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RAPPORTEUR'S REPORT

ON

DEVELOPMENT OF FISHERIES—ECONOMIC ASPECTS

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In all, 17 papers have been presented for discussion on the subject. In spite of the fact that most of the papers have been presented by authors having little or no background of Indian fishing industry, some of the papers contain great perspective vision in approaching the economic problems of the industry. They indicate the great role economics has to play in developing the Indian fishing industry, like any other industry, particularly in the field of fisheries management. The wide gap between an annual potential of about 10 million tonnes and the actual production of about 1.4 million tonnes along with the lowest growth rate in Indian fish production (129 per cent) as compared to most of the developing countries of South-East Asia (Ceylon 284 per cent, Taiwan 278 per cent, Thailand 182 per cent, Philippines 166 per cent, Indonesia 164 per cent, S. Korea 164 per cent, Malaysia 144 per cent and Pakistan 136 per cent) during the period 1951 to 1963 lends further support to the importance of management in Indian fishing industry as was also observed by G. V. S. Mani, Ex-Director of Fisheries, Andhra Pradesh. At the time of the inaugural of the Master Plan for Development of Fishing Industry in Konaseema Area in 1964, he observed: "Fisheries management requires increasingly the advice of Fisheries Economists. . ."

As the scope of the subject is very wide, the papers contain more of macro than micro studies. They cover a wide variety of topics both individually and collectively. However, the various topics discussed in different papers can be broadly categorized as under :

I. Resource assessment, production and export projections.

II. Review of fisheries development plans and assessment of progress achieved.

III. Review of the working of fishery co-operatives.

IV. Input-output studies.

V. Management problems in fisheries development.

RESOURCE ASSESSMENT, PRODUCTION AND EXPORT PROJECTIONS

For resource assessment, the authors have based their conclusions mainly on the water-sheet acreage in rivers, ponds, lakes, continental-shelf, etc., without taking into account the biological, oceanographical and limnological conditions of the fishery waters. It seems quite natural for economists to depend on the basic factor (*i.e.*, water-sheet acreage) of production. But conclusions arrived merely on the basis of water-sheet acreage are of limited use. For a proper and complete study of fishery resource assessment, it is essential to take into account the biological, oceanographical, limnological and other factors as well. It is why that fishery resource assessment is considered primarily the job of biologists and oceanographers. However, it is again for the economists to assess as to what extent the fishery resources or the bio-mass, as estimated in a certain fishing ground, can be economically exploited. It is one of the important problems which, at present, is being experienced by F.A.O. in the over-exploited fishing grounds. On the basis of a prospective fish production of 10 million tonnes per year, it is estimated that India can get annually an additional net food supplies of 36.93 to 61.84 lakh tonnes per year, a national income of about Rs. 450 crores, foreign exchange earnings worth about Rs. 40 crores, in addition to substantial increase in employment opportunities and ancillary industries, provided an objective national fishery policy to deal with the current problems of the industry can be formulated and implemented at an early date. It may not be out of place to mention here that, unlike forestry, animal husbandry, poultry, etc., fishery resources do not normally compete with agricultural resources because that part of the land on which agriculture cannot usually be carried on, constitute the basic factor of fish production. Therefore, it is cheaper to get an unit of animal protein from fish than from land animals.

The biological, oceanographical and limnological factors influence not only the production but export projections as well. These projections will also be materially influenced by the prospective rate of investment in the industry. Therefore, it is for all (biologists, oceanographers, limnologists, statisticians, economists, etc.) to decide as to what extent the projections based on linear and exponential methods can be relied upon. While formulating export projections, it is also essential to keep in view, besides several other factors, that production of fish consists of innumerable types of fishes and only a few of them have export possibilities. For example, Penaeid prawns alone constitute about 75 per cent of the total value of annual exports of fish and fishery products from India.

