

Aquaculture Livelihoods Service Centres in Aceh, Indonesia: A novel approach to improving the livelihoods of small scale fish farmers

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The world community responded rapidly to the devastating effects of the tsunami in December 2004 in Aceh and elsewhere. The Asian Development Bank (ADB) was quick to initiate a multi-sector project, the "Earthquake and Tsunami Emergency Support Project (ETESP)", with a major component on fisheries and aquaculture (ETESP-Fisheries) in Aceh, to rebuild the livelihoods of the coastal communities that were most affected. This ADB financed project was executed by the Badan (BRR) established by the Government of Indonesia in April 2005 to lead the reconstruction of Aceh and Nias.

Many social, technical and economic difficulties confront rural producers trying to rebuild their livelihoods after being devastated by natural calamities, despite the generosity of donors and concerns of the government. Governments, more often than not, express rehabilitation in terms of the repair or building of state infrastructure but this has limited impact unless the effected populations are assisted through their difficulties to become productive and socially organised and become "real" partners in the process from inception, design and implementation when it comes to reconstruction at village/ community level - a strategy adopted by the ETESP-Fisheries program.

To realise the full potential to improve livelihoods and reduce rural poverty through rebuilding the coastal fisheries and aquaculture in Aceh is a gigantic task. The potential lies in the formation of producer associations which could be trained with business organisational skills. Such associations have the potential to help mitigate low productivity, to form networks for dissemination of better management practices, to negotiate better deals on inputs, to arrange credit from banks, to assist coordinated cropping and marketing of larger quantities, to provide

a legal entity and status required for investment, and to provide traceable sources for consignments of shrimp.

- There are many challenges to overcome in attaining the above. These include:
- The need to develop a vision and a guiding policy from government which has difficulty in moving from a "control" mode to a "service delivery" mode.
- The development of functional services available through government and private sector.
- The development of a legal framework that promotes the formation of "producer associations" as legal entities.
- An increase in reliable productivity from traditional ponds.

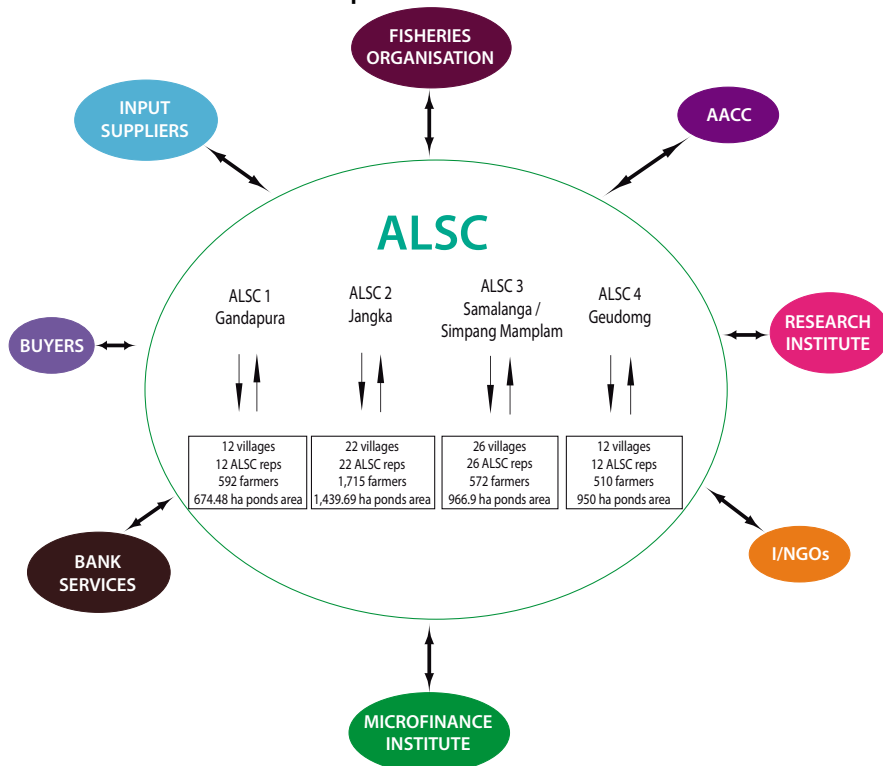
- Facilitation, awareness and acceptance of concepts such as better management practices (BMPs) and adoption thereof to improve yields and product quality, food safety, and reduce disease risk.
- Awareness of the increasingly stringent consumer demands of international markets in relation to food quality, traceability and sustainability.
- Ability to produce the quantities and qualities demanded by buyers thereby gaining valuable income potential.
- Wider access to, and capacity of, technical, market and financial services.

