

Fishery Technology
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IMPACT OF TECHNOLOGY ON INDIAN FISHERIES

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The large increase in world output from fisheries and its increased use as food by people all over the world have been the result of successful application of newer knowledge in fisheries technology-in fishing, fishing boat construction, fish processing and all ancillary connected industries. Indian fish production is largely based on traditional methods using very ancient type of fishing craft and gear. The local surpluses are mostly handled on cottage industry basis to prepare cured products of low quality. The low unit catch per fisherman and the absence of capital available to him for adoption of better methods in all connected fields of activity have tended to leave the industry far behind as compared with the progress it has made in many other countries. A bold departure was however struck in India since independence. After some years of preparatory work the launching of the first and second 5-year plans witnessed a very significant national outlay for fisheries both in finance and effort and at both official and non-official levels. Since then the industry has made large strides. I shall attempt in this article to indicate some of the important fields in which modern technology has influenced the course of events in the development of Indian fisheries.

Mechanization of boats:

The first impressive advance in application of technology is in the mechanization of fishing boats. Even now we have in India some of the most primitive fishing craft of the world whose form and shape have hardly changed for several centuries. At the same time, indigenous boat building talent has not lagged behind and in certain regions of our long coast line, boat building has been flourishing on a considerable scale, bringing to bear a wealth of seamanship and sailing experience. The installation of engine on fishing boats thereby increasing their range of

operation and the duration of fishing have raised the yield two to three times. In addition this offers a greater degree of safety to the fishermen. Pioneering efforts in mechanization of fishing boats were taken by the old Bombay Province, and great credit is due to S. B. Setna in the introduction of this project as part of the fisheries activity of that State. The Bombay-Gujarat boats were of such a design that engines could be installed without serious alteration or redesigning and this gave a lead to this part of India whereas other areas lagged behind. It is not surprising therefore that the largest number of mechanised boats are at present on the Bombay coast. Motorization was actively fostered by Central and State Governments in other States and U.S. technical Co-operation in the supply of engines gave considerable impetus to the programme. It was during the 2nd Plan that a very concerted effort to increase the mechanized boats in other parts of India was undertaken. The technical assistance of experts of FAO in fishing boat designing provided the background against which the programmes of other maritime states developed. Kerala, Madras, Mysore, Andhra Pradesh, and Orissa all joined in this endeavour for better fishing boats with engines. The work of Paul Zeiner in developing new designs for these maritime states such as, for example, the Pablo Boat, deserves mention and has been closely followed by the work of other experts.

A contribution to the development of mechanization of fishing boats came also from the Indo-Norwegian Project at Neendakara in the Kerala State. Having found that the indigenous boats were unsuitable for economical mechanization concerted efforts were directed to the development of a small mechanized fishing boat and after trials of several models the new 22 to 25 ft. INP Boat was developed. These fishing boats are now produced by mass assembly procedures from the Quilon boatyard. Intensive boat building based on some of Zeiner's models was also taken up in the Madras State while state fishery officials who were associated with FAO experts in this line of activity helped the opening of new centres of boat building and boat designing at Mysore, Mangalore, Tuticorin, Madras and Kakinada.

Mechanization of fishing:

While fishing boats have been mechanised, the same technological impact has not taken place in regard to fishing itself. In the majority of fishing centres the engine is only contributing to motor power as a quicker means of propulsion to and from the fishing grounds. This certainly has been one of the weaknesses of Indian mechanization. The early success of the Bombay experiments made the industry somewhat complacent that placing an engine on a boat was all that was required. During the past few years this mechanization is being put to severe trial. The increasing cost of fuel brought about by the enhanced taxes imposed by the Central and State Governments have made people reconsider whether it is always worthwhile to have an engine and whether it would be economical merely to mechanize the boats. In this context the experience in other parts

of the country particularly in the Kerala area will be watched with great interest. Here, as well as in other places the effort should be towards the development of a boat with a low Horse Power Engine where the fuel consumption will be small and which could be combined with the operation of a trawl with which actual fishing also could be done. The experiments in the Indo-Norwegian Project is particularly interesting in this connection.

