TNJFU

VISION 2030

INSTITUTIONAL DEVELOPMENT PLAN

Tamil Nadu Dr. J. Jayalalithaa Fisheries University

Vettar River View Campus,
Nagapattinam - 611002



Published by

Dr. N. Felix
Vice-Chancellor

Compilation and Editing

Dr. N. Felix
Dr. N. Jayakumar
Ms. R. H. Hermon Jisha

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About TNJFU

Tamil Nadu Fisheries University (TNFU), a professional Fisheries University of the State Government was established as per **Tamil Nadu Fisheries University Act 2012**, on **19.06.2012** at **Nagapattinam**, to impart professional fisheries education, conduct research and training for enhancing fish productivity and utilisation in the state, by following State Agricultural University (SAU) pattern and syllabi.

The University was renamed as **Tamil Nadu Dr. J Jayalalithaa Fisheries University (TNJFU)** as per G.O (Ms) No.21. of Animal Husbandry, Dairying and Fisheries Dept., dated:16.02.2018.

The University has got **12B Status** awarded by the **University Grants Commission (UGC)**, **ICAR accreditation** for the Fisheries Science programme with an **A grade**, and **AICTE accreditation** for the Fisheries Engineering, Biotechnology, Food Technology and Fisheries Enterprises Management programmes.

VISION

"Harnessing the Science of Fisheries for Food, Nutrition and Livelihood"

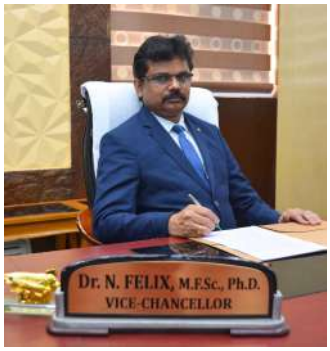
MISSION

Excelling in teaching, research, and extension initiatives in fisheries sciences to produce professionally acclaimed and socially responsible graduates achieving nutritional security and sustainable development of the fisheries sector.

Objectives

- To impart quality professional education in different branches of Fisheries Sciences as the University may determine.
- To conduct organised research in the frontier area to develop cutting-edge technologies in Fisheries Science.
- To provide extension services like training, consultancy, project formulation to fish farmers, fisherfolk, unemployed youth and entrepreneurs in Fisheries Sciences.
- To facilitate comprehensive development of Fisheries Sciences for increased contribution to the state's economy and set benchmark standards through appropriate interventions in fisheries teaching, research and extension.

Vice-Chancellor's Message



TNJFU, one of its kind in the country, is a young and dynamic university that saw its genesis a decade ago and roots to a humble beginning in **1977** as a Fisheries College in Thoothukudi, the country's second such institution. The journey that began then, spanning over **49 years of excellence** in the domain of fisheries education, research, and extension, has made the university stand as an exemplary institution today with a number of constituent units that are still growing. Our strong presence in **13 districts** of Tamil Nadu makes us a vibrant and fervent educational institution committed to exploring possibilities to bring about a transformation in the higher educational landscape.

The Indian fisheries sector has been witnessing tremendous growth in recent years, making its role in the Indian economy indispensable. While ensuring the nation's food and nutritional security, the fisheries sector is also preserving and improving the lives of millions of fishermen and fish farmers. The new developments and interventions in the aquaculture and seafood industries have made India a global leader in the fisheries sector. India's **"Blue Revolution"** mission to harness the full potential of the fisheries sector is netting huge success by increasing fisheries production, both inland and marine, from aquaculture and fisheries resources through sustainable practices.

TNJFU offers the right place for budding next-generation innovators and scientists in the discipline of fisheries science. Our academic programmes are designed to cater to the needs of the sector by developing professionals who are industry-ready to address the contemporary challenges prevailing in the fisheries sector. We are focused on **fostering seafood and aquaculture-based entrepreneurship** by training students in the future thrust areas with the best infrastructure and technology. We are dedicated to building expertise at the field level and nurturing the young minds who are tomorrow's changemakers. We believe in turning science into societal benefits by empowering the fish farmers, fishing communities, women, and youth of Tamil Nadu through capacity building, skill development, and livelihood improvement programmes.

Dr. N. Felix
Vice-Chancellor

ACCREDITATIONS

भाकृअनुप
ICAR
GRADE A

ज्ञान-विज्ञान विमुक्तये
UGC
'12 B' STATUS

AICTE
All India Council for Technical Education
APPROVED

COLLEGES/ INSTITUTES

Fisheries College and Research Institute, Thoothukudi

Dr.MGR Fisheries College and Research Institute, Ponneri

Dr.MGR Fisheries College and Research Institute, Thalainayeru

College of Fisheries Engineering, Nagapattinam

Institute of Fisheries Biotechnology, Vaniyanchavadi, Chennai

Institute of Fisheries Post Graduate Studies, Vaniyanchavadi, Chennai

College of Fish nutrition and Food Technology, Madhavaram, Chennai

Fisheries Business School (FBS), Muttukadu, Chennai

Paraprofessional Institute of Fish Processing Technology, Chennai

Paraprofessional Institute of Fishing Technology, Thoothukudi

Paraprofessional Institute of Aquaculture Technology, Chennai

(Affiliated Private College)
St.Devasahayam Institute of Fisheries Science & Technology, Kaniyakumari











ACADEMIC PROGRAMMES

8 UG Programmes

Science Programme (B.F.Sc.)

