

The present status of the support of the institute to the stakeholders

# Role of ICAR- Central Institute of Fisheries Technology in enhancing human resources in fisheries

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Fisheries and aquaculture contributes significantly to the Indian economy. India's contribution is 5.4 percent to the global fish production with the total fish production during 2013-14 was estimated at 9.45 mt with 6.10 mt coming from the inland sector and 3.35 mt from the marine sector. Globalisation has led to an upsurge in the flow of technologies which improve efficiencies in fisheries and aquaculture. New regulations with regard to export, sanitary and phytosanitary measures, use of modernised crafts and gears and introduction of new designs in mechanised boats, consumer concerns and political pressures and new advancement in the scientific and technological spheres contributes to the need of developing the fishing and fish processing industries with specific inputs thereby increasing and sustaining production and productivity. Hence, there is demand for skilled human resource for the development of standard products and services in the sector. The ICAR-Central Institute of Fisheries Technology, is the only national centre in the country where research in all disciplines relating to fishing and fish processing is undertaken. It undertakes several capacity building programmes for the enhancement of human resources development

in fisheries sector.

The CIFT functions with the following objectives: to evolve innovative and cost-effective technologies for fish harvest; to develop and standardise various aspects of post-harvest technologies; to develop technologies for extraction of biomedical, pharmaceutical and industrial products from aquatic organisms; to act as a repository of information on harvest and post-harvest technologies with a systematic data base; and to conduct transfer of technology through training, education and extension education programmes; to provide consultancy services and to popularize the innovations for overall development of the fishery industry.

The technologies developed by the Institute is taken to the stakeholders through various means. Conducting training programmes, offering consultancy services, hand holding through Business Incubation etc. are a few such methods. These programmes are aimed at popularising the Institute's technologies and at the same time benefitting the stakeholders through employment and income generation.



On an average CIFT conducts about 100 programmes a year.

### Training programmes

Human Resource Development through training is one of the most important activities that the Institute undertakes for transferring the technologies to the actual end users and in developing their skills. The programmes are demand - based regular and adhoc training courses for fishers, students, and other personnel sponsored by the industry and organisations. Training is also offered to the interested entrepreneurs based on their needs from time to time. On an average CIFT conducts about 100 programmes a year.

**Table 1: Number of training programmes organized by CIFT over the past five years**

Year	No. of training programmes organised
2010-11	148
2011-12	131
2012-13	123
2013-14	123
2014-15	123

The programmes are organised at its headquarters Cochin and also research centres Visakhapatnam, Veraval and Mumbai. Besides several other programmes are organised in other parts of the country based on requirements of specific stakeholders. The Institute is well equipped to conduct the training programmes which are handled by its well experienced scientists and technical staff. Its laboratories are state-of-the-art and have latest equipment. Field level programmes also use various audio-visual aids to make them effective.

The number of persons trained by the Institute has also been increasing (Table 2).

The Institute has a few regular programmes which have structured course content and are offered every year. The course on *Fishing Technology* deals with classification of fishing gear; fishing gear materials; fishing gear fabrication; modern fishing gear trawls, purse seines etc.; conservation and management of

**Table 2: Number of persons trained by CIFT over the past five years**

Year	No. of persons trained
2010-11	2029
2011-12	1970
2012-13	2993
2013-14	1940

fisheries resources; hull maintenance practices to steel and wooden fishing boats. The training Course on *Turtle Excluder Devices and By catch Reduction Devices*, is specialised in fishing gear selectivity in general; selectivity in trawls with reference to conservation; eco-friendly fishing practices and fuel saving; design aspect of different selective devices; by catch reduction devices ( BRD); turtle excluder devices (TED), construction of TED and BRD as per design; rigging of TEDs and BRDs in trawl; fishing trials onboard the departmental research vessels. The *Fishing Gear Materials* course deals with classification, numbering system, properties, testing and evaluation of fishing gear materials, besides teaching techniques for technical evaluation of the same. Boat building material and maintenance of the material are undergoing changes and the training course on *preservation of wood for boat building* deals with general classification of wood, types of wood preservatives and commonly used preservatives, methods of preservation, pressure impregnation treatment and operation of vacuum pressure impregnation facility. The Institute also has a pilot level impregnation facility where fishers can observe and get hands on exposure on impregnation of wood preservatives.

The quality of seafood is of paramount importance and training courses focusing on this are also offered which is mainly targeted for personnel from industry and students who wish to enter the food industry as professionals. The courses include *Laboratory Techniques for Microbiological Examination of Seafoods* where the basic principles of microbiology; staining of bacteria, nutrition of bacteria; preparation of media; sampling of fish for isolation of bacteria; enumeration and isolation of bacteria; identification and estimation of pathogenic organisms such as *Salmonella*, *Listeria*, *Vibrio cholerae*, *Vibrio parahaemolyticus*, *Clostridia*, *Staphylococcus* etc. are taught. The programme on *Seafood Quality Assurance* deals with proximate composition of fish; hygiene and sanitation in fish handling; identification and isolation of *E.coli*, *Streptococci*, *Staphylococcus aureus* etc in fish; quality



problems in seafood industry; legislation on export inspection in India; quality requirements of importing countries with special reference to USA, Japan, EEC etc; minimum facilities in processing units for approval etc. Another popular course which attracts a number of students every year is the *training Course on HACCP Concepts* which gives an exposure to the HACCP programme and HACCP evaluation; biological hazards in seafoods; food borne diseases; physical hazards, wholesomeness and economic fraud; chemical hazards in seafood handling and processing; and the principles and practices of HACCP.

