CONSERVATION AND REGULATION IN MARINE FISHERIES

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INTRODUCTION

THIS SEMINAR and Exposition on FISHERIES A MULTI-BILLION DOLLAR INDUSTRY is being held at a time when Marine Fisheries as well as Coastal Aquaculture for shrimp are passing through a difficult phase on account of multifarious reasons. Some of the issues in Marine Fisheries are clouded by open conflicts and controversies while shrimp farming in coastal areas is hard hit by diseases and large-scale ecological and environmental implications. I shall be dealing here, with Marine Fisheries. The sharing of demersal and pelagic common property resources of the continental shelf waters has created in the recent past a considerable amount of tension, law and order conflicts among the traditional artisanal and mechanised fishing sectors. The last three years has seen a major shift in the conflict. An united effort of the traditional artisanal, motorised and mechanised fishing sectors visa-vis the so-called deep-sea fishing is called for. This has brought up many contentious issues.

Fisheries Management should aim at a sustainable longterm economic utilization of the resources by maintaining the exploited fishstocks through proper regulatory measures, controlling fishery dependent factors such as, access and effort expended. While ensuring biological productivity, the socio-economic, environmental and conservation issues also need to be addressed. We have also to realise that the last three decades has seen a sea change in the artisanal (traditional and motorised) and mechanised sectors. The annual production from hardly 0.5 million tonnes in the fifties has in 1993-94 gone up to over 2.2 million tonnes while the export of marine products has crossed Rs. 3000 Crores.

Fisheries Policy on the Anvil is a news item I read last week in a lead newspaper. But this has been in the anvil for quite some time. Unless we have a well formulated Fisheries Policy, it will handicap development of Rules and Regulations. It is an irony that despite all these changes, we have still to go back to the Fisheries Act 1897. We have the Centre and State demarcated responsibilities, the latter extending only upto the 12 nautical mile territorial waters. Added to this, any National Policy on Fisheries will also have to take into consideration a wide spectrum of Acts, Rules and Regulations, Notifications and Schedules in other spheres of activity having relevance to Fisheries. To mention a few :

- The Environment Protection Act 1986, with the Environment Protection Rules 1986.
- The Coastal Regulation Zone Notification 1991.
- The Forest Conservation Act 1968 and the Forest Law.
- Maritime Zones of India Regulation of Fishing by Foreign Fishing Vessles Act 1981.

- Marine Products Export Development Authority Act 1972.
- Territorial Water, Continental Shelf, Exclusive Economic Zone and other Maritime Zones Act 1976.
- Territorial Waters Jurisdiction 1973.
- Wildlife (Protection and Control of Pollution) Act 1994.
- Wildlife (Protection) Act 1972.
- Water (Prevention and Control of Pollution) Act 1974 and so on.

Weak Links in our Fisheries Management

Our Fisheries Management has become very ineffective on account of :

- Lack of policies
- Lack of authority
- Lack of administrative skills, especially in decision making
- Lack of expertise
- Economic insufficiency
- Vacillating enforcement of Regulations/ Notifications
- Inadequate data
- Insufficency of funds to meet management costs

One has to only look at the cycle of events that takes place in Kerala just before the onset of the monsoon year after year. The easy way out has been the constitution of "Annual" High Power Committees to look into the question of ban on trawling during the monsoon period along the Kerala Coast. Socio-political pressures have overriding influence on negating or not using Committee Reports - but the cycle goes on.

We badly need a sound National Fisheries Policy within the frame work of which we could formulate Acts, Regulations and Rules for sustainably utilising a common property resource. Conservation and Exploitation are antithesis to each other and hence the stress on sustainable utilization. How do we go ahead with this in an open entry system dealing with multispecies of different sizes, dimensions and life habits where multiple types of fishing crafts and gears are used from over 2000 fishing villages along the mainland coast and landed at over 1800 landing centres and a handful of fishing harbours? Open access has provided an incentive to over capitalization and this is exacerbated by the ease of entry but difficulties of egress.

The goals of the recent Fishery Development Policy of our neighbour Indonesia should be of interest to us. I reiterate here their goals which read :

"1. Improve human resource quality and the welfare of fishermen through efforts to optimise fishery resource utilization by environmentally sound application of science and technology and by adding value to fishery products. 2. Improve supply and demand of fishery commodities, in order to improve the nutritional status of the population. 3. Encourage and increase employment and productive business opportunities. 4. Encourage domestic industrial growth by providing raw materials and increasing national income."

It is important that our National Fisheries Policy sets goals which in Indian context should also involve harmonising of actions of different Ministries/Departments and the States to spell out clear priorities. It should not be inadequate to meet the challenges of management decisions to be taken at State level.

