheries Policy). We cannot set up a control regime dominated by market forces given the following facts:

- There exists no clearly defined property rights in respect of capture fisheries in general and marine fisheries in particular.
- Even though some semblance of clear property rights are observed in the context of culture fisheries, there are certain grey areas where the property rights are neither clearly defined, nor vested permanently on the user.
- In view of a large number of possible products from fisheries, these are all yet to be standardised to facilitate smooth operation of the market mechanism.
- Activities in the marine fisheries segment generate fairly strong negative externalises.
- Activities outside the fisheries segment also generate environmental threats for the activities related to marine fisheries.

These factors will lead to a 'market failure' problem and the goals cannot be achieved if we are to depend entirely on 'output control' through the market mechanism.

Is complete state control then the way out? 'Action control' that the state is supposed to ensure will not be possible as complete knowledge about the appropriate action to be taken cannot always be available with the state. In the absence of the complete knowledge those providing direction on behalf of the state may indulge in 'rent seeking' behaviour and thereby obstruct the achievement of all or a part of the goals mentioned above.

In view of the general failure of both market control or state control in the simultaneous achievement of several goals, one has to take resort to control prior to action, i.e., input control and control through socialisation. This is the *essence of premise control*. In the context of Indian fisheries, an approach of 'collective action' and 'participatory management' to ensure controlled harvest as well as facilitating efforts towards development of efficient technology probably will be more effective while framing the necessary policy prescriptions.



## **Section V: A Relook at the Code of Conduct for Responsible Fisheries**

Before we examine the FAO-sponsored Code of Conduct for Responsible Fisheries, it is important to know about its genesis. Introduction of the notion of exclusive economic zones (EEZs) in the mid-seventies and the adoption of the UN convention on the Law of the Sea in 1982 provided the necessary framework for management of marine fisheries during the decade of 1980s. It provided the coastal states both rights and responsibilities for management of fishery resources within the respective EEZs covering nearly 90% of the world's marine fisheries. While extension of national jurisdiction was looked upon as necessary step, but very soon it turned out to be an insufficient step for efficient management and sustainable development of fisheries. This is because as the world fisheries became a market-driven and dynamically developing sector of the food industry, the coastal states started taking advantage of this new opportunity by making massive investments in modern fishing fleets and processing facilities in response to the growing global demand for fish and fishery products. So, by late 80s it became amply clear that such rapid and uncontrolled exploitation in response to market forces cannot be sustained. This is the beginning of a fresh need for an altogether new approach to fisheries management, which must embrace the urgency for conservation and environmental protection. The Code which was evolved in response to these developments and unanimously adopted in 1995 for implementation in a non-mandatory manner, set out 'principles and international standards of behavior for responsible practices with a view to ensuring the effective conservation, management and development of living aquatic resources, with due respect for the ecosystem and biodiversity'. This Code recognised the interests of everybody concerned with fisheries including the consumers and other users and intended to act as a reference document to help states evolve suitable legal and institutional framework for practice of responsible fisheries on the part of each and everybody involved in this sector.

While the general principles of the Code asserts the users of aquatic resources that fisheries management is not only for the present but also for the future generations, it also calls for transparency in the government decision making process relating to fisheries and urges the states to protect the rights of the fisherfolk to a secure and just livelihood besides their involvement in fisheries policy formulation. Besides these general principles, the Code also lays down certain broad principles pertaining to the following six themes:

- With respect to fisheries management, a precautionary approach is taken which stipulates that the absence of adequate scientific information should not result in failure to undertake timely measures to conserve fisheries.

- On fishing operations, the Code provides comprehensive guidelines regarding desirable fishing practices, selection of gear, energy optimisation, maintenance of marine environment and atmospheric protection, and use of artificial reefs and fish aggregation devices.
- On aquaculture development, the Code wants the states to ensure that the livelihood as well as access to fishing grounds of local communities are not affected.
- On the issue of integration of fisheries into coastal area management, the Code favours evolution of a holistic approach through active participation of the fisherfolk communities.
- The articles on post-harvest practices and trade highlight responsible fish utilisation and reflection of fairness, equity and environmental concerns in the rules and regulations governing international trade in fish.
- The articles on fisheries research emphasise promotion of appropriate institutions to promote integrated and multi-disciplinary research.