Fisheries Science

Engg. & Tech. Programmes (B.Tech.)

Fisheries Engineering

Food Technology*

Biotechnology*

Management Programme (B.B.A.)

Fisheries Enterprises Management*

Vocational Programmes (B.Voc.)

Fish Processing Technology

Industrial Aquaculture

Industrial Fishing Technology

**Self-finance Courses*

18 PG Programmes

M.F.Sc. (Fisheries Science) Disciplines

Aquaculture

Aquatic Animal Health Mngt.

Aquatic Environment Mngt.

Fish Processing Technology

Fish Quality Assurance & Mngt.

Fishing Technology & Engg.

Fisheries Resource Mngt.

Fish Biotechnology

Fish Nutrition & Feed Tech.

Fisheries Extension

Fisheries Economics

Fish Genetics and Breeding

Fish Pharmacology & Toxicology

Fish Physiology & Biochemistry

M.B.A. Discipline

Fisheries Enterprises Mngt.

M.Tech. Disciplines

Aquacultural Engineering

Fish Process Engineering

Biotechnology

14 Ph.D. Programmes

Ph.D. (Fisheries Science)

Aquaculture

Aquatic Animal Health Mngt.

Aquatic Environment Mngt.

Fish Processing Technology

Fish Quality Assurance & Mngt.

Fishing Technology & Engg.

Fisheries Resource Mngt.

Fish Biotechnology

Fish Nutrition & Feed Tech.

Fisheries Extension

Fisheries Economics

Fish Genetics and Breeding

Fish Pharmacology & Toxicology

Ph.D. (Life Sciences)

PG Diploma Courses

1. Shrimp Farming Management (PGDSFM)
2. Advanced Aquaculture Systems (PGDAAS)

TECHNICAL DIRECTORATES

4

A. Directorate of Research (DR)

Nagapattinam (HQ)

B. Directorate of Extension Education (DEE)

Krishi Vigyan Kendra (KVK), Sikkal

TNJFU-Fisheries Training Centre (FTC), Chengam



C. Directorate of Incubation and Vocational Training in Aquaculture (DIVA)





Centre for Incubation & Vocational Training in Aquaculture (CIVA), Muttukadu (HQ)

Centre for Incubation & Vocational Training in Aquaculture (CIVA), Kolavai

Centre for Incubation & Vocational Training in Aquaculture (CIVA), Poondi













D. Directorate of Sustainable Aquaculture (DSA)

Thanjavur Centre for Sustainable Aquaculture (TCeSA)

Mandapam Centre for Sustainable Aquaculture (MCeSA)

Kanyakumari-Ganapathipuram Centre for Sustainable Aquaculture (KKGCeSA)

Kanyakumari-Parakkai Centre for Sustainable Aquaculture (KKPCeSA)

Krishnagiri-Barur Centre for Sustainable Aquaculture (KBCeSA)

Erode-Bhavanisagar Centre for Sustainable Aquaculture (EBCeSA)

Trichy Centre for Sustainable Aquaculture

Theni Centre for Sustainable Aquaculture

TNJFU-Mylaudy Centre for Sustainable Aquaculture (Mylaudy CeSA)

TNJFU-Seaweed Research Centre, Mandapam





ENTREPRENEURSHIP DEVELOPMENT/ START-UP PROMOTION

A. INCUBATION CENTRES

EDII - Marine Products Business Incubation Forum (Thoothukudi) – Section 8 company

Fish Processing Incubation Centre (Madhavaram)

Fish Processing Incubation Centre (Thalainayeru)

METRO - Fish Processing Incubation Facility (Nagapattinam)

Aquatic Rainbow Technology Park (ARTP), Madhavaram

Aquatic Rainbow Mall (ARM), Madhavaram

Centre for Incubation & Vocational Training in Fisheries (CIVF), Mandapam

Centre for Incubation & Vocational Training in Fisheries (CIVF), Thengaipattinam

Centre for Incubation & Vocational Training in Fisheries (CIVF), Ponneri *(Post-Harvest Research and Incubation Center)*

B. 'KAYALAGAM' – Fishery Products Sales Outlet

Aquatic Rainbow Mall (ARM), Madhavaram

TCeSA, Thanjavur











PUBLIC PRIVATE PARTNERSHIP (PPP) UNITS









Microalgae Culture (Indoor & Outdoor) – M/s Sai Easwar Biosciences (Mandapam - CeSA)

Vannamei seed production – M/s Jayashri Hatchery (Ganapathipuram - CeSA)

Fish & Shrimp Feed Manufacturing – M/s CMR Feeds Pvt.Ltd. (Muttukadu - DIVA)

Micropropagation of Seaweeds – M/s Aquagri Pvt.Ltd. (Mandapam - CeSA)

Development of RAS Technology – M/s ECKLIEN4RAS LLB (Muttukadu - DIVA)

OTHER FACILITIES

A. E-EXTENSION HUB

Digital Blue E-extension Hub (Dr. MGR FC&RI, Ponneri)



