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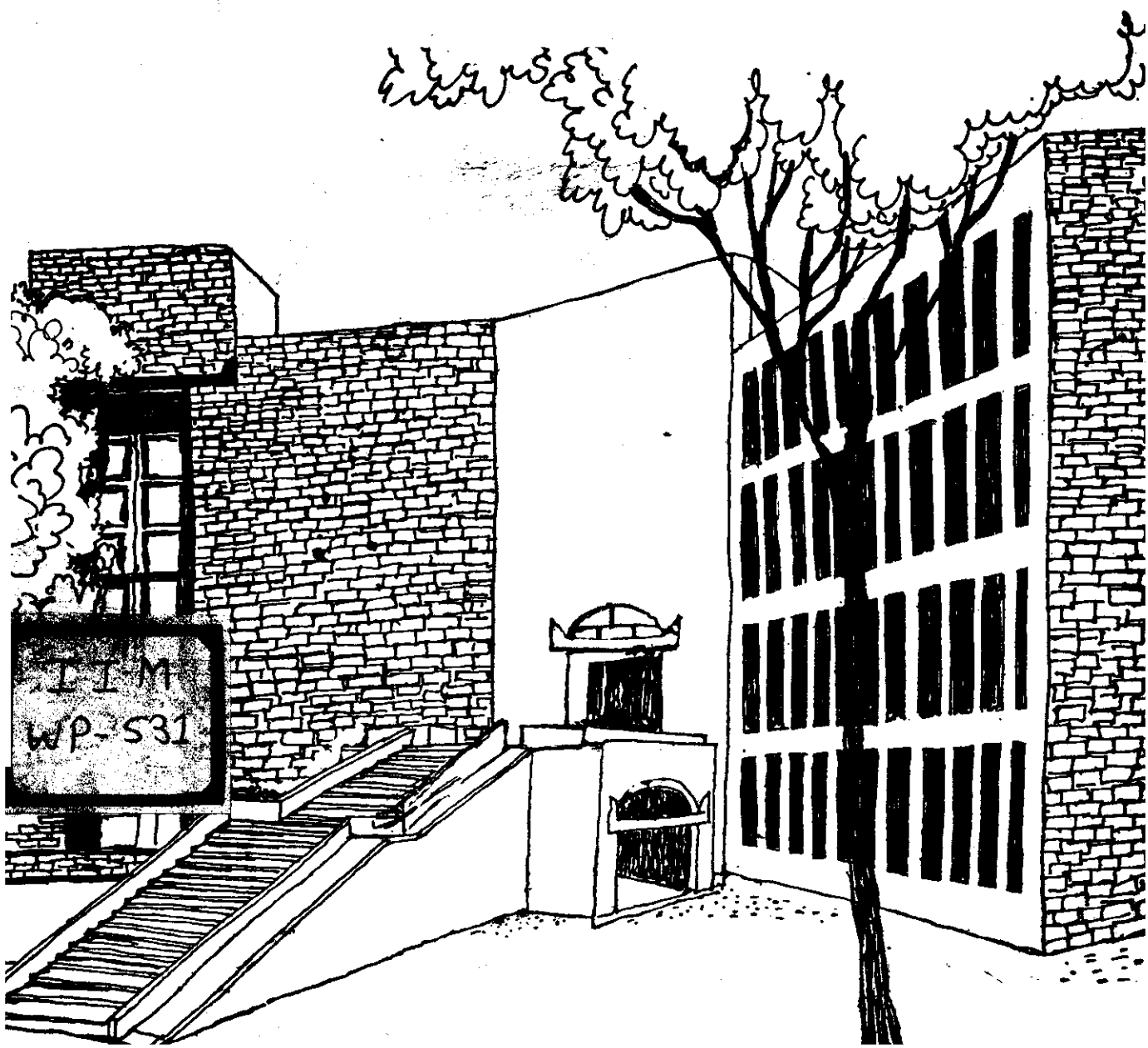

FEASIBILITY OF INTRODUCING A FISHERIES MANAGEMENT COURSE AT POST-GRADUATE LEVEL: SOME OBSERVATIONS

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This paper is designed to assess the need for a Management Course in Fisheries at Post-Graduate level and identify the pre-conditions for a contextually relevant introduction of such a course. Accordingly, this paper is divided into five sections. Section-I deals with the emerging of growth in both maring and inland sectors. Section-II deals with the manpower needs of various types for actualising these opportunities. Section-III analyses the curriculum of proposed M.Sc. course in Fisheries Management at Central Institute of Fisheries Education (CIFE). Section-IV deals with some of the preconditions for meaningfully introducing such a course,and Section-V presents some concluding observations.