REVIEW OF FISHERIES DEVELOPMENT PLANS AND ASSESSMENT OF PROGRESS ACHIEVED

The authors, who have preferred to take up the review of developmental plans, have dealt mainly with the financial provisions and physical targets fixed for and achieved under the Three Five-Year Plans. The fact, as pointed out by one of the authors, that "the proposed outlay in the Fourth Plan (Rs. 113 crores) is more than 40 times of that in the First Plan, $12\frac{1}{2}$ times of that in the Second Plan and slightly less than 5 times of that in the Third Plan" could serve a more useful purpose if compared with the corresponding physical achievements rather than with the corresponding investment in different Plans. A critical study con-

taining comparison of investment and return in Indian fisheries either with those of other comparable occupations in Indian economy or with the fisheries of other countries would have given a more realistic assessment of the progress achieved in India during the Plan periods. Lack of comparable investment data on the problem seems to be one of the important reasons for the absence of the same.

REVIEW OF THE WORKING OF FISHERY CO-OPERATIVES

Broadly speaking, the studies relating to the working of fishery co-operatives contained in the papers presented to the Conference may be classified into two, *viz.*, (1) based on all-India data published by the Reserve Bank of India and (2) case studies based on personal investigations. The authors who have adopted the former approach have brought out some interesting features such as failure in attracting public funds, low percentage in handling catch, high proportion of over-dues, increase in bad and doubtful debts and deterioration in general efficiency, etc. M.M. Bhalerao and Kali Charan's findings about lack of self-reliance, need of revitalization are of great importance for fisheries development. Since these findings have important bearing on fisheries development, the situation demands immediate remedial measures to enable co-operative movement to play its role effectively. The conclusions arrived as a result of a few case studies regarding difficulties in realizing sub-letting fees, malpractices by office-bearers, etc., need to be confirmed further before remedial measures are formulated and implemented.

None of the authors has made an attempt to analyse the salient features of the integrated plan and its economic implications though the same has often been advocated. It would have been a valuable contribution had Bhalerao and Kali Charan analysed the factors responsible for the uneven progress in different regions of the country.

INPUT-OUTPUT STUDIES

The papers on input-output studies basically deal with the comparative estimates on physical output and net income under cultured and uncultured conditions, indicating the importance of investment and ownership of fishery waters in the development of inland fisheries. Some authors have also attempted to indicate the possibilities of increasing production under varying conditions of gear in lacustrine and brackish water fisheries. The profitability of Rs. 2,305 per acre/year, as concluded by S. P. Dhondyal and G. N. Singh, is worth mention. As most of these papers are based on a limited number of case studies in limited areas and time, it is very essential not only to enlarge their area of inquiry but the duration of the studies as well before arriving at more reliable conclusions. Sushil Kumar Chakravorty's results would have been more comparable if, instead of tanks, acre had been chosen as an unit of analysis even when he has indicated the average size of the tanks.

MANAGEMENT PROBLEMS IN FISHERIES DEVELOPMENT

The management problems raised in different papers relate only to the inland fisheries passing through either the nascent or developing stages of development. Important among them are inadequate utilization of fishery waters, unrestricted and unauthorized fishing, arrears in recovery of lease money, wider marketing costs and margins, etc. They are chiefly ascribed to the multiple ownership of fishery waters, heavy risks and uncertainties, existence of a strong chain of middlemen, poverty of the fishermen and inadequacy of organized marketing facilities. It would have been much better if one or two of the above-mentioned problems could have been chosen for micro studies rather than dealing with most of them in the limited space. Any way, Chakravorty's observation about inverse relationship between the number of owners and productivity deserves serious attention. His proposals for solving the problem through improved fishery legislation and lease of fishery water according to the productivity criterion deserve serious scrutiny in the light of varying conditions in different regions of the country and feasibility of implementation.