B. FEED MILL

Aqua-Feed Extrusion Mill, Muttukadu



C. RESEARCH VESSEL

'KAYAL' - Deep-sea Fishing Research & Training Vessel



D. OFF-CAMPUS FACILITIES

Advanced Research Farm Facility (ARFF, Madhavaram)

Mariculture Research Farm Facility (MRFF, Tharuvaikulam)

Pulicat Research Farm Facility (PRFF, Pulicat)

Brackishwater Research Farm Facility (BRFF, OMR)

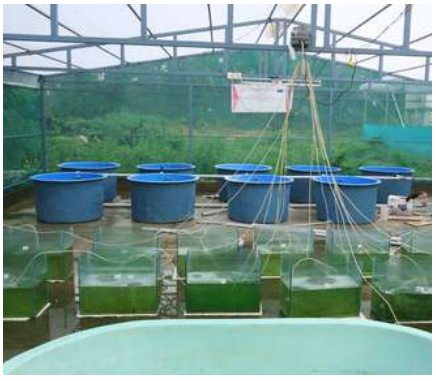
Freshwater Instructional Farm Facility (Korukkai, Nagapattinam)

Brackishwater Instructional Farm Facility (TNJFU HQ, Nagapattinam)











E. MAJOR LABS & WORKSHOPS

Aquatic Animal Health Lab, Madhavaram & Thoothukudi

Aquaculture Quality Testing Lab, Nagapattinam

Fish Quality Monitoring and Certification Lab, Thoothukudi

Fish Feed Testing and Quality Certification Lab, Vaniyanchavadi

Marine Engine Workshop (Mandapam, Thalainayeru and Nagapattinam)



F. MOBILE LAB FACILITY

TNJFU - Madhavaram Campus

Dr. MGR FC&RI, Ponneri

Dr. MGR FC&RI, Thalainayeru

TNJFU VISION 2030

GOAL 1 Academic Transformation & Global Talent Pipeline

To evolve the academic ecosystem to produce globally competitive, tech-savvy fisheries professionals capable of leading the modern blue economy.

Target 1: *Achieve institutional excellence through improved national rankings and maintaining institutional accreditations.*

Target 2: *Launch specialized degree programs/ new courses/ MOOCs to drive student enrolment, digital outreach, and fisheries entrepreneurship.*

GOAL 2 High-Impact Research & Blue Economy Innovation

To establish the university as a national hub for breakthrough scientific research in climate-resilient aquaculture, seafood processing and marine fisheries sector.

Target 3: *Increase total external research funding and high-impact international publications, specifically targeting patentable solutions in fisheries sector.*

Target 4: *Increase high-impact research in thrust areas of fisheries and drive strategic collaborations to bridge academia & real-world applications through commercialisation of developed technologies & patents.*

GOAL 3 Extension Services & Coastal Community Empowerment

To empower fish/ shrimp farmers by delivering technical support, advanced aquaculture training, and disease diagnostic services, and uplift coastal communities through tech-adoption, financial literacy, and sustainable livelihood models.

Target 5: *Scale the university's extension programs to increase the adoption of sustainable farming and sea safety practices among the fish farming and coastal communities.*

GOAL 4 Modern Infrastructure & New Facilities Development

To create a world-class, technologically advanced campus ecosystem featuring state-of-the-art research, and learning facilities.

Target 6: *Establish Centres of Excellence (CoE), new research & extension centres and robust sports facilities.*

GOAL 5 Financial Stability & Revenue Diversification

To secure long-term fiscal resilience by diversifying funding sources, scaling commercial ventures, and reducing reliance on baseline government grants.

Target 7: *Increase institutional income by expanding commercial seed/ feed production, and securing high-value corporate funds.*

GOAL 6 International Collaborations

To expand the university's global footprint by forging strategic alliances with premier academic institutions, and research organizations to drive collaborative innovation and foster academic enrichment.

Target 8: *Ensure consistent global opportunities for cross-border research innovation, joint degree initiatives, and bilateral faculty-student exchanges through institutionalised partnerships.*

GOAL 7 Staff Management & Professional Excellence

To strengthen the university's human resource ecosystem by implementing a rigorous recruitment process, timely promotions, and continuous capacity building for both teaching and non-teaching personnel.

Target 9: *Fill all vacant positions, process 100% of eligible staff promotions on schedule, and empower the entire workforce with modern technical and administrative capabilities.*

GOAL 8 Green & Energy Smart TNJFU

To build a highly sustainable campus ecosystem through smart energy management & eco-friendly practices, and reduce environmental impact.

