Food and Agriculture Organization of the United Nations

LINKAGES TO MARKETS THROUGH THE FAO SUSTAINABLE AQUACULTURE PROJECT IN ACEH

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SUMMARY

This case study investigates the factors that have impacted the decision of farmers to join or not to join the aquaculture shrimp production activities set up by the FAO project “Rehabilitation and sustainable development of fisheries and aquaculture affected by the tsunami in Aceh Province, Indonesia”. The project funded by the American Red Cross has been promoting better management practices for aquaculture production so as to help farmers improve the quality of their products. A participatory systems analysis through focus group discussions involving farmers engaged in project activities and their neighbours who are not involved shows that technical advice as well as group formation and management are critical factors to encourage producers to engage in better production practices. On the other hand, the access to markets facilitated by the project does not seem to be a determining factor in the farmers’ decision to join the project activities. In contrast, farmers who have decided not to join the project blame poor information about the objectives of the project as a motor element in their decision not to join the project. Another such factor is the distrust by farmers of the integrity of producers’ groups, as advocated by the project. Thus the results point to a need to increase communication and training activities targeting producers in order to explain the objectives of quality improvement activities, how producers might gain in joining these, and to present success stories of farmers already involved in group work and how this involvement has helped increase the quality of their production.

1. BACKGROUND

FAO is implementing a project funded by the American Red Cross on "Rehabilitation and sustainable development of fisheries and aquaculture affected by the tsunami in Aceh Province, Indonesia" during January 2007 – June 2010. The project supports sustainable recovery and development of fisheries and aquaculture through planning, coordination and improved post-harvest handling and marketing in Aceh following the tsunami of 26 December 2004. The province also faced a severe political and armed conflict over the past 30 years which was ended on 15 August 2005 with a peace deal between the Government of the Republic of Indonesia and the Aceh rebels (GAM) brokered by Nobel Laureate Mr Martti Ahtisaari.

The objectives of the aquaculture component of the project are:

- To develop, disseminate and demonstrate better management practices (BMP) for shrimp farming;
- To build capacity in local government line agencies;
- To promote farmer self-help groups for cluster farm management; and
- To facilitate market access for Aceh shrimps.

Gandapura and Jangka Subdistricts in Bireuen District are among the targeted aquaculture areas for development under the project (Figure 1). In Gandapura Subdistrict there are 37 villages with a population of 15 109 people. Of these 12 have brackish water aquaculture farms (*tambaks*) worked by 592 farmers and covering 636.5 ha. In Jangka Subdistrict there are 44 villages and the total population is 25 639 people. Of these 22 have *tambaks* worked by 1 715 farmers and covering 1 364 ha (World Bank, 2006). These two subdistricts are separated by a river and the farms in each subdistrict are mostly dependent on different water canals for their source of water. The International Finance Corporation (IFC) of the World Bank Group started its sustainable aquaculture activities in Gandapura in 2007, and in Jangka during 2008. FAO under the project funded by the American Red Cross is continuing the work until 2010. Twelve field facilitators stay in villages in these subdistricts on a full-time basis to provide on-farm technical services to all the farmers and to facilitate the formation and management of farmers' groups. Although only 90 farmers enrolled in the project initially to implement BMPs in their farms, that number is increasing after each demonstration crop. The main criteria used in selection of farmers to join the project initiative are:

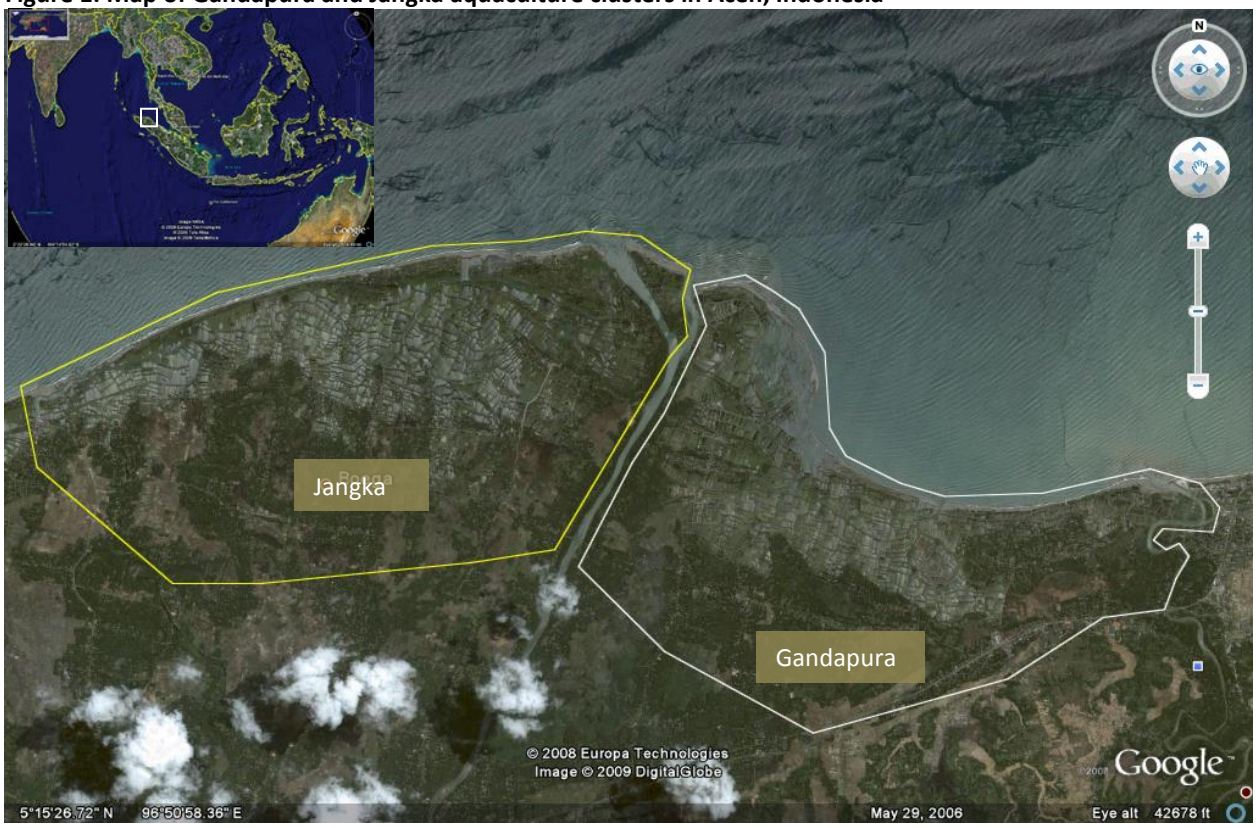
1. Willingness to implement at least some of the key BMPs, e.g. maintenance of water depth at 1 m, water filtration, stocking disease-screened seed, stocking according to a coordinated schedule;
2. Willingness to cooperate with other farmers by forming farmers' groups.

2. OBJECTIVES

The objective of the participatory systems analysis is to identify the factors impacting on farmers' decision to participate or not to participate in FAO's sustainable aquaculture project in Aceh.

The project has conducted four focus group discussions following the guidelines of Participatory Systems Analysis. The farmers were selected by the FAO field facilitators in Jangka Subdistrict.

Figure 1: Map of Gandapura and Jangka aquaculture clusters in Aceh, Indonesia



Source: Google Map, 2008

3. FINDINGS

The elements identified by participating farmers from Jangka Subdistrict and the specific description for each element were as follows:

1. Farmers' group. Formation and strengthening of farmer groups.
2. Farming discipline. Discipline in farming practices like stocking at the same time, harvesting at the same time, control of water intake and release from canals, other farming practices.
3. Information. Dissemination of information on BMP and training the farmers through BMP implementation in demonstration ponds.
4. Sustainability. Sustainable production and marketing.
5. Disease control. Control of disease in shrimp ponds.
6. Success. Increased production.
7. Input quality. Procurement of quality inputs (shrimp seed, feed, saponin, lime).
8. Environment. Care for the environment by not using pesticides in the ponds.
9. Market access. Links to good local and export market which offer transparency in trade, better prices, reduced market bureaucracy and reduced trade restrictions. Strong market network.
10. Shrimp quality. Better quality shrimps in terms of food safety and freshness.
11. Access to credit. Ability to submit credit requirement proposals to banks.
12. Information sharing. Information sharing among farmers through group meetings.

The PSA coordinates and graph for this group of producers are presented in Figure 2. The elements fall under only three categories. Symptom elements include sustainability, information sharing among farmers and shrimp quality. Buffer elements include care for the environment, input quality, market access and access to credit; this indicates that the latter element is of low importance to farmers' participation in the FAO project. There is no motor element indicating that there was no specific reason for farmers to join the project. Critical elements include success, farmers' group, disease control, information and discipline in farming. However, during the final discussion session in the focus group discussion, farmers proposed shifting the element "success" to the symptom grouping.