In this paper we discuss the form and function of aquaculture livelihood centres, which aim to help address



NACA DG visiting farmers and local officials at Samalanga ALSC.

General operational model of ALSCS



some of these issues. These are centres of the people, for the people, managed by the people, to address their problems and develop practical solutions, in this instance of small scale fish farmers. As this is a novel approach to facilitate sustainable growth of small scale aquaculture that would have application elsewhere, we felt it was appropriate to bring the concept to the public domain, primarily to bring about dialogue to improve its form and function, and to investigate its adaptability to comparable situations.

Aquaculture Livelihood Service Centres

The concept

Responding to the potential for coastal shrimp farming in Aceh to restore and improve livelihoods through the development of a premium export industry for large *Penaeus monodon* shrimp requires careful and progressive technical, social and economic facilitation over a period of time. It is in this context that the concept of livelihoods clusters has been proposed to meet some of these demands.

The livelihoods approach has advanced through two inter-related and innovative activities implemented through the

fisheries component of ETESP. Following the rehabilitation of 3,000 ha of shrimp ponds (tambaks) over three years through the application of a livelihoods approach and community contracts, four "Aquaculture Livelihood Service Centres" (ALSC's) in Bireuen and Aceh Utara districts were set up by the farmers to address some of the daily problems that they encounter, with the assistance of the project.

In the absence of government or private sector extension services, a specialised "Aceh Aquaculture Communication Centre" (AACC) was set up in Balai Budidaya Air Payau centre (BBAP), Ujung Batee, Aceh to provide advice and information services using websites and voice over internet (VOIP) to facilitate communication. This centre services the needs of the ALSCs, which are owned and managed by the local farmer groups, through modern communication channels.

ALSC based farmer groups at sub district and district level implement and manage the aquaculture activities through participatory approaches in order to accomplish their common goal of reducing risk and the maximising profit while meeting the expected market demand through sustainable aquaculture operations. The ALSC are expected to become fully self sustaining business and technical centres for

the fish/shrimp farmer associations through payment of services fees by the members.

The associations and centres are free to obtain services from the private sector e.g. feed and fertiliser suppliers, hatcheries, shrimp exporters, private laboratories and banking services. The members of the associations can achieve benefits by collectively purchasing inputs and marketing produce and thereby taking advantages of economies of scale and increased market power, maximising their profits and minimising cost of production.

Location

ALSCS have been established by shrimp and milkfish farmers in four sub districts (Samalanga, Jangka, Gandapura and Samudera) in the East coast of Nanggroe Aceh Darussalam (NAD), North Sumatra, Indonesia. All ALSC centres are located strategically near the centres of each sub district with good access to main roads, and nearby aquaculture pond areas many of which were rehabilitated by ETESP Fisheries.