I. EMERGING OPPORTUNITIES

A rapid progress has taken place in the development of both marine and inland fisheries.[1] In case of marine fisheries there has been a rapid mechanization of the fishing boats. At present, there are about 16,000 mechanized fishing boats in the country, of which 12,000 are operating in the west coast and 4,000 in the east coast. The number of mechanized boats in the north east cost is very small. All these mechanized boats have been predominantly

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[1] See V.K. Gupta, et. al., Marine Fish Marketing in India, Vol. 1-6, (Indian Institute of Management, Ahmedabad, 1983), and U.K.Srivastava, et. al., Inland Fish Marketing in India, (Concept Publishing Co., New Delhi, 1984).

concentrating on catches of shrimps. While the efforts in the years to come have to be to introduce new technology in the onshore water by constructing and distributing FRP/Ferocement boats and motorizing them for gillnets, and about 14 to 15 metres mechanized boats for trawling, gillnetting and long lining in the inshore regions, the major source of growth will be from the exploitation of the opportunity of catches from deep sea in Exclusive Economic Zone (EEZ).

Deep sea fishing is highly capital intensive and it requires sophisticated crafts, equipments and high skills. Deep sea fishing activities call for efficient management skills with a strong organizational built up to take decision for a quick turn around the fishing vessels at Ports ensuring immediate repair, proper handling and marketing of fish. The opportunities of deep sea catches cannot be actualised without commercialization of edible products out of the unconventional fish and by catches. Therefore, development of consumer marketing of these products is the key to the growth in catches from deep sea resources.

In addition, there are possibilities of specialized operations, like Tuna fishing which can be undertaken not only in the EEZ but also in the international waters. The exploitation of tuna fishing opportunities may necessitate a promotion of joint ventures, foreign collaboration for charter and purchase of vessels and engagement of foreign technicians. The success of these activities will depend on efficient management skills and commercial outlook on the part of the organization engaged in it.

In the inland fishery sector, there are possibilities of both development of fresh water culture, stocking-cum-capture (reservoir) and brackish water acquaculture. The country has an estimated 16 lakh hectares water areas under ponds and tanks, three million hectares water area under reservoirs, about 1.4 million hectares potential area for brackish water acquaculture. In addition to rivers, lakes, estuaries, lagoons, and hill streams. It is estimated that at present only 10% of the production potential is being realized from both capture and culture fishery resources. The technology for culture fishery has been available and organizational set-up in the form of FFDA's has also being created. Therefore, in the years to come, there are possibilities of rapid growth of the culture and stocking-cum-capture (reservoir) resources. A near stagnancy in the prawn catches has necessitated in the development of brackish water acquaculture resources for prawn farming. This is, again a highly capital intensive operation, requiring both technical and managerial skills. It is also likely that major exporters of prawn may be allowed to get into the area in the years to come.

In case of fresh water culture, one of the major problems will be the expansion of seed production, marketing, and rearing facilities. Substantial portion of seed may come from modern hatcheries which are also capital intensive requiring both technical and managerial skills.

II. MANPOWER NEEDS

To exploit the above mentioned opportunities, we shall require the following three types of personnel :

1) Statutorily required personnel for manning ocean going vessels and personnel for maintenance of vessels and machinery and fabrication of fishing gears (under-graduate level).

2) a. Personnel for the introduction and implementation of new technologies in the field of artisanal fisheries (base level), and personnel for handling, processing and marketing of fish.

   b. Scientific and technical personnel for exploitation of resources and scientific and technological advancement in fisheries (post-graduate level).

3) Managerial and administrative personnel to plan and execute fisheries development projects/enterprises (graduate and post-graduate level).

Statutory Personnel: These personnel are being presently trained by the Central Institute of Fisheries Nautical and Engineering Technology (CIFNET). The CIFNET is running several courses at its Cochin, Madras, Vaizag units. The Institute is equipped to handle additional training needs arising out of deep sea exploitation years to come.

