

Terms of Reference

Title	Technical Training on Equipment Maintenance, Safety, and Cost Efficiency in Intensive Shrimp Farming
Client	Phuoc Binh, Toan Thang and Hoa Nho Cooperatives
Country	Vietnam
Project number	24ATVN-9764
Assignment number	September – November, 2025
Period	
Cooperative advisors (CAs)	Le Anh Tuan, Pham Nguyen Duy and Nguyen Thanh Trang
Mode of Agripool involvement	No agripooler

1. BACKGROUND

The Mekong Delta remains the heart of Vietnam’s shrimp production, yet cooperatives operating in this sector face structural and technical limitations that restrict their capacity to scale, comply with international sustainability standards, and attract investment. Shrimp farming is increasingly capital-intensive and technology-driven, and without strong technical know-how, cooperatives are exposed to production inefficiencies, safety risks, and rising operational costs.

The “***Making Aquaculture Cooperatives in the Mekong Delta Inclusive and Bankable (MACIB)***” project, funded by the Dutch Ministry of Foreign Affairs and implemented by Agriterra, is designed to transform shrimp cooperatives into inclusive, professional, and market-driven entities. MACIB supports the shift from fragmented smallholder operations to cooperative-led, sustainable aquaculture enterprises through targeted capacity building, policy advocacy, and partnership facilitation with the private sector and financial institutions.

According to the **MACIB Mid-Term Review (July 2025)** and the **Cooperative Assessment Report**, a critical barrier to cooperative bankability and certification readiness is the lack of technical protocols and workforce safety measures in production operations. Equipment such as paddlewheel aerators, bottom aeration systems, and generators are often improperly maintained, leading to increased breakdowns, crop losses, and excessive energy costs. Furthermore, **over 60% of assessed cooperatives** lack structured guidance or enforcement of labor safety norms, including the use of personal protective equipment (PPE), chemical handling protocols, or electrical safety SOPs.

The “**Cẩm nang hướng dẫn kỹ thuật nuôi tôm cho HTX**” (Technical Handbook for Cooperatives) highlights persistent risks linked to unsafe operations, limited technical training, and inconsistent equipment maintenance practices. These issues are exacerbated in intensive shrimp farming environments where equipment failure or labor accidents can result in significant financial and ecological loss. Additionally, the **2023 Needs**

Assessment Survey revealed that many farmers are unaware of cost-saving techniques for electricity and chemical usage, and they frequently lack access to credible technical advisory services.

Within the MACIB portfolio, **three cooperatives—Phuoc Binh (Vinh Long), Toan Thang, and Hoa Nho (Can Tho)**—have been identified as applying **intensive shrimp farming models**. These cooperatives manage a substantial area of shrimp ponds and operate high-risk, energy- and input-intensive production systems requiring continuous operation of mechanical and electrical equipment such as aerators and oxygenation systems. However, assessments have shown gaps in farm-level technical management, periodic maintenance, worker safety, and responsible chemical/electricity use.

In response, MACIB is initiating a structured technical training program tailored to cooperative realities, with a strong focus on safety, efficiency, and operational reliability. This training will address the following critical needs:

- **Preventive maintenance** of key production equipment (paddlewheels, bottom diffusers, generators);
- **Workplace safety regulations and PPE enforcement** at shrimp farms;
- **Electrical system operation and risk management**;
- **Safe chemical handling** and environmental precautions;
- **Energy-saving strategies** to lower electricity costs;
- **Development of internal SOPs and safety rules** to institutionalize good practices.

This training aligns with MACIB's broader goal of enhancing cooperatives' technical readiness for sustainability certification (e.g., ASC, organic) and unlocking access to concessional financing. By embedding these practices into daily operations, cooperatives will be better positioned to manage production risks, reduce costs, and meet the expectations of buyers, certifiers, and financial partners.

2. OBJECTIVES

The technical training aims to directly respond to operational gaps and safety concerns identified across shrimp cooperatives under the MACIB project. It will deliver hands-on, context-specific capacity building to ensure cooperative members, technicians, and board members possess the knowledge and skills necessary to operate safe, efficient, and resilient shrimp farming systems. The specific objectives are:

- **Enhance technical competencies** among cooperative members and staff in **periodic maintenance** of essential aquaculture infrastructure—specifically paddlewheel aerators, bottom aeration systems, and backup generators—to ensure equipment longevity, reduce breakdown risk, and stabilize farm productivity.
- **Strengthen compliance with occupational health and safety (OHS) standards** by providing tailored guidance on the proper use of personal protective equipment (PPE), emergency response planning, safe electrical operations, and risk reduction protocols, contributing to a safer working environment and alignment with both national labor regulations and international certification requirements (e.g., ASC, organic).
- **Increase awareness and preparedness** among farmers and cooperative technicians on the various **accident and injury risks** commonly encountered in intensive shrimp farming—such as electrical shocks, chemical exposure, and mechanical hazards—and empower them with preventive strategies and emergency protocols.
- **Promote responsible and cost-effective resource management**, especially in relation to the **use of electricity and chemicals**, by introducing practical tools, real-farm case studies, and best practices that help reduce input costs, improve efficiency, and minimize environmental impact.

