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Aquaculture farmer organizations and cluster management

Concepts and experiences




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Top left: Cluster farmers meeting in Andhra Pradesh, India (courtesy of MPEDA/NaCSA); *Top right:* Cluster farmer committee meeting in Trang, Thailand (courtesy of Siri Ekmaharaj); *Bottom left:* A group of cluster farmers sorting their shrimp harvest in Chanthaburi, Thailand (courtesy of Siri Ekmaharaj); *Bottom right:* Group of cluster farmers in Andhra Pradesh, India, listening to an extension officer (courtesy of MPEDA/NaCSA).

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Globally, slightly more than half (53 percent) of the total food fish supply is obtained from marine and inland capture fisheries; the remaining (47 percent) supply is being derived from aquaculture. Its contribution to per capita food availability grew from 0.7 kg in 1970 to 7.8 kg in 2008. More "food fish" is consumed globally on a per capita basis than any other type of meat or animal protein.

Aquaculture makes valuable contributions to local, national and regional economies through goods and services provided to domestic and export markets. Aquaculture activities involve a wide range of people – from subsistence farmers practicing aquaculture as part of a diverse livelihood strategy, to more specialized commercial enterprises operated by small households through to larger integrated multinational companies, as well as employment through equally diverse value chains. Generally, subsistence and much small-scale aquaculture contributes in various ways to household income and food and nutritional security. Various enterprises from small-scale to large-scale commercial aquaculture, as is practised in many developed and developing countries, produce species such as shrimp, salmon, tilapia, catfish, grouper and carps, which enter domestic and export markets and generate employment opportunities in production, processing and marketing sectors.

The number of people involved in aquaculture directly or indirectly is substantial, with most in developing countries. Many of these people are smallholders in rural areas, many of whom live in poverty. Many small-scale aquaculture producers are facing new opportunities and challenges as the markets for aquaculture products continue to expand. Market liberalization in developing countries, in many instances, has led to significant State withdrawal from service provision and an end to guaranteed markets. This has affected small-scale aquaculture farmers, who are less able than larger producers to deal with increased market risks.

This document provides an overview of an important approach to assist small-scale farmers to overcome these challenges and effectively participate in and influence modern market chains and trade. This approach is to facilitate the successful establishment and operation of farmers' organizations (FOs) to support collective action among small-scale producers using "cluster management", a concept that has proved successful in many developing countries, particularly in Asia. This review seeks to bring together current knowledge on the formation, operation and impact of aquaculture FOs using the concept of cluster management.

The review has been conducted by the Aquaculture Service of the Fisheries and Aquaculture Department of the Food and Agriculture Organization of the United Nations (FAO), with strategic support and guidance from the WorldFish Center.

Abstract

Small-scale aquaculture producers in developing countries are facing new opportunities and challenges related to market liberalization, globalization and increasingly stringent quality and safety requirements for aquaculture products, making it harder for small-scale producers to access markets. Collective action through participation in farmers' organizations (FOs) can provide an effective mechanism to assist small-scale producers overcome these challenges and contribute to and influence modern market chains and trade. Literature on agriculture and aquaculture FOs and case studies of successful aquaculture FOs were reviewed and field research on successful aquaculture FOs in India and Thailand was undertaken to bring together current knowledge on the formation, operation and impact of aquaculture FOs. A range of FOs (such as farmer societies, cooperatives and community-based organizations) were examined and potential opportunities for success such as "cluster management" and group certification were highlighted. Cluster management has proved successful in many developing countries and refers to a group of aquaculture farmers or FOs that collectively implement certain production standards. Recent field experience shows that cluster management used to implement appropriate better management practices (BMPs) can be an effective tool for improving aquaculture governance and management in the small-scale farming sector, enabling farmers to work together, improve production, develop sufficient economies of scale and knowledge to participate in modern market chains, increase their ability to join certification schemes, improve their reliability of production and reduce risks such as disease. The experience of the National Centre for Sustainable Aquaculture's farmer societies and clusters in Andhra Pradesh, India, shows the potential that cluster management has for benefiting small-scale aquaculture farmers. The publication presents factors associated with successful FOs and guiding principles for development organizations that wish to support aquaculture FOs in developing countries that were distilled from the literature and case studies, followed by a summary of challenges and opportunities for the development of small-scale aquaculture FOs.

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Preface

Aquaculture is by far one of the world's most important food producing sectors, contributing to nearly 50 percent of the global food fish supply and providing employment and livelihoods to millions of people worldwide. Aquaculture makes valuable contributions to local, national and regional economies, and the activities involve a wide range of people – from subsistence farmers practising aquaculture as part of a diverse livelihood strategy, to more specialized commercial enterprises operated by small households through to larger integrated transnational companies.

Aquaculture is dominated by small-scale producers who are facing new opportunities and challenges as the market for aquaculture products continues to expand. Globalization and market liberalization in developing countries, in most instances, has led to State withdrawal from service provision and an end to guaranteed markets. This has affected small-scale aquaculture farmers who, contrary to the larger producers, struggle to deal with increased market risks.

FAO is pleased to present this document – *Aquaculture farmer organizations and cluster management: concepts and experiences* – based on a review and study jointly conducted by FAO and the WorldFish Center. The document provides an overview of an important approach to assist small-scale farmers to overcome these challenges and effectively participate in and influence modern market chains and trade though the establishment and operation of small-scale farmers' organizations (FOs) using "cluster management", a concept that has proved successful in many developing countries. We hope this document will become a key reference on the subject and will be of use to many who are working towards empowering small-scale aquaculture producers to gain better market access and, thus, improved livelihoods.

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Abbreviations and acronyms

AACC	Aceh Aquaculture Communication Centre
ACC	Aquaculture Certification Council
ADB	Asian Development Bank
ALSC	Aquaculture Livelihood Service Centre
BAAC	Bank for Agriculture and Agriculture Cooperatives
BMP	better management practice
CAA	Coastal Aquaculture Authority
CBO	community-based organization
CoC	Code of Conduct (Thailand)
CPR	common pool resource
CSR	corporate social responsibility
DANIDA	Danish International Development Agency
DCP	Department of Cooperative Promotion
DoF	Department of Fisheries
ETESP	Earthquake and Tsunami Emergency Support Project
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FO	farmers' organization
FOSCOT	Federation of Shrimp Cooperatives of Thailand
GAP	Good Aquaculture Practice (Thailand)
GNAEP	Greater Noakhali Aquaculture Extension Project
ICS	internal control system
IFC	International Finance Corporation
INR	Indian rupee
ISO	International Organization for Standardization
IT	information technology
kg	kilogram
MPEDA	Marine Products Export Development Authority
MSC	Marine Stewardship Council
NACA	Network of Aquaculture Centres in Asia-Pacific
NaCSA	National Centre for Sustainable Aquaculture
NGO	non-governmental organization
ShAD	Shrimp Aquaculture Dialogue
SSP	Surat Shrimp Programme
STSFC	Surat Thani Shrimp Farmers Club
THB	Thai baht
TMSFA	Thai Marine Shrimp Farmers Association
USD	United States dollar
WWF	World Wide Fund for Nature

The Aceh Aquaculture Communication Centre (AACC) staff demonstrating the use of a dissolved oxygen meter to the members of a shrimp farmer group (Aquaculture Livelihood Service Centre) in Aceh, Indonesia.

Courtesy of AACC/Brackishwater Aquaculture Development Centre at Ujung Batee

1. Introduction

1.1 CONTEXT

Small-scale producers are facing new opportunities and challenges in today's markets. Market liberalization in developing countries over the past three decades has led to State withdrawal from service provision and an end to guaranteed markets. This has disproportionately affected small-scale producers, who are less able than larger producers to deal with increased risks related to thin and volatile markets. Most producers have had to produce and market their products without access to reliable or affordable inputs, financial, technical or transport services. This situation has been exacerbated by the globalization of agricultural trade, which has forced small-scale producers to compete with large commercial producers from all around the world and to meet increasingly stringent quality and safety requirements demanded by buyers and consumers. Those small-scale producers who are able to access markets often find themselves disadvantaged owing to their weak bargaining position.

This review provides an overview of one important approach to assist small-scale farmers to overcome these challenges and effectively participate in and influence modern market chains and trade. This approach is to facilitate the successful establishment and operation of farmers' organizations (FOs) to support collective action among small-scale producers. This review focuses specifically on the development of small-scale aquaculture FOs, drawing on experience from both agriculture and aquaculture sector FOs.[1] It is hoped that the lessons learned from these experiences will have some relevance to small-scale producers from other primary production sectors, including agriculture, livestock and forestry.

Even though experiences with FOs in the agriculture sector have been mixed, recent experiences in the aquaculture sector show that collective action can yield a number of positive benefits. For example, the organization of farmers into FOs can facilitate the certification of groups as opposed to individuals; benefit farmers through economies of scale related to bulk purchasing of inputs and services, collective processing and marketing; support communication, extension training and technology dissemination; and lead to effective management through collective implementation of better management practices (BMPs).

This review will therefore explore the experience of increasingly successful aquaculture FOs on the ground, looking at a range of FOs (such as farmer societies, cooperatives and community-based organizations) and their business models, and highlight potential opportunities for success such as the "cluster management" concept and group certification. This will be done in order to understand some of the factors associated with successful FOs and to highlight some guiding principles for development organizations that wish to support aquaculture FOs in developing countries.

1.2 OBJECTIVES

While there are many existing reviews and guides on FOs, none focus specifically on aquaculture FOs. As such, the purpose of this review is to provide strategic guidance for public and private stakeholders involved in supporting small-scale aquaculture FOs in developing countries. The objectives of the review are to help these actors gain a better understanding of:

[1] Partly because of the lack of available literature on the experiences of aquaculture FOs.

- how to assist small-scale aquaculture farmers in connecting to input suppliers and buyers of their products, including identifying market niches and providing market information and particularly addressing issues related to improving their compliance to food-safety-related international trading standards;
- how to improve small farmers' access to technical knowledge (including BMPs), financial and technical services, particularly towards improving biosecurity and decreasing disease risks;
- how to apply the existing cluster management and farmer society concepts to aquaculture development in Africa and Asia, enabling increased access to input and output markets and services, and increased influence over government to create national policies which are conducive to the small-scale aquaculture sector;
- how to develop private and public institutions that deliver services to the small-scale sector; and
- how to develop responsive government policies that are focused towards support of the small-scale sector.

In order to achieve these objectives, the review will elaborate on key aspects of FOs along with introducing illustrative examples, including:

- the purpose of FOs;
- the benefits and costs of FOs;
- the common types of FOs and their functions;
- the main activities and services of FOs;
- the governance and management of FOs;
- examples of successful small-scale aquaculture FOs and cluster management in developing countries;
- examples of FOs that have achieved market access through meeting certification and other market requirements;
- factors associated with successful FOs; and
- the principles for supporting the successful establishment and operation of FOs.

1.3 TARGET AUDIENCE

The review aims to provide guidance to the wide variety of public and private actors that are involved with supporting small-scale aquaculture development in developing countries. These actors include the staff of development non-governmental organizations (NGOs), donor agencies, national and international research organizations, government ministries, public and private extension agents, private companies and aquaculture FOs.

1.4 METHODOLOGY

This review seeks to bring together current knowledge on the formation, operation and impact of aquaculture FOs and cluster management. Literature on agriculture and aquaculture FOs, including journal papers, project reports and grey literature such as conference proceedings, case studies and workshop papers, was reviewed. Field visits were made to India and Thailand to interview small-scale aquaculture farmers and FOs. In India, interviews were held with small-scale shrimp farmers and farmer society/cluster representatives supported by the National Centre for Sustainable Aquaculture (NaCSA). In Thailand, interviews were held with members of the Samroiyod Shrimp Farmers Cooperative, the Federation of Shrimp Cooperatives of Thailand (FOSCOT), the Surat Thani Shrimp Farmers Club (STSFC) and the Thai Marine Shrimp Farmers Association (TMSFA). This review was funded by FAO with strategic support and guidance from the WorldFish Center.

1.5 STRUCTURE

The review is divided into six chapters. Chapter 1 gives an introduction to the review. Chapter 2 provides an overview of the challenges facing small-scale aquaculture producers and looks at the role of aquaculture FOs in addressing some of these challenges. It goes on to explore the theoretical basis for the importance of FOs in developing countries. Chapter 3 looks at different types of FOs and how they operate in practice and presents illustrative case studies of successful aquaculture FOs from Bangladesh, India, Indonesia and Thailand. It also highlights the potential that implementation of BMPs and cluster management has for achieving success in the small-scale aquaculture sector. Based on the case studies presented in Chapter 3 and the wider empirical literature, Chapter 4 presents key lessons and factors associated with successful FOs. Chapter 5 focuses on the main issues related to supporting aquaculture FOs and outlines important actions and support needed for aquaculture FOs to succeed. It looks at the differing roles of stakeholders, such as the State, the private sector and NGOs and other development organizations, and suggests considerations and guiding principles for supporting successful establishment and operation of FOs. Chapter 6 concludes the review by presenting the implications of the above on the constraints, challenges and opportunities facing small-scale aquaculture FOs.

The Chief Executive Officer of the National Centre for Sustainable Aquaculture (NaCSA) discussing with the members of a shrimp farming society in Andhra Pradesh, India.

Courtesy of MPEDA/NaCSA

2. The case for farmers' organizations

Having introduced the idea that collective action through FOs can be a potentially successful strategy to help small-scale aquaculture farmers overcome certain challenges, this chapter begins by looking at what is meant by the term "farmers' organization" in the context of this study. After proposing a broad definition of FOs, the chapter goes on to introduce the aquaculture sector and highlights the importance of small-scale producers within the sector. The range of challenges faced by small-scale aquaculture producers is then explored, leading to an understanding of the potential role that aquaculture FOs could play in addressing some of these challenges. The theoretical basis for the importance of FOs in developing countries is then reviewed, and the chapter concludes by looking at the potential benefits and costs of FOs to small-scale aquaculture farmers.

2.1 WHAT ARE FARMERS' ORGANIZATIONS?

There are several definitions of FOs in the literature outlining key characteristics that distinguish FOs from other types of rural organizations involving small farmers. Most definitions emphasize membership as a key feature of FOs, provision of services to their members as the key function of FOs, and access to these services as the key reason for becoming a member of an FO (Stockbridge, Dorward and Kydd, 2003). Therefore, there is an important difference between FOs and other rural organizations such as NGOs, which may provide services to rural producers but are not based on membership (Rondot and Collion, 1999). Rondot and Collion (1999) also distinguish formal and traditional organizations. Formal organizations such as FOs have a formally defined membership and generally exist to organize members' external relations with the outside world. Traditional organizations such as a village or a kinship group, on the other hand, tend to be more concerned with managing internal relations among its de facto members. Penrose-Buckley (2007) goes further to suggest that FOs have three key defining features: they are rural businesses; they are producer-owned and controlled; and they engage in collective marketing activities. However, while these features could be seen as conditions for successful FOs, these criteria are perhaps too strict to include the many different types of FOs at their varying stages of development that exist in different countries and contexts. Therefore, an FO is defined here as:

> *A formal voluntary membership organization created for the economic benefit of farmers (and/or other groups) to provide them with services that support their farming activities such as: bargaining with customers; collecting market information; accessing inputs, services and credit; providing technical assistance; and processing and marketing farm products. Formal membership criteria could include payment of membership fees or a percentage of farmers' production. Informal membership criteria could be based on ethnicity or gender.*

FOs vary in terms of membership size, the services they provide and the level at which they operate. FOs can operate at the local level (e.g. farmers' clubs or self-help groups), at a meso level (e.g. local association or federation of farmers' clubs), or at a higher level (e.g. regional or national federations or associations). Thus, FOs can include:

- informal farmer groups and pre-cooperatives;
- farmers' associations, federations and unions;

- farmer cooperatives owned and controlled by their members; and
- chambers of agriculture with a general assembly elected by farmers (IFAP, 1992).

The opportunities and constraints faced by different types of organizations vary. For example, larger organizations offer the potential for economies of scale, but can also lead to high transaction costs associated with organizing larger numbers of people. FOs at the grassroots level have a better chance of resolving local issues such as access to common property resources, primary markets, and technical or economic services than regional or nation-level organizations, which are better suited to advocate for policy change. As such, function and level of organization are often related (Rondot and Collion, 1999).

2.2 BACKGROUND ON AQUACULTURE AND CONTRIBUTION OF SMALL-SCALE FARMERS

While capture fisheries production continues to stagnate, in recent decades the contribution of aquaculture to global supplies of fish and other aquatic animal products has increased substantially, from 3.9 percent of total production by weight in 1970 to 38.5 percent in 2009 (contributing 47.3 percent of the world's fish food supply in 2009). Fish and fish products provide important trade and livelihood opportunities for millions of people around the world. In 2008, 43.5 million people were directly engaged part time or full time in primary production of fish, either through fishing or through aquaculture, accounting for 3.2 percent of the 1.37 billion people economically active in agriculture globally. In the last three decades, employment in the primary fisheries sector has grown faster than the world's population and employment in traditional agriculture. This has been driven mainly by the growing aquaculture sector, which is the fastest-growing food sector in the world. Farmed fish and shellfish are reported to have exceeded the volume of wild-caught fish and shellfish for human consumption for the first time in 2008 (Joker and Christensen, 2009).

Aquaculture is practised globally (about 180 countries report some level of production); however, production is concentrated mainly in Asia, which contributes 91 percent by volume and 82 percent by value.[2] The role of Asia (China in particular) as the main supplier of aquaculture products globally is a situation that is likely to continue, making it important to pay particular attention to promoting responsible and sustainable aquaculture with a strong emphasis on the small-scale sector. A large proportion (up to 80 percent) of aquaculture production in many countries in Asia comes from small-scale, family-owned operations (Phillips *et al*., 2007). The small-scale sector is especially important for rural development, employment and poverty reduction in developing countries. However, while this sector is socially and economically important and continues to remain innovative, it faces many constraints and challenges in integrating into modern supply chains (especially for exports) and dealing with the changing market environment.

