

## AQUACULTURE INNOVATION TECH 2.0

*Driving 30% Growth with Focus on Shrimp, Prawn and Fresh Water Fish Entrepreneurship,*

*February 16–18, 2025, Fortune Murali Park, Vijayawada, Andhra Pradesh*



## AQUACULTURE INNOVATION TECH 2.0 CONCLAVE

### Process Documentation and Proceedings

*Vijayawada, Andhra Pradesh | February 16–18, 2025*



## **Introduction:**

The Aquaculture Innovation Tech 2.0 Conclave, held from February 16 to 18, 2025, at Fortune Murali Park in Vijayawada, marked a significant step in Andhra Pradesh's vision to lead India's blue revolution. Spearheaded by the Department of Fisheries, Government of Andhra Pradesh, in partnership with the Global Forum for Sustainable Transformation (GFST), the conclave convened a wide range of stakeholders- aqua farmers, exporters, processors, scientists, entrepreneurs, investors, and policy leaders. The overarching goal was to articulate a strategic roadmap to scale aquaculture to 10 lakh acres by 2029–30, triple the sector's Gross Value Added (GVA) from Rs.1.29 lakh crore in 2024-25 to Rs.3.87 lakh crore by 2028-29, and establish Andhra Pradesh as a global hub for sustainable, tech-enabled aquaculture.

The conclave's agenda was informed by a comprehensive baseline survey conducted in advance, covering over 60,000 aquafarmers across 4.44 lakh acres. The outcomes of this data-driven field engagement were used to shape the deliberations and themes across the three-day event. Each day built upon the previous one, moving from thematic discussions to strategic synthesis, and culminating in high-level directives and policy endorsements.

## **Day One**

### **THEMATIC DELIBERATIONS AND SECTORAL DIAGNOSTICS**

The first day of the conclave focused on intensive group-level discussions around Nine thematic areas critical to aquaculture transformation. Participants were divided into specialized groups, each tasked with diagnosing current challenges and recommending actionable interventions.

The discussions converged on nine core conceptual areas that now form the foundation of Andhra Pradesh's forthcoming aquaculture strategy:

1. Organizational Development, Inputs, and Capacity Building: Restructuring departmental roles, capacity strengthening, and cluster-based governance.
2. Real-Time Governance & Technology Integration: GIS mapping, IoT, drones, AI/ML for disease prediction and resource optimization.
3. Credit & Financial Linkages: Structured lending, insurance, fintech linkages, and farmer credit scoring systems.
4. Enterprise Development: Incubation support for startups, MSMEs, FFPOs; improving feed and seed infrastructure.



5. Industry & Market Linkages: Export hubs, certification systems, processing and cold chain infrastructure.
6. Marine & Deep-Sea Fisheries: Scaling operations with GoI-sanctioned vessels, offshore cages, and value-added marine produce.
7. Climate Resilience: Zero-emission aqua zones, green energy, and waste-to-wealth initiatives.
8. Domestic Market Development: Boosting shrimp consumption, ONDC integration, and nutrition-based product strategies.
9. Inland Reservoir Development: GIS-linked management of reservoirs, digital lease/license systems, and cage culture promotion.



This integrated framework laid the groundwork for a policy-driven roadmap with clearly defined deliverables, geared towards achieving a 30% sectoral growth rate by 2029 and positioning Andhra Pradesh as a global aquaculture leader.



## Day Two

### STRATEGIC SYNTHESIS AND PLANNING

The second day focused on consolidating the rich outputs from Day One into a cohesive and strategic action plan. The thematic groups were reorganized into Nine broader strategic clusters to ensure cross-cutting integration and prioritization of initiatives. This synthesis process aimed to align district-level and state-level visions into implementable blueprints.

Each group developed sector-specific strategies aligned with state ambitions. District action plans were drafted to include targets for hatchery modernization, real-time disease surveillance, SHG-led enterprise models, and Blue Skill Bootcamps for rural youth. Proposals were made to operationalize real-time digital payment systems for farmers, integrate Aqua Stack digital platforms, and leverage satellite data and AI for farm-level analytics.