- **Support the institutionalization of farm-level good practices** by guiding cooperatives in the **development and adoption of clear Standard Operating Procedures (SOPs)** for equipment maintenance, chemical handling, electricity management, and labor safety—ensuring consistency, traceability, and continuous improvement in farm operations.

This training will not only address technical shortfalls but also help shift cooperative mindsets toward a culture of preventive maintenance, structured risk management, and performance monitoring, ultimately improving their ability to attract investment and comply with sustainability standards.

3. SCOPE OF WORK

The selected consultant or technical training provider will be responsible for designing, customizing, and delivering a **practical, cooperative-level training program** that addresses key gaps in aquaculture operations, occupational safety, and cost efficiency. The training will be delivered in an interactive and field-oriented format, using demonstrations, group discussions, and visual aids to ensure high applicability and farmer uptake.

The consultant will conduct training sessions across selected cooperatives in the Mekong Delta and is expected to tailor content to cooperative capacity, farming models (intensive/semi-intensive), and site-specific risks. The scope includes the following core thematic modules:

A. Farm Equipment Maintenance

This module aims to improve the reliability and efficiency of critical shrimp farming equipment by introducing structured and preventive maintenance practices.

- Develop and deliver **step-by-step maintenance protocols** for:
 - **Paddlewheel aerators (quạt nước)** – ensuring optimal oxygenation and energy efficiency.
 - **Bottom aeration systems (hệ thống cung cấp oxy đáy)** – focusing on diffuser maintenance, pipe checks, and compressor servicing.
 - **Backup generators (máy phát điện)** – covering fuel system checks, oil changes, and emergency readiness.
- Demonstrate proper tools, schedules, and logs for regular inspections and maintenance tracking.

B. Occupational Safety and Health (OSH)

This module targets labor safety risk mitigation and aims to institutionalize compliance with farm-level safety regulations, aligned with Vietnam’s labor law and international aquaculture certification schemes.

- Introduce and explain cooperative-specific **“Nội quy an toàn lao động”** (Farm Safety Rules), including signage and enforcement responsibilities.
- Provide training on **mandatory use of Personal Protective Equipment (PPE)** (e.g., gloves, boots, masks, life vests), including proper storage and replacement cycles.
- Deliver **safety protocols for high-risk operations** (e.g., electrical work, machinery operation, water pumping) and working in enclosed/confined spaces.
- Build capacity on **emergency response measures**: electrocution, fire hazards, chemical spills, and accident reporting procedures.

C. Chemical Use Management

This module promotes safe and responsible chemical use to ensure environmental sustainability, food safety, and health protection.

- Train participants on **safe handling, storage, mixing, and disposal** of aquaculture-related chemicals (e.g., chlorine, lime, antibiotics, probiotics).

- Guide farmers in **accurate dosage calculations**, timing, and use of **record-keeping templates** to ensure traceability.
- Raise awareness of **environmental risks and market compliance**, especially related to overuse, banned substances, and residues in final products.

D. Electrical Safety and Cost Optimization

This module addresses electrical risk prevention and introduces strategies to reduce energy-related costs, which are among the top cost drivers in shrimp farming.

- Provide **hands-on training in the safe operation and inspection** of electrical systems, including cabling, switchboards, motors, and lighting.
- Recommend **energy-saving measures**, including optimal operation of aerators, pump scheduling, use of timers, and grouping systems.
- Introduce basic **load balancing techniques** and **routine checks** to detect short circuits, overheating, and inefficiencies in energy use.

All training materials, tools, and SOP templates developed during this assignment must be adapted to the literacy level and operational context of cooperative members and will be reviewed and approved by Agriterra prior to deployment. The consultant is also expected to identify champion farmers or technicians in each cooperative for follow-up coaching and peer learning facilitation.