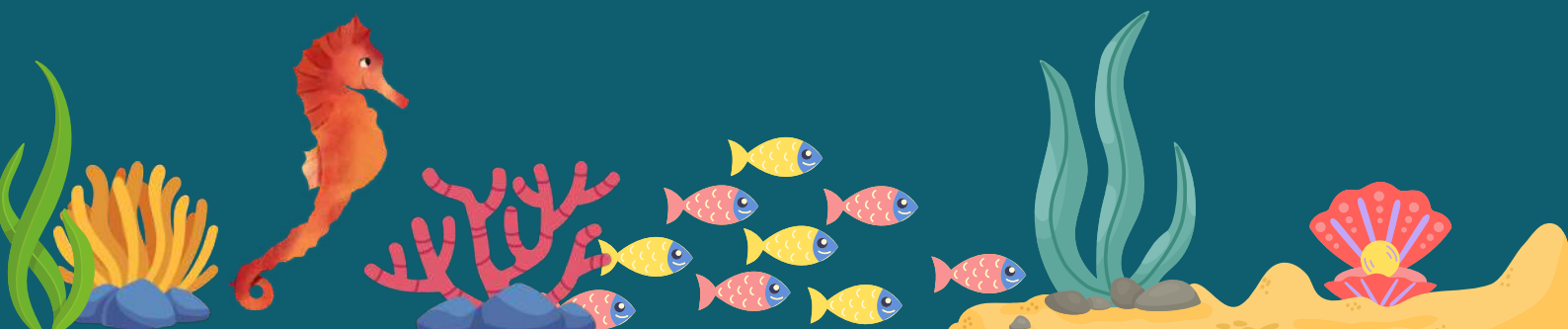
Target 10: *100% Green campus, solar energy adoption also in research facilities, carbon footprint reduction, waste to wealth and circular bioeconomy.*

GOAL 9 Innovation, Entrepreneurship and Startup Ecosystem

To cultivate a vibrant culture of innovation and entrepreneurship that transforms creative ideas into scalable, sustainable startups.

Target 11: *Nurture student entrepreneurs and incubatees through technical support & state-of-the-art facilities and provide robust network of mentors & resources for early-stage ventures.*





STRATEGIC PLAN

1

ACADEMIC EXCELLENCE

RANKINGS

- Raise the university's position in the Indian Rankings and attain the **NIRF Ranking** within the **top 30, top 25, top 20, top 15** and **top 10** under the **Agriculture and Allied Sectors category** for the years **2026, 2027, 2028, 2029** & **2030**, respectively.

- Participate in various global/ world rankings to enhance international visibility and reputation.

ACCREDITATION/ APPROVAL

- Regular renewal/ extension of existing I**CAR/ UGC accreditations** and **AICTE approval** to maintain continuous compliance with high-quality standards, regulatory requirements, and best practices.

- Obtain **NAAC/ NBA accreditation** for securing research funding and grants. Obtain **AICTE approval** for all technical courses offered by the university.

STUDENT HEALTH & WELL-BEING

- Engage doctors (psychologist) for regular psychological counselling and faculty mentors to actively support student health & well-being.

STUDENT ADMISSION

- Increase the **Gross Enrolment Ratio (GER)** to **95%** by improving the quality of education.

- Diversify the student intake by admitting more number of students across the country/ globe through simplified admission process & reasonable fee structure to **advance internationlisation**.

- Allocate additional seats in all academic programs to facilitate the admission of transgender students.

- Increase student intake for PG and Ph.D. programs and to foster research output.

SCHOLARSHIPS, STIPENDS & INTERNSHIPS

- Enhance financial support by streamlining access to government scholarships, increasing university stipends for PG & Ph.D. scholars, and securing paid corporate internships across all academic levels.

STUDENT SKILLING & PLACEMENTS

- Develop future-ready skills in AI, Data Science and Smart Technologies for undergraduate students in fisheries and aquaculture through bootcamps of one-week or two-weeks duration to produce **tech-ready workforce**.

- Prepare the students for overseas jobs, industry roles, and competitive exams. And host annual campus placement drives for graduating students.

NEW COURSES

- Introduce **new industry-relevant diploma, PG diploma & executive programmes** for working professionals.

- Introduce **new certificate/ diploma programmes** for Overseers, Fishermen, and Fishery Assistants of state fishereies department.

EXTERNAL RESEARCH ATTACHMENTS

- Facilitate **external research attachments for PG and Ph.D. scholars** at leading national and global institutions to accelerate research quality and career growth.

SMART & INNOVATIVE TEACHING TECHNIQUES

- Transform education through **100% smart classrooms,** virtual learning environments, & Artificial Intelligence (AI)-assisted learning.

- Boost **blending learning** & ensure **25%** of courses are in a blended format for enabling personalized student learning experience.

MASSIVE OPEN ONLINE COURSES (MOOCS)

- Develop and launch **3-5 pilot MOOCs** on key fisheries and aquaculture topics annually.

- Restructure the curriculum to include MOOC for earning credits (e.g., 10-15% of credit requirements) towards fulfilment of Master's or Bachelor's degree.

HUMAN CAPITAL DEVELOPMENT FOR VIKSIT BHARAT 2047

- Introduce **employer-driven academic degree programme** aligning with emerging needs in fisheries and allied sector.

- Establish **strong industry linkages and partnerships** to promote experiential learning, innovation, entrepreneurship, internships, and improved employability of graduates.

- Ensure active participation in the **National Apprenticeship Training Scheme (NATS)** to provide practical exposure and enhance employability of students.

- Implement **Professor of Practice (PoP) scheme** effectively by engaging experienced professionals from industry, start-ups, farmers' organisations, research institutions, and other relevant sectors to bridge the gap between academia and practice.

- Promote **interdisciplinary learning** to allow students to combine diverse fields to innovate the multi-dimensional solutions.

- Ensure **future readiness** of the fisheries higher education ecosystem to equip the next gen fisheries professionals with advanced skills.

- Enhance **access and governance** to democratize high-quality learning across the nation and create a transparent, agile institution that efficiently cultivate top-tier global talent.