## **Organizational Development and Capacity Building**

The Fisheries Department of Andhra Pradesh is spearheading institutional reforms to scale aquaculture and fisheries growth. A cluster-based management model is being implemented, with around 100 clusters each spanning 2,000 hectares. These will be managed by Fisheries Development Officers and supported by Village Fisheries Assistants. The marine segment will be monitored by 350 Sagarmitras for catch and market data. Staff rationalization is planned to align human resources with district-level aquaculture intensity, alongside efforts to fill 73 critical vacancies. Capacity building is prioritized through institutions like SIFT and APFU, with support from ICAR bodies. International study tours and modernized training centres with IoT and drone tools will upskill officials and farmers, laying the foundation for professionalized governance.

## **Technology and Real-Time Governance**

The conclave underscored the transformative role of IoT, AI, sensors, drones, and automation in aquaculture and fisheries. A comprehensive GIS-based mapping of farms, hatcheries, and water bodies will feed into centralized dashboards to enable real-time monitoring and decision-making. A proposed Centre of Excellence for IoT and AI will focus on analytics, early warnings, and capacity building. Differentiated technology support will be provided to small and large farmers, while GPS tracking of fishing vessels will enhance marine fisheries oversight. The integration of aquaculture, inland, and marine fisheries onto a unified digital platform will revolutionize governance and boost productivity.

## **Credit Access and Financial Inclusion**

A ₹19,521.84 crore five-year credit plan has been proposed to address capital gaps in the fisheries sector, drawing funds from central and state governments, banks, and beneficiaries. Mandatory bank lending for both working and capital loans is recommended, alongside the use of digital technologies for real-time credit scoring and risk management. Crop insurance should cover disease outbreaks and climate risks, backed by IoT-based monitoring. Innovations like the Aqua Credit Card and phased loan disbursement will democratize access to capital. Strengthening cooperatives, SHGs, and FFPOs is vital to bridge formal finance gaps, particularly for small and marginal farmers.

## **Enterprise Development and Industry Enablers**

Enterprise growth is being driven through the promotion of startups, MSMEs, and FFPOs engaged in advanced systems like RAS, Biofloc, and cage culture. Government support includes subsidies, incubation, and CSR incentives. Strengthening feed mills, hatcheries, and seed infrastructure—especially in underserved areas—is a priority. Export clusters with shared facilities for processing and quality assurance are planned in key districts like Krishna and Nellore. Public-private partnerships will be harnessed for infrastructure, R&D, and waste

valorization. Initiatives also aim to boost branding, antibiotic-free certification, and digital marketing, laying the foundation for a globally competitive aquaculture ecosystem.

### **Inland Reservoir Development**

Recognizing the latent potential of inland water bodies, Andhra Pradesh is implementing GIS-based mapping of reservoirs based on a decade of water retention data. This will inform cage culture and integrated farming interventions. Lease and production data will be digitized for better governance and input linkage. AI and ML will be used for predictive analytics, water quality monitoring, and resource optimization. Dashboards will guide policy and improve coordination across departments. With institutional strengthening and community engagement, these inland systems are positioned to become low-investment, high-return engines for inclusive growth.

### **Marine and Deep-Sea Fisheries Development**

Andhra Pradesh is leveraging its extensive coastline and continental shelf through deep-sea fishing vessels and offshore cage culture, supported by PMMSY. Fifty modern vessels are being rolled out to explore deeper waters and harvest underutilized species like tuna. Offshore cage farming is expanding, with successful Pompano harvests already underway. These initiatives reduce coastal pressures and boost high-value production. The state is also building value chains through cluster development, hatcheries, and processing infrastructure, with PPPs driving entrepreneurship and innovation in the marine sector.

### **Climate Resilience and Sustainability**

A climate-adaptive approach is central to Andhra Pradesh's aquaculture vision. Species diversification toward resilient varieties like seabass and crabs is encouraged. Solar energy adoption in aquaculture operations is being promoted to cut emissions and reduce costs. Waste-to-wealth innovations will convert processing waste into high-value products like chitin. Sustainability tracking systems will ensure environmental compliance and enhance export credibility. Institutional coordination is key for mainstreaming green practices, and all initiatives align with the long-term vision of a net-zero "Swarna Andhra Pradesh 2047."

