

## **Chapter 10**

### **ICAR initiatives for Innovation and Entrepreneurship in Fisheries**

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#### **Introduction**

The Indian Council of Agricultural Research (ICAR) is an autonomous organisation under the Department of Agricultural Research and Education (DARE), Ministry of Agriculture, Government of India. It is the apex body for co-ordinating, guiding and managing research and education in agriculture in the entire country. With 97 Research Institutes and 47 Agricultural Universities spread across the country this is one of the largest national agricultural systems in the world. With the aim of utilizing the vast research and development facilities and knowledge available with its institutions, ICAR has started a technology management and business incubation drive, designed for the Indian agricultural sector to promote agribusiness. This initiative started with the establishment of Agri-business incubation centres which effectively networked all ICAR research institutions for the management of new and cutting edge technologies developed by these institutions. ICAR started this move with the aim of improving its R&D system by incorporating new ways of doing business in agriculture and allied fields, to achieve the objectives of increased productivity, employment generation and strong national economic condition.

The Agri-Business Incubation (ABI) Centre and Zonal Technology Management Centre (ZTMC) established at ICAR-CIFT, Cochin supports operations on business 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 by finding doors to unexplored markets. ABI 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. It acts as a platform for the speedy commercialization 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. ABI offers its services to industries not only in Cochin, but also all over India through virtual incubation. Beyond promoting business growth, the Centre aims to bring its benefits to all the fisheries communities in India.

#### **Protection and management of intellectual assets of ICAR**

Agricultural science has been the engine of economic growth and has led to quantum jumps in productivity in the past. Application of ICAR technologies in farmers' fields and backyards has increased agricultural output and farm incomes. These

technology packages have been the major contributors to the green, white and blue revolutions that brought out spectacular gains in Indian agriculture. The technological assets of ICAR include a number of high yielding and resilient crop varieties, animal and poultry breeds, packages of improved crop and animal husbandry practices, natural resource management technologies, improved tools, equipment and farm machinery, animal science and fisheries technologies, harvest and post-harvest technologies, computer software and datasets, and several other processes and products of agriculture and allied sectors. ICAR focuses on producing significant research output to enable further enhancement of agricultural productivity and help meet the future needs.

### **Role of Zonal Technology Management Centre**

The IP and technology management drive of ICAR has entrusted the ZTMCs of different zones to establish a mechanism that accedes to the conditions of international standards and also to find ways for stimulating research, enabling access to technology and promoting enterprise growth, all for the ultimate benefit of the Indian farming community.

The main activities of ZTMC is targeted at the development and use of a Database System for management of intellectual assets, IPR protection, sensitization and capacity building, development of technology evaluation tools, formulation of model Business Plans/Project Reports and technology transfer/commercialization through business incubation. The Centre aims at protecting and translating the research results arising from the field of fisheries and other agricultural sectors into successful business ventures. It identifies new opportunities of business formation and helps the prospective entrepreneurs, by providing pro-active and value-added support in terms of technical consultancy, IP protection, infrastructure facility, business support services and training to develop technology based business enterprises.

ZTMC guides the member institutes under the zone to secure IPR protection of the research results, as per the Indian law and in conformity with the international agreements to which India is a signatory. It promotes transfer of these IPR enabled technologies, including finished processes, products, creations / works and other know-how, through commercial and public routes to farmers. The systematic management of IP assets have promoted commercial ethos in public sector research helping to transform agriculture from a predominantly subsistence mode to a globally competitive one. The Unit have the powers and flexibility to outsource for efficient execution of IP and commercialization matters.

### **Strategies adopted for Technology Management**

#### ***Sensitization and capacity building***

ZTMC regularly conducts Workshops, Meetings and Seminars with the participation of all ITMUs for awareness creation, faster adoption and implementation of the new scheme of Intellectual Property Management and Technology Transfer/Commercialization within ICAR. This has helped in chalking out the best-fit strategies and work plan for IP management by inculcating business ethos in transfer of both proprietary and public domain technologies. The scientific community was trained in handling technical information, finding solutions to technical problems, acquiring rights in public domain, identifying patentability potential of technologies at early stages of

development, avoiding risk of R&D duplication and solving potential disputes involving patents. The member institutes were given clear guidelines to convert their innovative ideas into business activities, to evaluate the commercial and economic viability of an invention, to formulate business plans and R&D contracts, to market and commercialize the invention, and to find potential business partners. Disputable areas regarding ownership of patents, acquiring trademarks in the name of the institutes, acknowledging the parent institution while selling the technologies etc. were sorted out during such meetings.

