



## Transforming Aquaculture in Asia and the Pacific: 3rd High-Level Meeting in Shanghai



The 3rd HighLevel Meeting on Aquaculture Transformation in Asia and the Pacific (HLM-3), held 1–2 July in Shanghai, brought together governments, industry leaders and development partners to drive innovation, investment and sustainability in the region's aquaculture sector. Discussions focused on scaling low cost fish production, making technology adoption easier for small farmers, improving access to finance, and strengthening regional cooperation. The meeting was organised by NACA, the Food and Agriculture Organization of the United Nations (FAO), and Shanghai Ocean University.

This annual series of high-level meetings is a platform for governments, industry leaders, researchers, and development partners to work together towards a shared vision: making aquaculture in the region more efficient, inclusive, resilient, and sustainable through innovation, investment, and partnerships.

### Objectives

Asia and the Pacific account for over 90% of global aquaculture production. Yet, the sector faces growing challenges from resource scarcity and environmental pressures to climate change and shifting market demands. HLM-3 built on earlier events in 2022 and 2023 and focused on:

- Reviewing progress on the Aquaculture Transformation Roadmap and national innovation and investment plans.
- Showcasing innovative technologies, business models, and investment opportunities.
- Strengthening partnerships and identifying priority actions to accelerate transformation by 2030.

### Key takeaways

Over two days of panel discussions, presentations, and open exchanges, participants highlighted key issues, which included:

- **Scaling low-cost fish production:** Key to food security, especially carps, tilapia, and catfish. Profit margins are tight, so technologies must be affordable and easy to adopt.
- **Farmer-focused innovation:** Most farmers are small-scale and need practical, intuitive tools. Building trust in new technologies and improving extension services is essential.
- **Policy and regulatory reform:** Streamlining product approval processes across countries could reduce delays and costs for innovations such as vaccines and feed additives.
- **Genetic improvement:** Selective breeding offers one of the biggest opportunities for productivity gains.
- **Financing and investment gaps:** The region produces most of the world's farmed fish but attracts far less investment than it needs. Financing models must work for smallholders.
- **Knowledge-based farming:** Efficiency gains in water, feed, and energy use require a shift from input-driven to knowledge-driven production.
- **Promoting the positive story of aquaculture:** The sector's contributions to rural livelihoods, food security, and the environment should be more widely communicated.

The meeting concluded that regional cooperation and targeted national actions must accelerate, with a sharper focus on investment strategies that reach small-scale farmers and SMEs. A meeting report will be published in due course.

## Looking ahead

Next steps agreed at the meeting include:

- Advancing the Aquaculture Transformation Roadmap and pilot national plans.
- Expanding the Aquaculture Transformation Monitoring System and AquaHUB platform.
- Deepening engagement with investors to meet the needs of smallholders and SMEs.
- Strengthening partnerships to share knowledge and reduce duplication of effort.
- Tracking progress towards the 4th High-Level Meeting.

## Additional resources

The [programme](#) and videos of the HLM-3 presentations are linked below or available from the [NACA website](#).

We thank Shanghai Ocean University for hosting the event, and all participants for their commitment to advancing sustainable aquaculture in the region.

## Watch the HLM-3 presentations on YouTube

### [Background & objectives of the 3rd High Level Meeting on Aquaculture transformation in Asia-Pacific](#)

This presentation by Eduardo Leaño, Director General of NACA, provides a background and introduction to the 3rd High-Level Meeting on Aquaculture Transformation in the Asia-Pacific Region (HLM-3).

The region accounts for around 90% of global aquaculture production but faces mounting challenges including resource scarcity, environmental pressures, climate change, and shifting global dynamics. Addressing these requires a strategic shift driven by innovation, investment, and stronger partnerships to build more efficient, inclusive, resilient, and sustainable aquatic food systems.

HLM-3 builds on the outcomes of previous high-level meetings and the Aquaculture Transformation White Paper, with a focus on national innovation and investment plans, regional collaboration, and implementation efforts to achieve transformation by 2030.