### **Domestic Market Development**

To reduce dependence on exports, domestic market development is being prioritized. Institutional procurement, especially by the defence sector, is proposed to promote shrimp consumption. Nutritional benefits of fish can address malnutrition and anaemia, particularly in vulnerable populations. Ready-to-Cook and Ready-to-Eat product lines are envisioned. Antibiotic-free certification and clear labeling will support consumer trust. Integration with ONDC is underway to connect producers directly with consumers. Awareness campaigns and cold chain expansion are critical to scaling this transition and providing new income streams for fishers.



## Reservoir Digitization and Governance

Reservoir development is also being approached with an emphasis on digitization. Mapping of water bodies, lease data integration, and AI-enabled platforms will facilitate yield forecasting, sustainability tracking, and adaptive planning. These tools ensure better coordination among agencies and more efficient resource use, reinforcing the state's push for inclusive and tech-driven aquaculture.

## Conclusion

Collectively, these nine thematic strategies form a comprehensive blueprint for transforming Andhra Pradesh's fisheries and aquaculture sectors. They emphasize digital governance, environmental sustainability, inclusive financing, and innovation-driven entrepreneurship, positioning the state as a global leader in sustainable seafood production by 2047.



## Andhra Pradesh State Fisheries Policy 2024-29 (Upcoming)

The forthcoming Andhra Pradesh State Fisheries Policy (2024-29) is a direct outcome of the strategic deliberations and actionable insights gathered during the Aquaculture Innovation Tech 2.0 Conclave. It is being crafted to align with the long-term vision of "Swarna Andhra Pradesh 2047" and aims to elevate the fisheries sector to contribute 28-30% of the Gross Value Added (GVA) within the agriculture and allied sectors by 2029, from the current share of 20%.

The policy will integrate the multi-dimensional priorities that emerged from the conclave's nine core thematic areas: organizational strengthening, real-time governance, credit and insurance accessibility, enterprise development, infrastructure expansion, export promotion, sustainability, domestic market growth, and inland reservoir utilization. These areas are considered pivotal to achieving a projected sectoral GVA of ₹3.87 lakh crore by 2029.

***Key policy directions will include:***

*Technological Transformation:* Emphasis on AI, IoT, GIS mapping, and precision aquaculture to enhance productivity and reduce input costs.

*Financial Ecosystem Development:* Streamlined credit mechanisms, interest subvention schemes, and insurance integration to de-risk aquaculture investments.

*Market Orientation:* Strong focus on traceability, value addition, export diversification, and antibiotic-free branding to meet international standards.

*Sustainable Practices:* Promotion of green energy, waste-to-wealth models, and low-emission aqua zones to ensure environmental responsibility.

*Human Capital & Capacity Building:* Institutional strengthening of training bodies like SIFT and partnerships with ICAR and global experts for skill development.

The policy will also provide strategic support to enterprises, including startups, MSMEs, FPOs, and SHGs, ensuring a shift from subsistence to entrepreneurial fisheries. It will institutionalize coordination between state and central bodies (e.g., MPEDA, ICAR, NABARD), and ensure that inland, marine, and aquaculture systems operate under a unified digital governance framework.

Overall, this forward-looking policy will serve as the blueprint for Andhra Pradesh's journey toward becoming a global aquaculture hub by creating a resilient, inclusive, and innovation-driven fisheries ecosystem.

The outcome of these sessions was a coordinated strategic framework covering credit, governance, infrastructure, data, innovation, and market access. These recommendations were peer-reviewed and consolidated for executive presentation on Day Three.

## **Day Three**

### **CHIEF MINISTER'S VISION AND STRATEGIC DIRECTIVES**

The final day of the conclave marked the high-level policy and leadership engagement with the presence of Hon'ble Chief Minister Sri Nara Chandrababu Naidu.