ISSUES FOR DISCUSSION

As the subject selected for discussion permits both micro and macro studies, as stated earlier, it offers a very wide choice of investigation to the authors. Therefore, the number of topics not covered is probably much more than what has been discussed in the limited number of papers presented at the Conference. In order to serve as the basis for discussion, the various issues can be broadly classified as follows :

(1) *Theoretical Issues*

Important among the issues which need discussion is the application of economic theories in developing the fishing industry and the extent to which the impact of these theories is restricted or accelerated due to the special characters of the industry, *i.e.*, biological, common property resource, excessive risks and uncertainties, preponderance of family entrepreneurs, etc. The application of economic laws to the fishing industry in most cases seems to be as universal as in any other industry. For example, lack of adequate development of smaller waters due to ownership difficulties leads towards a more rational thinking on the land tenure system of fishery waters in the field of inland fisheries; whereas practically stagnant shrimp production in Kerala State during the last 5 years in spite of a steady increase in fishing efforts in almost the same fishing grounds probably due to the application of the Laws of Returns, constitutes an important example in the field of marine fisheries. The F.A.O. report on The State of Food and Agriculture, 1967 observes that the "..... fishing level should be maintained at the point where the marginal cost of adding one unit of effort (one extra vessel) is equal to the marginal value of the increase in the sustained catch resulting from the extra effort. This situation is economically more advantageous than where the effort is at the level giving the maximum sustained yield, at which point the marginal value is zero." Similarly, the economic theories in the field of exchange, consumption and distribution are applicable to fishing industry in one way or the other.

(2) *Methodological Issues*

In order to take effective developmental measures, it is high time to define the methodological concepts and evolve procedures with regard to the different aspects of the industry. Important among them are as follows :

(*a*) Concept of a fisherman.

(*b*) Concept of a part-time and full-time fisherman.

(*c*) Methodology to estimate employment, food, national income and export potentialities from fisheries in the light of the existing statistical data and special characteristics of the industry.

(*d*) Concept of culture and capture fisheries.

(*e*) Concept of culture and uncultured fisheries.

(*f*) Concept of small, medium and large waters.

(*g*) Formulation of measuring rods to evaluate the developmental progress.

(3) *Analytical Issues*

(*a*) To what extent the validity of linear and exponential production and export projections can be relied upon in the light of the biological, oceanographical, limnological, investment factors involved in the fishing industry.

(*b*) Application of other tools of analysis to draw meaningful conclusions.

(*c*) Methodology for evaluating craft and gear efficiency.

(4) *Policy Issues*

(*a*) Formulation of a national fishery policy in the context of the changed political and economic set-up. Whether the fisheries should be food, employment or export oriented? What should be the priorities for the development of different types of fishery waters?

(*b*) Revitalization *versus* enlarging the areas of fishery co-operatives.

(*c*) Subsidy *versus* management-oriented planning of fisheries development.

(*d*) Should Indian fisheries be a source of public revenue?

(*e*) What should be the basis of settling lease money for fishery waters?

(*f*) Package *versus* area-oriented fishery developmental plans.

(*g*) What should be the form, extent, method, period of financing the industry?

(*h*) Fishery legislation—

(*i*) What should be its scope (production, processing, exchange, consumption)?

(*ii*) What objectives can be achieved through fisheries legislation in India? Preservation of fishery resources so as to achieve the maximum economic yield. Creation of a self-generating economy. Collection of statistical data. Proper use of financial assistance. Economy in administrative expenditure, etc.

(5) *Problem Issues*

(*a*) Remedy for multiple ownership of fishery waters.

(*b*) Formulation of an ideal outline of the integrated scheme of finance, production, marketing, processing, etc., and inter-linking the same.

(*c*) Formulation of exploitation systems for confined and unconfined fishery waters. Economic factors to be taken into consideration while making choice for them. Methodology for an economic assessment of different systems. Principles governing revenue from fishery waters.

(*d*) Devising an ideal system of rationalizing the use of mechanical power in fishing industry.