Composition of ALSCs

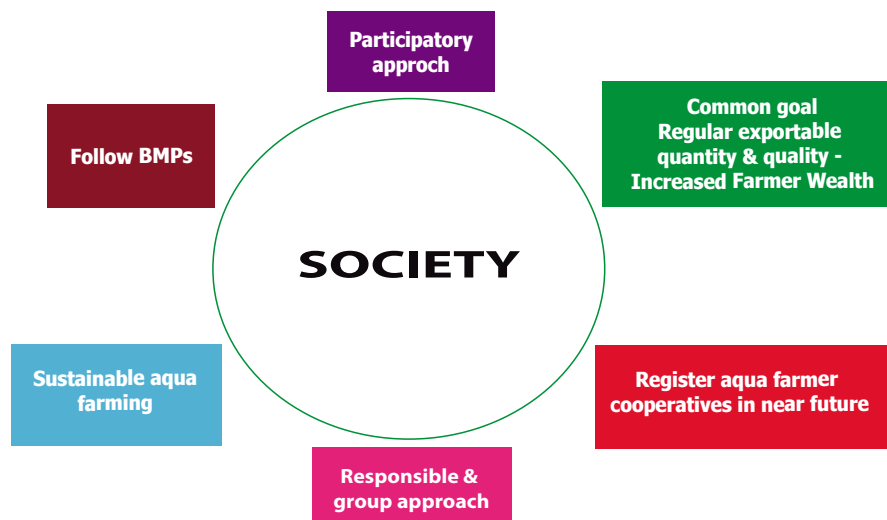
ALSCS are the centres at which rural producer associations, in this case fish farmers, begin to operate their own services in the absence of government or other private sector extension services. All ALSC committee members are drawn from the fish farming communities of the respective sub-districts. The members elect from amongst themselves a Chairperson, Vice-Chairperson, Secretary, Treasurer, and an Executive Committee (lead farmers from each village engaged in aquaculture as a main source of livelihood), and these personnel together are responsible for operational procedures. A schematic representation of the composition and organisational set up of farmer owned and managed ALSCS is shown below.

The activities of ALSCS are also technically supported and advised by various government agencies' staff such as the DKP- Dinas Perikanan dan Kelautan (Marine and Fisheries Affairs Agency). The activities are coordinated by ETESP Fisheries, FAO and OISCA field facilitators and lead farmers. The engagement of the different agencies through the ALSC is mediated to collate the perceptible differences in approach. Most farmers in the respective

sub-districts are active members of ALSCs. The registered members abide by the rules and regulations of ALSCs decided by the community (e.g. prohibition of the use of pesticides and antibiotics, crop planning, and a group approach to finding solutions for the various aquaculture related issues). The committee members/lead farmers and children of the farmer communities are well trained in the basics of computer operations and who in turn continue to train the farmer community/ groups at the village level. Leaders of villages in the sub-districts are also executive members of ALSC committee and it enables the ALSC to operate within the established social structure of the villages and contributes to the effective decision making. The matter of “elite capture” is ever present but countered through frequent meetings at which the farmers of all levels have democratic voice.

The committee members and lead farmers of the four ALSCs form the leadership for a producer association at the district level for furthering business developments in collaboration with various associated service providers such as hatchery operators, inputs suppliers, processors and exporters.

Organisation of small-scale aqua-farmers through ALSC



Community involvement

Capture fishers LSC's are based on existing fisher organisations referred to as “Panglima Laot” which is a traditional organisation with a feudal past. An equivalent organisation is lacking within the aquaculture sub-sector and the ALSCs are therefore focusing on the development of the aquaculture producer association, capturing interest by providing valued technical services.

In the formation of the LSCs, the farmer communities first underwent a process of socialisation for inculcation of the ALSC and AACC concepts and operation system through a large number of participatory farmer meetings at the village and sub district levels for periods up to six months. All the committee members were elected by the communities at the sub-district level, before establishment of the ALSCs. ALSC based farmer groups at sub-district and district level implement and manage the aquaculture activities through a participatory approach in order to accomplish their common goals of reducing risks and maximising profits while meeting the expected market demand through sustainable aquaculture operations.

In the future, it is expected that the ALSCs would depend on government and external agencies only for advice and information on technological advances and possibly extra services if available and/or needed. Further financial support will not be required.