- Take **institutional strengthening** measures to transform the university into hubs of innovation & academic excellence.

RESEARCH AND INNOVATION

2

RESEARCH PROJECTS

- Secure high-value externally funded research projects from various **government agencies** such as DBT, DST, ICAR, NFDB, ICSSR, NADP, TNSCST, Govt. of Tamil Nadu, etc.

- Secure a **10% year-over-year increase** in **joint research and process validation projects** with diverse industry partners to drive real-world technological advancement and innovation ecosystem.

- Increase the number of university funded **JTRF/ URP/ Revolving Fund schemes** to encourage the faculty to carry out innovative and quality research.

- Increase the number of university funded **TIF (Technology Innovation Fellowship) projects** to encourage the teaching faculty to carry out **innovative translational research**.

- Institute a **"One Faculty, One Project" policy**, aiming to involve up to **100% of the faculty** in externally funded research projects.

RESEARCH PUBLICATIONS

- Increase our **high-impact publication** output by **10% annually** through 2030 to reach the top 10% of India rankings (NIRF – agriculture & allied category).

- Prioritise publishing quality research works in the **top 25% high-impact global journals (Q1 journals)**.

- Advance scientific discovery by achieving **85% open-access excellence and public outreach**.

- Increase the percentage of publications co-authored with industry partners by **5% annually** through 2030 to ensure innovation and facilitate commercialisation.

- Ensure at least **10%** of all published research outputs are directly **cited or integrated into multi-level policy and societal initiatives**.

TECHNOLOGY/ PATENT DEVELOPMENT AND COMMERCIALISATION

- Promote **translational research** for development of viable and patentable technologies by **10% year-over-year increase**.

- Facilitate **filing of utility/design patents** and boost scientific research progress through the University Patent Cell.

- Promote **commercialisation of viable technologies** to the industries for bridging the gap between lab-scale research and field-level adoption.

FOCUS AREAS OF RESEARCH

- **Blue Economy** – Deep-sea Fisheries; Transforming fish waste into high-value resources (sustainable approach to circular economy); Development of advanced satellite-based and AI monitoring systems to study marine biodiversity loss and restore fragile coastal habitats like coral reefs, seagrass, seaweeds and mangroves; digital fisheries, 3D ocean farming (vertical aquaculture), carbon sequestration; Conduct bio-prospecting experiments to discover high-value biomolecules, biofuels, and pharmaceuticals from seaweeds, ocean microbes and microalgae.

- **Sustainable Aquaculture & Fish Nutrition** – Development of advance aquaculture systems, nursery/ growout culture technology for new species, selective breeding programs for commercially important species, precision broodstock conditioning through specialized nutritional programming (such as optimized fatty acid and amino acid profiles), highly sustainable & nutrient-dense ingredient (such as insect meal, algae-based omega-3s, fermentation-derived microbial proteins) based aquafeeds, species-specific functional feeds enriched with prebiotics/ immunostimulants to enhance natural disease resistance, functional feed additives as stress-mitigating agents in fish and medicinal plant-derived phytogenic feed additives in modulating physiological stress in fishes.

  Domestication & broodstock development of Asian Seabass. Development of cost-effective feeds, alternate protein sources, precision feeding strategies, feed additives & probiotics, functional feeds & nutraceuticals, and health products for climate-resilient aquaculture and disease prevention. Precision aquaculture, alternate cultivable fish species, development of ingredients from wastes, improving filtration in RAS, understanding microbial communities in biofloc, and sea cage farming.

  Development of hydroacoustic-based device for biomass estimation in shrimp culture, smart box framework AI-based crab moulting detection system, eco-friendly zeolite-biochar filter media, machine learning based shrimp larval stage quantification & identification, AI-driven multimodal vision-acoustic system for real-time feed waste monitoring & feeding control, a digital twin-based time-intelligence framework for predictive decision support, fish disease detection via computer vision.

- **Seafood Processing & Quality Assurance** – Ensuring food safety through traceability in fisheries & aquaculture. Waste valorisation and byproducts, safety and contaminant analysis, advance packaging, emerging approaches for fish freshness evaluation, value added products, and enhancing product quality.

  Development of Nori-like edible seaweed sheets, formulating thermally processed alginate-based caviar analogues, fish collagen peptide shots from processing wastes, vegan seaweed functional gummies, methods for seaweed pasta formulation, seaweed-fortified chocolate-filled snack bites, marine peptide serum, stable bio-functional emulsions of marine algal carotenoids, organic fertilizer coated with amino emulsion from invasive Charru Mussel, seaweed-infused functional boba and rapid non-destructive safety assays & portable biosensors for instant onsite detection of chemical residues, microplastics, & heavy metal contaminants.

- **Traceability** – Development of end-to-end digital records to continuously track aquafeed raw materials from their origin to the mill and farm to ensure transparent data flow between feed manufacturers, farmers and consumers. Development of smart packaging & tamper-proof tracking solutions for aquafeed & seafood to ensure food safety & supply chain integrity.

  Development and validation of low-cost, QR-code-based tracking technologies to provide the seafood industry with a scalable model for FSSAI-compliant traceability. Establish a university-led certification model that tracks fishery products from seed to harvest, ensuring strict adherence to national food safety and export-quality benchmarks.

