POLICY BRIEF

Challenges to Expanding Aquaculture Innovation and Optimization by Using Virtual Extension Services

Adopting innovations has been a serious problem for small-scale fish farmers in Indonesia. This research aimed to (1) explore the constraints to innovations in aquaculture encountered by small-scale fish farmers in two Indonesian regencies, and (2) develop suggestions for policy makers. The study used multi-stakeholder methods from the guidebook Rapid Appraisal of Agriculture Innovation System (RAAIS).

In both locations the market opportunities were somewhat different, but opinions about the challenges converged in the same direction. In both sites, all stakeholders agreed that their top constraint was that the limited number of contacts by extension agents made it impossible for them to supervise and advise all fish farmers in the villages.

Thus, an alternative strategy to more intensive contacts requiring the employment of more agents would be to complement the sparse meetings with a "virtual extension service". A virtual extension service uses social media, such as WhatsApp, to promote technological innovations and to supervise virtually through the Whatsapp groups created by the extension services or whoever is responsible for supervision.

BACKGROUND

Indonesia is famously known as one of the world's largest seafood contributors in the world. It ranks third in global seafood production in Asia, after China and India [3]. The country's aquaculture industry has also grown very fast in the recent years, with more than 3,8 million fish farmers in 2014. Majority of these are small-scale fish farmers[4]. Unfortunately, with limited capacity, small scale fish farmers remain vulnerable for sudden shifts of product prices, water quality and other natural hazards while facing many social challenges[1,2]. Finding possible solution to these challenges, is therefore, urgently needed.

THE RESEARCH

To explore the constraints encountered by Indonesian small scale fish farmers in adopting innovations for aquaculture, this research focused on the regencies of Demak and Brebes. The two coastal sites were chosen as both were experiencing a similar situation that required innovation. Both were:

- impacted by abrasion;
- having mangrove restoration projects;
- dominated by small-scale fish farmers using traditional tambaks (brackish water ponds).

Lecturers from the Aquaculture Department, Faculty of Fisheries & Marine Sciences, Diponegoro University, Indonesia, carried out this research in collaboration with researchers from Wageningen University & Research, the Netherlands.

This study is part of the “Project to design Aquaculture Supporting Mangrove Restoration in Indonesia” (**PASMI**) funded by the Netherlands Science Foundation NWO, Ecoshape and Wetland International. Next to this inventory of constraints, PASMI studied the option to:

- re-introduce shrimp culture through Integrated Multi-Trophic Aquaculture, and
- to grow-out Blue swimming crab juveniles from fishery’s by-catch.

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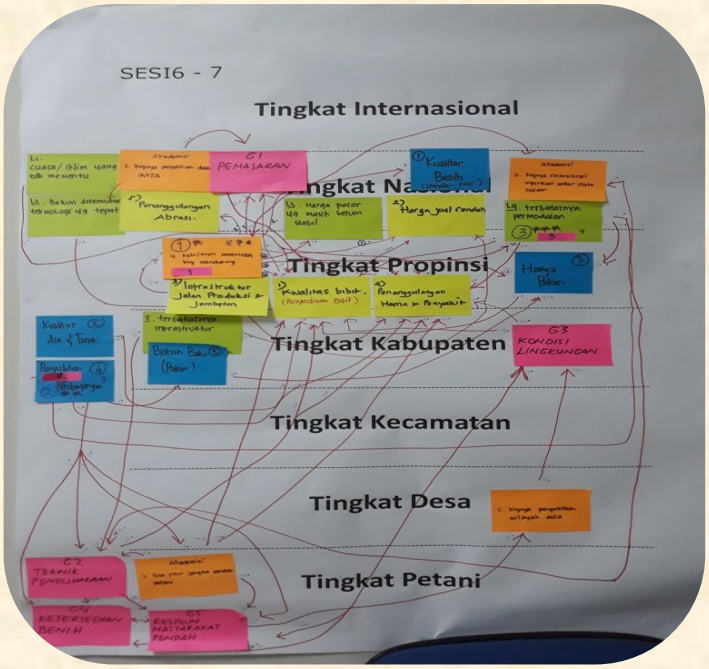
METHODOLOGY

Following the Rapid Appraisal of Agriculture Innovation System (RAAIS) guidebook, we used forum group discussions (FGDs) in workshops with stakeholders of the aquaculture sector in Brebes and Demak regencies.



We used two types of FGDs: group discussions and panel discussions. The panel discussion aimed to reach an agreement from all stakeholders on the constraints and their rankings. All data collected during the FGD were recorded and analysed.

Five stakeholder groups participated in this research: fish farmers, government, NGOs, private sector and academicians. These stakeholders attended a two-day RAAIS workshop.

During the FGDs, participants made long lists of constraints; and in panel discussions, they were asked to arrive at a consensus on the top three constraints encountered by the fish farmers when adopting new aquaculture innovation. They were also asked to discuss and give their opinion on several questions as described in the RAAIS guidebook.

RESULTS AND IMPLICATIONS

The table below lists the three main constraints confronting the fish farmers when adopting new aquaculture innovation.

Top three constraints in the two regencies.

Demak regency	Brebes regency
Heavy abrasion	Government policy does not support aquaculture
Lack of good seed quality	**Number of extension services and supervision is limited**
Number of extension services is limited	Lack of capital

Crucial constraint: Lack of extension

In both locations, the insufficient availability of extension services as a constraint appeared in the top three ranking. This confirmed with the earlier findings by one of the team members in another location of Indonesia[1]. Among others, good training and advise determine whether an innovation can be successfully implemented or not. All stakeholders agreed that the lack of support by extension services was a crucial constraint. Stakeholders agreed that fish farmers would need continuous supervision during the time they implement a new technology. Thus, a strategy is recommended to overcome this issue.

RECOMMENDATION

An innovation to address this problem might be the use of information technology. Continuous supervision and advisory for fish farmers can be given without having to visit each village by creating a **"VIRTUAL EXTENSION SERVICE"**.

A virtual extension service is a system where an extension agent can carry out his/her job in supervising and assisting fish farmers through electronic devices using social media such as WhatsApp, Line, Telegram or other mobile application. Virtual extension services can create a group for fish farmers under an agent's supervision who monitors a group regularly.

The aquaculture technology should still be introduced during the initial workshop(s). In case farmers lack some basic management skills by implementing a season-long field school[5]. Thereafter, when a problem occurs, fish farmers can discuss directly with extension service and with other members to find solution without the need to make field visits. Field visits can still be carried out, or innovation platform meetings held, whenever it is considered necessary or urgent.

References

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This brief was produced by PASMI for Indonesian policymakers, and extension agents.