Functions and operation

- 1. Group approach and linkage to stakeholders:** ALSC operations bring together aquaculture farmers and organisations from different backgrounds to work in partnership, a process that requires partners to pool their commitment of human, financial and natural resources to achieve sustainable growth of the aquaculture sector and also thereby increase aquaculture farmer wealth in Aceh Province, Indonesia.



Observing a shrimp grown in a pond supported by ALSC.

The diagram illustrates the connection between ALSC and various service providers such as input suppliers, banking services and shrimp buyers and exporters. The principal role of the ALSC is to provide technical and the business expertise and to sustain useful information flows. Progressively, it is intended to introduce banking services, micro-finance facilities, and create communication networks through the ALSC and to begin to create awareness of finance, credit, savings, small-scale business, and investment. The private sector will provide regular ongoing inputs on market needs and pricing strategies.

ALSCs will run as networks of service centres, conforming with a “cluster approach”, as operational information, extension, micro-finance and trading centres, with the purpose of improving the livelihoods of aquaculture farmers and their families through increasing their human and social capital, and know how on simple but effective business management.

2. Promoting sustainable

aquaculture: ALSC based farmer groups at the sub district and districts levels implement and manage the aquaculture activities through a participatory approach in order to accomplish their common goal of reducing risks and maximising profits while meeting the expected market demands through sustainable aquaculture operations. Aquaculture in small-scale farmer owned ALSC is developed through implementation of responsible BMPs to minimize the risk of disease out breaks and increase profit. The ALSC group has an internal control system to ensure compliance with the BMPs by all members.

3. Planning activities: ALSC centres support farmer communities for decision making in crop planning including harmonised stocking and harvesting in collaboration with various stake holders to minimise the risk of disease outbreaks during farming and increase the overall simultaneous harvest to levels of interest to larger buyers, both of which are the major challenge for the farmers in Aceh.

4. Providing Services: The ALSCs also provide technical services such as application and adoption of BMPs, disease diagnosis,

information, training and planned financial services for the well being of individual farmers as well as farming communities.

5. Legal entities: There are ongoing efforts by the ALSC committees to register producer associations as legally recognised entities for furthering business developments and mutual benefits to the stakeholders thereby improving the livelihoods of the aqua-farmer communities. The legal status would facilitate farmer community access to banking and micro finance services.

6. Traceability and marketing: At present, most Aceh shrimp are grown extensively using low densities that are capable of producing superior quality shrimp. There exists a strong potential for branding Aceh shrimp. However, certain practices have to be put in place through the ALSCs system to achieve this goal; these include implementing BMPs, maintaining consistent quality and quantity, establishing partnership with processing plants/exporters, assuring food safety standards through record keeping and traceability systems.

This concept has been introduced by ETESP to ALSCs members, and will be further supported by FAO, OISCA and processors with the objective of achieving successful market access.

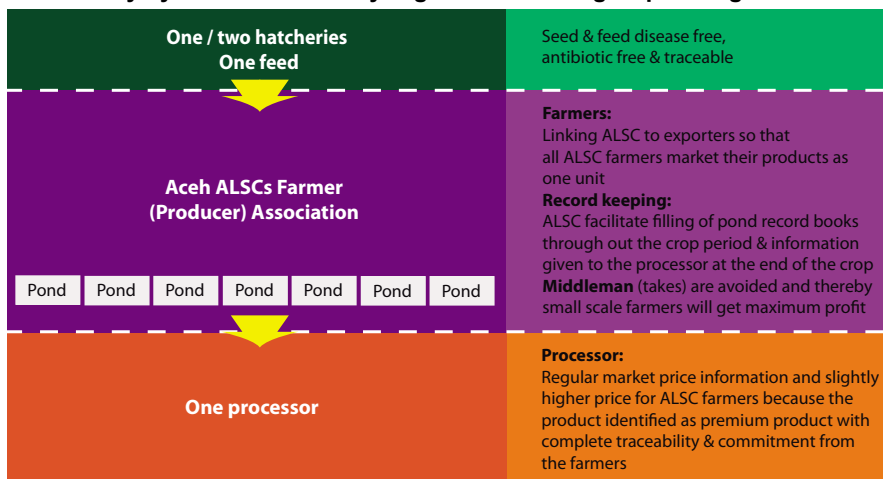
The challenges for the exporters are to organise group harvests at sub-district and district levels. This can be easily facilitated through farmer owned and managed ALSCs by focussing on:

- Sourcing of post larvae and feed through selected suppliers via ALSCs.
- Traceability back to shrimp farms and the hatcheries through record keeping at all levels.
- Selling produce as one unit coordinated by ALSCs to one processor/exporter.
- Better management practices monitored by ALSC committee members to control the hygiene and safety of shrimp produced associated farmers.
- Screening of all inputs for banned antibiotics.

Aceh Aquaculture Communications Centre Location

Aceh Aquaculture Communication Centre (AACC) is located at Brackishwater Aquaculture Centre (BBAP/Balai Budidaya Air Payau) at Ujung Bate, Aceh Besar district, NAD, North Sumatra, Indonesia. AACC was established in January 2009 with the approval of the Indonesian government, funded through ADB ETESP and technically advised by ETESP NACA. It provides information and communication services related to aquaculture direct to farmers and their associations through the ALSCs.

Traceability system facilitated by organised farmer group through ALSCs



Composition

Formal agreement between ETESP Fisheries and BBAP to delegate 8 part-time staff for efficient operation of AACC was reached on 29 April 2009. The job responsibilities for AACC staff are well described and necessary training is being provided. For further strengthening and consultation of the AACC-ALSCs operational system, there are current plans to conduct regular visits to each ALSC to establish full time permanent position for AACC operations.

The organisational set up of the AACC consist of a Manager, Vice Managers for Diseases Diagnosis Services, Information Services, Technical Services, Training Services, Website management, and Translation and Quality Control.

Community involvement

The AACC works with aqua-farmer associations primarily through the ALSC system, however services can also be provided to farmers outside the established ALSCs areas on a needs basis. The communities' technical and information needs will be fulfilled through services provided.

Functions and operations

The principles of AACC are to: 1) facilitate communication between farmers and other stakeholders/partners; 2) provide free source of information to ALSC and farmers through website, printed materials and other communication tools; and 3) facilitate ALSC and farmers in Aceh to access services provided by BBAP (information, technical, disease diagnosis, and training). At this stage, AACC provides four major services including:



Farmers conversing with AACC expert via Skype.

1. Information services

Providing information on market access; product prices, suppliers (hatchery, feed, agro input supplies), the latest articles and information related to sea food business internally and externally. Regular dissemination of updated news and practical information about aquaculture has been initiated.

This information can be accessed through the AACC website, brochures, posters and newsletters. The interactive website, "Jaringan Petambak Aceh" (Network of Aquaculture Farmers in Aceh; <http://petambakaceh.org>) will provide practical information and materials for aquaculture farmers, covering market information, extension materials, business directories and others developed based on the needs identified by participation of the farmers themselves. AACC provide online consultation and communication with ALSCs via Skype (voice chat over the internet) for immediate feedback and technical advice.

2. Technical information services

This service provides all technical aspect on aquaculture; information and technical consultation. Normally ALSC committee members provide the required services if within their capacity and experience. However, requests beyond their capacity are forwarded to AACC or another appropriate institution for technical assistance. Regular information on new technologies is also disseminated to ALSCs to keep the farmers updated on the recent development in sustainable aquaculture practices.

The information service is underutilised at present being newly established but records are kept and these show a growing trend in the number of enquiries. The AACC must prove its capability to the farmers in order that the demand for the services grows.