4. DELIVERABLES

The consultant is expected to deliver high-quality, practical outputs that can be immediately applied by cooperative members and staff. All deliverables must be developed in both English and Vietnamese, reviewed by Agriterra, and formatted to ensure usability by farmer-led cooperatives with varying literacy levels. The required deliverables include:

1. Training Materials Package

A complete set of customized training materials that can be used during the sessions and as reference documents by cooperatives post-training. These materials must be designed to be user-friendly, pictorial where appropriate, and tailored for field conditions. The package must include:

- **Slide decks (PowerPoint or equivalent)** for each training module, including case studies, good practices, and risk illustrations.
- **Standard Operating Procedure (SOP) templates** for key tasks such as equipment maintenance, chemical use, and emergency response.
- **Visual aids and instructional posters** suitable for display at farms (e.g., PPE guides, electrical safety tips, chemical mixing procedures).
- **Pocket-size manuals or handouts** for cooperative members to take home.

2. Comprehensive Training Report

A consolidated report documenting the design, delivery, and outcomes of the training program, submitted within 10 working days of the final session. The report should include:

- **Participant list**, disaggregated by gender, age group (if available), and role (e.g., board member, technician, farmer).
- **Pre- and post-training knowledge assessment results**, highlighting learning outcomes and areas requiring follow-up.
- **Photo documentation** of training sessions, practical demonstrations, and group activities, including captions and participant consent.
- **Session-wise summary of key feedback, observations, and recommendations** for each cooperative trained, with suggestions for further coaching or institutional adoption of good practices.

3. Farm Safety Checklist Template

A practical, easy-to-use “**Farm Safety and Maintenance Checklist**” designed for routine use by cooperatives. This tool will help monitor compliance with safety and maintenance protocols across shrimp farms and should include:

- Daily, weekly, and monthly inspection items (equipment, PPE use, electrical hazards, chemical storage).
- Roles and responsibilities (e.g., assigned technician, board oversight).
- Space for tracking completion, comments, and follow-up actions.

All deliverables must be submitted in editable formats (Word, Excel, PowerPoint, and PDF) and become part of the cooperative training toolkit under the MACIB project. Agriterra reserves the right to further adapt and replicate the materials across other cooperatives or regions as needed.

5. TENTATIVE TIMELINE

The assignment is expected to take place over a 3-month period, from **September to November 2025**, with structured phases for material development, cooperative-level training delivery, and post-training reporting. The timeline allows for sufficient time to ensure quality assurance, accommodate cooperative schedules, and incorporate field-level realities.

Activity	Timeframe	Responsible
Preparation and Approval of Training Materials	02–13 September 2025	Consultant + Agriterra
- Drafting training content, SOPs, and visual tools		
- Review and approval by Agriterra		
Training Delivery at Cooperatives	16 September – 31 October 2025	Consultant
- Coordination with cooperative leaders		
- Delivery of on-site training (estimated 5–7 days/cooperative)		
- Practical demonstrations and knowledge assessment		
Final Reporting and Deliverables Submission	01–15 November 2025	Consultant
- Submission of training report, photos, checklist, SOP templates		
- Review and final approval by Agriterra		

Note: Exact training dates per cooperative will be finalized in coordination with Agriterra and cooperative leaders to align with local farming schedules and avoid peak harvest periods.

6. QUALIFICATIONS OF CONSULTANT

To ensure the effectiveness, relevance, and practical applicability of the training, the selected consultant or training provider must meet the following minimum qualifications:

- **Demonstrated expertise in technical training for aquaculture operations**, with a focus on shrimp farming systems, equipment use, and farm management practices. Preference will be given to candidates with prior experience in conducting field-based or hands-on training for aquaculture stakeholders.

- **Strong technical knowledge of intensive and semi-intensive shrimp farming systems**, particularly the operation and maintenance of paddlewheel aerators, bottom aeration systems, electrical installations, and backup generators. The trainer must be able to translate complex technical concepts into simple, actionable practices suitable for farmer-level implementation.
- **Proven understanding of occupational health and safety (OHS) regulations and risk management frameworks**, especially as applied to aquaculture or broader agricultural production environments. Familiarity with national labor laws and relevant certification standards (e.g., ASC, VietGAP, organic) is highly desirable.
- **Experience working directly with farmer organizations, aquaculture cooperatives, or producer groups**, particularly in capacity-building, technical advisory, or cooperative development contexts. Knowledge of cooperative governance and dynamics will be considered an asset.
- **Excellent facilitation, communication, and interpersonal skills in Vietnamese**, with the ability to engage diverse audiences—including cooperative leaders, technicians, and smallholder farmers—through interactive and participatory training methods. Basic English reading comprehension is a plus for reviewing technical documentation.