Technical Personnel: We have talked about the introduction of new technology in the field of boats going to inshore waters. In addition, technical personnel are required for handling and processing facilities in case of new product developments out of unconventional varieties from deep sea fishing. The technical personnel are also required to man the hatcheries and also to work with extension system for guiding the farmers undertaking fresh water culture fishing. Similarly technical personnel are required to operate seed production for prawns and extension activities to guide the fishermen in pond design, stocking, feeding and harvesting. These technical personnel are being provided by B.F.Sc. and M.F.Sc. programmes conducted at College of Fisheries, Mangalore, post-graduat level courses in industrial fisheries conducted by University of Cochin and B.F.Sc. course at Tuticorin Fisheries College conducted by Tamil Nadu Agricultural University, Coimbatore. The CIFE offers certificate course of one year duration in inland fisheries development to graduate level candidates. It also offers a 10 month specialized training in extension techniques and methods in fish culture practices at post-graduate level. The scientific technical personnel for research and technological advancement in fisheries are derived from the post-graduate students in the above mentioned institution.

Managerial Personnel: The managerial and administrative personnel of planning and execution of fisheries development projects are also derived from among the technical graduates both with under-graduate and post-graduate qualification.

III. PROPOSED M.Sc. COURSE IN FISHERIES MANAGEMENT AT CIFE.: SOME OBSERVATIONS

As the fishery industry have become more complex and commercialized, the need for technician-managers is being increasingly felt. When the technicians are required to undertake the managerial task the training does not support the role expected from them. Broadly the managerial task can be classified into four categories (Chart 1) as under:

CHART 1

TASKS OF THE PROJECT MANAGER IN PRE-OPERATION AND OPERATIONS PHASE

The Project Manager	- Technical Respects - Personnel - Administration - External Relations
Technical Aspects	- Planning, Scheduling - Setting Priorities - Task Identification - Logistics - Equipment Use and Schedules
Personnel	- Organization and Staffing - Leading and Motivating - Communication - Resolution of Conflicts - Performance Evaluation
Administration	- Estimating and Controlling Cost - Budgetting - Cash Flow Monitoring - Management Information System - Systems and Procedures - Terminal Project Evaluation
External Relations	- Relation with Financial Institutions - Contracting and Use of Consultants - Dealing with Suppliers and Sub-contractors - Coordination with Other Agencies.

Source: U.K. Srivastava, "Project Planning, Financing, Implementation and Evaluation" (Ahmedabad : Indian Institute of Management, 1981), p. 183.

To fulfil the above mentioned needs of the managerial personnel in fishery sector, CIFE has proposed to introduce a fisheries management course at post-graduate level with the following objectives :

1) To provide orientation in managers in respect of all the branches of fisheries with particular emphasis on the economic and social aspects.

2) To provide the necessary scientific, technical and managerial background for the follow-up of fisheries development schemes. Since the schemes are assisted by financial institutions, and are commercial in nature, the course will seek to ensure that the incumbents, understand the financial and technical implications and critically assess the various fisheries projects.

3) To teach the students project planning, monitoring and evaluation studies which serve as a useful feedback.

4) To teach objectives, concepts, models and principles of management.

5) To equip the students with necessary scientific technical and managerial skills for the effective implementation of fisheries development schemes. As the schemes are commercial in nature, and are assisted by various financial institutions, the course will seek to ensure that students understand the financial and technical implications and critically available the various fisheries projects.

6) To provide the necessary knowledge and information to the students to enable them to study and compare the past fisheries management practices with modern techniques of management of the fishery industry in order to arrive at the appropriate set of decisions for national development.

7) To meet the needs of the country in the management of natural acquatic living resources to sustain their benefits for future generations to come.

8) To equip the students with research methodology for collection, compilation and interpretation of the scientific data for formulating the future fisheries development programmes.

9) To pay special attention to the study of the potential of reservoir resources.

10) To lay special emphasis on the development of games and sports fishery of India, which is considered to be a "Sleeping Giant".

The detailed course package is given in Annex-I, while attempt to introduce management course at post-graduate level ask the following questions :

1. Whether the curriculum makes the sound of grounding in the basic functional areas of management before getting into the courses involving application of the concepts and techniques of the decision-making situation in the fisheries sector. Basic functional area of management on management accounting, finance, marketing, business policy, managerial economics,

quantitative methods, personnel and industrial relations, and organizational behaviour. If one learns from the experience at the Indian Institute of Management (IIM) one finds that the first year is devoted to the basic functional areas and first year onwards a series of electives so that the students can specialize in some areas. Similar design is followed in case of the students with agricultural background (including fisheries, forestry, and dairy sciences).

2. Is the faculty sufficiently oriented to execute the management course which has a quite different focus than purely technical courses? This is necessary to establish the credibility of the faculty to take up courses in the other term only technical orientation.