### [Regional assessment of innovation & investment for aquaculture transformation in Asia-Pacific](#)

This video by Mike Phillips, CEO of FutureFish, explores the current state of aquaculture innovation and investment across the Asia-Pacific region. Technology innovation is advancing, especially for higher-value species, but challenges remain in scaling inclusive value chains and building climate resilience. Despite growth in private investment, significant financing

gaps persist—particularly for SMEs and smallholders, who make up 90% of the sector. National policies, governance, and regulatory environments strongly influence the adoption and scaling of innovations.

The presentation highlights the importance of partnerships, innovation hubs, and better alignment between financing and transformation priorities to achieve sustainable and inclusive aquaculture development.

### [Development of National Innovation & Investment Plans & Aquaculture transformation monitoring system](#)

This video by Tipparat Pongthanapanich, FAO, provides an overview of the development of National Innovation and Investment Plans (NIIPs) and the regional Aquaculture Transformation Monitoring, Evaluation and Learning System (ATMS). NIIPs aim to guide each country's strategic priorities for innovation and investment in aquaculture through 2030, aligned with the regional transformation vision. ATMS will support regional progress tracking and knowledge sharing. An FAO-led technical cooperation project is supporting the pilot development of NIIPs and ATMS in four countries - India, Thailand, Viet Nam, and the Philippines - with a view to wider regional application. Key components include strategic visioning, policy alignment, project formulation, and robust monitoring systems to drive inclusive, sustainable aquaculture development.

### [Assessing aquaculture transformation initiatives in China](#)

This video by Wenbo Zhang, Shanghai Ocean University, presents an overview of China's aquaculture transformation journey as part of the broader "Blue Revolution." It highlights trends in global aquatic animal production and outlines key challenges such as land use changes and environmental pressures.

The presentation details a series of national policies and strategies introduced since 2019 to promote green, healthy, and high-quality aquaculture development ranging from pond standardisation and deep-sea farming to innovation-driven investment and value chain upgrading. It also reviews recent actions supporting ecological farming, wastewater treatment, reduced chemical use, and improved germplasm resources, and introduces efforts to assess the impact of these transformation initiatives across the sector.

### [Reimagine Fish Farming with RAS-P.I.N.A.S](#)

This presentation by Elisa Claire Sy of E-Primate, showcases how RAS-P.I.N.A.S - a closed-loop, water-efficient technology - enables high-density, land-based fish farming using biofiltration, aeration, and mechanical treatment strategies. Discover how RAS conserves water and land, minimises disease risk, and offers flexibility in farm siting, while recognising the trade-offs of energy demands and infrastructure costs. Learn why RAS is gaining momentum as a key innovation in Asia's sustainable aquaculture future.

### [Thailand: Innovation showcase for aquaculture transformation](#)

This video by Montakan Tamtin, Department of Fisheries, features two presentations from Thailand's delegation to the 3rd High-Level Meeting on Aquaculture Transformation in Asia and the Pacific Region. The first showcases innovation

and nature-based solutions in aquaculture via the IDRC-funded AQUADAPT Project; the second presents Thailand's pilot initiative for low-carbon shrimp farming under an FAO Technical Cooperation Programme.

#### Innovations on alternatives to antimicrobials in aquaculture

This video by Chokanan Prompichai, NACA, presents two promising innovations aimed at reducing antimicrobial use (AMU) in aquaculture, showcased as part of Thailand's National Innovation and Investment Plan (NIIP) and via the IDRC-funded InnoVet-AMR 2.0 Project. NanoVac, developed by AIT, uses nanobubbles to deliver vaccines to tilapia, while ShrimpGuard, developed by BIOTEC and KU, is a bacteriophage-based solution for managing shrimp diseases. Both technologies offer potential to combat antimicrobial resistance (AMR) without leaving chemical residues. The presentation compares their readiness, challenges, and adoption, incorporating feedback from shrimp farmers across Thailand. It highlights the need for cost-effective, easy-to-use solutions that align with farmers' real-world needs and regulatory frameworks.

#### Investing in innovation for transforming aquatic food systems

This video by Tipparat Pongthanapanich, FAO, is focussed on the critical role of investment in transforming aquatic food systems. The discussion explores strategies to mobilise

finance from private capital, public investment, and development finance to meet the region's substantial innovation needs. Topics include how to support SMEs and start-ups, bridge early- to late-stage funding gaps, and manage investment risks. With Asian aquaculture dominating global production but receiving limited venture capital, the session calls for coordinated action to unlock the sector's full potential for sustainable growth, jobs, and food security.