Since all the instruments of control and regulation are imposed from above in the above-stated Code, one can legitimately raise question as to whose conduct this Code is meant to influence and what are the chances that it will be followed (see, Kurien, 1995a). Kurien has rightly pointed out that while the FAO Code has made the nation states the custodians of the living organisms in the sea, true conservation and promotion of such resources can take place only under careful stewardship of small-scale fishworkers, who have genuine 'connectedness' and therefore concern for these resources. This calls for participatory management and development of these resources., which unfortunately has not been given the central place in the proposed code of conduct by not addressing the issues specific to women and not assigning special role to non-governmental agencies and organisations of the fishworkers. It is important to see to what extent the spirit of the above-stated Code as well as the concerns of Kurien have been accommodated in the fisheries policy of the EU and India.

## **Section VI: Features of the Common Fisheries Policy of the European Union**

Being the world's largest market for fish products and the third major sea-fishing power behind Japan and China, fisheries constitute an important industrial activity in the EU. Although fishing's contribution to GDP is less than 1% in most of the member countries and although fisheries do not provide as many jobs as some other sectors of the economy, the EU attaches special importance to fisheries because of this sector's vital contribution to certain

coastal communities. Given the fact that every job at sea generates a further 4 to 5 for the fishing communities on the shore through forward and backward linkages, the EU fisheries policy was firmly based on Articles 38 and 39 of the Treaty of Rome. The common fisheries policy (CFP) of the EU came into being in 1983 based on the reasoning of the constituent national governments 'that the Community as a whole would be better placed to defend their interests in international negotiations and to manage the many fish stocks under their jurisdiction'. However, its foundations grew gradually over time often in response to internal dynamics of the EU and international developments. Today CFP is a full-fledged European Community policy, one of the very few, like agriculture, with common rules throughout EC member countries covering all aspects of the fishing industry from the sea to the consumers. It has three underlying principles: (1) conservation of the sea's resources, (2) access to Community waters by EC vessels, and (3) protection of interests of the coastal communities dependent on fishing for their livelihood. The commonness of CFP, however, does not mean that the European Commission in Brussels manages the policy on its own. A corner-stone of CFP is shared responsibility for decisions, their applications and enforcement by all the concerned parties - the EC institutions, national governments, regional and local authorities, fishermen and fishing organizations.

The thrust areas of the policy are: (1) controlling access to the fishing grounds; (2) conservation of fish stocks; (3) monitoring fishing activities; (4) marketing of fish products; (5) structural policies; (6) third country agreements and international conventions; (7) fishery research; and (8) CFP & the environment.

On the issue of 'Access to Fishing Grounds', the central EC principle of non-discrimination on grounds of nationality has been relaxed by attaching greater importance to the social and economic interests of coastal communities. Here the guiding principles are:

- Access to coastal waters upto 12 miles is reserved for fishermen from local ports who have traditionally fished these areas. This safeguard for coastal fishermen will continue till the end of 2002.
- Freedom outside 12 miles is also not total. Based on biological reasons as a way of protecting rich breeding grounds of fish for human consumption, the Community has designated protected areas where the right to fish is limited. In similar vein, some grounds are closed to industrial fishing of species like Norway pout or sand eel.
- A framework is developed which defines all the parameters governing access like areas where fishing is banned or restricted, limitations on exploitation rates and the time spent at sea, ceilings on catches, the number and type of vessels that may fish particular grounds, the type of fishing gear to be used, minimum

catch sizes and incentives to encourage more selective fishing so that one species is not caught as a by-catch of another.

- **Member States are permitted to introduce tougher measures on local stocks and for their own fishermen on conservation grounds.**

For 'Conservation of Fish Stock', the CFP has made two-pronged efforts - to prevent too many fishermen from chasing too few fish, and also to prevent too many young, immature fish from being caught. The second objective is achieved through reducing catches of young fish, especially of those which have not yet reached sexual maturity. This protection is essentially achieved through a variety of technical measures like the minimum size or weight of fish landed, limits on different fishing seasons, areas where certain types of fishing are banned and restrictions on fishing gear and vessels.

For achieving the second objective, the CFP also assesses annually on the basis of scientific advice total allowable catch (TAC) level for each stock. TACs are then divided into national quotas based on the allocation keys agreed upon in 1983. When a TAC or quota is exhausted, fishery operations are closed as per the policy endorsement of the European Court of Justice.