On the other hand, the non-participating farmers from Jangka Subdistrict proposed different elements to explain their non-participation in the FAO project and proposed the following descriptions for each element:

1. No incentive. No financial assistance to purchase farm inputs, equipment and materials.
2. Low input quality. The shrimp seeds provided by the project are small in size.
3. No access to credit. No credit availability.
4. BMP difficulty. There are many BMPs and they are difficult to implement given the present behaviour of farmers.
5. Low shrimp price. The project-linked exporter offered lower prices compared with that offered by the local market.
6. Disease. High prevalence of shrimp disease in the farming area discouraged the farmers from participating in the project.
7. Bad pond condition. Pond with a lot of black sludge, weak and leaking embankments, far away from water supply canal.
8. Poor information. Poor information on BMPs and project activities from project and from farmer leaders. No training on BMPs.
9. Bad canal condition. Poor quality of water and insufficient quantity of water in supply canal.

10. Lack of capital. No money to farm the shrimp according to BMPs.
11. Uncertain success. No confidence in successful crop even after participating in the project.
12. Doubt farmers' group. No confidence in farmer group system due to corruption.

The PSA coordinates and graph for this group of producers are presented in Figure 3. Symptom elements include lack of access to credit, bad pond condition, uncertain success in production and difficulty of implementing BMP. Buffer elements include environment disease control and low shrimp price indicating that this latter element is of low importance to farmer participation in the FAO project. Motor elements include lack of incentive, doubt in the farmers' group, lack of information and bad canal condition. These motor elements could have discouraged farmers from joining the project. Critical elements include lack of capital and low input quality.

Figure 2: PSA graph from participating group of farmers in FAO sustainable aquaculture project

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Coordinates of elements			
No.	**Elements**	**Activity ratio**	**Degree of inter-relationship**
1	Farmers' group	1.73	279
2	Farming discipline	1.12	220
3	Information	1.83	242
4	Sustainability	0.91	362
5	Disease control	1.36	255
6	Success	1.13	271
7	Input quality	0.93	174
8	Environment	0.81	194
9	Market access	0.53	128
10	Shrimp quality	0.58	209
11	Access to credit	0.68	85
12	Information sharing	0.86	279