- **Aquatic Environment Management** – Development of affordable next-gen technologies for the detection & remediation of persistent contaminants, probiotic consortia formulation for shrimp culture systems using native bacterial strains, eco-paper from aquatic weed reinforced with biogenic $CaCO_3$, bio-sorbents for treatment of contaminated water, biochar-based filtration prototype for efficient ammonia removal from wastewater, bio-bitumen from Eichhornia crassipes, mangrove bark-derived graphene spheres for aquatic bioremediation, AI-driven predictive modeling & IoT sensor networks for real-time monitoring of water quality, hybrid raindrop solar energy harvester, eco-friendly fibre from dried Typha spp. and biofertilizer from mangrove bacteria for ammonia removal in aquaculture. Carbon footprint assessment, effluent treatment technologies, genomics, proteomics, transcriptomics, environmental DNA, plastic & chemical pollution, and bioremediation.

- **Aquatic Animal Health Management** – Development of cost-effective vaccines, rapid field diagnostics for shrimp viral diseases, eDNA-based pathogen surveillance systems, AI-assisted disease diagnosis systems, microbiome manipulation techniques for disease prevention using next-generation probiotics/ postbiotics, oral/ nano-vaccines for emerging diseases in fishes, gut-stabilizing functional feed for management of White Feces Syndrome (WPS) in pacific white shrimp, portable biosensor for determination of Vibrio spp. in shrimp farm, lateral flow immunoassay for rapid detection of bacterial and viral pathogens in fish, seaweed-probiotic blends, and marine polychaete bioactives. Microbiome studies, one health in aquaculture, immunostimulants & phytogenic additives, therapeutics, epidemiology of emerging pathogens to prevent diseases, and quorum sensing.

- **Genetics & Biotechnology** – Development of climate-resilient fish strains, new CRISPR applications for aquaculture, fish cell lines, epigenetic mechanisms and applications in aquaculture. Conduct studies on CRISPR/Cas9 gene editing & genomic selection, conservation genetics of native fishes, germ-cell transplantation & cryobanking technologies and multi-omics approaches for growth & disease resistance. Selective breeding for growth & disease resistance, cryopreservation of gametes, and molecular diagnostic studies.

- **Fisheries Biology & Resource Management** – Mapping of hormonal cycles & egg quality indices to accurately predict wild spawning potentials; Integration of AI-driven life-history modeling to process big data on age, growth, and natural mortality rates; Utilisation of environmental DNA concentrations to estimate absolute biomass & map spawning grounds; Conduct studies on functional morphology/ fish biomechanics and multi-species/ trophic-interaction stock assessments; Development of low-cost portable digital fish length-weight measuring board for rapid field surveys, app-based digital solution for fishers during the seasonal fishing bans to ensure neat and tidy beaches, eco-friendly CO_2 sequestration system for fishing vessel exhaust, non-destructive fish freshness assessment using eye and gill colour based physiological markers, taxidermized fishes as educational and display models, AI-powered predictive catch limit systems using real-time catch-per-unit-effort (CPUE) biometrics to protect the biological integrity of wild marine/ freshwater populations, mobile friendly e-log book for inland fisheries resource management and validation technique for fish age determination using eye lens growth as alternative marker; Catch & survey modelling, and evaluation of marine protected areas.

- **Fishing Technology & Fisheries Engineering** – Development of smart gear for bycatch reduction, biodegradable materials for FADs, low-energy & eco-friendly fishing gears for sustainable fisheries, modified dredges & scrapers for the removal of invasive charru mussel, artificial conches for octopus fishing, solar-powered trap hauler with collapsible fish trap for reef fishery, compact buoyancy-stabilized underwater net-cutting system with camera & light assistance for mechanized fishing vessel propellers, working model to detect the fish catch through sensor based smart technology in trolling, artificial fish bait using surimi and seafood processing wastes for longline fishing, solar-powered smart navigation light system for small-scale fishing vessels, eco-friendly fishery waste-based bio-antifouling paint, and mobile-enabled smart fuel monitoring & emergency return alert system for small-scale fishing vessels.

- **Economics & Extension** – Value chain analysis, market intelligence & traceability, policy & governance, gender & livelihood studies, entrepreneurship development, impact assessment of aquaculture intervention, socio-economic trends of fisherfolk, digital extension services, Traditional Ecological Knowledge (TEK) and microfinance. Development of data-driven decision-support for shrimp price forecasting, and documentation of Best Management Practices (BMPs) & new technologies in fisheries and aquaculture for dissemination to the fish/ shrimp farming and coastal communities.

- **Entrepreneurship & Start-up Innovation** – Development of tamil voice-enabled aquaculture decision support application for farm management & health advisory, natural shrimp feed attractant from Charru mussel, plastinised/ diaphonized fish products for the education and art purposes, industrially relevant lipase from chlorella, and vendor-led climate smart dry fish vending model.

INSTITUTIONAL COLLABORATIONS

3

INDUSTRY-INSTITUTE COLLABORATION

- Strengthen industry linkages by partnering with leading seafood and aquaculture companies for joint research, product testing, student internships, and commercial incubation.

GOVERNMENT DEPARTMENTAL COLLABORATION

- Collaborate with state fisheries departments to implement development schemes, provide policymaking data, and execute field-level extension programs at the state level.