Given high probability of 'free riding' in the context of the open access nature of capture marine fisheries, CFP has attempted to provide a highly effective monitoring regime which is least costly at the same time. The following guiding principles are followed in this context:

- **While the main responsibility for ensuring application of rules lies with the member governments, which have their own inspection services, the principle of subsidiary is followed at the same time to distribute responsibilities to the most appropriate level - be it Community, National, Regional or Local level.**
- **All transactions in the fisheries chain beginning from the from producer to the consumer - whether the catches themselves, landings, transport or actual sales - are monitored and documented. This documentation through computerized database allows cross-checks to be run on the details provided by the transacting parties.**
- **The fishing activities of EC vessels whether in the waters of the Community, of third countries or elsewhere and also the boats from third countries fishing in EC waters and landing their catches at Community ports are increasingly being subjected to closer scrutiny.**
- **Besides use of national penalties with backup of satellite services, economic incentives are also offered to fishermen who respect the rules.**

With respect to 'Marketing of Fishery Products', the thrust of CFP is to ensure that fish reaches its ultimate customer, the consumer, in the best condition possible. With the objectives of (1) stabilising the market, (2) guaranteeing a steady supply of quality products, (3) ensuring reasonable prices for consumers and (4) supporting fishermen's incomes, common rules have been framed covering a wide range of live, fresh, chilled, frozen, dried, salted and smoked fish as well as shellfish and caviar. These rules apply to even items like fishmeal that are unfit for direct human consumption. Common marketing standards, a common pricing system, producer organisations and a common trade regime with all non-EC countries constitute the basic foundation of the Community's fisheries market policy. The following steps are taken in order to achieve these objectives:

- To guarantee the quality of fresh and processed fish, widely accepted standards have been set covering a variety of attributes like size, weight, presentation, packaging and labeling. Spot checks are carried out at transport or marketing stages.
- A comprehensive pricing system operates for fish, which strikes a balance between the conflicting interests of fishermen, processors and consumers.
- To stabilize fishermen's incomes a safety net has been set - known as the withdrawal price below which fish are withdrawn from the market and not sold - rather than by fixing prices at unrealistically profitable levels. However, the aid shrinks as the amounts expand. Storage grants are also available for quality produce to enable them to be sold later when supplies are less plentiful. The withdrawal price applies only to landings of fresh fish when they are first placed on the market. For catches frozen at sea where the problem of perishability is less acute, aid for frozen storage exists to prevent species already in surplus from being offered for sale. Special measures akin to deficiency payments rather than regulation of markets apply to tuna, whereby compensatory payments are made to tuna producers when prices fall in the community to compensate them for the fact that no tariffs protect this particular market (The absence of such tariff protection is designed to ensure that the community's processing industry has competitive access to raw materials in the world market).
- Producer organizations being the community's marketing pillar, most fishermen join these voluntary bodies and sell their catches to a wider public through these organizations, which are permitted to set their own withdrawal prices in consonance with the way the market operates. Thus, the local producer organisations help improve overall quality levels, adjust supply to demand and ensure fishing quotas are properly managed. Start-up funds from the Community nurture development of these voluntary organizations, which are being encouraged, in line with the subsidiary principle, to take on an even wider role in the running of the CFP. With this end in view, the member states may even

extend the disciplines of producer organizations to those fishermen who are not members of such organisations.

- The EU being the world's largest importer of edible fishery products, a common customs tariff which ensures application of the general principle of community preference is applied on non-preferential fish imports. In order to ensure that imports do not upset the stability of the Community market, the Commission carefully monitors the price of imported fish through its reference price system. To reinforce domestic price stability, additional measures are taken, which include minimum import prices for a handful of species including cod and hake, extra-promotional campaigns to encourage fish consumption and tight control over landings from non-EC boats.

