# Strengthening Fisheries HRD in India - The Dynamic Role of the CIFE

India has vast and diverse marine and inland fisheries resources. In view of the need for trained and qualified manpower in this sector, the Central Institute of Fisheries Education (CIFE) was established on 6 June 1961 in Bombay (now Mumbai) as a Government of India institution with FAO/ UNDP assistance. Its activities started with a two-year post-graduate Diploma in Fisheries Science to fisheries personnel, mainly from departments of fisheries of the States/ Union Territories.

The Inland Fisheries Training Centre, started in 1947 by the Government of India, was taken over by CIFE in October 1967. The erstwhile Fisheries Extension Centers of the Government also became CIFE sub-centers for Inland Fisheries Operatives Training at Agra and Hyderabad. These centers were subsequently shifted to Lucknow (Uttar Pradesh) and Kakinada (Andhra Pradesh) respectively. The Institute also acquired the much needed aqua-farm infrastructure, with the transfer of the Brackishwater Fish Farm at Kakinada (August 1968) and the Freshwater Fish Farm at Balabhadrapuram (April 1974) from the Government of Andhra Pradesh.

CIFE became a part of the Indian Council of Agricultural Research (ICAR) in April 1979. The 36.87 meter training-cum-research vessel MFV Saraswati, acquired with NORAD support in December 1982, strengthened the CIFE's programmes in marine fisheries and oceanography. During this period, the training facility in freshwater aquaculture also got a boost with the acquisition of a 100-acre fish farm at Powerkheda from the

Dr Dilip Kumar, Director and Vice-Chancellor of CIFE, joined the Institute in September 2005. He believes in participatory approaches to fisheries development and management. Before this assignment, he helped set up the Network of Aquafarmers Associations in the Asia–Pacific region and helped develop an Asia Regional Aquatic Animal Health Certification and Quarantine System. Dr Kumar has developed and demonstrated a highly acclaimed model for fisheries co-management that ensures community participation in the management of coastal fisheries resources in Bangladesh.

The aquaculture extension approach popularly known as "Trickle Down System of Aquaculture Extension" which was conceptualized by him as an FAO expert, is now widely practised in Bangladesh and other Asian countries. The project won the prestigious Edouard Saouma Award for the year 1997. He spent more than 15 years with UN Agencies such as FAO, UNDP, NACA and assignments with other International Agencies such as IFAD and UNOPS; through them Dr Kumar played a pivotal role in fisheries development in several SAARC, ASEAN and East African countries including Bangladesh, Bhutan, Sri Lanka, Nepal, Thailand, Vietnam, Zambia, Zimbabwe, Kenya, etc. Dr Kumar's vision is to make CIFE a vibrant institution of international calibre. Dr Kumar can be contacted at dk.dilipkumar@gmail.com.

**Box 1: Specializations offered for M.F. Sc and Ph. D courses**

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| Fisheries Resource Management | M.F. Sc & Ph.D |
| Inland Aquaculture | M.F. Sc |
| Mariculture | M.F. Sc |
| Freshwater Aquaculture | M.F. Sc |
| Post-Harvest Technology | M.F. Sc & Ph.D |
| Fish Genetics | Ph.D |
| Fish Biotechnology | Ph.D |
| Fish Genetics & Biotechnology | M.F. Sc |
| Fish Nutrition & Biochemistry | M.F. Sc & Ph.D |
| Fish Pathology & Microbiology | M.F. Sc & Ph.D |
| Fish Business Management | M.F. Sc & Ph.D |

Government of Madhya Pradesh. During 1984, an M.Sc course in fisheries management affiliated to the University of Bombay was started.

CIFE was accorded Deemed University status in March 1989 in recognition of its pioneering role in fisheries education. Consequently, masters and doctoral programmes (till then affiliated to the University of Bombay) were brought under the academic purview of CIFE. The Master of Fisheries Science (M.F.Sc) and Ph.D courses in mariculture affiliated to the Cochin University of Science and Technology were also brought under the CIFE banner. The Institute started two new M.F.Sc programmes in Freshwater Aquaculture and Post-harvest Technology at Central Institute of Fisheries Aquaculture, Bhubaneswar, and Central Institute of Fisheries Technology, Kochi, respectively.

### Achievements

CIFE offers masters and doctoral programmes in different areas of fisheries sciences (Box 1) to provide qualified manpower to the sector. It offers vocational and refresher courses to fisheries development officials and aspiring entrepreneurs; it also provides consultancies to government organisations, NGOs and private companies.

The faculty is selected through an all-India examination, and students through all-India entrance tests. The courses are residential and ensure maximum student attention. Every student gets a scholarship. Only five students are selected for each branch of specialization. A well-equipped library, hostel, playground and gymnasium provide first-rate facilities.