2.3 CHALLENGES FACING SMALL-SCALE AQUACULTURE PRODUCERS

Increasing globalization and accompanying liberalization of trade in aquaculture products is tending towards the marginalization and exclusion of individual small-scale producers. Even though a large proportion of global aquaculture production currently comes from small-scale farmers, small-scale producers face major challenges to remain competitive and participate in modern value chains. Increasing demand for higher-value internationally traded export species such as shrimp has led to more integrated production-distribution chains and coordinated exchange between aquaculture farmers, processors and retailers. At the same time, the aquaculture sector, as with other parts of

[2] The top ten aquaculture producers by quantity in 2008 are China, India, Viet Nam, Indonesia, Thailand, Bangladesh, Norway, Chile, the Philippines and Japan.

the global food industry, has experienced increased market concentration, meaning that there is an increasingly smaller number of companies operating at any particular stage of the market chain, enabling them to influence prices and giving them considerable market power, weakening the position of farmers (Penrose-Buckley, 2007). Thus, it is no longer enough for aquaculture farmers to focus solely on increasing production efficiency, but also on marketing and integrating successfully into the production chain, producing high-quality and safe products, accessing the required production inputs at affordable costs, and engaging in on-farm management practices that are highly efficient and sustainable, taking account of the surrounding environment and social issues related to production (Phillips *et al.*, 2007).

Small farmers also face challenges because of the changing preferences of consumers in developed (and increasingly in developing) countries for safer, healthier, better quality food that has been produced in environmentally sustainable and ethical ways. This has led to fast growth in demand for speciality or "niche" products that have special characteristics based on their quality and farming practice, origin, or how the product or production process benefits producers and/or the environment (Penrose-Buckley, 2007). This has been accompanied by a shift from public to increasingly strict private food standards established by groups of retailers, individual supermarket chains and other large companies in order to compete with others and satisfy consumer demands. These requirements increasingly focus on the process of production rather than just the end product, which has led to increased emphasis on traceability (to identify exactly where a product has come from, all the way down the market chain).

Aside from meeting the standards of individual companies, farmers are also increasingly required to meet collective certification standards to show buyers and consumers that certain quality, safety, environmental and/or ethical standards have been met[3] (Penrose-Buckley, 2007). These requirements are being driven, to a certain extent, by public concern over the safety and quality of aquaculture products along with the social and environmental impact of aquaculture production. Growing customer awareness of these impacts has led to the development of several aquaculture certification schemes such as GLOBALGAP[4] and the Aquaculture Certification Council (ACC), with the purpose of securing the long-term development of the sector (Joker and Christensen, 2009). There are currently 30 certification schemes that could be relevant to aquaculture, covering environmental sustainability (promoted by retailers, aquaculture industry, governments and NGOs), organic production, fair- trade, animal welfare and "free range" and the International Organization for Standardization (ISO). There are at least eight key international agreements and at least another nine initiatives of relevance (Corsin, 2007). The increased demand for meeting food safety standards, traceability, certification and other non-tariff requirements is driving risks and costs down the market chain to the farmer. For instance, certification against specific standards requires considerable resources to invest in improved production processes, monitoring systems and the cost of certification itself. Thus, the rise of these standards favours medium- to large-scale, capital-intensive operations that can afford such extra costs and excludes landless fish workers and small-scale fish farmers who have limited resources and capacity to meet these requirements.

The establishment, maintenance and enforcement of appropriate legal, regulatory and administrative frameworks in developing countries (where the majority of

[3] Most certification schemes are run by independent organizations that audit producers or production processes and provide a certificate to certify specific standards have been met.

[4] GGLOBALGAP was formerly known as EUREPGAP. It is a private-sector body that sets voluntary standards for the certification of agricultural products around the globe. The aim is to establish one standard for good agricultural practice (GAP) with different product applications capable of fitting to the whole of global agriculture. The aquaculture products currently covered include shrimp, salmonoids, tilapia and *Pangasius* species.

aquaculture products are produced) are key requirements for the development of a responsible and sustainable aquaculture sector. These frameworks should cover all aspects of aquaculture and its value chain, provide economic incentives that encourage best practices, prompting and assisting farmers to elaborate, support and enforce self-regulating management codes, and promote sustainability-conducive production systems. However, the inadequate financial and skilled human capacity in developing countries to enable better governance and management of the sector could threaten aquaculture development efforts in the future.

The combined effects of liberalization and globalization have also increased economic differentiation among communities and households, and State withdrawal from agricultural marketing has contributed to a highly uncertain environment in which input and output prices are determined by the market, often favouring larger producers who are better able to manage price variability and/or absorb price shocks. State withdrawal from input markets and service provision has left a vacuum, especially in remote areas where incentives for private-sector service provision are lacking.

These global trends require changes in management for both large- and small-scale farmers to remain competitive. Larger farmers have a much higher capacity than small-scale farmers to adapt and benefit from such trends. Small-scale aquaculture farmers are exposed to increased market risks, face enormous constraints in accessing markets and services and integrating into modern supply chains, and are ill-equipped to benefit fully from the new market environment and knowledge, resulting in potentially significant social implications for many rural producers. Despite these challenges, however, the aquaculture sector is growing, and small-scale aquaculture remains highly innovative and makes a significant contribution to global aquaculture production. There are many opportunities to improve the governance and management of the aquaculture sector and thus increase the social and economic benefits to small-scale farmers. One such opportunity lies in promoting and developing collective action among small-scale producers in the form of FOs.

Agriculture FOs have been widely studied, and the experiences of market-oriented agricultural products such as cocoa, coffee, horticulture products, milk and tobacco suggest that FOs and related institutional arrangements can be beneficial for enabling small farmers to access input and output markets and support market integration through mechanisms such as collective, high-volume procurement of inputs and reduction in transaction and marketing costs through joint processing and marketing of products. There is currently little documented information on group formation by commercially oriented small-scale aquaculture producers and related aquaculture institutional arrangements. However, recent experiences in the field show that promotion of aquaculture FOs and clustering of farms and/or farmers, and managing these clusters using appropriate BMPs can be successful tools for improving aquaculture governance and management in the small-scale farming sector, enabling farmers to work together, improve production, develop sufficient economies of scale and knowledge to participate in modern market chains, and reduce vulnerability. This governance and management approach is a way of improving the economic performance of the aquaculture sector and strengthening producers' ability to participate in decision-making and self-regulation.

Many FOs have also failed. A large literature warns that FOs are harmed by attempts to encourage them to scale up too rapidly or to undertake too many or complex activities (Chirwa *et al.*, 2005). They can also be undermined by subsidies, by a failure to focus on core commercial activities offering clear benefits to members, and by donor and government support and interference that treat them more as development agents than as private businesses (Stringfellow et al., 1997; Collion and Rondot, 2001; Lele, 1981; Hussein, 2001; Kindness and Gordon, 2001; Hussi *et al.*, 1993, Chirwa *et al.*, 2005).

2.4 IMPORTANCE OF MARKETS TO SMALL-SCALE PRODUCERS

Despite the challenges facing small-scale aquaculture producers in accessing markets outlined above, it is important to note that improved market access remains very important for small-scale producers and for rural development in general. Markets can often seem to be part of the problem rather than part of the solution, and, in the real world, markets do not function in the perfectly competitive way they are shown to in neoclassical economic theory. In developing countries, especially in poor rural areas, markets are often thin (with low volume of trade or a low number of transactions) or fail completely owing to the high costs and risks of participation. However, avoiding markets is not a realistic solution for most small-scale producers. With small-scale producers facing many general challenges (including limited land and capital, dispersed locations, limited transport and communications infrastructure, poor health and social and political marginalization), markets have the potential to help them overcome these challenges by providing income, generating employment and reducing poverty, empowering small-scale producers and fostering self-reliance, and promoting pro-poor economic growth through enabling consumption linkages resulting in multiplier effects on growth (Penrose-Buckley, 2007).

2.5 THE ROLE OF AQUACULTURE FARMERS' ORGANIZATIONS

Given the challenges facing aquaculture producers outlined in Section 2.3, aquaculture FOs have an important role to play in the sustainable development of the small-scale aquaculture sector, including to:

- enhance participation and consultation of all stakeholders in the planning, development and management of aquaculture, including the promotion of codes of practice and BMPs;
- facilitate mechanisms for voluntary self-regulation for attaining best practices such as the cluster management concept (discussed in Chapter 3);
- promote the appropriate and efficient use of resources, including water, sites, seed, stock and other inputs;
- develop human resource capacity by facilitating the provision of training, technology transfer and access to information;
- increase market access through enhanced ability to meet market requirements, increased negotiation and bargaining power and economies of scale;
- facilitate the provision of extension services, credit and market information;
- develop government communication and consultation processes and promote comprehensive policies and a supportive legal and institutional framework that support sustainable aquaculture development; and
- build partnerships with government to progress and implement policies and programmes, making government efforts and the use of scarce resources more cost-effective (Hough and Bueno, 2002).

2.6 THEORETICAL PERSPECTIVES ON FARMERS' ORGANIZATIONS

Various theoretical approaches[5] have been developed on FOs, on their role in helping to overcome economic coordination problems and promote economic growth, on their formation and operation, and on factors that have the potential to influence their success.

2.6.1 Institutions, transaction costs and the processes of institutional change

Over the last two decades, in the context of liberalization's failure to deliver the agricultural growth needed to reduce rural poverty in developing countries, institutions have been increasingly recognized as being important in influencing economic

[5] Many of which stem from the literature on New Institutional Economics.

behaviour and processes of economic growth (Nabli and Nugent, 1989; Poulton *et al*., 1998; North, 1990; World Bank, 2002; Dorward *et al*., 2005). Institutions, defined by North (1990) as the "rules of the game", influence the incentives and actions affecting people's behaviour and can be described at two levels (Davis and North, 1971):

> *"An institutional arrangement is an arrangement between economic units that governs the way in which these units can co-operate and/or compete."*
> and
> *"The institutional environment is the set of fundamental political, social and legal ground rules that establishes the basis for production, exchange and distribution. Rules governing elections, property rights, and the right of contract are examples…"*

Thus, institutions and institutional arrangements, such as FOs or contract farming arrangements, are a way for economic actors to reduce the uncertainty inherent in human interaction and overcome market failures caused by high transaction costs[6] (Dorward, Kydd and Poulton, 1998). The level of transaction costs is heavily influenced by imperfect information and the opportunistic behaviour of trading partners. According to Williamson (1995), transaction costs are directly related to the degree of asset specificity,[7] uncertainty[8] and transaction frequency.[9] If transaction costs are prohibitively high, producers and traders will not find it worthwhile to engage in output markets (De Janvry, Fafchamps and Sadoulet, 1991), leading to low levels of economic activity, constraining economic development, and potentially resulting in a "low equilibrium trap" (Dorward *et al.*, 2003). The transaction costs and risks faced by farmers and third parties when doing business with each other can be reduced if farmers act together as a unit, especially where investment in specific assets is involved; thus, the key importance of FOs in economic development lies in their transaction-cost minimizing role.

The institutional environment also has considerable bearing on FO development and internal and external relations. Formal laws and government policies along with informal institutions based on customs and traditions affect the environment for FO development and determine whether it is an enabling or disabling one. Moving from a disabling institutional environment associated with economic stagnation to an enabling environment associated with economic growth and development can be a slow and difficult process (Stockbridge, Dorward and Kydd, 2003). The role of FOs in this process can be limited if they are used by powerful organizations to pursue elite interests of socially inefficient institutional and technical change. Even if FOs are controlled by farmers whose interests correspond with socially efficient change, the process of change will be an incremental one.

2.6.2 Economic coordination

Despite the increasing importance placed on institutions to promote competitive markets in current development policy, Dorward *et al.* (2005) argue that this is still not enough to achieve pro-poor economic growth in developing countries. They contend that competitive markets are just one of many forms of institutions fulfilling exchange and coordination functions. As markets face particular challenges in poor rural areas,

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[6] Transaction costs are the costs associated with the exchange of goods and services (such as transportation costs, time, effort and costs involved in checking the quality of inputs, in negotiating with buyers and enforcing contracts) that are incurred by trading partners.

[7] The more specialized the asset, the higher the cost of transferring it to the next best use.

[8] Uncertainty influences the costs of searching for information, screening, negotiating, bargaining and monitoring contracts.

[9] Transaction costs are usually fixed regardless of the size of transaction; thus, more frequent transactions lead to higher transactions costs.

they suggest that other institutions may be more effective at fulfilling market functions in economies with a weak institutional environment, such as developing countries where neoclassical competitive markets may not perform at all. They argue that overemphasis on institutional development to promote competitive markets is not only inefficient in promoting economic growth, but also unlikely to promote pro-poor growth.

Dorward, Kydd and Poulton (2005) and Dorward, Poulton and Chirwa (2009) suggest that even if markets are not always the best vehicle for facilitating coordination and exchange functions, the central challenge facing smallholder agricultural development remains one of coordination. Stockbridge, Dorward and Kydd (2003) suggest that economic development is the result of the synergistic outcome of coordinated action, not the sum of isolated actions, where returns to the actions of one party depend on the actions of others. Thus, the success of an economy is highly dependent on the ability of its institutions to coordinate complementary investments. Dorward, Kydd and Poulton (2005) and Dorward, Poulton and Chirwa (2009) argue that different types and scales of coordination are vital to achieve rapid pro-poor economic development and involve both coordinated exchanges across multiple elements and mechanisms for coordination across all processes. They explore different types of coordination (vertical, horizontal and complementary) in the context of livelihood improvement; however, the incentives for large firms to provide mechanisms for such coordination can be weak in disperse, risky and low-value agricultural product markets. In fact, private-sector service providers and private companies are reluctant to even enter poor rural markets and are especially wary of providing services in food markets, as transaction costs and risks of doing business are often too high to make it worthwhile. This results in a cycle of underdevelopment where high transaction costs limit market investment, resulting in low volumes of production and trade, which again lead to high transaction costs and risks (Penrose-Buckley, 2007). As this cycle is caused by market distortions and failures, it is unlikely that the market will create a solution. Thus, non-market interventions that can reduce the costs and risks of doing business are needed. One way of doing this would be to coordinate the investments of all actors so they all invest at the same time; however, in current liberalized markets there is often no one to play this coordination role, resulting in markets remaining weak.

2.6.3 Commodity techno-economic characteristics

The incentives for establishing coordination mechanisms vary between different innovations and commodities. Jaffee and Morton (1995) suggest that the organization and performance of private-sector marketing and processing will be influenced by the "distinctive techno-economic characteristics of the individual commodities", as these characteristics affect transaction costs (and hence the demand for institutions) through influencing the level of asset specificity, uncertainty and frequency of transaction in production and marketing. Institutional development requirements and the need for coordination mechanisms will increase with demanding techno-economic characteristics such as perishability, multiple purchased input production requirements, technical sophistication of post-harvest and processing activities, and small quantities produced by many farmers. Thus, low levels of institutional development in developing countries are likely to be an important constraining factor in the development of institutionally demanding commodity systems and are likely to be more important than technological development (Dorward *et al*, 2000). Aquaculture products have institutionally demanding techno-economic characteristics (e.g. perishability, strict quality and food safety requirements, use of multiple inputs, need for cold chain, and sale and transport of live fish), especially if products are bound for export markets. This argument implies that in order to support the small-scale aquaculture sector, institutional development is needed. FOs are an obvious candidate for solving the sorts of coordination problems faced by developing countries and can be well placed to develop the trust needed to

secure credible commitments from different market actors to make mutually beneficial and complementary investments through building strong relations with other market actors.

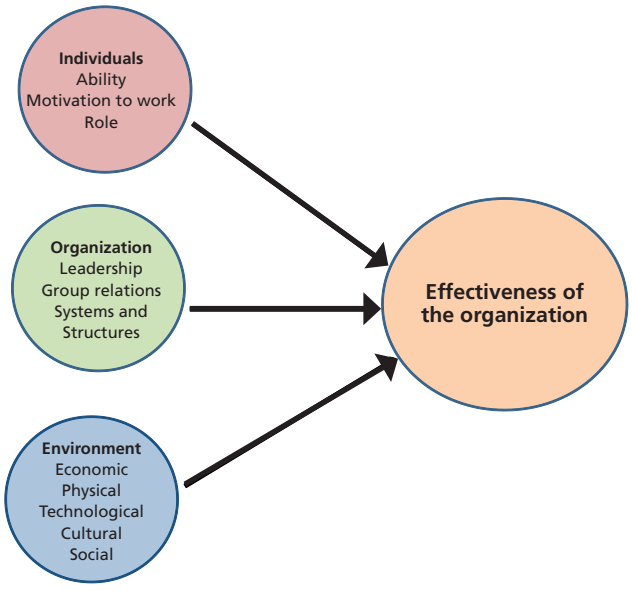
2.6.4 Organization theory

Organization theory looks at factors that determine the effectiveness of organizations in meeting objectives. Much of organization theory relates to private or corporate organizations; however, it can also be relevant to FOs, especially those organizations that are run as rural enterprises or businesses. Handy (1999) divides the factors that influence the effectiveness of organizations into three broad categories: individuals, the organization, and the environment. Figure 1 breaks these categories down further.

2.6.5 Collective action

Development of FOs involves collective action that occurs when a group of individuals come together to solve a shared problem by establishing a set of rules that, if followed, will allow the group to meet a common goal. However, like market exchange, collective action can also sustain transaction costs associated with negotiation, information gathering, monitoring and enforcing rules. If transaction costs of working together as a group are higher than those associated with other institutional alternatives or working individually, the group will be unsuccessful (Stockbridge, Dorward and Kydd, 2003). According to Ostrom (1990, 1999), there is much empirical evidence to suggest collective action is successful in finding solutions to the problems of managing scarce natural resources. Through an empirical study of collective action, the author has identified design principles (shown in Box 1) that characterize institutions associated with the sustainable management of common pool resources (CPRs). Although this is not the same as FOs, there are many similarities between managing CPRs as a group and the operation of FOs (e.g. access to CPRs by group members is similar to FO members' access to services provided by FOs) that enable these principles to hold useful insights into factors for successful FOs (Stockbridge, Dorward and Kydd, 2003).

FIGURE 1
Factors affecting organizational effectiveness



Source: From Stockbridge, Dorward and Kydd (2003).

BOX 1

Design principles illustrated by long-enduring common pool resources (CPRs) institutions

- *Clearly defined boundaries* – Individuals or households who have rights to withdraw resource units from the CPR must be clearly defined, as must the boundaries of the CPR itself.
- *Congruence between appropriation and provision rules and local conditions* – Appropriation rules restricting time, place, technology and/or quantity of resource units are related to local conditions and to provision rules requiring labour, material and/or money.
- *Collective-choice arrangements* – Most individuals affected by the operational rules can participate in modifying the operational rules.
- *Monitoring* – Monitors, who actively audit CPR conditions and appropriator behaviour, are accountable to the appropriators or are the appropriators.
- *Graduated sanctions* – Appropriators who violate operational rules are likely to be assessed graduated sanctions (depending on the seriousness and context of the offence) by other appropriators, by officials accountable to these appropriators or by both.
- *Conflict-resolution mechanisms* – Appropriators and their officials have rapid access to low-cost local arenas to resolve conflicts among appropriators or between appropriators and officials.
- *Minimal recognition of rights to organize* – The rights of appropriators to devise their own institutions are not challenged by external governmental authorities.