The EU's 'Structural Policies' with respect to fisheries aim at (1) achieving greater coherence between different aspects of CFP, (2) removing the partition between the CFP and other Community activities, and (3) taking account of the vast changes. The major ingredients of the structural policies of CFP are:

- To ensure that the fishing fleet is competitive and to improve the balance between fleet capacity and the fishing opportunities available in EC waters.
- To steer the industry towards activities compatible with the Community's long-term conservation strategy and to reinforce the social and economic development of coastal areas heavily dependent on fishing. (The Community has introduced several measures to ease the social and economic consequences of change in the fishing and processing industries. First, EC aid is available to withdraw vessels from operation on either a temporary or permanent basis. Second, financial assistance is made available to improve competitiveness by constructing new vessels and modernizing the existing ones. Third, Community assistance is provided to reduce excess capacity through establishment of joint enterprises in third countries.)
- To provide Community aid not only to the industry but also to community organisations and local bodies for improving the conditions under which fishery and aquaculture products are processed and marketed, with priority accorded to measures implementing new EC hygiene and public health standards, restructuring and modernizing the industry, promoting technical innovation, developing aquaculture products and upgrading auction halls and fish-handling facilities.
- To upgrade port facilities so as to improve the way fishery products are landed, handled and stored, besides improving the back-up services of fishing vessels.
- To promote public awareness of different types of fish in order to increase demand for species which are plentiful in supply or are little known. (Successful

campaigns include promotion of fresh herring in the UK, sardines in France and Italy, frozen fish in Portugal, carp in Berlin, mussels in Spain and a broader range of species for the Belgians).

- To actively promote rather than ban commercial farming of fish, crustaceans and mollusks for human consumption, in recognition of the fact that aquaculture, colloquially known as fish farming, provides badly needed jobs in some less-developed regions; increases the range and accessibility of fish, shellfish and other edible aquatic items for the consumer, and helps to reduce the Community's trade deficit on sea products, but of course under adequate safeguards against possible environmental pollution from non-treated waste and conflicts over water and land use.
- To provide Community assistance from European Regional Development Fund (ERDF) and the European Social Fund (ESF) to initiate a number socio-economic measures like new economic activities for job creation in order to offset the hardship for the coastal areas from the unavoidable restructuring process of the fisheries sector.

In order to provide vital access to fishing grounds for the Community's distant water fleet and help the search for new stocks, the CFP has laid considerable emphasis on third-country agreements and international conventions. These agreements are of the following types:

- While in the earlier years the agreements focused largely on EC access to another country's fish stocks and the financial and/or commercial concessions offered in exchange, the recent trend is to establish more lasting partnerships and joint ventures between the fishing interests of both parties.
- Close cooperation on conservation and application of technical measures are established on reciprocal basis with the Community's immediate neighbours.
- In exchange for access of fishery products to the EU's internal market, EU fishermen enjoy extra fishing facilities in non-EU country waters.
- The EU vessels are allowed access to the surplus stocks in the US and Canadian waters through joint venture arrangements.
- Payment to third countries for specific fishing rights and assistance with training, fish surveys and various scientific programmes is by far the most common type of agreement.
- More and more emphasis is now-a-days being laid on 'second generation' agreements which will create closer links not just between the Community and other countries, but also between their fishery industries.

On the subject of 'Fishery Research', the thrust area of the CFP are as follows:

- In response to the growing demand for detailed and more accurate data on fish stocks, it is in favor of cooperation with countries bordering the North Sea, the Mediterranean and the Atlantic.
- It lays fundamental priority on collection of reliable and basic data on all aspects of the sector, particularly on the detailed composition of Community fleets and catches, to enable scientists, politicians and fishermen to work out appropriate strategies for management of EU fisheries.
- It favors creation of research networks by bringing scientists and experts together in small groups to collaborate on specific issues covering biological, ecological, technical and socio-economic aspects of the CFP. The areas which have drawn special attention of the EU's fishery research programmes include development of nets allowing by catches to escape or separating fish from shellfish, vaccines to protect farmed salmon from ice, improved methods of handling, processing and storing fish, energy-efficient and environment-friendly methods of farming fish, shellfish and algae, ways and means of reducing the impact of fishing on non-commercial and non-targeted marine species, study of currents and wave patterns, and establishment of an European ocean data system.

