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WAVES Project in Malaysia: Planning for a Sustainable and Climate-Resilient Bivalve Industry

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Introduction: Why Malaysia's Bivalve Industry Matters

Malaysia's bivalve industry, which mainly consists of blood cockles, green mussels, and oysters, is a lifeline for many coastal communities. In 2024, the country produced over 20,000 tonnes of these shellfish, providing both a source of income and nutritious, low-carbon seafood for Malaysians. Beyond supporting livelihoods, the sector contributes to national food security and helps maintain healthy coastal ecosystems.

Yet, bivalve farmers face growing challenges, including climate change, water quality issues, disease risks, and fluctuating market demand, which put pressure on production and profitability. To help the industry adapt and thrive, Malaysia is participating in the Working towards Adaptive and Versatile Environmental Sustainability (WAVES) project, a three-year regional initiative supporting sustainable aquaculture in Southeast Asia.

About the WAVES Project

The WAVES project, led by the University of Southampton and funded by UK Research and Innovation (UKRI), aims to strengthen diversified mollusc aquaculture to support resilient farming systems and sustainable growth of the sector in Southeast Asia.

In Malaysia, project investigators include the Centre for Marine and Coastal Studies (CEMACS, Universiti Sains Malaysia) and WorldFish. To better understand how key bivalve species are currently farmed and where improvements can be made, they work with international partners from the UK, including the University of Stirling and the Royal Veterinary College, to map the systems of major bivalve production pathways. Meanwhile, the University of Southampton and Northumbria University will work with local partners to develop geospatial tools to identify suitable and climate-resilient farming areas. To inform climate-resilient strategies, CEMACS will work with the project lead to generate biological data and run trials with the oyster.

In Malaysia, WAVES brings together farmers, researchers, government agencies, and industry stakeholders to:

- Understand how mollusc production systems function across the value chain
- Identify challenges, gaps, and opportunities for improvement
- Explore future scenarios for production, consumption, trade, and climate impacts

Similar activities are also underway in Vietnam and Indonesia, encouraging regional learning and collaboration.

Highlights of the Malaysia Mollusc Systems Workshop: Seeing the Whole System

On 22–23 September 2025, 22 stakeholders gathered in Penang for a Mollusc Systems Mapping Workshop, organized by WorldFish in collaboration with CEMACS (Universiti Sains Malaysia), the Royal Veterinary College, and the University of Stirling, UK. Participants included farmers, traders, researchers, and representatives from LKIM and the Department of Fisheries (DoF). The workshop used a systems thinking approach to map how resources, activities, and products flow across the blood cockle, green mussel, and oyster value chains. Discussions highlighted challenges, including:

- Environmental pressures such as water quality and climate variability
- Market access and pricing issues
- Coordination and governance gaps across agencies and communities

Farmers and stakeholders from Penang, Kedah, Perak, Selangor, Johor, Terengganu, and Sarawak came together to share local experiences, highlight key farming challenges, and suggest practical solutions to address them.

Building Networks and Planning Ahead

A key outcome of the workshop was the formation of a national bivalve stakeholder network and the production of system map diagrams for key bivalve species, which are currently undergoing refinement. The WAVES bivalve network ('Rangkaian Industri Moluska') will allow participants to continue sharing knowledge, validating findings, and joining in project activities (stakeholders from the bivalve sector who would like to join the network may contact l.khor@cgiar.org).

In a follow-up foresight modelling workshop, Malaysian representatives joined counterparts from Vietnam and Indonesia to explore different



scenarios for the mollusc economy. They looked at how climate change, market shifts, and policy decisions could affect production and consumption. The findings will help guide planning for a more sustainable, inclusive, and climate-resilient bivalve sector.

Next Steps for Malaysia's Bivalve Industry

The WAVES project partners are now working closely with the Department of Fisheries to validate workshop findings. Next steps include:

- Collecting data on socio-economic, environmental, and policy factors that influence the industry
- Mapping key bivalve farming sites across Malaysia
- Developing economic projections to guide future investments and planning

A final stakeholder consultation workshop is planned for 2027, bringing together a wider network of stakeholders to prioritise practical actions for improving the sustainability of bivalve production in the country. The project will also collaborate with government agencies to draft a policy brief and action plan, providing guidance for the bivalve industry beyond the WAVES project timeline.

What you need to know about the WAVES project and its link to Malaysia's bivalve sector

- Malaysia's bivalve sector is an important source of income, nutrition, and low-carbon seafood for both coastal and urban communities.
- Rising climate change impacts, environmental pressures, and market challenges highlight the need for strategic planning.
- The WAVES project supports the sector by mapping production systems, sharing knowledge among stakeholders, and exploring future scenarios.
- Building networks and engagement with farmers, researchers, and government officers improves coordination and resilience within the industry.
- Data, foresight tools, and new information synthesized from WAVES will help guide stakeholders to make informed decisions for a sustainable and climate-resilient bivalve industry.



Fig. 1: WAVES project at the wet lab in CEMACS (Penang).



Fig. 2: Briefing all the project partners at the wet lab in CEMACS, Penang.