### ***Collaboration with member institutes under the Zone***

Under ICAR there are two statutory monthly reporting activities; one is summary highlights of research findings to be submitted to the Prime Minister's Office and two is input for the report for the Result Frame Document (RFD) of ICAR for information of Performance Monitoring and Evaluation Division of the Cabinet Secretariat. The IP protection and technology transfer/commercialization activities of the ITMUs are continuously monitored by the ZTMC, for compilation and onward transfer to ICAR. A comprehensive assessment system was devised for research and technological affairs at the zonal level for improving the supervision of research programs and activities for aiding ICAR in decision-makings and supervision processes. The ZTMC summarizes and reports the most important results that the member institutes have achieved during the period like product / process developed / commercialized, partnership development, including licensing of ICAR technologies and IPR titles.

### ***Guidelines for IP Exploitation***

In order to ensure that, R&D Institutes under ICAR captures and harness the value of its [intellectual property \(IP\)](#), and to also encourage the development, protection and commercialisation of research results arising from its research activities across all agricultural disciplines, specific IP management guidelines have been formulated. As a publicly funded institution, ICAR is under an obligation to ensure that the research outputs are used for public benefit. It recognises the importance of generating intellectual property and obtaining IP rights to optimise the use of research outputs for public and commercial benefit. The main aims of these guidelines are to:

- inform members of the ICAR community of their rights and obligations relating to IP created in the course of undertaking R&D activities
- recognise the creative contribution of staff
- provide an appropriate incentive structure to reward innovators for successfully [commercialised](#) IP
- protect the interests of the ICAR and all its members
- recognise and promote the benefits of open access to knowledge and its public dissemination, while balancing this with the need to protect commercially valuable outputs of research activity

IP that is potentially exploitable will be identified and recorded using the IP Disclosure Record. The Institute management should strictly ensure the unprompted disclosures from staff and research students. In doing so, all parties will be cognisant of not damaging the Institute's core research and development activities. All identified IP will be reviewed by the ZTMC, to consider its suitability and marketability. The Panel will take into account

the wider strategies and policies of the Institute in determining the exploitation route. Protection of the IP will be determined and funded by the ZTMC. The Institute may make use of specialist external organisations, to take forward specific cases, where they bring detailed knowledge of the technology and/or relevant market. Interactions with such organisations will be managed by ZTMC. The timescale for exploitation of any given set of IP depends significantly on market conditions as well as the state of development of the IP. The discussions between ZTMC and creator(s) / innovator(s) includes agreement of a reasonable initial timetable, with regular review points. All parties involved have responsibilities in achieving successful exploitation, and need to be aware that circumstances will change as the process develops. Where an innovator is to undertake an involvement with a licensee or other external organisations, it must be governed by a suitable agreement between the company and the Institute, e.g. for consultancy, services etc

### **Business Incubation Centre at CIFT**

Fisheries sector with its important role played in the socio-economic development of the country has become a powerful income and employment generator, and stimulates the growth of a number of subsidiary small, medium and large scale industries. In order to translate the research results arising from the field of fisheries and other agricultural sectors, and to establish fisheries enterprises through IPR enabled technologies, ICAR set up an innovation based Agri-Business Incubation (ABI) Centre at ICAR - CIFT, Cochin. ABI supports operations on business 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. It acts as a platform for the speedy commercialization 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. ABI 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.

With the aim of transforming the incubator into a symbol of entrepreneurship and innovation, the ABI has created an environment for providing timely scientific and technical assistance and support required for establishment of technology based business ventures. The activities of the ABI 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 analyze the constraints and barriers hindering the growth of a business and devise appropriate strategies. It explores various structures

and strategies to help small enterprises to grow and ensure a promising future in the global market. It fosters corporate and community collaborative efforts, while nurturing positive government-research-business relationships.

### ***Process of Business Incubation***

The Agi-Business Incubation (ABI) Centre targets entrepreneurs, from fledgling start-ups in need of basic small scale processing capacity to sophisticated businesses in need of R&D back up, office infrastructure and pilot / test market processing facility for the development of new products. It possesses good infrastructure facilities suitable for providing direct incubation to 9 entrepreneurs in a corporate environment within the premises of CIFT at a time. The purpose of direct incubation is to support emerging companies through their infancy. ABI apart from being a multi-tenant facility with on-site management that delivers an array of entrepreneurial services to clients operating with the facility, it also serves clients that are not located in the facility through virtual incubation or incubation without walls.