For CPRs that are parts of larger systems:

- *Nested enterprises* – Appropriation, provision, monitoring, enforcement, conflict resolution and governance activities are organized in multiple layers of nested enterprises.

Source: Ostrom (1990).

2.7 BENEFITS OF FARMERS' ORGANIZATIONS

While collective action and FOs are not a universal solution to all the challenges faced by small-scale producers, especially those related to structural issues such as gaps in the market for services that are not being filled by the private sector, they can be used to overcome some of the scale and market challenges discussed above and provide important benefits to producers in a number of ways. FOs can increase the scale of individual farmers' business activities, act as intermediaries or links between individual farmers and buyers and/or service providers, enable specialization of labour, and empower small-scale farmers through cooperation and increasing their influence and voice.

These lead to the main economic and sustainability benefits of FOs – lower costs through economies of scale, increased access to input and output markets and services, increased bargaining power, and increased confidence and influence.

2.7.1 Lower costs

One of the main benefits of FOs is their ability to decrease marketing costs through economies of scale. Economies of scale refer to reductions in the cost of production or marketing a unit of product as a result of increasing the overall scale of activities. This stems from the reduction in fixed costs (e.g. costs for storage or processing equipment), which fall for each unit produced or marketed (Penrose-Buckley, 2007). It is also due to the reduced transaction costs (e.g. search and negotiation costs) for producers (and buyers) when FO members sell their products together, as one or two members can undertake these activities for the whole group instead of each member undertaking them individually. This is also the case when an FO buys inputs as a group.

In both cases, due to reduced transaction costs for buyers and input sellers, FOs can often negotiate higher prices for their output and lower prices for their inputs. Group adoption of BMPs (discussed in detail in Chapter 3) can also significantly reduce costs of aquaculture production, for example, through reduction in the use of unnecessary chemicals and better feed and water management.

2.7.2 Increased market access

Many small-scale producers have to settle for the prices offered by local traders as they are unable to access output markets directly. However, by acting as a group, small-scale farmers are more likely to be able to access processors, wholesale and other markets further down the market chain by bulking their produce together to reach the scale necessary to deal with buyers directly, and bypassing local traders and other intermediaries. However, despite the bad press that "middlemen" and local traders often receive, they can perform a useful service to farmers, especially in poor rural areas where farmers are dispersed, markets are thin and there is a lack of infrastructure, all leading to high transaction costs. In these cases, traders often make small profits and FOs may find it hard to compete with them as intermediaries.

2.7.3 Increased access to inputs and services

Economies of scale and lower transaction costs associated with FOs can enable members to increase their access to inputs and services, as it makes it much cheaper and easier for businesses, input suppliers and service providers to work with a group rather than individual producers. The increased credibility that is associated with FO membership, especially if it is legally registered, also makes it easier for members to access services, particularly financial services, as banks are more likely to give credit to registered organizations than to individual producers. In some cases, FOs may be able to provide services such as transport or credit to members, especially when private-sector service provision is lacking; however, this can be risky as FOs will need to recover the costs of service provision. FOs can also make it much easier for government and other organizations to deliver extension services and disseminate research outputs and ensure they reach large numbers of producers. Farmers thus have increased access to extension, training and information services through involvement in a group. This has certainly been the case with the dissemination of BMPs developed by the Network of Aquaculture Centres in Asia-Pacific (NACA) to aquaculture FOs and farmer clusters in India, Indonesia and Viet Nam, and is discussed in more detail in Chapter 3.

2.7.4 Increased bargaining power

Bargaining power refers to the ability to influence the price or terms of a business transaction. The bargaining power of producers increases when the product is scarce, when alternative marketing options exist, and when producers have access to market information. FOs can increase the bargaining power of small-scale farmers in a number of ways. By bulking or spreading production between members throughout the season, FOs are more likely to be able to meet the demands of buyers and negotiate better prices. It is easier for FOs than individual members to invest in processing, storage or transport facilities, giving members increased choice over when and where to sell their products. In market chains where buyers have most of the power, FOs can provide some balance to that power. Increased producer power is especially important when perishable products such as aquaculture products are involved or if producers have invested in expensive equipment that cannot be used for other purposes (this is often referred to as "asset specificity"). Both of these situations lead to weak bargaining position of producers, as perishable products need to be sold before they go bad, and investment in specific assets means producers will continue to produce even if they receive low prices.

2.7.5 Empowerment of small-scale farmers

The strength and unity that comes from cooperating and working together can be empowering for small-scale producers, who often lack the skills, knowledge and experience to successfully participate in the market. By working as a group, producers can take increased risks and gain confidence in the market and become empowered through their achievements and their increased income and independence. In addition, FOs can also be an important way to empower women and underprivileged communities.

2.7.6 Increased voice

FOs, especially larger ones, can provide a platform for producers to advance their interests and influence local, national and international policies that affect them.

2.8 COSTS OF FARMERS' ORGANIZATIONS

As mentioned above, FOs and collective action are not a universal solution to the problems of small-scale producers. Aside from their many potential benefits, FOs can also face very real costs and challenges of collective action that need to be overcome if they are to be successful. The existence of these costs and challenges may go some way to explaining why FOs have had such a mixed record of success in the agriculture sector. The main costs and challenges facing FOs are those related to lack of trust between members, high internal transaction costs and the problem of free riding.

2.8.1 Trust

Poor management and the subsequent breakdown of trust among FO members, leaders and managers is one of the main reasons FOs are unsuccessful. When an FO is made up of producers with different asset levels, interests and objectives, it can be difficult to manage, especially when the FO becomes larger. A lot of time and effort is needed to consult with members and communicate between the different levels of the FO to develop consensus on important issues. It is easy to forget the importance of maintaining the trust and commitment of members or to feel it is too costly to continue to put such effort into maintaining "social capital"; however, it is crucial to the sustainability of the FO.

2.8.2 Transaction costs

While decreasing transaction costs between FO members and service providers and/or buyers, collective action also incurs certain internal transaction costs such as negotiation costs, monitoring and enforcement costs, and information costs. If these costs are too high, collective action may be unsuccessful. Negotiation costs can include those related to deciding upon which rules/institutions to base the collective action. Monitoring and enforcement costs relate to ensuring members adhere to the rules decided upon to protect against "free riding" (see below). Information costs include those related to information exchange for joint decision-making, which in itself can be a constraint, especially when business decisions need to be made quickly. High transaction costs can also lead to delays in providing services to members, such as purchase and distribution of inputs or collection and transportation of produce to the buyer. This could result in members deciding to obtain such services from traders or other intermediaries who are more efficient than the FO owing to lower operating costs.

2.8.3 Free riding

Free riding is a common challenge for collective action and the provision of public goods. Free riders are people who consume more than their fair share of a public resource or contribute less than their fair share to the cost of its production. In the context of FOs, free riding occurs when some members (or non-members) benefit from the efforts or investments made by others. For example, an FO may help provide

inputs to members and recover some of its costs by selling members' products in bulk; however, members may be tempted to make use of the inputs and then sell individually to local traders if it is more profitable. Non-members can also benefit (free ride) from the activities of FOs; for example, if an FO spends time and resources lobbying for a change in policy to benefit all small farmers and is successful, both members and non-members will benefit even though non-members have not contributed to the costs of the activity. Free riding is usually considered to be a problem when it leads to the non-production or underproduction of a public good or when it leads to the excessive use of a common property resource. FOs must therefore establish systems to limit free riding and provide incentives for all members to invest in the organization.

2.9 WHO BENEFITS FROM FARMERS' ORGANIZATIONS?

Even though FOs have the potential to provide many benefits to small-scale farmers in poor countries, it is often argued that they provide limited benefits to poor and subsistence farmers.[10] FOs are often established by better-off producers,[11] as poorer farmers often lack the resources to become members of commercially oriented FOs that require members to produce a reliable surplus that meets market requirements. Also, membership fees, even if low, may still be too expensive for poor subsistence farmers, especially women farmers with limited cash. Women farmers may also find it difficult to join FOs, as they have so many other demands on their time (e.g. household duties, child rearing) and could also face cultural constraints. Often, the poorest small-scale producers live in poor and remote areas and face thin markets, resulting in a lack of successful FOs in the area for farmers to join. For these farmers, joining commercially oriented FOs may not be appropriate and offers few immediate benefits. However, other forms of collective action, for example, community-based organizations (CBOs) may be better placed to assist poorer farmers and address more fundamental problems in the community, such as lack of infrastructure, assets or skills, that could help them come closer to meeting the requirements to join a commercially oriented FO.

It is often argued that FOs and other membership-based organizations reflect the social and cultural context in which they exist, and that it is naive to think such organizations are abstracted from local power structures (Khan, 2007). For example, in her study of CBOs in Sindh Province, Pakistan, Khan argues that in this particular case "beneath it all, it is social and caste hierarchy that controls how members of CBOs interact with each other and those around them". Thus, if FOs are established in areas where, for example, certain groups are marginalized or women are not seen as equal, it is likely that FOs will also reflect these social and cultural value systems and exclude certain groups.

Despite arguments that poor farmers and other marginalized groups are less likely to join and benefit from FOs, this is not always the case and can depend on the context and types of constraints that farmers face and the type of support they receive. Many of the shrimp farmer societies in India (see Case Study 3 in Chapter 3) are located in remote villages and made up of poor farmers. This is partly due to the fact that the common issue that has brought them together is not just oriented around market access but to reduce disease risks and thus costs of production. They have also benefited from strong support and capacity building from the NaCSA along with support from the NACA and the Marine Products Export Development Authority (MPEDA).

[10] Further, in the case of aquaculture, rural households face certain minimum requirements (such as access to land) to enter into production, often out of reach of the extreme poor.

[11] Moreover, they can end up being controlled by local elites who aim to control local market activities and those of small farmers.

If interventions are focused on empowerment of these groups and are managed carefully, it can be possible for FOs to be of benefit to both poor and better-off farmers. For example, FOs can be started off as small groups, such as registered or unregistered common interest groups involving poor and marginalized groups, which then grow steadily and become formal FOs over time.

However, despite poorer farmers and other marginalized groups being less likely to join and thus benefit directly from FOs, they may still be able to benefit indirectly through services offered to non-members (e.g. buying produce of non-members to meet market demand), through increased local employment and demand for labour, through local economic growth, and through social activities supported by FOs (Penrose-Buckley, 2007).

*Harvesting white shrimp (***Penaeus vannamei***) from the pond owned by the members of a shrimp farmer group/cooperative in Samroiyod, Thailand.*

Courtesy of Koji Yamamoto/FAO

3. Structure, operation and management of farmers' organizations

This chapter[12] starts by looking at the most common types of FOs and some of the different legal and organizational structures they can adopt. The concept of "cluster management" as an informal multilevel organizational structure used to enable self-regulation in aquaculture farming through group implementation of BMPs is introduced. Different types of services provided (and activities) undertaken by FOs and the ways in which these services can be delivered both by FOs and others is then explored. Some key issues in FO governance and management are highlighted, and the chapter concludes by looking at different business strategies FOs can adopt to increase income, reduce costs and achieve their objectives. Throughout this chapter, five case studies of a range of different aquaculture FOs are introduced in order to show how FOs function in reality, helping to illustrate the points being made in a practical way.

Before looking at some of the different types of FOs that exist, the first two case studies will be introduced. Case Study 1 (Box 2) summarizes the experiences of the Samroiyod Shrimp Farmers Cooperative in Thailand (the full case study is attached as Appendix 1) and Case Study 2 (Box 3) introduces the Surat Thani Shrimp Farmers Club and the Thai Marine Shrimp Farmers Association.

3.1 TYPES OF FARMERS' ORGANIZATIONS

According to the broad definition of FOs put forward in Chapter 2, FOs can include a wide range of organizations and structures ranging from informal farmer self-help groups to farmers' associations, federations and unions. This section will look at the three most common types of small-scale FOs: informal organizations, associations and cooperatives.

3.1.1 Informal organizations

Informal organizations are unregistered FOs that have no legal rights, and they are how most FOs start off. FOs will only register once the benefits of doing so outweigh the additional costs that come with registration; for example, the Samroiyod Shrimp Farmers Cooperative in Thailand, introduced in Case Study 1 (Box 2), was an informal unregistered farmers' organization for a whole year before its members decided to register with the Department of Cooperative Promotion. The Surat Thani Shrimp Farmers Club, introduced in Case Study 2 (Box 3), has remained unregistered as an informal club for 20 years to avoid the costs of having to follow government rules and regulations. In some countries, the laws governing FOs are poorly specified or require an inappropriate structure for small-scale producers,[13] providing farmers with little incentive to register their organizations. Registration can be a disadvantage if an FO is competing with informal traders in an unregulated informal market (e.g. if FOs have to pay tax when their competitors do not). However, without registration, FOs can have

[12] This chapter draws on Part II of Oxfam's guide to producer organizations: *Producer organizations: A guide to developing collective rural enterprises* (Penrose-Buckley, 2007).

[13] For example, in Viet Nam, cooperatives are the only legal structure for collective business, but cooperatives have a lot of rules and regulations that are not suitable for small enterprises (Penrose-Buckley, 2007).

BOX 2

Case Study 1: The Samroiyod Shrimp Farmers Cooperative, Thailand

The Samroiyod Shrimp Farmers Cooperative, located in Prachuap Khiri Khan Province in Thailand, was established in 2006 by shrimp farmers to help them respond to the decreasing international price of shrimp by increasing productivity through group-regulated production, provision of financial support, and enabling farmers to access sustainable output markets offering higher and more stable prices. The cooperative has been supported by the Network of Aquaculture Centres in Asia-Pacific (NACA) since 2008.

Cooperative membership currently stands at 158 members (115 men and 43 women). Members are mostly small-scale farmers with one or two ponds. Conditions of membership include farm registration, a minimum purchase of 200 cooperative shares and a small administration fee. Regardless of how many shares or how many ponds a member has, each member is only allowed to access cooperative services for one pond. Members also have to agree to follow the cooperative's regulations, established by the Executive Committee in order to increase the productivity and quality of shrimp, which is maximized when all group members follow the regulations. The regulations, which are similar to BMPs promoted by the National Centre for Sustainable Aquaculture (NaCSA) in India and by NACA elsewhere in the region, include maximum stocking densities, prohibited use of banned chemicals and certain antibiotics, etc. The cooperative provides members with a number of important services, including credit for farm inputs, provision of technical advice, a computerized traceability system, increased market access through developing links with processors and buyers, and improved quality and safety of shrimp (through an internal control system).

A major achievement for the cooperative is increased market access due to its collaboration with a local processing plant and a European Union buyer. This partnership between the cooperative, processor and buyer is under consideration for Fairtrade certification and, if successful, will mean the cooperative will be producing the first-ever Fairtrade certified shrimp product. The cooperative has also increased members' access to good-quality inputs through negotiation of various partnerships and agreements with input suppliers and has improved the production and income of members.

problems accessing market services (such as bank credit or technical assistance) and can be seen by potential business partners as being less credible than other FOs that are registered (Penrose-Buckley, 2007), and experience has shown that, in the long-run, FOs are less likely to be sustainable if not formally registered.

3.1.2 Associations

Associations are membership-based organizations where members have access to particular services and benefits. Among other reasons, associations can be formed simply to allow members to meet and discuss common issues, exchange ideas and devise collective solutions. Many NGOs and CBOs are registered as associations, but it is also a common legal structure for FOs. For example, the Thai Marine Shrimp Farmers Association in Surat Thani (Case Study 2) is an association of medium- to large-scale shrimp farmers. Even though membership is restricted to farmers, other shrimp industry actors such as input suppliers, processors and exporters also attend the association's meetings, as it provides a forum for industrywide issues to be discussed and for different actors in the market chain to meet and build partnerships. Association members can decide how to structure and manage their organization to suit their

own requirements. The autonomy and flexibility of associations are big advantages; however, associations are not usually designed for business activities and are seen in many countries as non-profit organizations and so are not allowed to distribute profits to members, and members are personally liable for the association's debts.

3.1.3 Cooperatives

Cooperatives are the most well-known type of FO. Traditional cooperatives are controlled and owned by their members, who have equal shares and who each have a say in the running of the cooperative through equal voting rights. The main purpose of cooperatives is to provide competitively priced services to their members and to make a profit from the sale of members' produce, which is then usually distributed to members according to how much they use the cooperative's services. This is different from private companies, where ownership, decision-making and profit distribution is proportional to each member's investment in the business. The Samroiyod Cooperative in Case Study 1 is a cooperative where members must buy a minimum amount of shares to join, have equal voting rights, and are offered services such as competitively priced inputs on credit and extension services. Unlike traditional cooperatives, however, profits will be distributed according to the proportion of members' shares rather than according to patronage (how much they use cooperative services) as with traditional cooperatives. However, as the cooperative has not yet earned any profits, this may change. Because of the way profits are distributed in traditional cooperatives, they often find it hard to increase the level of investment from members, as there is little incentive for members to invest more than the amount required. Cooperatives usually have a particular structure requiring many rules and regulations, making them less flexible than associations and increasing their internal administration costs. In many countries, cooperatives are viewed negatively owing to past experiences with government-led cooperative promotion programmes. Even though those days are mostly over, governments still define cooperative structures, in some cases to allow them to maintain some control over their activities.[14]

3.1.4 Choosing the type of farmers' organization

FOs are created to address common issues and identify appropriate solutions. The role and scope of the FO depends on the nature of the issues to be addressed. For example, if the objective of the FO is to sell members' products, a cooperative structure may be required. If the FO wants to link to civil society and influence government authorities, the appropriate structure could be that of a professional association, such as the Thai Marine Shrimp Farmers Association, that is incorporated as a non-profit organization and where financing is obtained from membership fees. When establishing an FO and deciding which legal structure or type of FO is most appropriate, a number of issues need to be considered. These include ownership, membership criteria, decision-making and voting rights, distribution of profits, responsibility for risk, level of regulation needed, level of credibility, taxation, incentives for members' investment and share transfer. Once decisions are made on these issues, it will be easier to see which legal structure or FO type is most appropriate to meet members' needs, bearing in mind that there is no perfect structure for an FO.