On the subject of 'CFP & the Environment' while the CFP recognises the two-way street between fishing and the environment, policy thrust is on the man-made changes including fishing which has probably the maximum impact on the coastal zones and estuaries. While its objective is to control the ecological impact of fishing and of other activities on fishing, the CFP is never in favour of eliminating all such activities. It is always in favour of striking a balance between economic needs and protection of the environment. The highlights of the CFP in this context are as follows:

- Since non-selective fishing is the worst offender, the emphasis is on adoption of selective fishing techniques.
- The CFP takes a cautious view of new fishing methods and more powerful vessels, although they tend to fish in areas and at depths which were previously inaccessible.
- The CFP also takes a skeptical view of the chemicals used in industry and agriculture, debris from ships, burst undersea oil pipelines and even domestic waste in the interest of fisheries.



- The CFP is also selective towards construction of dams and exploitation of mines and quarries several miles inland, as these may have eventually the same repercussions on the sea's resources as construction of coastal leisure centres and marinas with concentration of yachts and pleasure vessels.
- The Community strongly backs multilateral approaches to deal with multilateral environmental problems as unilateral environmental protection measures may become indistinguishable from trade protectionism for defending the interests of domestic fishermen.

A careful examination of the features of the CFP reveals the following unique and underlying characteristics:

- The policy puts considerable emphasis on reducing the open access character of the sea waters through controlled access regime where restrictions are imposed in terms of areas to be harvested, time of harvest, technology for harvesting and people to be allowed to harvest. All these controls are imposed and monitored through premise control in the sense that institutions right from the EU level to the that of local level producers organisations are involved actively.
- The role of markets, wherever applicable, has been given due considerations. But creation of the market through back-up institutional measures has been assigned an even more prominent place - especially when the CFP talks of standardisation of products and the concept of safety net to ensure economic sustainability of the fishermen against the possible risks of market failure.
- The financial and other support necessary for devising the appropriate technology are also being provided from different EU programmes and incidentally the responsibility of funding is shared by all the participants affecting or being affected by the fisheries activities, and before the international community the EU does not feel ashamed of or apologetic for providing this necessary budgetary support to the major profession of mainly coastal areas.
- Considering their ecological implications a large number of domestic economic activities which may have an adverse impact on fisheries have been made subservient to the needs of the fisheries sector.
- The EU is not at all hesitant to enter into collaborative and cooperative agreements with even far-off non-EU countries in the long term interests of its fisheries and fisherfolks.

- In the framing of the CFP as well as in its implementation, the EU has not just honored but has in fact gone to the extent of further strengthening the basic foundations of the civil society, namely the local bodies and local community organisations.

Needless to add, presence of these characteristics backed by scientific researches and a participatory approach towards management probably provides the necessary operational instruments for successful implementation of the CFP.

## **Section VII: A Brief Look at Indian Fisheries Policy**

The present section intends to examine the Indian fisheries policy scenario - especially with respect to marine fisheries, in the light of the discussion in the preceding sections. To be specific, it intends to cover only the Draft National Fisheries Policy supposed to remain valid till the end of the 9th Five Year

The objectives stated out in the Draft National Fisheries Policy document are:

1. Conservation of aquatic resource and genetic diversity;
2. Enhancing production of fish and the productivity of fishermen, fish farmers and the fishing industry to contribute to the food and nutrition security for all Indians;
3. Generating employment for coastal and rural poor;
4. Improving the socio-economic conditions of the traditional fishermen and the fish farmers and;
5. Augmenting the export of fish and marine products, duly taking into consideration the need for sustainable and responsible fisheries.

To achieve these objectives in the context of marine fisheries, the following propositions have been made:

- \* The welfare of fishermen and fisherwomen and safeguarding their interests will be at the heart of all programmes.
- \* Income will have to be increased through improving the technological and asset base of the traditional fisherfolk.
- \* Attention will be focused on the special requirements of fisherwomen.
- \* An integrated approach to marine and inland fisheries and aquaculture in both freshwater and brackishwater will be attempted.
- \* In the context of marine fisheries, in view of having achieved only 70% (!) of the potential, great efforts are to be put in exploiting fish

**stocks beyond 50 metre of depth where only 40% of the potential are being tapped now-a-days.**

**More traditional fishermen will have be empowered to enable them to go for longer voyages into the deeper waters.**

**In view of negligible farming in deeper waters of the EEZ, exploitation of fish upto the extent of maximum sustainable yield will have to be encouraged.**

**Impact assessment studies of River Valley Projects on migration and breeding of fish will be taken up.**

**It will be further ensured that no decision on a River Valley Project is taken up without taking into account its possible impact on fisheries.**