#### Summary of HLM-3 and next steps

This video presents a summary of key insights and forward-looking actions from the closing session of the 3rd High-Level Meeting on Aquaculture Transformation in the Asia-Pacific Region. It highlights the critical role of low-cost fish for food security, the need for intuitive technologies suited to small-holders, and the barriers posed by regulation and financing gaps. Key themes include the importance of genetic improvement, knowledge-based farming, improved access to expertise, and alignment of incentives for sustainable and profitable aquaculture. The session emphasises inclusive investment strategies, farmer integration into financial systems, and the need for regional coordination and collaboration to drive transformation through 2030.

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## Thailand to chart aquaculture transformation plan at Bangkok workshop

Bangkok, 21–22 October 2025 - Thailand will convene a two-day workshop at the Department of Fisheries to shape a National Innovation and Investment Plan (NIIP) for aquaculture. The meeting forms part of FAO's Technical Cooperation Programme project TCP/RAS/4004, implemented with NACA, which is supporting India, the Philippines, Thailand and Viet Nam to prepare NIIPs and link them into a shared Aquaculture Transformation Monitoring, Evaluation and Learning System (ATMS) for Asia and the Pacific.

### Blue Transformation: from vision to implementation

FAO's Blue Transformation sets a 2030 direction for aquatic food systems that is not simply about producing more, but producing better. For aquaculture, this means climate-smart and lower-carbon growth, greater resource efficiency, strengthened aquatic animal health, and broader social inclusion along the value chain. In Asia and the Pacific, FAO and NACA translated this direction into a regional White Paper (2022) and an action guide (2023) that show how countries can move from high-level goals to practical reforms, investment pipelines and measurable results.

Within this approach, the NIIP serves as the national vehicle for action. It defines a shared sector vision and the future state Thailand aims to reach; identifies bottlenecks that

impede progress; prioritises areas for policy reform, innovation and investment; and assembles a shortlist of flagship programmes and projects. It also sets out enabling measures such as standards, permitting, extension and digital services; proposes financing pathways that blend public expenditure with private capital; and specifies the data, roles and timelines needed to manage delivery and adjust course.

### Inside the Bangkok workshop

The programme is designed to move from context to action. Short technical briefings will situate Thailand's work within the regional project and illustrate how other countries have approached NIIP design. Facilitated sessions will then work through the NIIP steps. Participants will review recent performance and development trends in Thai aquaculture and map system bottlenecks such as input costs, biosecurity, market access, environmental compliance or workforce skills. They will frame a transformation vision for Thailand that reflects national priorities while aligning with regional targets, describing the future state in terms of resilience to climate shocks, lower emissions intensity, improved biosecurity and welfare, fair participation along the value chain and global competitiveness.

The discussion will organise reforms and investments into practical pathways: technology adoption and innovation; aquatic animal health and biosecurity; environmental



performance and water quality; data, traceability and market standards; finance, insurance and risk-sharing; and skills, extension and digital advisory services. Participants will outline an initial tranche of flagship programmes and projects suitable for development partners and private investors, with indicative scope and expected outcomes. Financing options will be considered, including how to combine public budgets, concessional resources and private capital, and where guarantees or insurance could help crowd-in investment. The meeting will agree immediate next steps and responsibilities for completing the NIIP, along with the data and milestones required for implementation.

## Connecting Thailand's NIIP to the regional monitoring system

A core deliverable of the Technical Cooperation Project is a regional ATMS that allows countries to track progress in a comparable way and to learn from one another. Thailand's NIIP will be linked to this system through harmonised indicators and regular reporting. The ATMS is designed to establish a common baseline foreseen for 2026; enable comparison across countries on productivity, environmental performance, climate resilience, aquatic animal health and welfare, social inclusion and investment mobilisation; and provide an evidence base for policy dialogue and for signalling bankable opportunities to public and private investors. Periodic regional

syntheses, including an initial consolidated report targeted for 2028, will highlight trends, gaps and emerging good practice that can be replicated or adapted. For Thailand, this linkage means national progress will be visible in a regional frame. The country will be able to benchmark outcomes, share lessons, and signal investment-ready programmes that align with both national objectives and the wider regional transformation.