3.2 MULTILEVEL STRUCTURES

As FOs grow and their membership base increases, they often become harder to manage. Most studies of FOs suggest that the ideal size is between 15 and 30 members

[14] New types of FOs have developed recently to reduce the disadvantages of cooperatives and in response to challenges of buyer-driven markets, combining traditional cooperative features and those of private companies. For example, new generation cooperatives have a fixed number of members, and allocation of profits and voting rights is done according to the proportion of shares owned by each member.

BOX 3

Case Study 2: The Surat Thani Shrimp Farmers Club and the Thai Marine Shrimp Farmers Association

The Surat Thani Shrimp Farmers Club (STSFC) was established 20 years ago by a group of new shrimp farmers in Surat Thani. The club was established as an informal support group with the overall goal of achieving environmentally sustainable shrimp farming. The STSFC was the first shrimp farmers' club in Thailand, and today there are approximately 80 members, most of whom are medium- to large-scale farmers. The STSFC is an informal group that is not registered with the Government (to avoid having to follow the many government rules and regulations and to reduce the potential for government interference). Thus, the club does not have strict membership fees or regulations and is financed by the donations of its active members. Donations can be any size and can range up to THB 80 000 per year. The STSFC has encouraged other provinces to form clubs, and today there are seven such clubs in the southern provinces, one club per province.

While the clubs did not want to register with the Government, it soon became apparent that they would have limited influence on the Government if they were not registered. Therefore, they decided to form and register the Thai Marine Shrimp Farmers Association (TMSFA) in 1998 in order to be able to interact with and lobby the Government to ensure sustainable shrimp farming in Thailand. The association is sponsored mainly by the STSFC, and its income is supplemented by the THB 1 000 annual membership fee. It is essentially the advocacy arm of the clubs and is made up of the association's president, the presidents of the seven provincial clubs and approximately 70 independent members, all of whom are shrimp farmers, many belonging to the clubs. The TMSFA meets twice a month and has had 450 meetings since it started. Other shrimp industry actors such as input suppliers, processors and exporters also attend the association's meetings.

The main activities of the clubs include the two-day Shrimp Day Fair, which they organize annually in Surat Thani. It is a showcase for outstanding farmers and researchers and is also a trade show for all those involved in the Thai shrimp industry (e.g. farmers,

in order to keep internal transaction costs such as monitoring and enforcement costs, free riding and maintaining trust at a manageable level. However, a balance must be struck between keeping internal transaction costs down and the need for economies of scale to be able to lower production and marketing costs and increase the FO's market power (see Chapter 2). In order to achieve this balance, FOs often join with other FOs and create additional higher-level organizations or multilevel structures (e.g. federations or apex organizations). In this way, FOs can remain individually small at the same time as benefiting from economies of scale. For example, the Samroiyod Shrimp Farmers Cooperative, described in Case Study 1, has joined together with four other shrimp cooperatives to form the Federation of Shrimp Cooperatives of Thailand (FOSCOT). The individual cooperatives concentrate on accessing inputs and services, managing production and quality control. The federation focuses on negotiating contract farming arrangements with large processors and buyers on behalf of all the cooperatives, along with lobbying the government. The Samroiyod Cooperative has also divided its 158 members into 17 subgroups based on location in order to ensure that the cooperative is responsive to members' needs (along with ensuring increased enforcement of cooperative production management regulations), so in effect it has a three-tiered organizational structure (subgroups at the first level, the general cooperative at the second level and the federation at the third level).

This is also an example of when FOs create multilevel structures in order to perform certain functions that a lower level FO is unable to accomplish effectively (as discussed in

inputs suppliers, processors and exporters). The profits go towards local development initiatives related to the environment and education. For example, the club has spent THB 6 million on schools in Surat Thani to establish scholarships, donate computers and construct new buildings. The STSFC also produces the Shrimp Newspaper once a month. This is a free newspaper, which is now self-financing through the sale of advertising space. The newspaper covers stories related to all aspects of shrimp farming and is distributed to shrimp farmers all over southern Thailand. The club has also established the Surat Shrimp Programme (SSP), a self-certification guarantee that is run by the club and audited by a special committee. The SSP standards include:

- food safety standards: no illegal chemicals, no antibiotics (Good Aquaculture Practice [GAP] still allows the use of legal antibiotics);
- social standards (local development activities as mentioned above);
- environmental standards (e.g. no mangrove destruction); and
- traceability: farmers deposit specimens in a freezer at the club's office to ensure that if there are any problems they can be traced back and checked.

The association lobbies the Government through trying to informally influence the Department of Fisheries. Currently, it is lobbying the government to raise awareness in international markets about the Thai Government standard for aquaculture (GAP) that all farmers must adhere to, and its equivalence to other private standards such as the Aquaculture Certification Council (ACC) and GLOBALGAP. As long as international buyers see the GAP as inferior to other private standards, Thai farmers will have to continue to pay large amounts of money (especially in cases such as ACC certification, which costs approximately USD 2 000 per year) to be certified in order to access international markets. The association has also lobbied the Government to make the Thai Department of Fisheries' GAP and Code of Conduct (CoC) certifications into a single standard, which the Government is currently in the process of doing.

Sources: Interviews with the president of TMSFA, Dr Suraphol Pratuangtum, and the president of STSFC, Mr Ekapoj Yodpinit.

Chapter 2). For example, a local FO will find it difficult to lobby the national government; however, a higher-level apex organization or federation committee representing local FOs in a particular area or region will be much better placed to advocate for small farmers and FO needs through their easier access to national government officials and policy-makers. The Surat Thani Shrimp Farmers Club in Case Study 2, for example, joined with other shrimp clubs to form the Thai Marine Shrimp Farmers Association in order to lobby the government effectively. Higher-level organizations can also have increased capacity to undertake development activities. For instance, as mentioned in the case study, the Thai shrimp clubs and the Thai Marine Shrimp Farmers Association organize an annual two-day Shrimp Day Fair and use the profits to undertake development activities, such as providing local schools with computers, new buildings and scholarships. At the same time, a higher- level organization may find it difficult to provide members with certain services such as production and technical assistance.

Even though there are many benefits to having networks of groups forming multilevel structured FOs, they can be difficult to manage and require substantial capacity and resources to do so effectively. Any expansion in the scope and scale of collective activities should be a gradual process in which capability in simple collective activities is developed first before attempting to undertake more complex collective activities. Multilevel structures require building from the bottom up, and there is a danger of establishing additional levels prematurely. For example, even though NaCSA in Case Study 3 (Box 4) has helped to establish 312 shrimp farmer societies, joining

BOX 4

Case Study 3: Farmer societies and the National Centre for Sustainable Aquaculture, India

In 2000, the Network of Aquaculture Centres in Asia-Pacific (NACA) began cooperating with the Marine Products Export Development Authority (MPEDA) of India's Ministry of Commerce, providing them with technical assistance for a "Shrimp disease control and coastal management" project, focusing on black tiger shrimp (Penaeus monodon), to address increasing anxiety over disease and the sustainability of the shrimp sector. The MPEDA-NACA project team developed better management practices (BMPs) to address the key disease risk factors along with food safety and environmental risks. The BMPs included recommendations for good pond preparation, high-quality seed selection, water quality management, feed management, health monitoring, pond bottom monitoring, disease management, emergency harvest, food safety and environmental awareness. The BMPs were disseminated through farmer meetings, regular pond visits, training of extension workers and the publication of ten brochures on BMP adoption, along with booklets on shrimp health management and extension.

Farmers were organized into self-help groups, originally called "aqua clubs" and now legally registered as farmer societies, which have joined to form "clusters" (groups of interdependent shrimp ponds situated in a specified geographical locality, typically comprising farmers who share resources or infrastructure such as water sources). The cluster concept was found to be a practical and effective way to communicate risks and risk management to farmers to reduce risks and maximize returns. Thus, the organization of farmers into groups and clusters was used to facilitate the effective dissemination of BMPs among group members and also to enable them to more easily address the social and financial risks associated with small-scale shrimp farming and increase their access to input and output markets and services.

To continue the project, a separate semi-autonomous governmental agency called the National Centre for Sustainable Aquaculture (NaCSA) was created in 2007, with the approval of the Government of India. NaCSA not only facilitates the formation of farmer societies but builds their capacity and supports their activities to maximize their chances of success in achieving sustainable and profitable shrimp farming. The project has made significant progress, with the number of farmers adopting the cluster management approach growing exponentially from five farmers in 2002 (covering 7 hectares in one state) to 7 402 farmers in 312 societies (covering 8 616 hectares in four coastal states). The production of BMP shrimp through the project increased from 4 tonnes in 2001 to 4 160 tonnes for the first crop of 2009.

The NaCSA model has often been described as a success story of collective action and cluster management for sustainable small-scale aquaculture development. This is understandable given the numerous achievements of the project, including reduced disease incidence; increased productivity and quality; increased access to good-quality inputs; increased profit through reduced production costs; improved market access through increased ability to meet market requirements such as organic certification, traceability and ecofriendly sustainable production; and through linking societies to processors and retailers (an example of which is a recently agreed contract to supply Sysco Corporation in the United States of America with 10 000 tonnes of shrimp to be sold under their premium brand, which will involve 10 000 farmers in 525 societies); revival of abandoned ponds; increased food security and sustainable livelihoods; and empowering small-scale farmers and giving them a "voice".

BOX 5

Attributes required by small-farmer groups wishing to form associations with other groups

- Good leadership, and active participation of members in group meetings and activities.
- A high degree of solidarity among members.
- Well-defined group income-generating activities and a high level of self-reliance (e.g. they no longer need continuous support from their group promoter).
- The capacity to deliver valued benefits or services to their members.
- The ability to manage their financial affairs efficiently and to repay debts promptly.
- Sufficient group savings to cover their own needs and any risks or costs associated with forming and developing their network or federation.
- A demonstrated interest in intergroup cooperation to solve common problems that affect neighbouring groups.
- Confidence that intergroup cooperation will bring them concrete economic and social benefits.

Source: FAO (2001).

these societies together to establish apex organizations to take care of marketing activities and lobbying the government is an important future priority. However, they are not rushing into establishing this yet and instead are ensuring the farmer societies are successful and will provide a solid foundation for any future multilevel structure. NaCSA is aware that if a higher-level structure is established too soon and before the necessary capacity has been developed, it could weaken the societies by reducing the commitment, trust and motivation of society members and could perhaps even lead to the collapse of the whole structure.

Some attributes required by FOs wishing to join with other groups in order to form networks or federations are suggested in Box 5. By meeting these criteria before joining together, FOs are more likely to develop stronger partnerships with other groups and thus develop more successful networks and multilevel structures.

3.3 CLUSTER MANAGEMENT

Farm cluster management has recently been suggested by NACA as a successful mechanism to empower small-scale rural farmers and to improve aquaculture practices, including those related to health management for the safe movement of live aquatic animals. Farm clusters consist of farmers located in the same local area and often sharing the same water source. In some cases, the term "cluster" is synonymous with FO (i.e. a cluster or group of farmers); however, in other cases (such as in Andhra Pradesh, India), a cluster refers to a cluster or grouping of FOs in the same locality. In the latter case, a cluster is an example of an informal multilevel organizational structure.

Whichever way it is used, the term "cluster management" refers to a group of farmers or FOs that collectively implement certain production standards. Cluster management has been used as a tool by NACA to facilitate the implementation of BMPs (see Box 6) for small-scale aquaculture development in a number of countries in Asia (i.e. India, Indonesia, Sri Lanka and Viet Nam). Cluster management is thus used to enable self-regulation for the implementation of standards at the farm and processing level to ensure responsible and high-quality aquaculture farming in a specific locality. State agencies often do not have the capacity to regulate the numerous small farms that exist in aquaculture-producing areas. This inevitably means that monitoring and control of farming practices are effectively outside of the government's capacity. This means that the avoidance of banned or controlled chemicals and the production of

BOX 6

Better management practices

Better management practices (BMPs) for aquaculture production refer to a set of guidelines and science-based tools developed out of population-based risk factor studies in farming systems and evaluation of current production practices, in consultation with relevant stakeholders. The main objective of BMPs is not just to promote increased production but to promote responsible and sustainable aquaculture. Although most BMPs have similar objectives, there is a significant level of variation in BMPs for different commodities and locations, and developing location and context-specific BMPs is very important. BMPs are much broader than good aquaculture practices (GAPs), which are commonly used only to address food safety issues in aquaculture to minimize contamination of aquaculture products with pathogens, chemicals, etc.

Adoption of BMPs aims to improve production practices, reduce disease risk, improve yield and contribute to sustainability and economic viability. BMP guidelines are always evolving and open to improvement as aquaculture practices progress. Benefits of BMP adoption include: reducing and/or minimizing disease occurrence; decreasing the cost of farming; improving growth performance; improving environmental conditions and minimizing impact on the local environment; attaining food quality standards; improving relationships with local communities through perception of commitment to good environmental performance; improving marketability of the produce; and facilitating sustainability.

It is clear that adoption of BMPs has brought about very significant beneficial impacts to farming systems, best exemplified in the case of the revival and the continued sustenance of shrimp farming in India by farmer societies supported by the project of the Marine products Export Development Authority (MPEDA) and the Network of Aquaculture Centres in Asia-Pacific (NACA) and now by the National Centre for Sustainable Aquaculture (NaCSA). In this case, not only have the BMPs been adopted by individual farmers, the farmer "clusters", through formation of farmer societies, have had improved yields, nearly minimized disease occurrences and brought about increased profits, among other benefits.

Experience from India and elsewhere shows that adoption of BMPs through FOs and farmer clusters is much more effective than individual adoption and enables additional benefits to complement those related to BMP adoption, including increased bargaining power to facilitate input supply and output marketing, increased environmental integrity and rational use of water resources, and provides one voice to the group, enabling access to government and policy-makers in a much more effective and coherent manner.

Source: AusAID (2009).

healthy and safe aquaculture products rely heavily on the behaviour of farmers and their willingness to modify their practices. Cluster management can thus provide mechanisms to introduce standardized, shared and improved methods for aquatic animal health management, including diagnostics, disease control and reporting.

Two examples, related to Case Studies 1 and 3, include the approximately 24 000 shrimp farms in Thailand and the shrimp farming area of approximately 70 000 hectares in Andhra Pradesh, India. It is clear that when such large numbers of farmers and areas under cultivation are involved, some form of farmer organization is required in order to deliver services, transfer information and ensure a degree of self and/or mutual monitoring for responsible practice. In India, NaCSA is facilitating the development of farmer societies made up of between 20 and 75 shrimp farmers to implement BMPs in order to reduce disease risk and increase productivity of shrimp ponds. The FOs or farmer societies within a certain locality are grouped together in

clusters and the self- regulation of production activities is undertaken within farmer societies and in turn within the clusters and is referred to as cluster management. This is necessary partly because farmers in the same locality or cluster usually rely on the same water source, and bad management practices of one farmer have the potential to affect not only other farmers within the same society but also those in the broader cluster as well. Cluster management thus seeks to achieve responsible aquaculture production by encouraging farmers to adhere to codes of practice or BMPs as a group and to monitor each other's activities to ensure that the group complies with the principles of the particular scheme. Through cluster management, small-scale aquaculture farmers have increased chances of achieving priority market access, increased ability to join certification schemes, improved reliability of production and reduced risks such as disease.

The establishment of FOs can be a key element in enabling effective cluster management and maximizing benefits. For example, in the case of NaCSA's farmer societies in India (so far the best and most widely documented example of successful implementation of the cluster management concept), it is the farmer societies that are registered with the government and not the clusters. The clusters are an informal, unregistered grouping of societies used to enable the specific function of self-regulation and quality management within a specific location. As such all the farmers located within a cluster are not necessarily members of farmer societies, which can present problems when it comes to cluster management.

3.4 FARMERS' ORGANIZATIONS ACTIVITIES AND SERVICES

The main purpose of most FOs is to provide or facilitate access to services to their members. These services are usually business-oriented and provided by independent service providers if the FOs themselves cannot provide them profitably. Aside from business services, FOs can sometimes also provide social services to members and/or the wider community; for example, the Thai Marine Shrimp Farmers Association described in Case Study 2 focuses some of its activities on community development. A survey of 400 aquaculture FOs in the Asia-Pacific region by NACA in 1997–98 showed their most common activities were as follows:

- highlighting farmer problems;
- mobilizing public and institutional support for farmers;
- protecting the interests of the FO;
- providing technical services to members;
- becoming organized to resist exploitation by intermediaries and local pressure groups;
- mobilizing credit; and
- influencing policy decisions (Hough and Bueno, 2002).

Many FOs have developed into multipurpose enterprises that offer a wide variety of services to their members, such as a broad supply of farm inputs, agroprocessing and storage facilities, marketing and credit supply. Before looking at the most common activities and services provided by FOs, the final two case studies will be introduced. Case Study 4 (Box 7) introduces the CBOs that have been established in Noakhali, Bangladesh, and Case Study 5 (Box 8) looks at how Indonesian shrimp and milkfish farmers have established four Aquaculture Livelihood Service Centres in Aceh, Indonesia.

In general, the most common activities and services provided by FOs are those summarized below (adapted from Penrose-Buckley, 2007).

3.4.1 Input supply

Facilitating input supply to members at the lowest possible price is one of the major services provided by FOs regardless of their types. Like the Samroiyod Shrimp Farmers Cooperative in Thailand, the ALSCs in Indonesia (Case Study 5) and the

BOX 7

Case Study 4: Community-based organizations of the Greater Noakhali Aquaculture Extension Project

The Greater Noakhali Aquaculture Extension Project (GNAEP) was established in Bangladesh in 1998 and was funded until 2006 by the Danish International Development Agency (DANIDA). The goal of the project was to improve the lives of the poor fish farmers in Bangladesh by promoting improved and sustainable aquaculture cultivation practices, specifically for prawn farming, given its high value, export market potential and suitability for poor farmers with small ponds.

The project was based around community-based organizations (CBOs) established by local farmers to offer sustainable extension and other services to prawn farmers to fill the gap in government and private-sector service provision resulting from limited resources and relative isolation. The GNAEP saw the CBOs as key to the sustainability of the project through their role in helping to ensure input supply and market access for prawn farmers, as well as serving as a channel to express community demands. The GNAEP provided support to build the CBOs' institutional management capacity and networking skills, enabling them to establish and maintain linkages with different service providers, local government institutions and the private sector in order to explore service provision for their communities. For example, CBOs have now built partnerships with private-sector hatcheries and feed suppliers, enabling them to buy inputs and distribute them to members, earning profits by selling on commission (for example, the hatchery pays the CBOs 7 percent commission for its services) or selling at a marked-up price. Some input suppliers, especially the prawn hatcheries, provide a percentage of their production as credit-in-kind to the poor households recommended by GNAEP. These supplies are also channelled through CBOs with the same commission agreement. These input supply arrangements ensure farmers can access good-quality inputs at fair prices at the same time as supporting the financial sustainability of CBOs. At present, at least 60 of these CBOs located in Greater Noakhali are active in supporting the prawn farming activities at the community level. Around 24 of these are engaged in seed distribution and around 50 are engaged in fish and prawn feed trading.