The installation of engines in boats has also led to the need for training programmes on an All-India scale and this was started during the first and second Plans by the opening of several fishermen's training centres for giving training to fishermen on the operation and maintenance of mechanized fishing boats. These fishermen's training centres and connected activities for training master fishermen will receive emphasis at a much higher level at the Central Institute of Fisheries Operatives which the Government of India is establishing at Cochin.

Synthetic Fibres:

A rapid change taking place in fishing methods all over the world is that concerning the gear material, particularly, the replacement of the natural fibres like cotton, jute and hemp with man-made fibres from the series of polyvinyl compounds known popularly as "nylon". This revolution has taken place all over the world and its introduction to India came about 1955. The yield from nylon nets is so impressive as compared with that from cotton nets that the demand for nylon has come from all fishing regions of India. As nylon had to be imported it was unable to meet the demands of the industry; this continues to be in short supply owing to import restrictions. There is the hopeful sign in recent years that nylon to meet the requirements of fishing industries will be manufactured in the country itself. The advent of synthetic fibres for fishing has had such large impact on fishing that a well known specialist ventured recently to say that the quickest way to double the world's fish catch would be to replace the natural fibres with the synthetic fibres. Such statements have underrated the very high capital investments required for nylon and the fact that in countries like India the promised increase may not always take place unless there is a corresponding improvement in the fishing boats and methods of fishing.

Technology of handling:

In regard to technology in handling fish after capture, I think we are still far behind. Even the storage of fish in vessels before it is landed is far from satisfactory, leave alone the way fish are handled at the landing centres and sent to the markets. Improvement here is closely tied up with the supply of ice at cheap rates and in affluent quantities. Much effort has gone into the improved supplies of ice but we have still not reached a stage of adequate supply. Technology of transport whether at sea by ships or on land by trucks or by railway wagons, has to be critically investigated and further developed. The introduction of

refrigerated railway wagons during the second plan connecting major production centres with the major consumption centres for fish has been certainly a technological success and the supply of fish in Madras, Delhi and Calcutta has improved as a result of these efforts. But these have not been taken to their logical development by a well supported system of bulk handling and distribution at the centres of consumption so much so that the economics of fish transport by refrigerated railway vans still remain to be established. With the railways already working to their maximum capacity in a country like India, it is also worthwhile reconsidering whether fish transport by trucks would not be better suited than that by rail. I do not think, however, that adequate attention has been paid to the designing of cheaper and inexpensive trucks.

Technology of fish processing:

Fish processing technology has made large strides all over the world. In India the most important has been the development of the freezing industry which has been stimulated by the export trade in frozen prawns. The past few years have also witnessed the establishment of several new fish processing units both freezing and for the manufacture of canned products. The recent steps taken by the Union Ministry of Food and Agriculture for implementing the quality control of Indian fish products will be widely welcomed. One healthy development in this direction is the increasing support which the industry is giving for quality control of fish products, as compared with their earlier fear and resistance. The extent to which the freezing has revolutionized the industry can best be seen by the recent developments in Cochin where during the past ten years we have witnessed phenomenal expansion of fish processing, mechanized fishing and connected industrial activity. The impact on the fishermen has also been very perceptible as a higher return for catches has now been assured. For all these changes great credit is due to the initiative of private industry who entered the field for the first time although governmental organizations have done much to promote these activities. The work of R. Madhavan Nayar in pioneering frozen prawn industry and export in association with Kerr deserves special mention in this connection because they opened up a new and promising field.

Indian Fisheries Technology took a more concrete shape in 1957-59 with the establishment by the Central Government of the Central Institute of Fisheries Technology at Cochin with its two separate wings for craft and gear as well as fish processing. This is an organization to whose development the skills of many Indian and foreign fishery scientists have been expended and this Institute in the midst of a flourishing industry will prove to be an important factor in the development of fishery technology in India. The Indian fishing industry has to go far before it can contribute its full share to Indian economy but in this march of progress modern technology has to play a decisive part.