It commenced with the formal welcoming of the Honourable Chief Minister and other distinguished dignitaries by S.P. Tucker, IAS (Retd.), Former Chief Secretary, Vice-Chairman & Director, GFST representing Innovation and Growth, Aquaculture 1.0 & 2.0. In his opening remarks, he underscored the remarkable growth of the fisheries sector, which recorded a 29.6% increase in Gross Value Added (GVA) between 2014 and 2019. He also provided a detailed recap of the discussions and deliberations from the previous two days of the conclave, offering a comprehensive overview of the key themes and insights. Additionally, he shared

preliminary findings from a survey conducted to assess the sector's current landscape and future opportunities.

Following this, Mr. Sridhar Seshadri, Director, Global Foresight and Innovation, delivered a presentation highlighting the key findings from a rapid survey conducted by the Department of Fisheries under the auspices of GFST. This comprehensive survey, carried out between January 5th and 23rd, was designed to provide empirical evidence to support the conclave's discussions and to guide the formulation of future policy frameworks. His presentation offered valuable data-driven insights, setting the stage for informed dialogue on advancing the fisheries sector.

The survey spanned 60,000 farmers across 4.44 lakh acres in eight districts, yielding critical insights that framed the subsequent group presentations and policy deliberations.

- **Technology Adoption:** Only 14% of the surveyed area employs advanced technology. Of the 64,000 acres utilizing technology, 41% incorporate water quality sensors, while drone adoption is negligible at 0.01%.
- **Technology-adopting farms** report average outputs exceeding 50 tonnes with investments of ₹10-30 lakhs. In contrast, non-technological farms yield approximately 10-12 tonnes despite significantly higher investments, often exceeding ₹50 lakhs and, in some instances, ₹2 crores.
- **Insurance Coverage:** 91% of farmers lack insurance coverage, with 97% of aquaculture practitioners remaining uninsured overall. This emphasizes the need for tailored credit and insurance frameworks to safeguard farmer livelihoods.

These findings were presented to the Honourable Chief Minister to contextualize the subsequent group presentations and underscore the urgency of targeted policy interventions.

Following the presentation of the survey results, which highlighted technology as a key driver for Gross Value Added (GVA) growth in the fisheries sector, Mr. Pavan, CEO of Aqua Exchange, presented how IoT and deep-tech solutions are transforming aquaculture by increasing yield, improving transparency, and enabling insurance claims for farmers.

He emphasized that achieving ambitious GVA growth requires boosting domestic shrimp consumption. He explained that IoT and deep-tech provide accurate, real-time data on aquaculture, which, over time, can help farmers secure insurance and access financial credit, reducing risks and increasing profitability.

Mr. Pavan emphasized the significant impact of Aqua Exchange's technology, revealing that it has helped over 4,000 farmers save ₹12 crore, while the Government of Andhra Pradesh has benefited from savings of ₹30 crore. He also highlighted the global adoption of this technology, mentioning its successful implementation in Ecuador, reinforcing its broader relevance and effectiveness.

Following this, Mr. Praneeth from Galaxy Eye delivered a presentation on Advanced AI mapping for traceability in the fisheries sector. He explained how collaborating with the



Defence sector to supply shrimp could boost domestic consumption while addressing anaemia-related health challenges in the state.

With these insights setting the stage, the conclave proceeded to in-depth presentations on key focus areas:

1. Export Promotions
2. Aqua Innovation Technology
3. Credit Group
4. Enterprise Development

These sessions aimed to explore actionable strategies for enhancing the fisheries value chain, fostering technological adoption, and driving sustainable economic growth in the sector.

Key discussion Points on Export Promotions by Mr. Nekkanti Venkat, Managing Director of Nekkanti Sea Foods, focusing on export promotion. Key insights included:

- Ensure farm registration with geo-tagging for Fish & Fishery Products to meet US FDA, EU, and global regulations.
- Promote value-added products to increase GVA, enhance market differentiation, and diversify products—Vietnam (3.9 MT) exports \$12.9 bn, while Andhra Pradesh (5 MT) exports only \$3.5 bn.
- Allow solar power generation up to CMD for captive use to reduce carbon footprint (current cap: 500 KVA).
- Establish an Aqua Quarantine Facility and Centre of Excellence near Visakhapatnam to support 300+ hatcheries.
- Set up a dedicated body (like NECC) to promote fish and fishery products—India's per capita seafood consumption is 9 kg, below the global average of 15 kg and China's 36 kg.
- Enforce strict regulations against banned antibiotics—EU mandates 50% testing of Indian aqua products, and USFDA rejections are rising.
- Adopt best practices for pre-processing as per EIA, MPEDA, and APSADA guidelines.