Greater Noakhali CBOs in Bangladesh (Case Study 4), the FOs often buy inputs in bulk, at lower prices (or higher quality, such as NaCSA's farmer societies using the contract hatchery approach), and supply them to their members.

3.4.2 Production services

FOs often provide extension services and technical advice and training. The Samroiyod Shrimp Farmers Cooperative employs an extension worker, and the NaCSA's farmer societies employ a society coordinator for each society. FOs can also provide access to equipment (such as water quality testing kits in the case of NaCSA) to help members increase their productivity and improve the quality of their produce.

3.4.3 Financial services

FOs can facilitate access to cash loans and input credit, as it is easier to negotiate credit with banks as a group rather than individually, especially if the group is legally registered. The Samroiyod Shrimp Farmers Cooperative has successfully negotiated input credit for its members, which is one of the main reasons the majority of members joined the organization.

The CBOs have open membership, regardless of socio-economic status, provided that members follow the regulations; however, those involved in agricultural activities are given priority membership. The CBOs are democratically run and managed by their members through an elected executive committee. They are non-profit organizations, and the majority of earnings are used for the further development of services for the community. They have also come together to form the Greater Noakhali CBO Association (GNCA), the apex body of CBOs.

It is estimated that between 2002 and 2006, nearly 8 000 farmers were engaged in prawn culture in various culture systems, covering a total of 1 266 hectares and benefiting many of the poorer households in the region. By 2006, over 25 percent of women-headed households were culturing prawn, and cash income from aquaculture had risen by over 300 percent and contributed over one-quarter of their total income.

Through the project, it was found that horizontal expansion of low-input systems has considerable potential for other parts of Bangladesh but requires a total system approach involving all stakeholders in a specific geographical area, namely a "regional integration model". Such a model requires the organization of small farmers into community-based FOs for service provision and for representation of farmers with private-sector partners. Such a model also offers scope for system certification and traceability to ensure the ability to comply with international market standards. Building such a total system, however, involves a lengthy process of capacity building with the local stakeholders.

The GNAEP had the advantage of donor funding to develop its system, but donor projects need to "stay the course" for an adequate length of time to ensure the sustainability of their capacity-building activities. Moreover, all the efforts in the controlled environment of the project can be thwarted by the operation of the policy environment, and international attempts to offer certification for small farmers must be based upon a proper understanding of the realities of the variation in small-farmer systems and the feasibility of adhering to the standards set.

Source: Alam and Demaine (2008).

3.4.4 Training

In addition to extension training, many FOs provide training in literacy, numeracy, basic accounting and report-keeping, to help members manage their own business activities better and improve the capacity of members to run the FO effectively. For example, members of NaCSA's shrimp farmer societies are trained by NaCSA in pond-book record-keeping, which is important for good pond management and meeting market traceability requirements, among other things.

3.4.5 Quality control

To meet increasingly strict quality and food-safety standards of some markets, FOs may need to monitor and control the production process and the quality of the final products they sell. For example, the NaCSA's shrimp farmer societies, the Samroiyod Shrimp Farmers Cooperative and the FOs that form the ALSCs in Aceh, Indonesia, have all established BMPs to ensure higher-quality products and have set up internal control systems (ICSs) to ensure adherence to these practices and standards (e.g. in the case of organically certified societies in India). Increasingly, experience is showing cluster management to be an important and potentially successful way for groups of small farmers to ensure better quality and safer produce and overall responsible and sustainable aquaculture farming. The ability for aquaculture FOs to monitor the

BOX 8

Case Study 5: Aquaculture Livelihood Service Centres in Aceh, Indonesia

In response to the tsunami in December 2004, the Asian Development Bank (ADB) initiated the Earthquake and Tsunami Emergency Support Project (ETESP) in Aceh, Indonesia, to rebuild the livelihoods of the coastal communities that were most affected. A major component of the project focused on fisheries and aquaculture (ETESP-Fisheries). Three years were spent rehabilitating 3 000 hectares of shrimp ponds (tambaks). Between 2007 and 2009, in a process facilitated by the Network of Aquaculture Centres in Asia-Pacific (NACA) in collaboration with the ADB-ETESP project and the International Finance Corporation (IFC), 3 689 farmers in 72 villages and five subdistricts established milkfish and shrimp FOs in order to reduce disease risk and maximize profits through collective implementation of BMPs developed by NACA. In 2009, these FOs established four "Aquaculture Livelihood Service Centres" (ALSCs). In the absence of government and other private-sector extension services in Aceh, these centres are expected to become fully self-sustaining service centres for FOs through payment of service fees by members. The ALSCs are owned and managed by community-based milkfish and shrimp farmers, and the committee members are drawn from the fish-farming communities of their respective subdistricts. The four ALSCs are expected to function as a network or "cluster" of service centres and, as such, the committee members and lead farmers of the centres form the leadership for a producer association at the district level to further business developments in collaboration with various associated service providers such as hatchery operators, inputs suppliers, processors and exporters.

The principal role of the ALSCs is to provide technical and business expertise to farmers. Their activities include:

- facilitating group crop planning, including harmonized stocking and harvesting in collaboration with various stakeholders to minimize the risk of disease outbreaks during farming and improve the overall quantities simultaneously harvested from many small-scale producers;

quality of members' produce and regulate themselves through mechanisms such as cluster management and ICSs has led to an increasing number of aquaculture FOs achieving certification. For example, two of NaCSA's farmers' societies have been organically certified, and the Samroiyod Shrimp Farmers Cooperative in Thailand is on its way to having some of its members' produce being Fairtrade certified. The challenges surrounding certification for small-scale aquaculture producers along with the potential for group certification are outlined below (see Box 9).

3.4.6 Coordinating production

To take advantage of different market opportunities and respond to the needs of buyers, FOs may have to coordinate the production of members. For example, FOs may be required to supply a continuous amount of fresh produce throughout the year, so they may need to organize members to stagger the stocking of their ponds. The NaCSA's farmer societies and the ALSC farmers in Indonesia also coordinate production; however, at present they do so primarily to reduce disease risks. To achieve this, farmers develop a crop plan together and stock their ponds within a specified period of one another (in Andhra Pradesh, India, for example, farmer societies stock at the time when white spot disease is at its lowest level).

- providing technical services, including advice on application of BMPs, monitoring adoption of BMPs, disease diagnosis, screening inputs for banned antibiotics, and providing information and extension training;
- providing market services, including sourcing and bulk buying of good-quality feed and seed, coordinating sale of bulked produce to one processor/exporter, etc.; and
- record-keeping at all levels to enabling traceability back to shrimp farms and hatcheries.

Planned activities include introduction of banking services and microfinance facilities and building awareness among members of finance, credit, savings, small-scale business and investment opportunities.

The Aceh Aquaculture Communication Centre (AACC) was established in 2009 with the approval of the Indonesian Government, funded through the ADB-ETESP and technically advised by the ETESP and the NACA. The AACC provides information and communication services related to aquaculture direct to farmers and their associations through the ALSCs, including market information, technical information, disease diagnosis and training services. The AACC works with aquaculture FOs primarily through the ALSC system; however, services can also be provided to farmers outside the established ALSCs' areas on a needs basis.

The ALSC-AACC model has had very positive initial results. Farmers have reduced disease risk through implementation of collective stocking and crop planning. Communication has increased through ALSC Web site facilities, improving transmission of information related to disease outbreaks at the village, subdistrict and district levels, and providing a platform for improving business and collaboration among all stakeholders, not just farmers, and reducing the gap between farmer communities and stakeholders. The ALSC system has also encouraged exporters and processors to visit ALSC sites and started preliminary discussions for group harvests and on processes leading to the introduction of a traceability information system. In the future, it is expected that the ALSCs and the AACC will become self-sustaining units, providing business, technical and communication services to fish/shrimp FOs, largely independent of government and external agencies.

Source: Ravi Kumar and Yamamoto (2009).

3.4.7 Output marketing

Marketing produce is one of the main services provided by most FOs. To be successful in doing this, FOs must be able to analyse market information, identify opportunities, negotiate contracts and sales, collect, store and transport produce, and pay members on time. The ALSCs in Indonesia, the Samroiyod Shrimp Farmers Cooperative in Thailand and the NaCSA's farmer societies in India all coordinate the sale of bulked produce to processors and exporters.

3.4.8 Trading and intermediation

Going one step further than just coordinating the sale of bulked produce, some FOs take on the role of trader or intermediary by negotiating contracts with buyers and purchasing produce from members (and sometimes non-members), ensuring it meets the quantity, variety or consistency of supply demanded by the buyers. For example, FOSCOT (Case Study 1) acts as an intermediary and has recently negotiated a contract to supply a large amount of shrimp to a national processor. To meet the contract requirements, the federation has had to supplement the shrimp bought from cooperative members with that of non-members, and will earn a commission on the total sale. Intermediary models drive change through negotiating with actors, improving efficiency through greater organization, and improving information flows and shared standards along the market chain. While FOs may want to "cut out the middleman", chain intermediaries are often

BOX 9
Certification

Certification is rapidly being introduced to the aquaculture sector, and the number of certification programmes and labels for aquaculture products is rising. Certification is viewed as a way to encourage more sustainable aquaculture production; however, this trend represents a serious challenge to small-scale aquaculture farmers due to:

- the small volumes of product from individual farms and the large numbers of farms;
- low or no market incentives to become involved in certification;
- complex marketing channels, making traceability difficult;
- limited access to market, technical and business knowledge and related infrastructure;
- limited or inequitable access to financial services for investment in changes that may be required for certification;
- lack of formal farm registration and producers' groups;
- inadequate trader-credit relations;
- commercial/government servicing less oriented towards the small-scale farmer; and
- risk management strategies of larger traders and buyers requiring large volumes of product working against small-scale farmers producing small quantities of product.

If certification is not to have a negative impact on small-scale producers, these issues need to be addressed. It is extremely important to engage small-scale farmers in the development of certification schemes to ensure equitable participation. There is a need to better understand the processes, standards, their applicability and the related opportunities and challenges in order for small-scale farmers to benefit from certification systems.

It seems unlikely that many individual small-scale farms will be able to be easily certified in the near future and, as yet, no certification scheme targets the small-scale sector. However, there could be significant social and economic benefits if the small-scale sector can be effectively serviced to become certified and participate in modern market chains. One way forward is the promotion of group certification or certification of clusters of small-scale farmers, an approach that has been used successfully in other agriculture sectors (e.g. organic products) and has now been shown to be possible in the aquaculture sector through two of the National Centre for Sustainable Aquaculture's shrimp farmer societies in India being organically certified and by the Samroiyod Cooperative in Thailand being well on its way to having some of its shrimp being Fairtrade certified.

Source: Phillips *et al.* (2007).

vital in linking smallholders to markets, especially those farmers who are located far away from markets. Recent attention has focused on a new generation of "doubly-specialized intermediaries" (business-oriented and development-motivated), and is an area that appears to offer great potential for linking business with small-scale producers. FOs in the agriculture sector are developing innovative models of intermediation as alternatives to vertical integration; however, the majority of intermediary initiatives are still dependent on donors and NGOs, raising questions about their comparative advantage over traditional intermediaries. If the real costs of intermediation are going to be subsidized by external agencies, there must be an exit strategy in place that leaves behind a healthy and intact chain (Vorley and Proctor, 2008).

3.4.9 Processing

Some FOs process produce to add value and thus access markets further along the market chain; however, none of the aquaculture FOs reviewed for this study are yet involved in processing activities.

3.4.10 Advocacy

Some FOs, especially higher-level organizations such as apex organizations or federations established by FOs, provide lobbying and advocacy services to promote and defend the rights of members. This is not a direct business service but is still an important activity of many FOs that provides members with a "voice", increases the chance of this voice being heard by those in power and has the potential to provide members (and other farmers in the sector) with real benefits. For example, FOSCOT spends much of its time lobbying the Department of Fisheries and other branches of the Thai Government to support policies which are more favourable to the small-scale shrimp sector and to give the aquaculture sector the same benefits and subsidies that the agriculture sector receives. Likewise, the presidents of two of the farmer societies supported by NaCSA sit on its board of directors. As NaCSA is a governmental organization, this enables society members' views to be heard by policy-makers and government officials in MPEDA and the Department of Commerce, under whose remit MPEDA falls. At the same time, an MPEDA field officer is an ex officio member of the governing body of each society registered with MPEDA, providing another channel through which issues and problems of the society can be heard by the Government and thus influence policy. One of the Thai Marine Shrimp Farmers Association's main activities is to lobby the Government to promote the Thai shrimp industry. Examples of their activities include lobbying for the two quality assurance standards for Thai shrimp (CoC and GAP) to be merged into one set of standards and trying to raise international awareness about the quality of the Thai standard. Successful lobbying and advocacy requires skills and resources that few FOs have (without external support). FOs have the potential to play a very important role in influencing policy-makers at all levels of government for the benefit of their members and the sectors they represent.

3.4.11 Community development

Some FOs also undertake social and community development activities. For example, the Thai Marine Shrimp Farmers Association undertakes many community development activities, including donating money and equipment to local schools.

3.4.12 Environmental and conservation activities

Some aquaculture FOs reviewed for this study also provided support for environmental and conservation activities in the community (this may be more common for aquaculture FOs rather than agriculture FOs, as aquaculture has been more strongly accused of having large environmental impacts). For example, the Samroiyod Cooperative works with a local conservation charity to monitor the wetlands around Samroiyod for illegal fishing. It also supports the annual wetland day event, which raises awareness about the importance of wetlands and how to protect them. The Thai Marine Shrimp Farmers Association has been supporting a local environmental NGO to help protect and reforest sensitive mangrove areas. For the shrimp societies in India, under MPEDA's scheme for registration of societies, there is also a provision to give grant-in-aid assistance to societies for promoting ecofriendly farming practices (e.g. planting mangroves in farming areas).

Most FOs will only provide a small subset of the services outlined above. Which services they provide will be dependent mainly on the purpose of the organization, the interests and requirements of members, the specific problems that need addressing, the demands of the market and ultimately whether or not the FO can afford to provide these services.

3.5 DELIVERY OF MARKET SERVICES

The majority of the market services outlined above in Section 3.3 can be provided by many different kinds of organizations, ranging from private companies to development-oriented NGOs and government agencies, to CBOs and FOs themselves. The different

types of service providers and ways in which they deliver these services are outlined below (based on Penrose-Buckley, 2007).

3.5.1 Independent commercial service providers

Many market services are provided by independent commercial service providers. For example, transport services are usually provided by commercial businesses and financial services are usually provided by commercial banks. NGOs and government agencies can often help to link FOs to commercial service providers. For example, NaCSA in India has helped to link farmer societies to hatcheries that were willing to implement a "contract hatchery system" developed by NaCSA, thus linking farmers to quality control services in the form of hatchery seed testing facilities to ensure feed was not diseased and met high-quality standards.

3.5.2 Market actors

Different actors in the market chain (e.g. input suppliers, farmers, processors and retailers) can provide services for their suppliers and/or customers as part of other business transactions. When services are provided in this indirect way, they are called "embedded services". For example, the Samroiyod Cooperative receives feed and seed on credit from their feed supplier and hatchery. In this case, credit is the service that is embedded in the cooperative's input supply contracts with private companies.

3.5.3 Government market services

Government ministries such as ministries of agriculture or commerce often provide important market services such as training, extension and market information services. If countries wish to promote collective action and FO development as a strategy to achieve market access for small-scale farmers, they must also promote the provision of market services. This is because in many remote and poor areas, which have thin markets and are characteristic of where small-scale farmers in developing countries live, there is little incentive for private-sector provision of essential marketing services because of the high transaction costs associated with doing so. In these cases, the government must intervene to either facilitate the development of those services that are critical for small-scale farmers and markets to develop or to provide those services themselves (especially services that have public good elements and will not always be provided by the private sector, such as extension and market information services). An example of government service provision for small-scale farmers can be found in Thailand, which was the first shrimp-producing country to establish both environmentally sustainable and product quality/safety guidelines to enable shrimp farmers to access the European Union (EU) and other markets. Shrimp farmers receive production advice, training, monitoring and certification services from government extension officers in order to meet these minimum standards and help them to increase their market access.

3.5.4 NGOs and other non-commercial service providers

Development NGOs and international donor agencies can provide market services to FOs and grants to help FOs establish their business and invest in capital assets. However, as mentioned above, NGOs and development agencies must be careful not to crowd out private-sector provision of market services by supplying them at such a low cost that the private sector cannot compete. Direct provision of services by these types of organizations is not usually financially sustainable, and FOs and farmers must be able to access these services in the long run and cannot be dependent on external grants.

3.5.5 Farmers' organizations service provision

As outlined in Section 3.3, FOs often provide their own market services for members. For example, farmer societies established by NaCSA in India employ a society

coordinator to provide extension and training to shrimp farmers. The Samroiyod Cooperative also employs an extension officer to do the same for its members. CBOs in Bangladesh (Case Study 4) buy inputs and distribute them to members, earning profits by selling on commission through arrangements with suppliers or by selling at a marked-up price. FOs can also join together to form a larger group or network to more easily provide certain services, such as collective output marketing, to members. For example, as mentioned above, FOSCOT is made up of five cooperatives and negotiates large contracts on their behalf with processors and buyers. In Aceh, FOs at the subdistrict level have come together to form four ALSCs and the Aceh Aquaculture Communication Centre (AACC) (see Case Study 5) at the district level, with the support of ADB and NACA. The ALSCs and the AACC were established purely to provide farmers with technical, business and communication services owing to the lack of service provision from the government and private sector. It is hoped that the ALSC-AACC model will be self-sustaining through payment of service fees by members, independent of government and other external agencies.

3.6 FARMERS' ORGANIZATIONS GOVERNANCE AND MANAGEMENT

Each FO will have a different internal governance and management system. This system includes how decisions are made, how much distance there is between members and the FO leadership, and how profits are managed. In small FOs, it is easy for all members to be involved in day-to-day decision-making. However, as membership increases, representatives are usually chosen to manage the FO on behalf of members. For example, the Samroiyod Shrimp Farmers Cooperative is managed by a 13-person, annually elected Executive Committee that includes the president, vice-president and treasurer. A general meeting is held at least twice a year for members to vote on the budget, on a new president and Executive Committee members, and other general matters. The general management of the FO is left to the Executive Committee, which meets once a month.