The Centre regularly conducts industry interface and technology promotional programmes for sensitization of entrepreneurs and to identify interested potential candidates for physical and virtual incubation. The Clients at ABI gets the privilege of meeting ICAR-CIFT officials directly, to discuss and finalise the strategies to be adopted to take the business forward. It is also the peer-to-peer relationships that develop within the incubator, that ensures the delivery of basic services such as how to actually incorporate a business; what are the legal issues; how to take intellectual property protection; how to do basic accounting and cash flow; how to do business presentations etc. Those kinds of skills are what are transmitted as part of the incubation process.

### ***Client Selection***

The process of client selection starts with the review of applications submitted by the Entrepreneur for becoming Business Incubator Client. The application must address the requirements described a prescribed format which includes executive summary, vision and focus, financial plan and economic impact of the proposed business. The application and the proposal will be first reviewed by the Principal Investigator of the Business Incubation Centre against the set criteria. During the second stage of the selection process, applications will be evaluated by a Joint Evaluation Committee. The committee reserves the right to request additional information from an applicant, or reject / accept an application. During the committee's review, applicants will be required to make presentations of their proposals. Once selection procedures are completed, the Client can sign Memorandum of Understanding with CIFT, for availing the facilities and services of ABI for a limited period of time on a payment basis.

The residency period for direct incubatees is normally for one year, extendable by another year in special cases, depending on the progress of business development. As the business venture becomes mature enough, the concessions and the facilities provided to the incubatee companies will be gradually withdrawn. Incubatee mentoring will continue in virtual mode after graduation on a case to case basis.

### ***Services and facilities offered***

The Incubation Centre provides shared physical workspace, management and technical assistance, access to financing and other supporting services to the incubating entrepreneurial firms.

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
- Modern laboratory facilities for product testing and quality control
- Physical and digital libraries

### ***Pilot Level Production Lines***

A state-of-the-art generic semi-commercial production facility is made available to incubating entrepreneurs for developing value added products from fish. ABI provides access to these facilities along with support of manpower, and assists the entrepreneurs in production and testing of new product formulations. The plant also serves as a process lab.

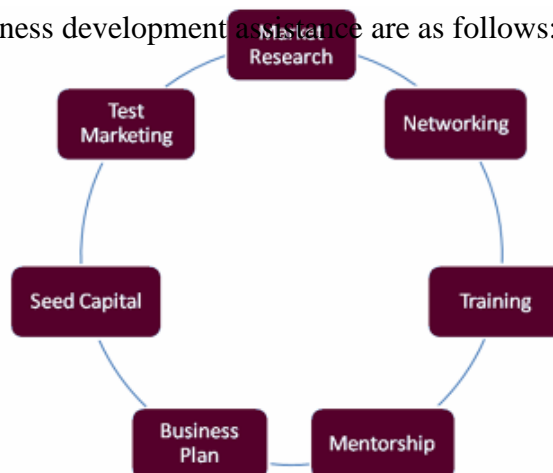
Various lines available with ABI for entrepreneurs are listed below:

- Fish Pre-Processing line
- Retort Pouch Processing unit
- Fish Canning line
- Fish Sausage production line
- Fish extruded product line
- Fish Curing and Drying line
- Fish battering and breading line
- Fish product packing system line
- Chitin & Chitosan Production line

The Centre greatly reduces the high capital cost faced by small entrepreneurs.

### ***Business Services***

The business oriented services offered by ABI include assistance in complying with business regulations, licensing procedures, financing, information services, marketing and tailor-made services designed for the various tenant enterprises. Incubator clients can also gain special advantage in terms of tax savings through special regulations for Business Incubators. ABI also offers a wide variety of services, with the help of strong associations throughout the Business Incubation Network. Currently the services being offered as part of business development assistance are as follows:



### ***Facilitation for financial assistance***

The ZTMC facilitates the availability of loans with the aid of State Bank of India (SBI), Agri-Commercial Wing and provides direct access to financial schemes offered by Micro Small and Medium Enterprises (MSME) for gathering capital investment, company expansion and new product development. It also helps entrepreneurs in developing linkages with various venture funding agencies. ABI being a registered member of Indian STEP and Business Incubators Association (ISBA), the privileged tenants of incubator are entitled for getting tax exemption benefits as well as opportunity to attend the ISBA Annual conference, workshops, training programs etc.