**Box 2: Significant Research Highlights**

- Breeding of *Macrobrachium rosenbergii* using ground saline water.
- Cage culture trials of commercially important fishes in open waters.
- Development of value-added products from low-cost fish by modern and improved conventional methods.
- Larval rearing of giant freshwater prawn *Macrobrachium rosenbergii* in artificial seawater for establishment of backyard/ small-scale hatcheries in inland states.
- Use of ozone in shrimp and prawn hatcheries to treat water and control larval diseases in hatcheries.
- Development of carp hatcheries for breeding under controlled conditions.
- Culture of marine fin and shellfish in inland ground saline water.
- Culture of live food organisms for aqua hatcheries.
- DNA fingerprinting and RADP profiles of selected fish species.
- Hatchery for breeding of *Clarias batrachus*.
- Database development for marine fisheries of Maharashtra.
- EIA studies of shrimp farming in the coastal districts of Andhra Pradesh and Tamil Nadu.
- Field trials on standardization of indigenous hormone, ovatide, for breeding of Indian and exotic carps.

Since inception a total of 4 350 students including over 100 foreign students have completed their studies. Ph.D degrees were awarded to 72, M.F.Sc to 278, Post-Graduate Diplomas to 1 043 and 2 857 got Certificates.

A placement cell facilitates gainful employment for those who pass out of the Institute. The Dr Hiralal Choudhary Foundation Award is a gold medal for students securing the highest OGPA in different streams of M.F.Sc and Ph.D programmes every year. This foundation has also instituted annual awards for the best teacher, a young scientist, the best technical staff, the best supporting staff and the best extension worker for technology transfer.

The Institute also arranges annual lectures by an eminent personality in fisheries every year. Through the TATA Endowment Trust, CIFE arranges further training for the two best students of the Institute, one from M.F.Sc and one from Ph. D stream, in India and abroad. The Dilip R Jalihal Award is given to the best M.F.Sc thesis every year.

Staff and student researchers of CIFE take up a number of research programmes (Box 2). An important research area relates to aquaculture in saline soils. Recently, CIFE scientists have evolved a mechanism to breed prawn in such saline conditions. This will help boost the blue revolution in the heartland of India's green revolution. To improve the productivity of reservoirs, the institute has piloted cage culture trials of commercially important species. It has also conducted path-breaking research in genetics and biotechnology, in the development of value-added products, in database development and resource management.

Since its inception, the Institute has been serving the community in many ways. CIFE has facilitated a 'blue revolution' in Andhra Pradesh, demonstrated cage culture technology in Himachal Pradesh, Madhya Pradesh, Chattisgarh and Maharashtra. It is striving to set up

*Students at work in the laboratory*

freshwater prawn hatcheries using artificial sea water in the north-eastern states of Tripura, Mizoram and Manipur. It is collaborating with fisheries departments of many inland and coastal states on holistic development of fisheries in these states. The Institute has experimented with developmental models to improve the livelihoods of fisheries communities.

The Institute has taken up many collaborative ventures with private, government, co-operative and international institutions and NGOs. Examples: private companies like Godrej, Hemmo Pharma, Biostadt India Ltd, public sector institutions such as National Institute of Oceanography, Goa, National Environmental Engineering Research Institute, Nagpur; Central Drug Research Institute, Lucknow and Indian Space Research Organisation, Ahmedabad. It interacts actively with international agencies. In collaboration with Australia, it is developing aquaculture in degraded inland areas of India and Australia. Experts from reputed institutions sit in the CIFE's Board of Management, Academic Council, Research Advisory Council, and Extension Council. The Institute's course curricula are revised from time to time to meet current challenges.

The Institute has been playing pivotal role in fisheries education, nutritional security and policy formulation. CIFE alumni serve as torchbearers of institutions in India and abroad. In the field, the Institute has designed development models for north–eastern states, for fisherwomen and for poor Adivasi (tribal) villages. In the area of research, the CIFE has developed several technologies and at the policy level, the Institute is helping in the formulation of a national fisheries policy.

The Institute has been playing a key role in enhancing capabilities of fisheries departments in Afro-Asian countries by providing slots in its post-graduate programmes for its personnel. The Institute can also play a major role in enhancing Fisheries Education and Extension in the Bay of Bengal region.

*Model of the new campus of CIFE*

**Box 3: Thrust Areas**

- Utilization of salt-affected inland areas through aquaculture.
- Genotype environment interaction studies of *Macrobrachium rosenbergii* for economically important traits.
- Non-food organisms in aquaculture.
- Sustainable fisheries development through co-management.
- Policy framework for Indian fisheries and aquaculture.
- Quality enhancement in fish.

## The Future

The CIFE has identified thrust areas for the future (Box 3). Fishing grounds are in open access and common property. The Institute recognises the urgent need to address co-management issues in fisheries.

The fisheries sector demands sustainable aquaculture systems, responsible fisheries, post-harvest management and research to augment productivity, efficiency, equity, sustainability and trade. CIFE endeavours to empower fishers and fisheries professionals towards these goals. It also aspires to be a global leader in fisheries education. In a globalizing world, CIFE has to provide education programmes that make students both nationally useful and globally aware. Curricula must therefore be developed that strengthen understanding of global phenomena and global trends. The latest teaching and pedagogical aids are required to meet these challenges. The process of entrepreneurship development must be stimulated. More details on the Institute can be seen at http://www.icar.org.in/cife/intro.htm.