Sometimes FOs employ professional managers from outside the FO to manage their organization. This could be for a number of reasons; for example, the management of FOs can be an onerous task, leaving little time for managers to focus on their own individual production. For example, the president of the Samroiyod Shrimp Farmers Cooperative spends much of his time working at the cooperative office, holding meetings with stakeholders and responding to member requests. However, he is a larger farmer than many of the cooperative's other members and can afford to employ people to take care of his own shrimp farm. The majority of small-scale FO leaders will not be in this fortunate position, however, and will have to find a way to run an FO (a potentially full-time job in itself) and a shrimp farm.

In some cases, FO members may not have enough business and management skills and experience to manage the FO effectively and so would need to obtain the help of an outsider to assist them. Committees may also not be the best way to manage FOs, as markets are fast moving and decision-making needs to be just as fast to be able to respond to changing circumstances and new opportunities that may arise. However, hiring professional managers also has its disadvantages, as it is can be difficult to monitor their work if members do not have the business knowledge to understand what they are doing. This can lead to problems such as embezzlement and other such activities going unnoticed. In the long term, therefore, FO leaders must develop some minimum level of business understanding to monitor and control the work of hired managers effectively.

One of the most important conditions for a well-functioning and successful FO is members' trust of the leadership and a strong sense of ownership. Leaders need to be responsive to members' needs, and systems should be established to allow this to happen, for example, through participatory decision-making and strong accountability of leaders to members through regular election of officials and/or term limits.

For many FOs, deciding what to do with business profits is a difficult task, often owing to a conflict of interest between members who want to be paid their dividends in the short term and FO leaders who may want to reinvest profits back into the FO to help ensure long-term sustainability. This problem often occurs during the early years of FO establishment where members have limited understanding of the FO's business or they do not yet trust the leadership. As it is, small-scale FOs usually find it difficult to raise money for investment and working capital. Thus, the system of ownership and the way profits are distributed (according to the proportion of shares members own as in a private company or based on patronage as in traditional cooperatives) must be thought about carefully, as it can influence members' motivations to invest in the FO or use its services, so the way profits are distributed is important and ideally will satisfy members as well as strengthen the sustainability of the organization.

3.7 BUSINESS STRATEGIES

To compete in today's demanding markets, provide benefits to members in the long term and achieve financial sustainability, FOs either have to make a profit or fulfil certain functions that are beneficial enough to members that they continue to pay membership fees and make large enough contributions to the organization to sustain it in the long term, like the Thai Marine Shrimp Farmers Association. This association fulfils certain functions such as networking, information exchange and coordination among different market chain actors. along with advocacy and community development. Most importantly, however, it is made up of medium to large farmers who are rich enough to be able to make large donations to something they see as a good cause. This is rare for an FO, especially those made up of small farmers who do not have excess cash; thus, the primary aim of most small-scale FOs is to provide economic benefits to their members. As such they need to provide members with services at a lower price than can be found elsewhere, which can be difficult. It requires careful analysis of the market and the real costs of doing business. If this is not possible, FOs will have to facilitate access to these services from independent service providers for their members while maintaining control of members' produce. In order to continue to provide members with economic and other benefits in the long term, FOs will need to find ways of increasing their income, decreasing their costs and, in short, functioning like a business.

Some of the common business strategies adopted by FOs to increase income include:

- increasing volume;
- adding value by improving quality, processing or differentiation;
- diversifying into high-value products;
- accessing new markets and increasing demand; and
- negotiating higher prices through increased bargaining power.

A common strategy to ensure that income is not only increased but is stable as well includes lowering market risk through:

- diversifying products;
- diversifying markets (which is often easier); and
- increasing sales through long-term contracts with buyers.

Common strategies to lower costs include:

- exploiting economies of scale (e.g. bulking produce and collective marketing); and
- lowering internal transaction costs.

*Successful harvest of black tiger shrimp (***Penaeus monodon***) by the members of the society in Andhra Pradesh, India.*

Courtesy of MPEDA/NaCSA

4. Lessons for successful farmers' organizations

So far, this review has explored the rationale for FOs, the costs and benefits of FOs, the structure, operation and management of FOs, and the large variety of activities and services provided by FOs, giving some insight into the kinds of advantages FOs can have for small-scale aquaculture farmers. However, there is a lot of evidence, especially in the agriculture sector, to suggest that projects promoting collective action and farmer cooperation do not always succeed in establishing viable farmer groups. Project evaluations show that FOs are often formed hastily and with little thought as to how they will fit with the underlying patterns of social and economic organization or actual commitment to collective action. As a result, many FOs do not survive long and, in the worst cases, bad experiences can contribute to undermining future opportunities for collective action (Stringfellow *et al.,* 1997). The "Regoverning Markets Programme"[15] has also found that many FOs that have been successful have been instigated by large farmers, producers and retailers or by NGOs and other support agencies, and few have been initiated by small-scale producers themselves (Vorley and Proctor, 2008).

However, recent evidence in the aquaculture sector shows that successful FOs are an effective strategy to improve productivity and increase access to input and output markets and services, and that some support, particularly during the early transitional phase, can play a catalytic role in the success of small-farmer-initiated FOs. This chapter provides an overview of some of the common factors that are associated with (but do not necessarily determine) successful FOs, based on empirical evidence found in the agriculture FO literature and the two in-depth case studies of successful aquaculture FOs undertaken for this review, NaCSA farmer societies in India and the Samroiyod Shrimp Farmers Cooperative in Thailand (see Chapter 3 for case study summaries and Appendixes 1 and 2 for the full case studies). This chapter will explore some of the factors that may determine whether or not successful farmer cooperation is likely to take place.

4.1 DEFINITION OF "SUCCESS"

Before identifying factors for or determinants of successful FOs, it is important to have an understanding of what "success" actually means. Crowley *et al.* (2005) define successful organizations as those that:

(i) achieve the objectives agreed upon by members;
(ii) retain or expand their membership;
(iii) progress towards financial and managerial self-reliance and sustainability, inspiring members to maintain their equity stake in the organization; and
(iv) improve self-esteem, and the economic and social well-being of members.

Stockbridge, Dorward and Kydd (2003) argue that even though "expansion" (point ii above) is often viewed as an indicator of success, expansion of the membership base may also dilute the benefits to existing members and perhaps even threaten the sustainability of the FO. However, expansion can also create economies of scale, leading to greater benefits to new and old members. Thus, "expansion", when used as

[15] The Regoverning Markets Programme is a collaborative research project on small-scale producers and modern agrifood chains run by the International Institute of Environment and Development. Its Web site is www.regoverningmarkets.org.

an indicator of success, must be treated with care. Similarly, "sustainability" (point iii above) is also commonly thought of as being a condition of success; however, this is not always the case. Some FOs can survive for a long time without ever achieving very much, while others can achieve a lot in a short space of time and then decide to shut down, as they have achieved their objectives, for example, to link farmers to markets until markets become more developed or farmers are able to act independently. Thus, bearing in mind these issues related to expansion and sustainability, an FO that meets the four criteria set out above can be seen to be a successful FO.

4.2 LESSONS LEARNED FOR SUCCESSFUL FARMERS' ORGANIZATIONS

Stringfellow *et al.* (1997) identify three key factors that can determine the success of an FO. They argue there must be:

(i) a match between the existing capacity, skills and experience of members and what is required to undertake joint activities;
(ii) internal cohesion and a membership-driven agenda; and
(iii) successful, commercially oriented integration of the FO into the wider economy.

Factors (i) and (ii) are both internal factors for success and factor (iii) is an external factor for success. The following sections will thus explore both internal and external factors for successful FOs, informed by both the literature and the case studies of aquaculture FOs undertaken for this review.

4.2.1 Internal factors for success

Common and clearly defined objectives

The objectives of FO members are unlikely to be exactly the same. Members may have different priorities with regard to the sorts of services and activities they think the organization should be involved with and how they should be undertaken. Members may also have different needs or interests owing to economic, social or cultural differences. However, common objectives are the most basic prerequisite for an FO to function properly. Ensuring that members have shared interests and that the organization is addressing a common objective will help to maintain members' unity, focus and commitment, which are vital to the success of FOs. Common objectives were found to be one of the main reasons for the success of both the NaCSA's farmer societies and the Samroiyod Cooperative (see Appendix 1). As with all organizations, there can be problems when FOs have multiple or conflicting goals, for example, welfare goals versus economic goals. Where farmers seek to cooperate as a business enterprise in an FO, success may depend on a separation of the welfare functions from the marketing functions. It is also important that these goals and objectives are defined clearly and unambiguously by FO members themselves. Giving members the opportunity to analyse their own problems and identify for themselves the needs they wish to address implies a power over their destiny, which can be empowering in itself (Crowley *et al*., 2005).

Technical and managerial capacity

Stringfellow *et al.* (1997) suggest that the levels of organizational and managerial capacity required by farmers' existing investment enterprises must match those required by any future joint activity. The type of activity to be undertaken will have a major bearing on the management demands made on the group. These activities could, for example, be coordinating marketing activities or operating jointly owned assets. Their research suggests that successful FOs are more likely to be involved in the former, as the skills and experience required for this are often less complex than those required to operate a jointly owned piece of processing equipment. The level of technical and managerial capacity of the group is a very important factor of success. FO leaders (and ideally members too) should have the technical knowledge and managerial

capacity to run the FO effectively, deliver services to members efficiently and respond to challenges and opportunities as they arise.

Demand-driven and beneficial service delivery

According to Thomson *et al.* (2009), FOs that provide services that deliver clear, continuing and valued benefits to their members will be successful. As mentioned above, FO leaders need the capacity to deliver these services to members effectively. FOs should be careful not to overstretch themselves by trying to provide too many services or provide services that are too technically, managerially or financially demanding, as they will be hard to sustain and deliver cost-effectively. These services should also not be accessible to members from other sources on similar or better terms, and they should not be offered to non-members on the same terms as to members, so as to maintain members' incentives to be part of the FO. The range of services offered should also be dynamic and able to evolve over time to reflect increasing demands from members and respond to the changing market environment and services offered by other organizations. However, increased service provision must still match existing capacity to deliver services. Advocacy and policy engagement, which do not usually provide direct benefits to members over non-members, should generally be later and higher-tier activities (perhaps limited to larger farmers, federations and cooperatives).

Sound governance and management

Thompson *et al.* (2009) point to sound governance as an important factor contributing to the success of an FO. Democratic control of the organization by members on the basis of one member one vote, along with clear and consistent rules to establish norms of behaviour by officials and members (with systems for monitoring and applying sanctions and reducing the transaction costs of negotiating, monitoring and enforcing agreements between the organization and its members) are necessary for the successful governance of an FO. Equally important is a governance system that creates a strong sense of ownership and trust of the leadership by giving members the ability to participate meaningfully in decision-making. If members do not have a good understanding of the FO and its business, however, it is difficult for them to participate in decision-making or to know whether the FO is really serving their interests or not. General meetings can be a bureaucratic process where members simply endorse the proposals put forward by the leadership. Many FOs reflect the existing power and gender relations within the community (Khan, 2007), and thus it can be difficult for individual members (especially women) to challenge these power relations, particularly when elections are not conducted by secret ballot. Sound governance and management within FOs therefore also depend on individual members having the capacity, confidence and freedom to participate in meaningful decision-making (Penrose-Buckley, 2007). This can be achieved by creating an enabling culture that encourages previously marginal groups and individuals to influence FO leadership and ensure their needs are adequately served. According to Vorley and Proctor (2008), a primary success factor in FOs centres around management models that balance member inclusion and group competitiveness. These models usually involve differentiation of membership to cope with the range of landholdings, wealth, education, etc., for instance, grouping smaller-scale farmers around a larger farmer or differentiating between year-round core suppliers and seasonal "top-up" suppliers. Any member differentiation, however, can be a challenge to a group ethos of cooperation and equality.

Strong leadership

Whatever governance and management system is used, as noted above, FOs can only function effectively if their members trust and have confidence in their leaders. This not only requires members' participation in decision-making but also the existence

of strong, competent and accountable leadership. FO leadership should be capable, responsive and effective but not overbearing. It should function within clear rules decided on by members and should have significant capacity in terms of business and governance skills and culture. FO leadership should be representative of the FO's membership and therefore should include women and men, smaller and larger farmers, etc., and not just as token representatives. There must be strong accountability of leaders to members for effective services and representation, with professional financial audit systems to monitor income and expenditure (Thompson *et al.*, 2009).

Group cohesion

Internal group cohesion supported by a clear member-driven agenda is central to successful FOs. Group cohesion is facilitated by small group size, homogeneity and face-to-face contact, which are most important where the FO activity requires a commitment of financial resources to a shared enterprise. However, where the FO's primary function is bulk marketing or negotiation with buyers or suppliers, larger and more heterogeneous groups may be at less of a disadvantage. There is often a trade-off between economies of scale and internal cohesion, and successful FOs are able to strike a balance between the two. Relations with external agents also affect the FOs' internal dynamics. Where politicians try to manipulate group development through preferential access to resources, for example, the results contribute little to genuine farmer cooperation. Whatever the source, be it NGOs, local elites, international donor agencies or government, free or subsidized resources tend to attract people seeking handouts and do not necessarily create business opportunities (Stringfellow *et al.*, 1997).

4.2.2 External factors for success

External partnerships with government, NGOs and donors

As mentioned in Chapter 2, one of the main reasons for formal farmer cooperation is to manage relations between farmers and the outside world. Establishing relationships between FOs and external partners is critical to their success as, along with internal relations discussed above, they help to determine an FO's capacity to act as an autonomous self-sustaining unit. This is important, as lack of autonomy and political interference have been the reasons for the failure of many FOs (Stockbridge, Dorward and Kydd, 2003). Strong partnerships with donors and NGOs are a key feature of the aquaculture FOs examined in this review. This may be partly due to the fact that FOs that are not supported by external organizations are less well-documented in the literature; however, it is clear from the case studies and from the wider literature that external relationships are very important. Partnerships with development agencies and government can have many advantages, especially in the early stages of FO development. External partners can help with training and capacity building, facilitating FO linkages with the private sector (see below) and creating a conducive legal framework to enable FOs to operate successfully. Despite these advantages, there are also well-documented disadvantages, especially when partners are too interventionist or if FOs have been created by external agencies. External partnerships can create a market incentive for individuals who would not otherwise do so to join together simply to access funds; distort member investment behaviour, leading to overinvestment in inappropriate capital-intensive technologies that are beyond the member's capacity to manage; and create dependency on external resources, causing FOs to discontinue their activities and dissolve once the funding ceases. Even well-meaning donors, governments and development agencies may actively influence FOs in their choice of activities and in the way they are structured and governed and may hinder the development of a strong and authentic decision-making capacity within these FOs. Donor pressure to produce quick and visible results also creates incentives to demonstrate short-term outputs rather than to ensure longer-term impacts and outcomes (Crowley *et al.*, 2005).

Thus, it is important for FOs to tread carefully when partnering with outside agencies, and the method of engagement between FOs and external agencies is critical. Kindness and Gordon (2001) suggest that the role of outside agencies should be a facilitative one, not an interventionist one. Partnerships should provide intensive "software" support, in which external actors accompany and advise FOs over a long period but do not intervene directly in decision-making. Such collaborations can also help existing organizations become more empowered and more capable of representing the interests of their members in key policy arenas. Thus, FO management should be independent from government and donors, while still maintaining close cooperation at the operational level, and FOs should have clear and enforceable rules separating political interests and external pressures from its leadership (Thompson *et al.*, 2009).

Strong relationships with the private sector

The success of an FO depends very much on its ability to integrate into the wider economy and participate effectively in the relevant market chain or chains. As Vorley and Proctor (2008) suggest, market inclusion is not just about market access. Sustained market inclusion is much more difficult and requires stronger linkages between producers and consumers and other actors in the market chain, along with responsiveness to what the market wants and may require. A good business rationale based on commercially viable activities and strong relationships with the private sector are key for FOs to succeed in achieving their economic and market-related objectives. In a review of FOs, Hussi *et al.* (1993) concluded that FOs must be treated as private enterprises. All of the aquaculture FOs reviewed for this study have put great emphasis on commercial viability and developing relationships with private-sector input suppliers for feed and seed, processors, retailers and buyers, and the Samroiyod Cooperative in Thailand and the NaCSA's farmer societies in India have become successful partly through their strong relationships with the private sector and their chain vision. Donors and NGOs are also focusing more and more on FOs as commercial enterprises and promoting linkages with the private sector, whereas before there was a lot more suspicion of private enterprise.

An enabling institutional environment

Many of the issues discussed above regarding sound governance and management and internal and external relations are affected by the institutional environment in which FOs operate. As mentioned in Chapter 2, the institutional environment (including both informal and formal rules) will affect an FO's ability to function successfully. Informal rules based on custom and tradition may be difficult to change; however, formal rules such as government policies can be designed in ways that can enhance FO activities and the chances of achieving their objectives.

Most countries have legislation in place for governing FOs, mainly related to formally registered cooperatives[16] but also affecting other legally registered FOs such as associations. Well-designed and properly enforced laws can help promote good governance, protect the interests of FO members and encourage participation. However, badly designed laws can suppress FO development. According to Shah (1995), laws must give cooperatives and other FOs greater autonomy from state regulation, allow the employment of professional managers, separate day-to-day managerial functions from the policy-making functions of the board of directors, enhance democratic

[16] Many cooperative laws were designed when cooperatives were still tools of state development planning and had little autonomy. The situation cooperatives face now is very different. They need to be flexible enough to respond to increased competition, commercial pressures and changing market conditions. Thus, cooperative law needs to be reformed, and this has been taking place recently in some countries (Stockbridge, Dorward and Kydd, 2003).