- Collaborate with Department of Fisheries (DoF), national bodies, and intergovernmental organisations at the national level to assist in seamless delivery of Govt. welfare schemes like PMMSY & PMMKSSY.

NATIONAL INSTITUTIONAL COLLABORATION

- Expand national reach by signing memorandums of understanding with national universities/ institutes to align research goals, and share laboratory infrastructure.

- Implement faculty-student exchange and joint research programs to leverage collective academic expertise and address high-priority national challenges/ issues in the fisheries and aquaculture sector.

EXTENSION AND OUTREACH

4

SKILL DEVELOPMENT PROGRAMME

- Train over **5,000 rural youth, women self-help groups (SHGs), and fishermen** annually in value-added processing, fish net mending, seaweed propagation, and ornamental fish breeding.

- Train over **1000 fishermen** annually in **"Marine Engine Maintenance and Safety of Fishermen at Sea**" and certify the trainees to apply for dedicated **Boat Driver License** to safely operate mechanized vessels under 24 meters in length with engines up to 240 HP (The Department of Fisheries and Fishermen Welfare, Government of Tamil Nadu issues the license after training completion).

TRAINING & AWARENESS PROGRAMMES

- Provide training to the scholars, Food Business Operators (FBOs), QC technologists, analysts, scientists, academicians and fishermen related to fish quality, safety and authenticity to enhance sustainability, fair trade, and consumer safety.

- Conduct state-wide awareness drive across fish markets to educate vendors and consumers on seafood safety, cold chain maintenance, and detecting adulteration.

- Sensitize 150 traditional fishermen annually to the livelihood potential of seaweed cultivation, mud-crab fattening and integrated multi-trophic aquaculture (IMTA).

- Conduct 10 hands-on training batches for 300 fishers annually on utilizing smart mobile apps and QR codes for FSSAI-compliant digital traceability tracking.

- Nurture the coastal communities to protect and restore the fragile coastal ecosystems of the state.

- Educate 50 local hatchery operators annually on molecular disease diagnostics and strict biosecurity protocols to ensure 100% SPF (Specific Pathogen-Free) seed production.

- Provide skill training on fisheries and aquaculture best practices and new technologies to the fish/ shrimp farming communities.

CONFERENCES & WORKSHOPS

- Convene regional and national level technical workshops to disseminate knowledge on advanced technologies and connect fish farmers, fishermen, researchers, policymakers, and industry experts.

- Organise a bi-annual Industry-Academia Meet bringing together fisheries startups and university students/ teachers to boost collaboration and fast-track commercial technology transfer.

- Organise I**ndian Fisheries Students Innovation and Startup Conference (IFSISC) annually** to cultivate entrepreneurship mindset and culture among the students of the university.

FARMER OUTREACH EVENTS

- Organize fisheries exhibitions and melas (fairs) reaching **25,000 farmers annually** across the state to demonstrate latest technologies in aquaculture.

STARTUP & ENTREPRENEURSHIP

- Launch intensive 'Fisheries Business Accelerator' programs to help 25 annually progressive farmers, and seafood processing ventures utilising the university's incubation centres.

- Expand fisheries incubation centers to drive technology commercialization by actively fund and nurturing start-ups specialized in fish processing, value-addition, and aqua-feed production.

STUDENT STARTUP & ENTREPRENEURSHIP

- Launch student business accelerator programs to provide students with the funding and mentoring needed to start their own fisheries startups.

- Launch regular entrepreneurship awareness drives, hackathons, and ideation challenges to actively inspire students.

- Bridge the gap between academia and the business world to secure funding by connecting student with alumni investors and industry experts.

DIGITAL INFRASTRUCTURE

5

ENTERPRISE RESOURCE PLANNING (ERP) CELL

- Establish Enterprise Resource Planning (ERP) cell to streamline academic data, centralize administration process, and automate financial workflows.

TNJFU - FISH CART PORTAL

- Launch "TNJFU – Fish Cart Portal," an online marketplace for farmers and the public to conveniently purchase fish seeds, live feeds, formulated feeds, fish and seaweed-based products, and other university-developed saleable items.

CYBER-SECURITY CELL

- Establish a cyber-security cell to protect university research and online student data systems.

STUDENT PLACEMENT AND ALUMNI DATABASE

- Establish an online tracking portal to connect students with 2,500+ alumni and partnering with them to secure job placements for 85% of graduates annually.

DIGITAL LEARNING HUB

- Establish a digital learning hub with interactive courses and AI-assisted learning modules to deliver online certificate courses, virtual lab simulations, and localised fish farming video guides to students and fish/ shrimp farmers.

INFRASTRUCTURE DEVELOPMENT

6

HOSTEL & SPORTS FACILITIES

- Construct Boys and Girls Hostel for the Directorate of Incubation and Vocational Training in Aquaculture at Muttukadu, Chengalpattu.
- Construct an additional floor in the existing boys and girls hostels at the Institute of Fisheries Post Graduate Studies (IFPGS), Vaniyanchavadi, Chengalpattu.
- Establish robust sport facilities such as indoor stadium, courts and playgrounds to excel students in co-curricular activities.