In his address, the Chief Minister emphasized the pivotal role of aquaculture in rural employment, exports, and sustainable development. He articulated a clear vision to triple the aquaculture GVA by 2028–29 and transform Andhra Pradesh into a global benchmark in fisheries governance and technology deployment.



Several key strategic directives were announced by the Chief Minister:

- Mandatory geo-tagging and traceability for all aquaculture farms in the state.
- Immediate launch of a real-time digital payment system integrated with farm data.
- Promotion of seafood consumption in domestic markets through tie-ups with Defence and Health Departments.
- Implementation of Aqua Stack digital infrastructure across all district fisheries offices within 90 days.
- Declaration of 12 Aquaculture Innovation Zones with modern infrastructure, incubation support, and green energy solutions.

The Chief Minister also called for leveraging AI, blockchain, and IoT technologies to drive transparency, productivity, and compliance. He emphasized the importance of skill development, financial innovation, and institutional convergence in achieving long-term sectoral goals.

Three flagship documents were formally launched during the concluding session:

- **Blue Horizons**, outlining the vision for sustainable aquaculture growth;
- **SmartFish**, detailing the digital transformation strategy using AI and machine learning; and
- **Sea to Serve**, which provides a roadmap for market expansion, traceability, and export value addition.

## Conclusion

The Department of Fisheries, in collaboration with GFST and other ecosystem partners, is now set to implement these recommendations through structured timelines and cross-departmental coordination. The outcomes of this conclave will directly inform the upcoming Andhra Pradesh Fisheries Policy 2024–2029 and serve as a blueprint for India's blue economy ambitions.

The Aquaculture Innovation Tech 2.0 Conclave marked a pivotal step in Andhra Pradesh's vision to transform its fisheries and aquaculture sector into a global benchmark for innovation, sustainability, and economic impact. Held over three days, the conclave brought together an extensive network of stakeholders including farmers, exporters, industry experts, government officials, and researchers. The deliberations, grounded in real-time data and collaborative group work, aimed to formulate a roadmap to triple the Gross Value Added (GVA) of the sector by 2028-29 and expand aquaculture coverage to 10 lakh acres.

At the heart of the conclave was the integration of advanced technologies such as Artificial Intelligence (AI), Internet of Things (IoT), GIS mapping, drones, and real-time monitoring systems. These were positioned not just as enablers of efficiency, but as essential tools to predict disease outbreaks, optimize resource use, and provide data-backed insights for governance and credit access. Emphasis was also placed on ensuring digital traceability, blockchain-enabled supply chain management, and antibiotic-free certification to meet global export standards.

The conclave underscored the critical need for institutional reforms and capacity building. Proposals included rationalizing departmental roles, creating technology clusters, expanding training via SIFT and APFU, and international exposure trips for officials. Financial inclusion was another cornerstone, with a proposed ₹19,521 crore 5-year credit plan, integrated insurance, and digitized claim processing systems to support farmers at every stage.

Enterprise development was addressed by supporting startups, MSMEs, and FPOs in areas like feed production, hatcheries, and value-added seafood processing. Export competitiveness



was to be enhanced through infrastructure development, Integrated Aqua Parks, adherence to global quality norms, and leveraging Free Trade Agreements (FTAs).

In conclusion, it synthesizes the conclave's core objective to build a resilient, tech-enabled, and inclusive aquaculture economy in Andhra Pradesh. Through convergence of policy, innovation, and stakeholder engagement, the state aspires to not only increase its domestic and global market share but also improve livelihoods, ensure sustainability, and contribute meaningfully to India's blue economy. The Department of Fisheries, in collaboration with GFST and other ecosystem partners, is now set to implement these recommendations through structured timelines and cross-departmental coordination. This conclave serves as the foundation for Andhra Pradesh's forthcoming State Fisheries Policy (2024–29), aligning with the vision of Swarna Andhra Pradesh 2047.