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Fish processing is an area where the Institute is a pioneer and is an area which has both low end and high applications and can cater to many levels of stakeholders starting from SHGs to large scale entrepreneurs. These programmes include basic course in *fish Processing Technology* which stresses on factors affecting quality of fish; post harvest handling of fish; canning and preservation of fish and shell fish; salting and drying of fish; value added fishery products; packaging; sensory evaluation of fresh fish; technology transfer in fish handling and processing. A specialised course on *Production of Value Added Fish Products* deals with production of value added products, including battering and breading; surimi and surimi-based products; packaging of value added products; and economic viability of the process. There are also

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specialised courses on *Battered and Breaded Products*.

Students and industry personnel also get trained in *Modern Analytical Techniques in Biochemistry* where they are exposed to modern analytical tools like spectroscopy; gas chromatography; high performance liquid chromatography; atomic absorption spectrophotometry. There are also courses on *LC MS MS* and *GC and GCMS*.

Many *ad-hoc* training programmes that are based on the demand of different stakeholders are also conducted at CIFT. They range from production of value added products, the main clients of the programme being fisherwomen from different SHGs to advanced customised programmes like Verification and Auditing (of HACCP plans), implementation of European Union Regulations and Implementation of FDA regulations in seafood processing plants for which the clients are usually the seafood industry.

#### **Programmes for special areas**

The Institute also caters to different parts of the country through special programmes like the NEH (North Eastern Hill Region) and TSP (Tribal Sub-Plan). The NEH programme focusses on the North eastern States while the TSP is for the benefit of tribal fishers in the country. CIFT has organised programmes in all states in the NEH region including Assam, Arunachal Pradesh, Manipur, Tripura, Mizoram, Nagaland and Sikkim. Under the TSP also various programmes have been conducted in Kerala, Andhra Pradesh, Tamil Nadu, West Bengal and Karnataka.

#### **Consultancies offered**

On an average the institute enters into 10 to 15 consultancies annually. Consultancies offered have been the areas of fishing vessel construction, value added products and by-products, seafood safety and quality assurance etc. Besides this the Institute also provides analytical services to the seafood processing industry and around 1000 samples are analysed per year.

#### **Business Incubation**

The Institute also equips and encourages budding entrepreneurs through its Business Incubation Centre (BIC). The BIC is managed by Zonal Technology Management – Business Planning and Development (ZTM-BPD) Unit and aims at establishment of food business enterprises through IPR enabled ICAR technologies. BIC supports operations on business



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projects as a measure of enhancing the foundation for new technology based industries and establishing a knowledge-based economy. It focuses on finding new ways of doing business in fisheries and allied agricultural fields by finding doors to unexplored markets. The Centre helps prospective entrepreneurs, by providing pro-active and value-added business support in terms of technical consultancy, infrastructure facility, experts' guidance and training to develop technology based business ideas and establish sustainable enterprises. The center acts as a platform for the speedy commercialisation of the ICAR technologies, through an interfacing and networking mechanism between research institutions, industries and financial institutions. The Incubator at CIFT differs from traditional Business Incubators as it is tailored specifically for technology based industries and is operational at an area with a high concentration of fish production. This industry-specific incubator also allows new firms to tap into local knowledge and business networks that are already in place. BIC offers their services to industries not only in Cochin, but also all over India through virtual incubation. Beyond promoting business growth, the Centre is also trying to bring its benefits to all the fisheries communities in India.

This unique Business Incubator is now known as a "One Stop Shop", where entrepreneurs can receive pro-active, value-added support in terms of technical consultancy, and access to critical tools such as entrepreneur ready technologies, vast infrastructure and other resources that may otherwise be unaffordable,

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inaccessible or unknown. With the aim of transforming the incubator into a symbol of entrepreneurship and innovation, the ZTM-BPD Unit has created an environment for accessing timely scientific and technical assistance and support required for establishment of technology based business ventures. The activities of the ZTM-BPD Unit focuses on finding creative and innovative ways for linking public sector resources and private sector initiatives within and across regional and national boundaries for promoting economic growth. The Centre uses the right expertise in relevant fields to identify and analyse the constraints and barriers hindering the growth of a business, and devise appropriate strategies and explores the various structures and strategies to help small enterprises to grow and ensure a promising future in the global market.

Success Stories under the BPD of CIFT include Charis Food Products, Kerala; Monsoon Bounty Foods Pvt. Ltd., Chennai; Freedom Kitchen, Kerala; Pescado Seafood Restaurant, Cochin; Fish Bite, Haryana etc.

Incubation facilities under one roof are,

- Furnished office suites within the premises of CIFT, with shared facilities like secretarial assistance, computing, copying, conferencing, video conferencing, broadband internet and communication services.
- Pilot level production lines
- Culinary facility
- Access to modern laboratory facilities for product testing and quality control
- Access to well-equipped physical and digital libraries

#### Visits

CIFT also receives a lot of visitors every year. They may be students from school and college students to fisher groups from different parts of the country. The groups usually spend time looking at the various facilities at the Institute and the research work being carried out is explained to the visitors. Sometimes in-depth information is also provided based on specific requests.

#### Future efforts of CIFT in HRD

CIFT will continue to support stakeholders from different sectors of the fisheries sector through various capacity building programmes. The skills developed in the sector will be effective in the long term to improve the employability of personnel in the sector and will be an avenue for employment and income generation. ■