**Diversion of species will be encouraged in brackishwater aquaculture keeping in mind the guidelines for maintaining coastal zone environment.**

**Large scale collection of juveniles from natural sources has to be discouraged and setting up of more hatcheries is to be ensured.**

**Suitable infrastructure for landing of fish, berthing, auction and disposal of fish, net mending and repairing of boats are to be developed. A fresh survey about the availability of infrastructure will be made by the Ministries of Agriculture and Food Processing Industries in connection with deep sea fishing.**

**Marketing infrastructure will be improved.**

**More research and development of new programmes for fishery cooperatives will be undertaken.**

**Fishermen's cooperatives and self-help groups will be encouraged.**

**The technological requirements of the fisheries will be looked into.**

**Speedy dissemination of proven technology to the end users will be taken up through strengthening the extension machinery.**

**Extension activities through both public and private sector initiatives will be encouraged.**

**For facilitating faster growth of the fisheries sector, strengthening the departments and other agencies responsible for implementation of the developmental activities will be necessary.**

**Better credit facilities will be made available to the fish farmers and fishermen to help them improve their asset bases. Such will also be provided to the entrepreneurs to set up processing units including export-oriented units.**

**Comprehensive insurance packages will be provided to those engaged in fisheries sector to hedge themselves against the risks of accidents, diseases, market failures and climate.**

**Formulation of the Code of Conduct for Responsible Fisheries will be supported.**

**Co-ordination among the different Ministries, having relation with fisheries, and their policies will have to be ensured.**

A close look at the long list of 'do's unfortunately reveals nothing other than a set of 'pious wishes'. The policy spells out clearly as to what is to be done and ends its task there itself. It tells us nothing about how these are to be implemented and by whom. We do not find any mention about the methods of operationalising the concepts. And herein lies the problem with our existing policy framework. Absence of such an operational framework has led many policies in the past to have failed in yielding desirable results on grounds of 'poor implementation', which may be the case with the present fisheries policy as well.

## **Section VIII: Policy Changes Prescribed for Indian Fisheries**

We shall be emphasising only the major policy changes in this section, which would enable the country to achieve the three-dimensional concept of sustainability - namely, economic, social and ecological - through suitable changes in the property rights regime pertaining to marine fisheries. Although we shall also cover some general policy changes for the fishery sector as a whole, the emphasis would be more on major policy changes for the marine component of the fishery sector in this paper.

**(1) Protection & Development of Wetlands, Waterbodies and Collective Organisations:** As is evident from the discussions in the earlier sections, we face the problem of absence of well-defined property rights in respect of the fishery sector in general and in capture fishery in particular. One can observe a fairly well-defined property rights regime only in the context of the small ponds and tanks segment of freshwater aquaculture which is functioning under individual or small group type enterprises. There are many instances of even freshwater aquaculture being carried out in small ponds or tanks which are leased out from state or local level governments for a fixed period. Unfortunately, there is no uniform, fixed, comprehensive, transparent and fisherfolk-friendly policy of leasing of such water bodies at any level of governance, be it local or state. There is no denial of the fact that fixation of property rights to the stake holders is one fundamental criterion for ensuring sustainability of any fisheries unit. This is because such fixation makes the owner(s)/leaseholder(s) responsible for minimising the extent of possible externalities generated out of his/her/their enterprises as they can be easily caught and made to compensate the victims as per the 'polluter pays' principle. It should, however, be noted that property rights need not always be defined at individual levels. Such rights may very well be conferred on collectives subject to monitoring and periodic review by suitable self-government structures through a participatory process. In the interest of the fisherfolk and environmental stability, the government must by all means be persuaded to protect wetland and water bodies from being converted into homestead or agricultural land.