The type of services sought by farmers and provided to farmers through the system								
ALSC	Month	Technical advice sought				Laboratory services	Farmer meetings	Computer training
		Shrimp	Milkfish	Tilapia	Grouper			
Samalanga	April	10	5	0	2	2	15	0
	May	15	7	0	5	3	12	16
Jangka	April	25	60	18	11	3	30	0
	May	32	74	23	17	5	50	16
Gandapura	April	10	15	0	7	33	15	0
	May	60	22	0	11	42	45	16
Samudera	April	25	5	0	0	10	16	0
	May	40	10	0	0	14	30	16

3. Disease diagnosis service

AACC facilitates the farmers access laboratory facilities at BBAP centre for disease diagnosis via the ASLCs. The diagnoses, results and recommendations are sent back to ALSC rapidly to be effective and applicable.

Established protocols and standard operation procedures for sample collection for water quality and disease diagnosis are provided to farmers. Fine tuning of protocols and SOP for aquaculture practices in Aceh will be further improved as development progresses.

In case of serious disease outbreaks, AACC staff will visit and provide practical field level solutions to farmers through meetings and this information will be disseminated to other areas for prevention of further spread of disease.

4. Training services

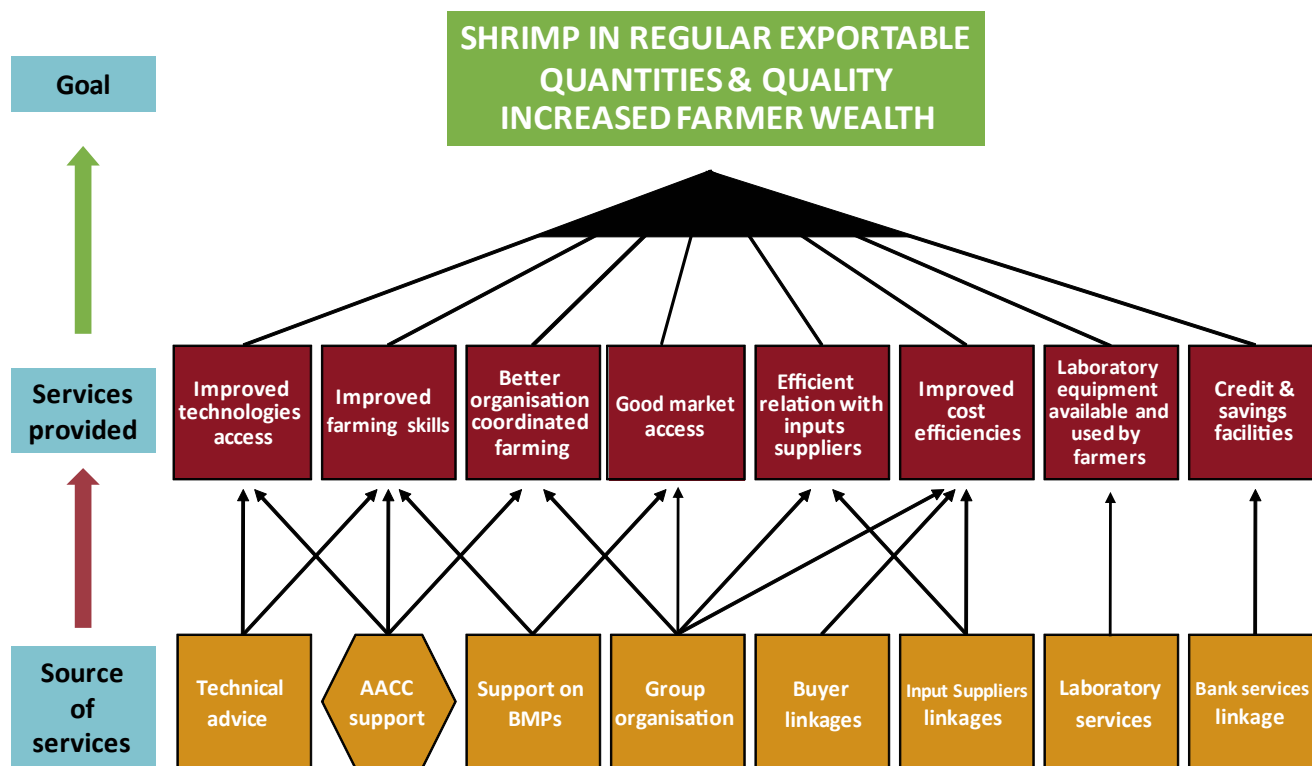
AACC conducts training based on identified needs of Aceh farmer communities through ALSCs or when new technologies become available and are ready for dissemination. The training may focus on technical aspects, business management, and other capacity building topics through lectures and/or hands-on training.