BOX 10

Key lessons learned from the success of NaCSA's shrimp farmer society and cluster management approach in India

- *Common problems successfully addressed* – The farmer societies comprise farmers with different needs, interests, skills, and financial and technical capacity. However, these farmers are united by a small number of common interests and objectives. Their common problem of high prevalence of disease in their ponds has been addressed successfully through collective action and implementation of better management practices (BMPs) (which has developed into a "self-propagating" model where farmers believe in the success of other farmers). The "win-win" situation created by adoption of better management has provided a strong incentive for positive change. It is the existence of this common problem that is being successfully addressed by the cluster management model that has kept the farmer societies strong by providing them with a good incentive to work together and has enabled them to grow.
- *Participatory approach* – From the beginning of the project by the Marine Products Export Development Authority (MPEDA) and the Network of Aquaculture Centres in Asia-Pacific (NACA) through to the establishment and activities of the national Centre for Sustainable Aquaculture (NaCSA), a participatory approach has been taken. This is shown, for example, by the importance placed on farmer-to-farmer information exchange through demonstrations and farmer field days, enabling farmers to learn from other farmers in a bottom-up way. This participatory approach has also enabled farmers to articulate their needs, to which the project has been able to respond in a meaningful way. Farmers have thus been empowered to take control of their own development.
- *Strong leadership* – The most successful farmer societies have strong leaders who have vision and commitment, which is very important for society management and success.
- *Slow progress* – This project has been active for nearly ten years but has only recently begun to show success on a large scale. Societies have only begun to achieve market access through organic certification and building links with processors and overseas retailers such as Sysco in the last year or so. This shows that it takes a long time to lay strong foundations and achieve success.
- *Capacity building* – From the beginning, the MPEDA-NACA project was based on building farmers' collective and individual capacity to implement BMPs. This has been the approach taken up to now, and NaCSA still focuses mainly on provision of independent technical advice and capacity building at the grassroots level. This independent advice and capacity building has secured the confidence of farmers and is key to its success and sustainability. Also, as the main service provided by NaCSA is capacity building and technical advice, farmers are not coming together to receive any subsidies or monetary handouts, for example, but to address their common problems together through the services being offered.
- *Institutionalization* – The MPEDA-NACA project was successful in building farmers' capacity to combat disease through group implementation of BMPs. However, the project would not have been scaled up without its institutionalization into government structures through the establishment of NaCSA. This has been important for continuing and building on the success of the original project and has been vital for sustainability. However, institutionalization of successful projects into government structures may not always be successful. NaCSA's success is likely due to a combination of factors including the genuine and strong support from government through MPEDA, continued cooperation with NACA and the motivation and commitment of NaCSA's staff, who provide continuing support to the societies through regular field visits and attendance at society meetings, ensuring they are constantly in touch with farmers and responsive to their needs.
- *Partnerships* – Strong external partnerships between farmer societies and NaCSA, NACA, MPEDA and the Government have been an important factor in the scaling up of the MPEDA-NACA project and the continued success of the farmer societies. These partnerships have provided NaCSA and the societies with funding, strategic guidance and technical support, along with raising the profile of the project, all of which have contributed to the continued success of the farmer societies.

control and participation by members, and encourage internal capital mobilization. Reforms also need to accommodate a large variety of different types of cooperatives or pre-cooperatives, so that the level of regulation matches the size and complexity of different organizations (Stockbridge, Dorward and Kydd, 2003).

The key lessons learned from the NaCSA's farmer societies and the Samroiyod Shrimp Farmers Cooperative are shown in Boxes 10 (on previous page) and 11.

BOX 11

Key lessons learned from the success of the Samroiyod Shrimp Farmers Cooperative in Thailand

- *Similar objectives of members* – The cooperative is made up of farmers with different needs, interests, skills and assets. However, these farmers are united by a small number of common interests and objectives. The main problems related to decreasing and unpredictable prices and unsustainable market access are being successfully addressed by the cooperative. The cooperative is providing members access to good- quality inputs on credit, along with negotiating new partnerships for market access. By working together and building partnerships along the market chain, members also now have the chance to become Fairtrade certified, which would be virtually impossible if they were working individually. It is the existence of common problems being successfully addressed by the cooperative that has kept the cooperative strong and its membership growing.
- *Strong leadership* – The cooperative president is extremely motivated and committed. He is a successful shrimp farmer and understands the problems members are facing. The strength and commitment of his leadership is a key reason why the cooperative has moved forward and grown so quickly in such a short space of time. The cooperative president is also supported by another strong and charismatic leader, the federation president, who has creativity and vision, is highly educated and well connected both nationally and internationally.
- *Partnerships* – Strong external partnerships between the cooperative and the Network of Aquaculture Centres in Asia-Pacific (NACA), the Government, the private sector (input suppliers, processors and buyers), non-governmental organizations (NGOs) such as the World Wide Fund for Nature (WWF) and now with Fairtrade, along with the other cooperatives which form the Federation of Shrimp Cooperatives of Thailand (FOSCOT), have been important factors in the growing success of the Samroiyod Cooperative. These partnerships have provided the cooperative with increased influence with government (by forming a federation with other cooperatives, they have increased their voice and lobbying power), and increased exposure, leading to national and international awareness of the cooperative, strategic guidance and technical support from NACA and others, all of which have contributed to its growing success.
- *Responsive management* – The cooperative is managed in a very transparent and democratic way. Members interviewed noted how responsive and approachable the Executive Committee is. The division of members into small subgroups based on geographical location has also enabled committee members to better understand and respond to members' needs.
- *Coordination* – The cooperative's main business strategy is to link farmers to input and output markets and services and coordinate activities of market chain actors. Lack of coordination among market actors is a big constraint in many sectors in many countries and especially so for more highly institutionally demanding products such as shrimp and other aquaculture products, making coordination an important key to success.

4.3 SUMMARY OF FACTORS ASSOCIATED WITH SUCCESSFUL FARMERS' ORGANIZATIONS

Given the wide range of FOs and the socio-economic, agro-ecological and policy contexts in which they are found, no specific combination of enabling factors, characteristics and good practices can guarantee their success or failure. However, analysing the characteristics of successful FOs and understanding the challenges they face are good starting points for supporting the developing of successful aquaculture FOs. The factors for successful FOs discussed above are by no means comprehensive; however, they do give an idea of the types of issues that affect the success and effectiveness of an FO. Box 12 contains a summary of the characteristics commonly associated in the literature (and supported by the findings of the case studies in this review) with successful FOs.

BOX 12

Summary of factors associated with successful farmers' organizations

- *Homogeneity* – People engaged in collective activities are relatively homogeneous in terms of their socio-economic status and cultural values.
- *Size* – The size of the farmers' organization (FO) matches the organizational abilities of its members and is appropriate for the type and scale of activities being collectively undertaken.
- *Choice of services* – The services provided by the FO reflect the demands of its members and are matched by the ability of the FO to deliver them.
- *Commercial activities* – The FO is able to identify and undertake activities that make good business and commercial sense.
- *Self-reliance and autonomy* – The FO is not dominated by outsiders (e.g. government, donors and non-governmental organizations) in pursuit of their own respective agendas and in the long run is not overly dependent upon outsiders for support and guidance.
- *Finance* – The FO has the financial capacity to support its own activities and is not heavily dependent upon subsidies.
- *Skills and education* – A minimum level of skills and education is represented among the FO's membership.
- *Participation* – Strong incentives exist for active participation by members in decision-making and in the use and/or provision of services.
- *Organizational structure and governance* – The structure of the organization facilitates good governance and effective day-to-day management of the organization and ensures that the leadership is accountable to members.
- *Legislation* – The legislative framework within which FOs operate promotes good governance while at the same time avoiding excessive regulation and the harm this can do to the autonomous development of FOs.
- *Focus* – Resources are focused on undertaking a limited number of activities effectively rather than a larger number of activities less effectively.

Source: Stockbridge, Dorward and Kydd (2003).

Society farmer meeting at Badava Village in Andhra Pradesh, India.

Courtesy of MPEDA/NaCSA

5. Supporting farmers' organizations

Much has been written on the risks to FOs associated with too much external intervention or subsidy and the importance of ensuring FO activities are driven by members and not by donors or government. However, the success of FOs is often influenced by their relationships with government and other external partners, and the case studies in this review (along with the experiences of many successful FOs) show that development agencies and external partnerships can make positive contributions in facilitating FO development. This chapter outlines the actions and support external actors such as governments, NGOs, international donors and other development agencies can undertake to facilitate the development of successful FOs.

5.1 ACTIONS AND SUPPORT NEEDED TO FACILITATE THE DEVELOPMENT OF SUCCESSFUL FARMERS' ORGANIZATIONS

There is no universal, "one size fits all" set of interventions for supporting FOs. As with all development interventions, support must be appropriate for the specific context, circumstances and needs of each FO. Support organizations must take the time to listen to FO members' needs and requirements, assess their capacities and motivation, and analyse the market and institutional environments before developing a specific programme of support in collaboration with the FO and its members. Support programmes for FOs should, however, still follow some general principles (summarized in Box 12) aimed at increasing FO empowerment, participation, autonomy, business competence and sustainability. These principles highlight the importance of taking a holistic approach (rather than one consisting of isolated interventions) and a facilitative approach (rather than an interventionist approach where a support organization is directly responsible for providing services or undertaking activities on behalf of the FO) to maximize chances of FO success and sustainability (Kindness and Gordon, 2001).

Building on the factors for success identified in Chapter 4 along with the principles underlying a facilitative approach outlined by Kindness and Gordon (2001), four broad areas requiring support have been identified to assist the development of successful FOs: (i) training and capacity building; (ii) development of an enabling environment; (iii) market coordination and chain development; and (iv) access to technology, research and development.

5.1.1 Capacity building

Building the capacity of FOs to help them implement their own strategies is fundamental to any FO support programme and is essential for FO sustainability and self-reliance. World Bank projects on FO development currently focus on strengthening FOs' technical and strategic capacities. This is also an increasingly common approach for NGOs and donor agencies. Strategic capacity refers to the ability to develop strategies to meet FO objectives. Technical capacities refer to the following skills:

- functional literacy and numeracy;
- accounting and financial management;
- ability to run an efficient information system;
- capacity to analyse constraints, synthesize members' needs, set and articulate priorities;

- ability to undertake specific activities; and
- capacity to design, implement and evaluate an activity (Collion and Rondot, 2001).

Penrose-Buckley (2007) identifies several key areas of FO capacity that need strengthening. These areas encompass the broad technical and strategic capacities mentioned above, but also focus on the capacities needed to undertake specific key FO activities. These areas include:[17]

- Empowering grassroots members:
  - Increasing members' ability to exercise ownership and control of the FO and keep leaders accountable is extremely important and depends on members' capacity.
  - Members can be empowered through developing their skills in critical areas, including numeracy, literacy and business and marketing skills.
- Strengthening governance and leadership:
  - Supporting FOs to identify the most suitable rules and legal structure for their needs is important; however, it is of little use unless members understand these rules and are able and motivated to participate in decision-making (see above).
  - Strong leadership is essential for the effective governance of FOs, and leadership capacity can be improved by developing the management skills and business understanding of leaders
- Supporting effective market research:
  - FOs need support to develop marketing strategies that reflect members' priorities and willingness to take risks and that build on the FO's competitive advantage and capacity.
  - The choice of markets and marketing strategy will affect who can participate in FO activities, and complementary development activities may be needed to ensure that poorer producers, women and other marginalized groups have the opportunities and capacity to participate in FOs.
- Strengthening business management:
  - Capacity in business planning (to analyse business and market systems and develop realistic and sustainable business strategies) is essential for FOs to become profitable and benefit their members.
  - Many FOs fail because they do not analyse their business costs carefully. Thus, support is needed to help FOs develop effective business management systems to ensure they can meet financial obligations to members and service providers.
  - FOs should try to raise some capital from members' contributions to increase their ownership and commitment to the business. Support may be needed for poorer producers to ensure that they are not excluded by these contribution requirements.
  - Support organizations can also help FOs to access funding but should avoid financing FOs in ways that weaken their long-term sustainability.
- Supporting improved production:
  - FOs can increase their output in a number of ways (e.g. by increasing membership, raising members' productivity or buying produce from non-members), all of which require additional skills and resources.
  - Coordinating members' production is a key role of many FOs and needs to be supported through developing efficient and effective logistical systems
  - Improving product quality is essential for FOs to access better prices, but it involves a range of different costs (including those related to extension services, quality management systems and certification) that FOs are often unable to

[17] For a step-by-step guide on how to facilitate the development of these capacities, see Penrose-Buckley (2007), Chapter 14.

cover. This is especially relevant for aquaculture FOs that produce output that often needs to meet strict quality and safety standards. Thus, support may be needed to enable FOs to make these investments, but FOs must be able to cover these costs themselves in the long run.

- Facilitating access to market services:
  - Sustainable access to market services is essential for FOs to conduct and develop their business. FOs may need support to assess the market services they need and to explore what market services are available.
  - Support organizations can facilitate FO access to market services in various ways, including providing services directly, managing FOs' access to services, coordinating FOs' independent linkages to service providers or developing the capacity of service providers.
  - The aim of support organizations should be to develop the capacity of FOs to access, pay for and negotiate contracts with service providers in the long term.

5.1.2 Market coordination and chain development

Aside from increasing FO capacities to meet objectives, support organizations can also facilitate FOs' trading activities, which lie at the heart of FOs' objectives of achieving increased access to input and output markets. Support organizations can act as trade partners, broker sales on behalf of FOs, advise FOs on their trade linkages or coordinate trade linkages between FOs and other market chain actors. Facilitating linkages between FOs and private-sector stakeholders and supporting economic coordination among market actors along the market chain are essential for FOs to achieve sustainable market success. Support organizations can facilitate coordination between FOs and market actors by introducing FOs to buyers, input suppliers and service providers, increasing trust and confidence between different actors in the chain and facilitating negotiation between them. It is important, however, that linkages and coordination among actors are facilitated in such a way that does not weaken ownership within the FO and helps the FO develop independent capacity to negotiate contracts with different market chain actors and a good reputation with buyers. It can also be a more effective and sustainable strategy to start by strengthening existing private-sector marketing channels and linkages rather than developing entirely new ones.

5.1.3 Enabling environment

An enabling environment including favourable business development policies, macroeconomic performance and legislation can have a strong influence on the success of an FO. If government policies are not conducive to growth, there may be little point in investing resources in FOs that focus on marketing interventions, which may provide some cushioning from the effects of bad policies but do not address the fundamental need for policy reform. Burnett and Greenhalgh (2002) make a number of suggestions on the kind of policy measures that can improve the functioning of markets to the benefit of small-scale farmers and, in turn, FOs highlighted in Kindness and Gordon (2001) as follows:

(i) Policies need to be adopted in industrialized countries that do not distort smallholder competitiveness in developing countries.

(ii) Developing country governments should be encouraged to adopt macroeconomic policies, particularly monetary and fiscal policies, that do not distort economic activities.

(iii) Trade policy needs to be considered within a wider development context; better governance and reforms are needed to attract investment and trade opportunities.

Other issues related specifically to State support of small-scale aquaculture farmers that need to be addressed include the development of policy that is more favourable

to the small-scale sector based on the requirements and realities of the small-scale aquaculture farmer; policies and incentives that encourage private investment in small-scale aquaculture production and services; provision of technical and marketing services that are more oriented towards small-scale aquaculture producers, as well as the small-scale traders and businesses associated with the sector; provision of social safety nets for the most vulnerable producers and traders; facilitation of access to financial and insurance services in rural aquaculture farming areas; and the provision of information services that cater to the needs of rural farmers (Phillips *et al.*, 2007).

Aside from policies that constrain growth and do not address the needs of small-scale producers, in many countries legal and regulatory frameworks can also constrain the operation and development of FOs themselves through complicated administrative and bureaucratic procedures. FOs often lack the support and recognition of the State and are discriminated against and excluded. Simplifying administrative procedures and allowing easy, affordable and rapid registration and decentralizing administrative and legal procedures to regional or local levels are some of the ways in which governments can develop an institutional environment that is favourable to the free and effective functioning of FOs. Governments should also accept the full operational autonomy and private nature of FOs and recognize their positive contributions to rural and national development (SARD, 2007).

Inadequate infrastructure and transport can also be important constraints to the agricultural marketing activities of FOs and small farmers generally, particularly in remote rural areas. Even though this may not be part of the institutional environment, these issues fall under the wider enabling environment and must also be addressed by government if FOs are to be able to achieve their objectives and be successful.

The government has a key direct role to play in improving the institutional and wider enabling environment for FOs; however, there is also a role for support organizations to either lobby the government or support FOs themselves to lobby the government for an improved policy environment that encourages growth and does not distort trade, for a legal framework and registration process that ensures FOs can compete on an equal basis with other businesses, and for the necessary investments in infrastructure and other public services that are vital for the success of FOs.

5.1.4 Access to technology, research and development

Small farmers are often unable to access technology owing to their lack of knowledge about how and where technology is developed and who the key players are. Support organizations and FOs can play an important role in improving linkages and coordination between farmers, agricultural research agencies and extension services, which can be facilitated through regular consultations among key stakeholders. The development of BMPs, for example, key to improving the productivity of aquaculture farmers, decreasing risks and vulnerability, and central to the cluster management concept, will be difficult to do without linking and coordinating with research agencies to support FOs in developing appropriate BMPs. In the case of NaCSA's farmer societies, the Government (through MPEDA) enabled farmers to link with NACA through a joint project that facilitated the development of BMPs by NACA and their subsequent successful implementation by farmer societies.

FOs should participate in planning meetings and, where possible, serve on the boards of research agencies to have a greater say in the research agenda and to ensure that trials are designed to address the needs of small-scale farmers. Knowledge, information and technologies can reach farmers at the grassroots level more effectively if agricultural research and extension institutions proactively involve FOs; however, FOs made up of low-resource farmers are unlikely to have the capacity to engage meaningfully with these institutions. Also, access to technology can be expensive or require higher asset levels, and it is usually FOs with donor support or a higher level of resources that

have been successful in accessing new technologies (Carney, 1997). In any case, it is important to ensure that technology transfer and dissemination to farmers and FOs is undertaken in a participatory way to maximize farmer learning and innovation and increase the chances of adoption.

5.2 THE ROLE OF THE STATE

As noted above, the government has a key role to play in improving the institutional and wider enabling environment for FOs, without which FOs will find it hard to succeed. Developing-country governments are responsible for providing FOs with a responsive policy environment that encourages growth and does not distort trade, for a legal framework and registration process that ensures FOs can compete on an equal basis with other businesses, and for the necessary investments in infrastructure, communication and other public services that are vital for the success of FOs. At the same time, developed country governments must adopt policies that do not distort smallholder competitiveness in developing countries.

It is, however, very important that FOs are not seen by government as an instrument of public (or private) service delivery to rural areas (as this can undermine their organizational viability) but rather as autonomous business-oriented organizations in their own right, representing the needs of farmers. Mechanisms should be institutionalized at all levels of government for the inclusion and participation of FOs in agricultural, rural development and agrarian reform policies and programmes. Further, the government must ensure that public-sector institutional support to FOs is given priority, and funds must be allocated for such support to ensure a high probability of success for FOs and to encourage and facilitate their formation and spread.