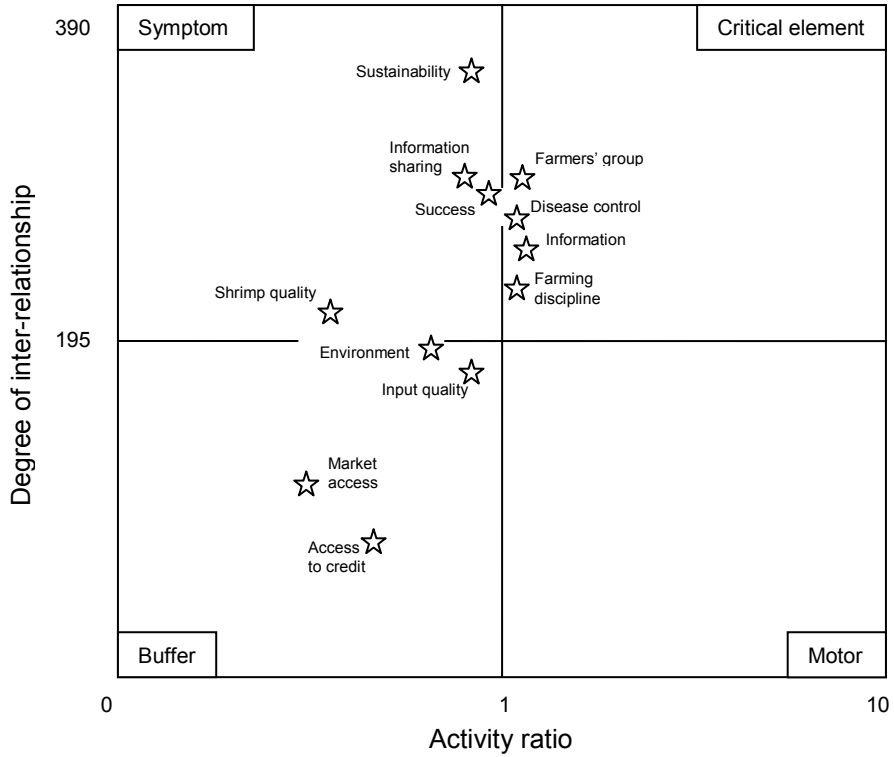
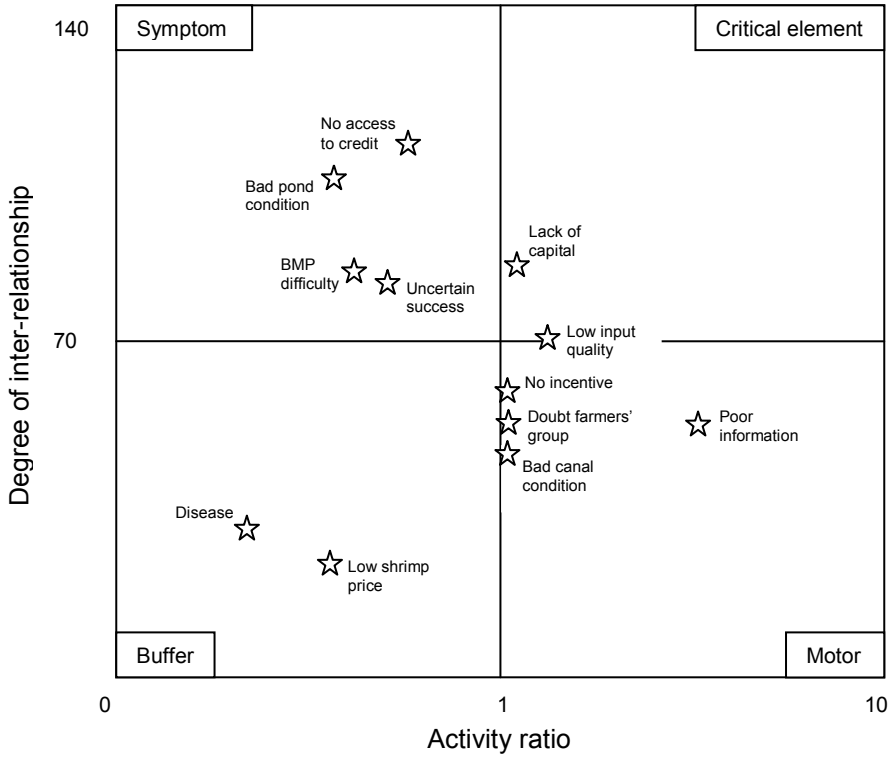


Figure 3: PSA graph from group of farmers not participating in FAO sustainable aquaculture project

Coordinates of elements			
No.	**Elements**	**Activity ratio**	**Degree of inter-relationship**
1	No incentive	1.29	61
2	Low input quality	2.18	71
3	No access to credit	0.77	119
4	BMP difficulty	0.63	89
5	Low shrimp price	0.55	28
6	Disease	0.28	30
7	Bad pond condition	0.60	109
8	Poor information	4.76	55
9	Bad canal condition	1.07	48
10	Lack of capital	1.30	92
11	Uncertain success	0.72	84
12	Doubt farmers' group	1.27	55



4. ANALYSIS

The following analysis considers the motor and critical elements. Among participating farmers the motor element identified was the services from the project. This is mainly on-farm technical advisory services. This suggests that provision of good services is important to attract farmers towards the project and would yield a predictable positive impact. This perception from participating farmers could be due to the fact that they joined the project during 2007, thus relatively early in the lifetime of the project and allowing the project to deliver results to the farmers. Interestingly participating farmers identified the following critical elements: information, farmers' group, and disease control. Focus of the project on these critical elements might have quickly and positively changed many other things related to farmer knowledge, attitudes, perceptions and practices. During 2007 to promote adoption of BMPs and to motivate farmers to form groups, the project initially shared the cost of shrimp seed with farmers (50 percent) and provided seed quality testing services free of charge. The incentive was reduced during 2008 but the farmers did not complain about it as they had become more interested in the quality of this key input than in the price.

The non-participating farmers identified poor canal condition and low incentives as main reasons for not joining the project. Since the inception of the project, poor canal condition was one of the major constraints on successful implementation. Through coordination and cooperation with other organizations or agencies in Aceh, some canal improvements have been carried out. USAID repaired all the 36 km of water supply canals in Gandapura Subdistrict in mid 2008. This should encourage non-participating farmers to consider joining the project in 2009. In Jangka however, the project started its activities only during 2008 and tried to find funds from other agencies to repair the water canals. Increasing the incentives to motivate the large number of non-participating farmers to join the project is not economically viable within the project limitations. Therefore this factor is of low priority to the project.