3. Are the suitable facilities for trying out different pedagogical tools (like case method, role plays, management games and computer stimulation exercise etc) available at the Institute? The reason why these are necessary is to bring the contextual relevance of management tool to fisheries decision-making situations.

4. Is there a sufficient rapport between the Institute and fishery industry and other employees of these management graduates? This aspect is necessary to -

a) develop cases on real life situation, actual problems in decision-making process in fishery industry, and

b) generate a market for the fishery management graduates.

IV. SOME PREREQUISITES FOR INTRODUCING THE MANAGEMENT COURSES IN FISHERY SECTOR

Some of the observations made above on the CIFE's efforts in introducing the fishery management course at post-graduate level, give us insights in the pre-requisite for launching such a course. Pre-requisites are presented below.

1. Facilities for faculty development and reorientation.
2. Efforts and resources to develop cases, management games and stimulation exercises.
3. Rapport with the practising world of enterprises for arranging of practical training and getting the case loads for faculty.

Most of the above mentioned prerequisite requires additional funding to develop the existing faculty resources and recruit the new faculty in some of the functional areas of management. Additional funds may also requiredto augment the facility for the developing cases and other teaching materials and having an interaction with fishery enterprises.

V. CONCLUDING REMARKS

The new emerging opportunities in both marine and inland sub-sectors offer a vast scope for development of the fishery sector. At the same time the operations are getting more and more complex and broad based. While additional technical manpower is extremely necessary to set-up and to operate specific systems, a specialized category of technicians - managers is to take and necessary integrated view of the total operation. This category is expected to have a

broad based view of the total operations of the enterprise from catching or culturing fish to processing and marketing of fish and fish products. The effort of CIFE to fulfil this gap is commendable but if this effort is to succeed in a meaningful fashion, it is necessary that above mentioned prerequisite are created so that the contextual relevance of curriculum to real life situations in fisheries sector can be ensured and a suitable market for these graduates be created and developed.

ANNEX - I

M.Sc. FISHERIES MANAGEMENT COURSE AT CIFE : PROPOSED CONTENTS

M.Sc. PART-I (First Year)

Paper - 1 : PRINCIPLES OF FISHERIES MANAGEMENT

Section A - Fisheries Resource Base

Section B - Techniques of Fisheries Management

Paper - 2 : DEVELOPMENT AND MANAGEMENT OF AQUACULTURE

Section A - Management of Fresh Water Aquaculture

Section B - Management of Braciksh Water Aquaculture and Mariculture.

Paper - 3 : FISHERIES STATISTICS AND SYSTEM ANALYSIS

Section A - Statistics and Computer Science

Section B - Fishery Planning and System Analysis

Practical and Field Reports

Section A - Capture Fisheries

Section B - Culture Fisheries

Section C - Statistics

Section D - Field Reports

M.Sc. PART-II (Second Year)

Paper - 4 : MANAGEMENT OF HARVESTING AND PROCESSING TECHNOLOGY

Section A - Harvesting Technology and Infrastructure Management

Section B - Processing Technology, Quality Control and Infrastructure Management

Paper - 5 : MANAGEMENT OF MARINE AQUATIC ECOSYSTEM

Section A - Oceanography, Meteorology, Ecological Hazards and Abatement

Section B - Major Marine Fisheries and Principles of Management (or alternative)

Paper - 6 : MANAGEMENT OF INLAND AQUATIC ECOSYSTEM

Section A - Limnology of Inland Waters and Management of Fish Populations

Section B - Systematics and Principles of Fishery Biology

Paper - 7 : OPTIONAL SUBJECTS (ONE OF THE FOLLOWING)

1. Fish and Crustacean Pathology and Parasitology
2. Reproductive Biology and Endocrinology of Fishes and Prawns
3. Fishery Environment Protection
4. Fishery Engineering and Farm Management
5. Fishery Electronics and Computer Science
6. Fisheries Planning and Legal Regime.

Practicals and Field Reports

Section A - Harvesting Technology

Section B - Processing and Fish Handling

Section C - Oceanographical Aspects or Limnological Aspects and Fishery Biology

Section D - Field Reports.

DISSERTATION AND VIVA-VOCE

The dissertation shall be on any subject of curriculum for M.Sc. (Fisheries Management). The topic of dissertation shall be selected by a candidate and certified by his guiding teacher at the beginning of the first year and the evaluation of the dissertation and the viva-voce shall be held at the end of the second year.

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