### ***Promotion of ICAR Technologies***

The ZTMC, since its establishment at CIFT, has been responsive to the rapid transformation of innovation processes and business needs, and has been continuously trying to enhance the visibility of ICAR technologies through Business/ Industry Meets, Exhibitions, Industry Interface Programmes etc. This has helped in strengthening the public private partnerships and to bring together innovators involved in research and development, and entrepreneurs from the field of fisheries on to the same platform. Technology exhibitions are regularly organized, and entrepreneur-ready innovations and technologies developed by the ICAR Institutes specialized in fisheries and aquaculture are exhibited to the Industry. The areas addressed are seed production technologies of fish and shrimp, cost-effective and nutritious fish feed formulations, diagnostic and test kits, new and improved aquaculture methods, harvest and post harvest technologies, ready-to-cook / ready-to-serve products from fish, pharmaceutical and biotechnological products, and techniques for fisheries waste management.

### ***Human Resource Development***

Human resource development for the fisheries industry has been in the mandate of CIFT since its inception. Fish processing industry is a fast growing industry in our country as well as abroad, where there are immense opportunities for rightly trained professionals. CIFT has the right expertise and facilities to provide hands-on, application-based training courses such as HACCP concepts, HACCP Audit, Seafood Quality Assurance, Basic Food Hygiene, Food Processing and Preservation, Energy Efficient Harvesting Techniques, Boat Construction etc. Successful trainees have high potential for employment in India and various foreign countries including Middle East and South Africa. The ZTMC organises several awareness workshops, seminars, training programmes etc. for human resource development in the fisheries sector. The Unit also conducts capacity building programmes to help the incubatees build their competence in the areas of business practices, technology up scaling, networking and financing strategies.

### **OUTCOMES**

- Transmitting benefits of developed technologies to the nation fast and effectively
- Distributed regional economic growth and national wealth creation through SMEs
- Creation of gender equity and economic independence to women through SHG clustering
- Reduced chances of failure for first generation entrepreneurs and consequent saving of national wealth

- Import reduction and enhanced national life style through introduction of innovative products and services
- Increased national savings through efficiency enhancement of industries
- Employment generation
- Enhanced build-up of human resources and national IPRs
- Encourage thrust towards solution driven research to benefit target groups
- Increased revenue to host Institute

### **LESSONS LEARNED IN BUSINESS INCUBATION AND WAY FORWARD**

From the experience gained from the interaction with budding entrepreneurs, three primary reasons which create difficulty to the small and medium start-up businesses to remain competent have been identified. They are, lack of access to capital, lack of managerial skills, and the lack of knowledge about how to estimate their markets, gauge growth and potential business basics. Incubators are proved tools that can specifically address these three issues. High risk start-ups are instrumental in creating jobs, and business incubators play a role in making and leveraging the investments these entrepreneurs make. In a country like India, entrepreneurship is ubiquitous and is reflected in all the major dimensions of civilization *viz.* social, political and economic. With the initiation of economic reforms in early 1990s, India's business environment has witnessed considerable improvement. Domestic and foreign investors are finding it easier to do business after the reforms, which are aimed at reorientation of the centrally controlled economy to a market-oriented one in order to foster greater efficiency and growth. In spite of the global meltdown, Indian economy offers ample opportunities for business, both to the domestic and foreign entrepreneurs.

### **CONCLUSION**

Amidst the changing paradigms and demanding global structure, India, in order to remain a frontrunner among developing nations, has primarily focused on the agriculture sector. The scope and level of protection of intellectual property rights (IPRs) has been increasing in the past few decades. The three tier IP management system is introduced in ICAR as an incentive for investing in research and development, creative activities, and for extending markets for technology and products. Among the various strategies to promote planned growth in this sector, focus was also given on promoting viable small and medium scale enterprises. However the Indian agricultural sector, despite its importance in industrialization strategy and immense potential for employment generation, confronts several problems in business development and management. In this context, business incubators which can help entrepreneurs turn their ideas into viable businesses and promote innovation, by providing business support services and resources have great scope and significance.

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