Other motor elements identified by another non-participating group were frequent floods, wide prevalence of disease and lack of capital as main reasons for them not to participate in the project. Lack of trust in the farmers' group and lack of information were other motor elements for not participating. Lack of information and lack of capital are categorized as critical elements.

Prevention of flooding needs raised embankments along two rivers in the Gandapura farming cluster. The project is pursuing this matter with the local government. It is a slow process however and beyond the control of the project. Wide prevalence of disease is a significant fear factor among the farmers. To overcome this, the project could consider setting up its own demonstration ponds fully managed by field facilitators. But this would require considerable funds. Farmers' lack of capital could be overcome by facilitating access to banks or credit and the project is working with bankers to this end, including with Bank Indonesia. At the moment bankers are not ready to extend credit to shrimp farmers due to:

1. High risk in shrimp production;
2. Poor banking history among farmers;
3. Banks are physically far away (10−20 km) from farming villages;
4. High degree of retail banking required due to no or poorly organized farming and farmers' groups.

The identified weaknesses in farmers' groups are corruption, nepotism including only friends and relatives, and lack of transparency in information sharing with other farmers. These were fears of non-

participating farmers rather than direct experiences of the project-promoted farmers' groups. During the 1990s the government facilitated several farmers' groups in Aceh (Badan Muysawarah Petani *Tambak* or BMPT) to popularize government programmes on shrimp farming, mainly subsidy distribution for farm agro-inputs. This resulted in several cases of malpractice, and the farmers lost trust in such farmers' group systems. Considering the bad historical experiences the project is moving carefully in the promotion of farmer groups by avoiding a top-down approach and supporting a bottom-up, democratic approach in the selection of farmers' group leaders. In addition the project is facilitating weekly village level farmers' group meetings and providing limited incentives but making sure to publicize information about the incentives in the villages. Another important motor element identified is lack of information. This could be due to a communication gap between farmers and the project field facilitators. Perhaps the project should give importance to improving the skills of the field facilitators in communications and public relations.

The other critical element identified by the non-participating group is poor quality of inputs provided under the project. Farmers considered small-sized shrimp post larvae (PL 20–25) as poor quality compared to nursery raised juveniles (PL 30–40). This perception among farmers is correct provided nursery conditions are good and safe so that the post larvae do not get infected with virus and other disease-causing pathogens. But it is not the case in the project areas. The shrimp nurseries (both commercial and on-farm) are in very poor condition: shallow water depth, heavy organic waste at bottom, poor water quality, presence of a lot of disease-carrying vectors like crabs and wild shrimp. So to avoid this condition, the project promoted direct transfer of hatchery PL to grow-out farms without any nursery stage. Also in the hatchery, the larval rearing period was increased from 20 days to 30–35 days in order to grow the PL to considerably bigger sizes. This strategy is accepted by participating farmers. Perhaps there is a communication gap between the field facilitators and the farmers failing to convey the right message on this issue.

5. CONCLUSION AND RECOMMENDATIONS

The focus group discussions using participatory systems analysis methodology with groups of participating farmers and groups of non-participating farmers has greatly helped the FAO sustainable aquaculture project in Aceh not only to identify strengths and weaknesses in project extension methodology and approach but also to prioritize them in order to plan the next stages of activities in a better way. In general, both the participating and non-participating groups of farmers seemed to be influenced to join or not join the project based on farm level issues such as availability of information, on-farm services, condition of water canals, disease prevalence and control, understanding of the advantages of farmer groups and incentives offered by the project. Lack of capital is an additional factor that is preventing farmers from participating in the project. Therefore to achieve the project objectives of sustainable *tambak* farming and better linkages to markets, the following interventions can be prioritized. These would help increase the farmer participation in the project:

- Improved information delivery system to farmers;
- Improved water canal system;
- Promotion of farmers' groups and training to key farmers on transparent and efficient group management;
- Demonstration of successful crops in some model farms to increase farmer confidence;
- Careful continuation of incentives;
- Facilitation of access to finance.

REFERENCES

World Bank. 2006. *Conflict and development programme in Aceh, July 2006*. World Bank. Jakarta.