As we have mentioned several times in course of this paper, capture fisheries consist of marine, riverine and large reservoir, and estuarine fisheries. In the context of their sustainability, we have mentioned the negative externalities generated at different stages, the continuation of which may pose a possible threat to the long run sustainability of such activities. The role of cooperatives as one of the possible alternatives for 'collective action' and their operational problems therefore assume significant importance in this context. In the light of these observations, we propose the following major policy changes:

- In respect of deep sea fishing there are two major schemes implemented by the Government of India : (a) introduction of deep sea vessels in the range of 23-27m OAL and (b) granting permissions to Indian enterprises for operating foreign fishing vessels on charter/lease and under joint ventures and also for test fishing (Fishing Chimes, March 1997, p.5). However, the operation at deep sea in all probability having turned non-economic, many of these vessels have stopped their fishing activities and those which have not are alleged to be operating in regions reserved for artisanal fishermen using traditional or semi-mechanised boats. In view of such a situation, the policy of issuing licenses for deep sea fishing to joint venture ship should be discontinued immediately and the traditional artisanal fisherfolks should be given necessary supports so that they can gradually extend their fishing ranges. Such support as may include advance dissemination of information about possible location of fish herds, provision for expanding the capacity of undertaking longer duration voyages into the sea on their part, such as off shore availability of fuel, installation of radio communication facilities on the boats, will go a long way in strengthening the socio-economic status of the traditional fishermen and ensuring sustainability of deep sea fishing.
- The policy measures mentioned above have to be supported by efforts to redefine the property rights over the fisheries resources. Crafting of institutions for 'collective action' involving the fishermen and handing over the fishing rights to such organisations according to a pre-determined 'allowable catch' is the need of the day. Such institutions will be responsible for ensuring 'premise control' *a la* Collin(1993) in respect of the threats of over-fishing. Co-operatives of fishermen may be one such possible institutions, but not the only possible one. Brotherhood organisations like fishermen's association can also be conceived of. They may even enter into strategic alliances with corporate/public sectors at the initial stages of their operation for support in respect of processing and marketing-- both in domestic and foreign markets, research and in development of suitable technologies and human skills.
- Following on the example of the Common Fisheries Policy of the EU, SAARC and BOBP (Bay of Bengal Programmes, FAO) ought to play a catalytic role in initiating a process for evolving a similar common fisheries policy at least on certain important dimensions across India, Bangladesh, Sri Lanka, Pakistan and Maldives. This will not only help resolve quite a few of the knotty operational problems in fisheries including arrest of local fishermen

while inadvertently in alien waters, but also help achieve several economies in fishing and fish-marketing, especially when all these countries are confronting powerful buyers in the developed countries.

**(2) *Integrated Community Management of Coastal Fisheries:*** As we have seen earlier, the impact of other economic activities on the ecological sustainability of fisheries is enormous. A proper policy framework for fisheries should also fix responsibilities of such activities so as to ensure sustainability of the fisheries sector. For example, there should be some norms identified in respect of the responsibilities of the industrial units polluting the water bodies engaged in fisheries. Spread of urbanisation and construction of dams and reservoirs also put considerable pressure on fisheries. Unfortunately, we are yet to come out with any fixed policy towards reducing the hardship to fisheries. The same argument may be raised in respect of the impact of deforestation, power generation etc. The approach of the EU's Common Fisheries Policy, discussed earlier in this paper, provides an illuminating example in this regard. In fact, what is needed is that the evaluation and monitoring exercises by state pollution control boards and other bodies need to be more rigorous through involvement of research organisations, on the one hand, and more accountable and transparent to the civil society through involvement of suitable higher-tier organisations of local self-governments and NGOs, where presumably the representatives of the fisherfolk can participate in the decision-making process. John Kurien (1995b) has made a similar point in the context of articulating his concept of integrated community management of coastal fisheries:

*"Since the "sea starts in the forests", cooperation from the upstream sectors of the economy is a prerequisite for total success of the community venture. This in turn implies a willingness on the part of these upstream sectors to regulate their polluting and resource degrading activities. Such are the multisectoral compulsions of integrated community management of coastal fisheries.*

*A beginning on this front calls for both state intervention and community action"(ibid, p.113).*

The other suggestions made by Kurien (*ibid*) for an integrated community management of coastal fisheries also deserve special mention in the context of the major policy changes suggested at this juncture. He argues quite rightly that the solution to the problems of coastal fisheries has to be sought largely within the sector itself, as the possibilities of gainful employment of the fisherfolk outside of the fishery sector is, considering the socio-economic realities of the South Asian economies including India. Given the fact that the coastal communities have homogeneity of interests, he advocates initiation of collective action processes, often with the help of dedicated NGO-groups and around a core group among these communities, who can become the "beacons and

guardians of the sea'. According to him, development and rebuilding of these communities is possible given the 'concentric circles of supportive interests' provided three supporting conditions are fulfilled: aquarian reforms, community development and new relationship with the outside world.