There is lack of authority to implement Regulations and Notifications at the Centre-State levels. The need for a single administration to deal with the Governmental responsibilities in fisheries for policy enunciation and implmentation of management measures needs our serious consideration. In Marine Fisheries, the divide in responsibilities between the Centre and the maritime State is a grey area, except for the twelve nautical mile limit of the territorial waters which fish stocks do not honour.

Effective management with clear specification of policy objectives will call for a total coordination of responsibilities and accountability between the Centre and State Policy on Fisheries.

Fisheries administration has all through been increasing expansion of activities least realising that even a renewable resource such as fisheries will need management inputs for sustainable production.

The concept has also become ingrained with funding agencies. One result is the excess fishing capacity and over capitalization in the scenario of limited resources and allocation problems. The socio-economic aspects have also received inadequate attention. Unlike agricultural crops, fish stocks are unseen resources. As such, efforts to limit fishing should be backed by sound knowledge of the resource characteristics and the capability to effectively implement any regulatory action.

It is said that open access leads to economic waste as it expends more capital and labour with reduced economic returns. So what should we do about an open entry system and reduce excess fishing capacity for achieving better economic efficiency? When fish stocks are shared by different sectors, voluntary refrainment or restrictions on one user sector alone leaves much to be desired.

Regulations aimed at conserving resources may not be an answer to such situations.

Regulations if formulated without understanding the full implication of the effects may prove counter productive. Regulations aimed at reducing conflicts may be difficult to enforce and costs of implementation may be very high. We have to identify the means of regulating the fishing effort and take steps in controlling expansion of fishing capacity when needed.

Inadequate data are one of the major maladies. Management for conservation without a data base will only result in mismanagement. Today management function has to look not only at resource conservation and utilization, but also at the economic and social aspects as well. For this a proper data base is necessary. Equally bad as inadequate data is information received late or information not being accessible to those who need it for taking management decisions.

Management of Fisheries is expensive. If we are to go by Total Allowable Catch (TAC), reliable data collection becomes an integral part and has to have information on craft, gear, species, size, quantity of discards and many other parameters. It is not a one time effort. A continuous monitoring system has to be established which will be expensive.

Issues in Evaluating Regulatory Systems

Over 45 years ago, Michael Graham (1949, *The Fish Gate*) opined that in the great law of fishing 'Fisheries that are unlimited become unprofitable'. When the value of the catch is high and the cost of harvesting is low, biological overfishing is likely to take place - that is when the net value expressed as resource rent is great. The bionomic equilibrium, the state

at which the value of the sustained catch is no greater than the harvesting cost may be influenced by many factors such as increase of catch or lowering of cost or changes in quality of technology inputs and so on. Thus the protection of the fish stocks and the yield is only part of the issue. Being common property resource there is always a tendency to over develop fishing capacity to excess capacity giving rise to many problems. Regulatory systems to govern these will require periodic review and evaluation. Pears (1980) has outlined the following which appear relevant to any regulatory system we may adopt :

- Its effectiveness in controlling fishing capacity.
- Its effect on fishing technology.
- Its adaptability and robustness in the face of inevitable changes in fishing technology, cost, fish prices and availability of resources.
- Its effect on distribution of effort.
- The way it will distribute the economic gains from rationalization among fishermen, vessel owners, the Government and others.
- The extent to which it would cause dislocation and affect employment.
- The administrative complexity and costs.

Regulating Fishing Effort

Regulating fishing effort revolves around protecting and enhancing productivity of the stock by regulating the size composition of the catch. The value of the sustainable yield or the size of the fish in the catch depends upon the selectivity of the gear, location and timing of fishing, introduction of minimum mesh size, closed seasons and restricted fishing areas.

Closed Season : Closed season has different connotations. First is the banning of fishing during part of the year to specifically protect the life history stages of fish stocks at the time of spawning, larvae and juvenile stages. Secondly, closed season is applied when the CPUE declines to a certain point.

How this could be applied to a multi-species fishery is complex and will require location specific observations and decisions.

Closed season according to Pears (1980) 'simply reduce time in which fish may be taken, without affecting a long-run reduction of effort. For the individual enterprise, fishing during the shortened season will become more urgent and this will encourage distortions in the design of fishing units by providing incentives for increased speed and storage capacity. Any short-run increase in profitability will attract additional entrants. As the fishery adjusts to the shortened season, the season will have to be progressively shortened in order to prevent total pressure from increasing. If the fish are equally available during the closed and open seasons this process will result in no reduction in excess fishing capacity. On the contrary the fleet will expand to the size capable of taking the catch in a shorter season.... In short, seasonal closures, like gear restrictions, are ineffective means of regulating fishing effort.' He, further concludes that they aggravate structural distortions and inefficiencies in the fishery, thereby rising costs unnecessarily. The observations have some relevance to the inshore fisheries as well.

Closed season a boon or bane? We have another dimension to the issue, namely, the efficacy of closed season for only one sector sharing common resources as in the periodic ban on trawling observed along Kerala coast.