For deliberation of services, AACC cooperate with training providers, such as extension unit of BBAP or other government institutes, as well as the other parts of the private sector.

Effectiveness of the ALSC-AACC model

- There is growing close coordination and collaboration between farmers at the sub-district and district levels. Considering the history of the area this itself is a breakthrough. After establishment of ALSC, farmers have improved crop planning, sharing experiences and resources through regular farmer meetings organised by ALSCs with the objective of overcoming the various issues and challenges in their practices.
- Information on disease outbreaks at village, sub-district and district level are quickly transmitted across boundaries, are well discussed and shared with other ALSCs for control of disease through a group approach.
- The farmer owned website facilitates effective communication between farmer communities and stakeholders. The website provides a platform for improving business and collaboration among stakeholders.
- Effective communication between farmer communities and government agencies, research organisations and laboratory services established. Communication gaps between farmer communities and stakeholders have been reduced through ALSC-AACC operational system.
- ALSC-AACC operational systems are well explained to stakeholders through meetings/discussion groups and it helps to plan their activities based on the community needs e.g. banks, micro finance units).
- ETESP Fisheries facilitated service provider meetings with input suppliers of quality materials and at discounted prices. Service providers welcome such arrangements through the ALSC system (e.g. Gold Coin feeds, Medan). To date a few exporters and processors have visited ALSC sites and started preliminarily discussions for group harvests and on processes leading to the introduction of a traceability information system (need further supports during harvest periods July-September 2009).
- Effective dissemination of BMPs was achieved through ALSC-AACC system in four sub-districts. As a result harmonised stocking and crop planning are in place, communities

Schematic representation of the services provided by ALSC and its goals



are enthused in harmonised harvesting and traceability for minimising risks and maximising profits through high level coordination with stakeholders.

- The table above indicates the types of services sought and provided to farmers in the current system. It is evident, although the data are available only for two months, that the use of the system of communications to address farmer problems and concerns are on the rise, indicating that the system is operating to expectations.

Expectations for the Future

It is expected that the ALSCs will become self sustaining units, with business acumen and technical centres for fish/shrimp farmer associations. In the future these would depend on government and external agencies only for advice and information on technological advances and possibly services if available but not financial support. The associations and centres are free to obtain services from the private sector e.g. feed and fertiliser suppliers, hatcheries, shrimp exporters and banking services. The members of the associations would achieve benefits in group purchasing of inputs and marketing produce and thereby maximising their profits and minimising costs of production.

Progress facilitated by NACA

The work on the development of better management practices (BMPs) on the shrimp culture commenced with the organisation of small scale aquaculture farmer groups at one or two villages, grouping of farmers at the sub district level (IFC NACA Shrimp project during the year 2007-08), drawing on common resources, and experiences drawn from comparable practices in Andhra Pradesh, India, and inducing the farmer to act in groups rather than individually for the betterment of all. The three years collaborative project of IFC/NACA and ADB/BRR/NACA from 2007-09 provided the basis and a strong foundation for the establishment of farmer owned Aquaculture Livelihoods Service Centre in Aceh and thereby improving the livelihoods of the small scale aquaculture farmer community in Aceh.



Farmers accessing computer to obtain information at ALSC.

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Regular farmer meeting.