The aquarian reform package according to Kurien has the following four facets:

- Right of access to the harvesting technology restricted exclusively to the fisherfolk;
- A ceiling on the number of units each fisherman family can own;
- Appropriate access restriction of each member to the EEZ; and
- The right of first sale of catch vested with the fisherfolk.

One can see striking similarity between these suggestions and the kind of access restrictions the EU has evolved at regional as well as local area level through the CFP, and the gradual shifting of responsibilities to local area associations of fish farmers for evolution and enforcement of access rules. What is needed is to reensure the 'community property' character of coastal waters through gradual but steady promotion of stewardship of the class of workers and owner-workers; strategic alliances with the business is necessary in the interest of promoting forward linkages, but such alliances ought to be made subservient to the interests of the fisherman community.

**(3) Capability Building of Fisheries Communities & their Collective Bodies:** Simultaneous to the process of aquarian reforms, it is necessary to push through the process of building up the capabilities of the community through community-owned and community-controlled marketing organisations, as in the EU case, and through better credit, better education and skill formation of the younger generations via the self-help group route. In order to ensure that the local communities do not lose control over the fishing activities, the emphasis should be more on the nature, human and social capital rather than on man-made capital. While dealing with the sophisticated outside world, definitely the role of man-made capital will creep in, but it should take place on case by case basis only as a matter of strategic alliances. Within the community, there must be always a "nurturing, caring and sharing" approach.

**(4) Globalisation & Institutionalisation of the Concerns of Fishermen Communities:** As coastal fisheries are subject to negative externalities of the economic activities of the hinterland and even of transnational bodies, he highlights the need for a broader platform not only for creating awareness, but also for projecting the problems at the level of the 'upstream sectors' for

necessary corrective actions at the other end of the spectrum. While he argues that "the nature and quantum of coastal fishing effort, even assuming community management, will largely be dictated by consumer demand in Japan, the United States and Europe" (ibid, p.113), he is not in favour of putting a ban on fish exports or stopping imports of fisheries technology from the developed countries. What he demands is a balanced and a more transparent approach with responsible and accountable behavior not only on the part of the local fish farmer or the domestic primary processor, but also on the part of the secondary processors and final consumers at the transnational level. The developing countries like India ought to be able to articulate their views and concerns at appropriate international forums and must think of means and devices, often through regional cooperation, to demand a rightful price for their fishery products. While this perspective is there in the EU's Common Fisheries Policy, this is unfortunately missing in our policies. Obviously, the solution does not lie in ban and isolation, but in playing the game skillfully with appropriate strategies!

To sum up, this paper proposes policy measures which ought to apply the participatory approach to resolve property rights issues relating to the various components of fisheries and especially in the context of marine fisheries at the centre-stage. The Supreme Court in its famous judgement of December, 1996 observed that the establishment of aquaculture units by private enterprises had encroached on some informal common property rights enjoyed traditionally by fishermen and thereby affecting their social and economic sustainability. The order to stop such units follows invariably from such an understanding. Establishment of institutions of collective action and vesting common property rights of the CRZ on them may solve the issue in favour of sustainability. It has been observed that intensive or for that matter, even semi-intensive brackishwater aquaculture poses considerable threats to the already fragile ecosystem of the coastal regions. India can remain globally competitive and can gain quite a lot even through pursuing improved traditional farming system in large and hitherto unexplored regions. Negotiation across the stakeholders can take place following the value-maximizing framework of the celebrated Coase Theorem on implementability of even the modified extensive method of farming.

The 73rd and 74th Amendments to the Constitution have already provided for constitutional legitimisation of the '*Panchayati Raj*' institutions which have been in fact in operation in a good number of states since the pre-amendment days. Although the *Panchayats* are essentially political institutions, there is no escape route for a decentralised civil society other than fixing the responsibilities for evolving suitable forums for 'collective action' for the fisherfolk and for protecting their livelihoods, areas and villages on the *Panchayats* themselves. No doubt a new horizon can be started if the scientific community can enlighten the *Panchayats*, can build up their capabilities and can also remain vigilant on the functioning of our decentralised decision-making system at the grassroot level.



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