Conservation : Biologically speaking conservation problem is ubiquitous. While protecting the stocks, it aims at also providing sustainable yield.

In multi-species fisheries it is difficult to predict decline in recruitment due to fishery dependent factors. One way out is to regulate the total fishing effort applied to the community. This could prevent changes in species composition which are economically detrimental or irreversible.

In Malaysia, Thailand and Indonesia the tendency has been for a shift from predator species to prey species. This has had a two fold threat to predator species, *viz.*, the threat to the predator species from below normal recruitment and secondly the decline in forage food supply of low value fish. This I mention to point out the complexity in conservation concern and the number of inter-related problems in establishing conservation criteria for fish stocks and communities. In such a scenario, Pauly and Murphy (1982) opine that 'the biological criteria for conservation can be encapsulated in the simple idea that changes in the community or target species abundance should be reversable on some reasonable time scale'.

Conservation based regulations may have to address economic performance, social values, especially equity, administrative feasibility and political acceptability. Unhealthy competition and conflicts between industrial fisheries operating off-shore with trawlers and the artisanal fisheries restricted to a narrow coastal strip resulted according to Sardjono (1980) in dramatic fishery regulations and the banning of trawling in Indonesian waters.

This is an extreme case and shows the extent to which conservation issues are taken up to protect resources for sustainable yields and also meet social comments.

Economic Performance : The bioeconomic equilibrium is accompanied by increasing economic inefficiency when fisheries are unregulated. Revenues from unit effort tends to decrease when more fishing effort is attracted to the fishery. Bioeconomic equilibrium is reached in theory when the lack of profits discourage further entry. The low income prevalent in the fishery can also attract regulations.

Bain (1984) remarks that careful attention to both cost and benefits due to regulation is required if fisheries are to be a source of value and not a burden to a country. One area Bain questions is whether changes in fishery regulations could lead to increase in foreign exchange or whether they could be a drain on such funds. Further, he rightly feels that regulations should be set to encourage catch at the time of the year when quality reaches an acceptable standard and to move that catch into processing and marketing channels in ways which will maintain quality. Growth under fishing of shrimp/fish in our fishery needs regulation for delayed harvesting for increased landed and processed value realisation. Therefore the need for regulations with economic implications.

Social Value : This has great relevance, though it poses a most challenging task to fishery managers and policy makers. How do you propose regulations without affecting one group or the other of fishermen who have a stake in sharing the same resource? In many cases, inaction or half measures or compromises are the approaches chosen to ward off such

situations. Sociological solutions to the problems are most important - a social equity in participation and sharing of resources. The failure to identify such implications has led to many equity consequences in different parts of the country reflecting on the poor managerial system in vogue. Equity is a very difficult concept and depends on how one looks at it. Beddington and Rettig (1983) opine :

- equitable share of catch may refer to one given year or average over a number of years
- equity of distribution of income
- equity with reference to access conditions (seasons, gear, restrictions and area)
- equity regarding government processes leading to consideration of alternatives.

Thus equity is an extremely important social consideration in the formulation of fishery regulations. This may have to be combined with social values and occupational objectives. A failure to recognise such implications may lead to equity consequences which the management authorities may find it difficult to deal with later.

Feasibility and Cost : Whether regulations are administratively feasible; whether they can be enforced and whether they can be monitored and at what cost? How does one go about awareness creation of regulations among fishermen? The feasibility of their enforcement is most important.

Political Cost : It is said that recognition of political cost is one of the many factors which cause governments to adopt piece-meal approaches to resource management. Often decisions on regulations are changed due to pressures from vote banks making efforts of governmental implementing machinery weak and futile.

CONCLUSION

It is a true saying that management schemes designed to last for ever will fail as badly as absence of management. Thus there is no point in seeking a system which will provide a solution for all times. Marine Fisheries in India is a dynamic sector which has undergone a sea change in pattern of growth during the past two decades. Economic and social systems have also been fast changing with equally important changes in the processing industry and marketing strategies. Quality assurance has become the byword and exacting standards are expected from processed products in keeping with ISO 9002 and HACCP. Diversified products are today marketable. Even non-conventional resources and discards have a value as a result of product development and value addition. It is in this context that we have to look at Conservation, Management and Regulation.

There is no single way of regulating our fisheries that is multi-species with open access using diverse types of craft and gears some of which are very destructive and operated 365 days landing at more than 1800 fish landing centres and fishing harbours all along the coast.

In this brief review, the focus is on Indian EEZ and the Conservation and Regulation issues we should directly be concerned with at the national level. The question of stradling stocks shared by more than one country such as the *Hilsa* resource of the Bay of Bengal, or the highly migratory tunas of the high seas shared by many countries including distant water fishing fleets of countries such as Japan, Taiwan, Korea, France and Spain are of a totally different dimensions and merit Regional and International Considerations.

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