## Planned outcomes

By the close of the workshop, Thailand will have a well-defined NIIP draft that sets a clear transformation vision, prioritises a manageable set of reforms and investments, identifies a first set of flagship programmes for detailed design, outlines feasible financing pathways, and assigns responsibilities, timelines and data requirements for implementation. Alignment with the ATMS will support transparent tracking of results over time - such as adoption of climate-smart practices, improved biosecurity, reduced environmental footprint, increased participation by women and smallholders, and mobilisation of private investment - while enabling timely adjustments as conditions evolve. By situating national planning within a coherent regional effort, the Bangkok workshop is intended to help Thailand progress from strategy to delivery - contributing to a more sustainable, competitive and inclusive aquaculture sector, and to shared monitoring and learning across Asia and the Pacific.

## Third Asia-Pacific Laboratory Proficiency Testing Program for Aquatic Animal Diseases launched



The third Asia-Pacific Laboratory Proficiency Testing Program for Aquatic Animal Diseases (APL-PT) has been launched at a workshop convened in Bangkok, Thailand, from 28–29 August 2025. The workshop brought together 50 laboratory

representatives, government officials, and technical experts from thirteen countries and territories to strengthen cooperation in aquatic animal health diagnostics.

The APL-PT program is a long-standing collaboration between NACA, the Australian Government Department of Agriculture, Fisheries and Forestry (DAFF), and CSIRO's Australian Centre for Disease Preparedness (ACDP). Its objective is to improve the accuracy and reliability of aquatic animal disease diagnostics across the Asia-Pacific through structured, region-wide proficiency testing and capacity building. Strengthening laboratory performance not only safeguards aquaculture livelihoods, but also underpins safe trade, protects aquatic resources, and contributes to regional food security.

## Building on more than a decade of progress

Australia first launched a regional proficiency testing program in 2012, engaging 41 laboratories from 12 countries to test for 10 priority pathogens of fish and crustaceans. Over four rounds of testing, every laboratory improved their diagnostic performance, with relative gains of 7–32 percent.

The second program, conducted from 2019 to 2023, involved 34 laboratories from 13 countries and delivered eight rounds of testing over four years. Again, the results showed measurable improvements in diagnostic capacity, helping countries strengthen their aquatic animal health systems and build confidence in disease reporting.

This third program, beginning in 2025, builds on the legacy. It will expand opportunities for laboratories to benchmark their performance, harmonise methods, and share experiences on technical challenges.

## Workshop activities

The two-day workshop combined presentations, technical sessions, and group discussions. Key topics included:

- The importance of aquatic animal disease diagnostics for trade and transboundary disease detection.
- Overview of the new APL-PT program design and quality control systems.

- Technical presentations on PCR laboratory design, workflows, sample preparation, method validation, and use of controls.
- Updates to the World Organisation for Animal Health (WOAH) Aquatic Manual.
- Quality assurance and accreditation (ISO 17025, ISO 17043).
- Breakout sessions on troubleshooting, standard operating procedures, internal audits, and future directions of the APL-PT program.

Participants also explored options for the future operation of the program, including the selection of pathogens and panel designs, and discussed strategies to sustain collaboration and continuous improvement in laboratory performance.

## Thanks to our sponsors and partners

NACA extends its sincere appreciation to the Australian Government Department of Agriculture, Fisheries and Forestry, and to CSIRO's Australian Centre for Disease Preparedness, for their generous support and leadership in sponsoring the program and organising the workshop. Their continued investment has been instrumental in strengthening regional diagnostic capacity and in fostering a spirit of cooperation among Asia-Pacific laboratories.

NACA also thanks all participating laboratories for their commitment to improving aquatic animal health in the region. Through collaborative initiatives like the APL-PT, Asia-Pacific countries are better equipped to detect and manage aquatic animal diseases, supporting sustainable aquaculture and regional food security.



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