7. TEAMWORK CORDINATION

The consultant/training provider will work under the overall guidance of the **Agriterra Vietnam team**, which is responsible for technical oversight, quality assurance, and alignment with the MACIB project’s objectives. Specific coordination and supervision arrangements are as follows:

- The **training program will be organized and managed by Agriterra Vietnam** under the MACIB project framework. Agriterra will provide technical inputs, review training content, and ensure that the sessions contribute to broader cooperative strengthening and certification-readiness efforts.
- The consultant will **coordinate directly with cooperative boards and focal persons** to finalize training dates, venue arrangements, participant mobilization, and on-site logistics. The consultant is expected to adapt to the schedules and operational realities of each cooperative, including seasonal farming activities and local availability.
- **All training content, materials, and communication tools must be submitted to Agriterra for review and formal approval** before delivery. Agriterra reserves the right to request revisions to ensure consistency with project messaging, technical accuracy, and farmer accessibility.
- Throughout the assignment, the consultant is expected to maintain close communication with Agriterra’s technical advisor(s), promptly flagging any risks, delays, or issues encountered during coordination or implementation.

8. CONSULTACY DAYS

For this assignment, which targets three intensive shrimp farming cooperatives: **Phuoc Binh, Toan Thang, and Hoa Nho**—the total number of advisory days is estimated at **19–22 working days**, broken down as follows:

- **Preparation & Material Development:** 6 days: (including content adaptation to local farming systems and SOP drafting)
- **Coordination & Scheduling:** 2 days (with Agriterra and cooperative leadership)
- **Training Delivery:** 6–7 days: (estimated 2 days per cooperative for full delivery and travel)
- **Final Reporting & Deliverables:** 4 days: (including disaggregated reporting per cooperative and checklist templates)

- **Optional Post-Training Support:** 1–2 days: (remote coaching or technical clarification if requested)

Note: The total advisory days are tailored to cover three cooperatives. Any expansion beyond these (e.g., additional cooperatives or refresher sessions) will require approximately **1.5 additional days per cooperative**, depending on travel distance, content depth, and customization needs.

9. APPLICATION AND SELECTION PROCESS

Interested consultants or consulting teams are invited to submit a complete application package that demonstrates their capacity and suitability for delivering this assignment on **Technical Training on Equipment Maintenance, Safety, and Cost Efficiency in Intensive Shrimp Farming**.

Application Package Requirements:

- **Cover Letter:** Clearly stating the applicant's interest in the assignment, highlighting relevant qualifications, prior training experience, and outlining suitability for the role.
- **Technical Proposal:** Presenting the proposed training methodology, curriculum outline, tools, and work plan, including how the consultant will address both theoretical and hands-on training needs. Availability to deliver the assignment within the proposed timeline should also be indicated.
- **Financial Proposal:** Detailing the daily consultancy rate in VND (inclusive of taxes) with a cost breakdown covering facilitation, training materials, and any travel or logistical requirements.
- **Updated CV(s):** Providing detailed qualifications and professional experience of the consultant(s), with at least two references. Previous assignments related to aquaculture, equipment maintenance, safety training, or cost management should be attached as evidence of relevant expertise.

Submission Guidelines:

- All application documents must be submitted in **English**.
- Please send the full package by email with the subject line: *"Consultant – Training on Equipment Maintenance, Safety & Cost Efficiency in Intensive Shrimp Farming (MACIB Project)"*
- Email submissions should be sent to: **vietnam@agriterra.org**

Selection Process:

- Only shortlisted candidates will be contacted and invited for an interview.
- The closing date for applications is **17:00 (Vietnam time), August 20, 2025**.

Agriterra, for cooperatives

We are a purpose-driven organisation, aimed at strengthening farmer cooperatives in 13 countries in Africa and Asia. Agriterra's wheel of impact depicts how strong farmer cooperatives contribute to societal development and the relevance to many of the Sustainable Development Goals of the United Nations.

Positively impacting farmer cooperatives is at the heart of our identity and is reflected in our legal entity as a Dutch non-profit foundation.



Agriterra provides high quality and hands-on advice, training and exchange services to farmer cooperatives with maximum impact to support dynamic, economic and sustainably strong and productive rural areas. We draw on a century of cooperative knowledge in the Netherlands shared through our extensive network in the Dutch agri-food sector. These Agripool experts from farmer organisations across the world work with Cooperative advisors from our country offices, supported by staff teams in the Netherlands.

In 2022 Agriterra worked together with 579 farmer organisations, trained 8,989 people and 3,808,366 farmers were reached.