NEW RESEARCH & EXTENSION CENTRES

- Establish a new Krishi Vigyan Kendra (KVK) at Panangudi, Tirunelveli.
- Establish TNJFU-Fisheries Training Centre (FTC) at Chengam, Thiruvannamalai to develop aqua demo units and conduct training programmes.
- Establish TNJFU-Seaweed Research Centre at Mandapam, Ramanathapuram to develop high yield disease resistant tissue cultured Kappaphycus seaweed plantlets for large scale farming.
- Establish TNJFU-Mylaudy Centre for Sustainable Aquaculture (Mylaudy CeSA), Kanyakumari to conduct freshwater finfish breeding of Barbs, Carps, Catfishes, and Snakehead murrels.

- Establish Business Incubators to promote startups and entrepreneurship in fisheries and aquaculture.

- Establish a Centre of Excellence (CoE) in aquaculture at Madhavaram, Chennai to conduct selective breeding programs for commercially important species to produce/ supply quality seeds and to develop advance aquaculture systems and new species nursery/ growout culture technology.

- Establish a Centre of Excellence (CoE) in aquatic animal nutrition, health & certification at Muttukadu, Chengalpattu to formulate species-specific feed and to develop advanced, rapid diagnostic tools for management of emerging pathogens in aquaculture.

- Establish a Centre of Excellence (CoE) in fish processing, post-harvest technology, traceability & certification at Thoothukudi to develop standard operating procedures (SOPs) for hygienic processing & digital traceability platform.

- Establish a Centre of Excellence (CoE) in Mariculture, Thoothukudi to develop mariculture, cage culture and IMTA.

- Establish broodstock bank for Seabass in Mandapam, Ramanathapuram to develop quality broodstock.

- Establish broodstock bank for Red bellied Pacu in Barur, Krishnagiri to develop quality broodstock.

- Establish Mud Crab Breeding and Hatchery Unit at Pulicat, Thiruvallur.

- Establish a new Department of Bio-prospecting and Bioproduct Development to derive nutraceuticals, immunostimulants, bioactive compounds, biostimulants, and biofertilisers from marine resources and fish waste (circular bioeconomy).

STRENGTHENING OF RESEARCH FACILITIES

- Strengthen the existing field laboratories and research facilities for high-quality research, technology development and patent generation.

- Enable quality assurance through **NABL Accreditation** of major research and testing laboratories of TNJFU.

GREEN & ENERGY SMART CAMPUS

- Expand the total green cover of all the campuses and organise regular plantation drives.

- Develop the university campus' mangrove plantation into a model blue carbon sink that protects and supports diverse aquatic life.

- Transition the university toward renewable energy independence by installing rooftop solar panels across all institutional buildings, field laboratories and research facilities.

- Turn fish waste, guts, and gills from the processing labs into high-quality liquid organic fertilizer for waste reduction.

REVENUE GENERATION & FINANCIAL MANAGEMENT

7

FUNDING SOURCES

- Secure funding from diverse external sources for building a robust financial foundation that ensures long-term institutional sustainability and the continuous expansion of our academic & professional standing.

SALES ACTIVITIES

- Generate more income from the sales of farm products, fish/ shrimp seeds, cultured fish/ shrimp and value-added fishery products from the constituent units of the University.

TECHNOLOGY TRANSFER (TOT)

- Accelerate technology transfer by monetizing innovations through strategic industry partnerships and exclusive licensing agreements.

CORPORATE SOCIAL RESPONSIBILITY (CSR)

- Mobilise CSR funds from corporate partners to undertake campus development activities and address infrastructure/ research funding gaps.

- Establish industry-sponsored scholarship programs through Corporate Social Responsibility (CSR) initiatives to fund studentships and research stipends.

INTERNATIONAL COLLABORATIONS

8

DUAL-DEGREE PROGRAMS

- Introduce dual-degree programs that allow students to earn degrees from both partner institutions.

STUDENT-FACULTY EXCHANGE PROGRAMS

- Establish structured exchange programs with global partner universities to allow students to study abroad/ conduct research for a semester and faculty to share modern teaching/ research methods.

COLLABORATIVE RESEARCH

- Secure joint international research grants with global partner institutions, co-author scientific papers with overseas researchers to boost global academic rankings and organise joint virtual seminars/ international conferences with overseas partners.

INTERNATIONAL RELATIONS CELL

- Ensure effective functioning of the dedicated international relations cell to support foreign students/ faculty/ visitors and establish new connections with global premier institutions and industries to expand academic networks.

STAFF MANAGEMENT & PROFESSIONAL EXCELLENCE

9

FACULTY RECRUITMENT

- Conduct recruitment drive to fill vacant posts of teaching faculties at all stages.
- Conduct targeted recruitment drive to fill vacant posts of non-teaching faculties.

PROMOTION & CAREER PROGRESSION

- Ensure timely teaching faculty promotions through regular Career Advancement Scheme (CAS) mechanism.
- Ensure timely promotions specifically for non-teaching technical and administrative cadres.

CAPACITY BUILDING PROGRAMS

- Encourage and sponsor the faculty to attend winter schools, summer schools, and capacity building programs to upgrade their teaching skills and learn modern research techniques.
- Train the university officers and non-teaching faculty through relevant capacity building programs to upgrade their administrative skills and improve their management skills.