5.3 THE ROLE OF NGOs AND OTHER DEVELOPMENT ORGANIZATIONS

Penrose-Buckley (2007) identifies a number of strategic roles for development NGOs (which also apply to other development organizations and donors) in supporting FOs. These roles include those summarized below.

5.3.1 Accompaniment

The main role that NGOs and other development organizations play is as an FO's long-term development partner, supporting and "accompanying" the development of the organization and supporting capacity development in the key areas outlined in Section 5.1. It is important to note, however, that the way in which capacity development services are delivered is important. Training and capacity-building needs will develop and change with the FO and are not a one-time need. As such, provision of training services must be undertaken in a sustainable way, perhaps through an established institution rather than directly by NGO or donor project staff in order to be sustainable beyond the life of any externally assisted project. Cost recovery needs to be considered from the start, and "accompanying" organizations must ensure that their support services become self-financing or are sustainable in the long run. Aside from capacity building, the main accompanying role of NGOs and donor organizations is to help FOs analyse and identify their own needs and priorities and together develop a support strategy.

5.3.2 Mobilizing and coordinating support activities

NGOs and donors can also play a critical role in mobilizing and coordinating the necessary support from specialist support agencies, government agencies and other actors and can use their position and contacts to leverage financial support from financial institutions and other sources.

5.3.3 Facilitating chain coordination

As mentioned above, market coordination of market chain actors is very important for FO development. NGOs and donor organizations can act as catalysts to bring together different players in the chain, build trust and facilitate dialogue and negotiation between FOs, suppliers and buyers as a basis for improved coordination.

5.3.4 Advocacy

NGOs can play a crucial role advocating with and on behalf of FOs to bring about critical changes in the policy and institutional environment outlined in Section 5.1.

5.4 THE ROLE OF THE PRIVATE SECTOR

Private-sector market actors do not usually have specific objectives as they relate to the success of FOs. However, as noted in previous sections, partnerships with FOs can be beneficial for input suppliers, traders and buyers owing to the reduced transaction costs associated with them, for example, buyers can obtain reliable volumes of high-quality and traceable products. It is important for the success of FOs that private-sector actors are open to doing business with them and are flexible in negotiating contracts and mutually beneficial partnership arrangements. More specifically, the private sector plays an important role in providing technical and marketing services for small-scale aquaculture producers, information services, microfinance and financial services, insurance services and input packaging and delivery for small-scale farmers. Phillips *et al.*, (2007) also suggest there is a strong business case for investment in the small-scale sector. In India, for example, an investment of USD 80 000 in technical servicing in 2006 led to crop improvements worth USD 2 million. Given that approximately 80 percent of aquaculture producers in Asia are small-scale producers, an investment in servicing the small-scale sector could therefore be a potentially profitable one.

"Corporate social responsibility" (CSR) also has a role to play in small-scale farming, particularly the larger retailers that are becoming increasingly powerful. These businesses should be encouraged to adopt more CSR initiatives in the aquaculture sector, such as facilitating market access for small-scale aquaculture producers, providing technical and financial assistance to small-scale producers to comply with market requirements, and developing brands and marketing methods favourable to aquaculture products from smaller producers.

Certification and quality assurance schemes that are relevant and practical for small-scale aquaculture producers are also needed. Certification could focus on the advantages of small-scale producers with regard to their role in providing both environmental and social benefits. Development of a small-scale certification scheme oriented towards "Fairtrade" could also be explored.

As the success of FOs depends upon their ability to operate successfully as commercial enterprises, it is important for them to understand which types of business relationships and partnerships are likely to be most conducive towards their success given the contexts in which they operate and the types of products they produce.

Contract farming schemes (where processors or traders provide farmers with services such as inputs, extension advice and output marketing in exchange for commitment by farmers to supply them with some or all of their output) are an important type of contractual relationship between farmers and the private sector. Where farmers negotiate these contracts as part of an FO, they increase their bargaining power. Processors or traders benefit from economies of scale in service delivery and from a reduction in lending risk that may result if FOs accept joint liability for the credit of their members. Both parties benefit from lower transaction costs than would be the case if agribusiness negotiated a separate contract with each farmer.

BOX 13

Guiding principles for supporting the successful establishment and operation of farmers' organizations (FOs)

- *Develop independent capacity* – Support activities should focus on developing the capacity of FOs to manage and implement their activities independently. Support organizations should therefore avoid implementing or managing any activities for FOs unless there are strong reasons for doing so that are supported by and are in the long-term interests of producers; the support organization builds the capacity of the FO to take over those activities at the same time; and both the support organization and the FO have agreed a clear process and timetable for handing over management and implementation to the FO.
- *Promote independence* – The support organization should respect and encourage the FO's organizational independence and internal accountability between FO leaders and members before external accountability to the support organization.
- *Prioritize business objectives* – Support organizations should prioritize the development of a sustainable business above social objectives that may undermine the FO's financial sustainability.
- *Promote long-term sustainability* – All support activities should contribute directly or indirectly to the financial and/or organizational sustainability of the FO. From the start, support organizations should approach all support activities with a clear exit strategy and a joint plan with the FO that sets out how it will become financially sustainable in the long term.
- *Adopt a coordinated approach* – Few non-governmental organizations or donor projects have the necessary resources and expertise to support FOs effectively on their own and, even if they do, an FO's independence can suffer if it only relates to a single support organization. A coordinated approach involving a wide range of actors, therefore, lies at the heart of an effective FO support strategy.
- *Take a long-term approach* – Support organizations should accept that supporting independent FOs is a long-term activity that requires patience and a recognition of the fact that FOs' development paths will not always be optimal from the point of view of the support organization.
- *Set realistic expectations* – Support organizations should be realistic about the expected results of their support activities, particularly in regions with limited competitive advantages. They also need to ensure that FOs have realistic expectations about the level and type of support that will be offered.
- *Understand the market system* – Support should be based on a sound understanding of the market system in order for FOs to be able to invest their limited resources in viable business and marketing strategies.
- *Allow failure* – Support organizations should resist the temptation to support FOs that would otherwise have no chance of succeeding as a business in the long term.

Source: Penrose-Buckley (2007).

5.5 SOME CONSIDERATIONS FOR FACILITATING FARMERS' ORGANIZATIONS

As noted above, different interventions will be needed to support different FOs depending on conditions such as the market context and FO objectives and capacities. Before development agencies such as NGOs, donors and others launch programmes of support for FOs, it is important for them to consider whether certain minimum conditions exist, as these may have important implications for the approach and resources required to facilitate FOs effectively.

When certain conditions in the market environment and with FOs themselves are not present, it will require more support and time for FOs to become strong, independent organizations. This has implications for the type of support they require and should be kept in mind by development organizations when planning and prioritizing their FO support activities. Some of the main minimum conditions in the market environment include a minimum level of security, a minimum level of economic stability, political independence and limited government interference in FOs, a suitable legal framework, a minimal level of market development and a competitive market structure that is not biased against small-scale producers. FO characteristics should also be assessed. FOs must have some level of production capacity and the potential to produce a reliable surplus (without this, FO support programmes are unlikely to be successful). They must also have a minimum level of social capital and trust and understanding between members and elected leaders. FO members should also have some minimum level of business and other key capacity, without which the support process will be very challenging (Penrose-Buckley, 2007).

There are a number of other key considerations that support organizations should bear in mind when planning FO support programmes. Support organizations may find it easier and more effective to support existing FOs rather than form new ones. Establishing new FOs from scratch is very difficult and is less likely than supporting existing ones to lead to successful, sustainable, member-driven FOs. As noted in Chapter 2, FOs will not provide benefits for many poor and marginalized groups and, as such, development NGOs and donors may want to provide complementary support to achieve more direct and targeted benefits to these poor and marginalized producers. Support organizations also need to plan their exit strategies with FOs from the beginning in order to maximize the chances of the FOs becoming autonomous, sustainable and successful organizations.

Box 13 (on previous page) gives a summary of guiding principles for NGOs, donors and others for supporting the successful establishment and operation of FOs.

NaCSA officers and members of the Sri Sainadha Aqua Farmers Welfare Society discussing better management practices and the extension brochure by the pond side in West Godavari District, Andhra Pradesh, India.

Courtesy of MPEDA/NaCSA

6. Conclusion

The aquaculture sector is the fastest-growing food sector in the world. Farmed fish and shellfish are reported to have exceeded the volume of wild-caught fish and shellfish for human consumption for the first time in 2008, offering increased opportunity to harness the market growth potential for pro-poor livelihood development in the aquaculture sector.

However, this review has shown that there are a number of challenges being faced by small-scale aquaculture farmers in developing countries. These challenges are mainly due to market liberalization in developing countries along with globalization, which have led to the withdrawal of State service provision and an end to guaranteed markets for farmers. Along with the concentration of market chains and the increasingly strict quality and safety requirements demanded by buyers of aquaculture products, these challenges are leading to the marginalization of small-scale aquaculture producers, who are finding it increasingly hard to compete with large commercial producers from around the world. It has been argued in this review that collective action through participation in well-organized and efficiently managed FOs can provide an effective mechanism to assist individual small-scale aquaculture producers overcome these challenges and effectively participate in and influence modern market chains and trade. In order to explore this approach, this review has examined and analysed the importance of FOs in developing countries from both a theoretical and an empirical viewpoint. It has shown that a clear case for FOs can be put forward and has shown the range and diversity of aquaculture FOs in practice using illustrative examples of successful aquaculture FOs from Bangladesh, India, Indonesia and Thailand. The review has also highlighted the realizable potential that the implementation of BMPs through a cluster management approach offers for achieving success in the small-scale aquaculture sector. Key lessons and factors associated with successful FOs have also been distilled from the research and development literature and from the in-depth field-based case analyses of shrimp FOs in India and Thailand. The review has also suggested some important actions and support needed from key stakeholders and development organizations to assist aquaculture FOs' success and has highlighted some guiding principles, gleaned from the literature, for supporting the successful establishment and operation of FOs and their spread.

This concluding chapter examines the implications of the foregoing review for harnessing the potential of aquaculture FOs for pro-poor development along with the constraints, challenges and opportunities facing small-scale aquaculture FOs in developing countries. The chapter concludes by looking ahead at the prospects for the successful development of aquaculture FOs and the small-scale aquaculture sector in general.

6.1 HARNESSING THE POWER OF FOs FOR PRO-POOR DEVELOPMENT

FOs have the potential to provide many technical, economic and social benefits to small-scale aquaculture farmers in developing countries, as shown by the preceding case studies. However, as mentioned above, they may not be the most appropriate strategy for poor and subsistence farmers who lack the resources to enable them to produce a reliable surplus for market. FOs are often established by better-off producers (which was the case for all of the FO case studies undertaken in Thailand), and membership requirements and cultural norms may exclude poorer farmers, women and other marginalized groups. Often, the poorest small-scale producers live in deprived and remote areas and face thin markets, resulting in a lack of successful FOs in the area for

farmers to join. In these cases, where more fundamental and structural changes have to be made, FOs will find it difficult to succeed and may not be the most appropriate response, especially when poor subsistence farmers who lack critical technical and entrepreneurial capacities are the targets of development intervention. This may not always be the case and can depend on the context and types of constraints that farmers face and the type of support they receive. If interventions are focused on empowerment of these groups and are managed carefully, perhaps by starting smaller groups to address specific constraints that can then grow steadily to become formal FOs over time, poor and marginalized groups can still benefit in the future. However, enabling these groups to benefit from commercially oriented FOs still remains a challenge and will need to be carefully addressed through targeting and tailoring of interventions to meet the needs of these groups.

However, in contexts where there are minimum levels of market development with growth prospects, where there are small-scale farmers that have the potential to produce some surplus for the market and where there is a suitable institutional and enabling environment, FOs can be an effective way of contributing to poverty alleviation through a wide range of direct benefits for members (e.g. increased access to input and output markets and services, increased bargaining power, lower costs due to economies of scale, and increased voice and empowerment). Support organizations can maximize these direct benefits by encouraging poorer farmers and other marginalized groups to join FOs and providing them with more targeted capacity building, training and support to enable them to realize their potential to contribute to and take part in FO activities.

Poorer and subsistence farmers may also be able to benefit indirectly through FO development, even if they are not members, by taking advantage of FO services that may be offered to non-members through certain spillover effects such as increased access to knowledge and technology, through community development activities supported by FOs, and ultimately through the opportunities that result from FO-driven local economic growth such as increased local employment, demand for labour and increased levels of service provision. These all have the potential to directly benefit poorer farmers, and thus FOs can be an extremely important mechanism for pro-poor development and poverty alleviation.

6.2 CONSTRAINTS AND CHALLENGES

This review has highlighted the many constraints and challenges facing small-scale aquaculture producers in today's liberalized and globalized markets. It has also highlighted an important strategy for small-scale aquaculture farmers to respond effectively to these challenges, namely the development of FOs. This section highlights some of the key constraints and challenges currently facing the development, operation and impact of small-scale aquaculture FOs in developing countries.

Collective action and FOs are not able to solve all the challenges faced by small-scale producers, especially those related to structural issues such as gaps in the market for services that are not being filled by the public or private sector. Even though FOs have an important role to play, group approaches in themselves do not provide an easy institutional response to the pressures facing small-scale producers in a liberalized economy and should not be seen as a universal strategy to address the challenges currently facing small-scale aquaculture producers. The following are the key constraints and challenges facing the development of small-scale aquaculture FOs.

6.2.1 Targeting poor farmers

An important challenge facing FOs is their limited ability to involve and benefit poorer and subsistence farmers. Poorer farmers may not have the technical and entrepreneurial capacities needed to effectively participate in a group, such as basic numeracy and

literacy skills. They are more likely to be risk averse than more commercially oriented small farmers, and they also may not be able to produce a reliable surplus that meets market requirements for quality. They may also lack the resources needed to meet membership requirements such as membership fees. As such, FOs are usually unable to be of much direct benefit to poorer farmers, and business-oriented FOs may not be the best approach for targeting such poor farmers.

Further, the poorest small-scale producers often live in deprived and remote[18] areas and face thin markets. FOs will find it extremely hard to succeed in areas that are remote and/or areas with limited market development and low levels of service provision. In these cases, where more fundamental changes have to be made such as establishment of infrastructure or a minimum level of input, output and/or service market development, small farmers will be unable to benefit from marketing interventions, as more basic needs must first be met. Also, as suggested in Chapter 5, the trend in marketing approach adopted by development organizations has moved towards a more business-oriented, facilitative approach, and this may be less likely to succeed in remote rural areas than in less remote, higher-potential areas. Ultimately, in poor remote areas, FOs will find it extremely difficult to succeed and may not be the most appropriate strategy to help poor farmers.

6.2.2 Certification

As noted in the preceding chapters, certification, which is being rapidly introduced to the aquaculture sector, represents a serious challenge to small-scale aquaculture farmers. This is due to a number of reasons, including the small volumes produced by individual farmers and the large numbers of farms; low or no market incentives to become certified; limited access to market, technical and business knowledge and related infrastructure; and limited or inequitable access to financial services for investment in changes that may be required for certification. If certification has any chance of having a positive impact on small-scale producers, these issues must be addressed. It seems unlikely, however, that many individual small-scale farms will be able to be easily certified in the near future and, as yet, no certification scheme has been developed to target the small-scale sector.

6.2.3 Institutional environment

The institutional environment has considerable bearing on FO development, and institutional change can be a lengthy and difficult process. Thus, if FOs are operating in an environment in which institutional change is the only way they can develop and succeed, they will need to rethink whether their time would be better spent focusing solely on advocacy efforts towards the government for change; however, institutional change can take years if not decades to achieve. Nevertheless, as noted above, FOs provide one of the few ways in which small farmers can have their voices heard by those in power and as such should be encouraged to continue to advocate for change.

6.2.4 External interference

While FOs provide an important strategy for small-scale aquaculture farmers to overcome some of the challenges they face, experience in the agriculture sector shows that FOs can be seriously undermined by attempts to encourage them to scale up too quickly or to take on too many or overambitious activities. They can also be weakened by subsidies, by a failure to focus on core activities offering clear incentives and benefits to members, and by donor and government support and interference that treats them more as development agents than as private businesses. Thus, inappropriate and damaging

[18] Both in terms of distance from markets and in terms of difficulty reaching markets due to lack of transport or infrastructure.

interference from development agencies presents a serious challenge to FOs. FOs must be allowed to develop at their own pace and must be driven by the objectives of their members, not by the objectives of the government or development agencies.

6.2.5 Long-term investment

Evidence from the literature points to the fact that successful FOs take a long time to develop due to the importance of laying strong foundations, such as capacity building of members, developing internal cohesion and members' trust in the leadership and developing external partnerships. All of these are extremely important factors that contribute to the success of an FO and that take time to develop properly. Thus, one of the main challenges to small-scale aquaculture FOs is the time, effort and long-term investment that are needed to build successful, effective, competitive and sustainable organizations that are able to achieve members' objectives.

6.3 OPPORTUNITIES

Despite the constraints and challenges outlined above, collective action and FOs still provide an important strategy to assist small-scale aquaculture farmers to respond to some of the challenges they face. Some of the most important opportunities for the development of small-scale aquaculture FOs are summarized below.

6.3.1 The growth of the aquaculture sector

One of the most important opportunities that small-scale aquaculture FOs should be taking advantage of is the rapid growth of the global aquaculture sector. The aquaculture sector is the fastest-growing food sector in the world. As capture fisheries production continues to stagnate and effective demand increases for global seafood products and higher-value internationally traded export species such as shrimp, global demand for aquaculture products will continue to rise in the coming years. The role of Asia as the main supplier of aquaculture products globally is likely to continue, and the large proportion (up to 80 percent) of aquaculture production in many countries in Asia that comes from small-scale farmers provides a huge opportunity to aquaculture FOs to contribute to rural development, employment and poverty reduction in developing countries. Thus, the increasing demand for aquaculture products coupled with the social and economic importance of the small-scale sector is a high-value opportunity upon which aquaculture FOs can capitalize.

6.3.2 Group certification

A key challenge facing small-scale aquaculture producers is the increasingly strict quality and safety requirements demanded by buyers of aquaculture products. The importance of product certification is increasing, and even though meeting these requirements is a challenge for producers, as with most challenges, it also represents a significant opportunity for small-scale aquaculture producers to offer quality products. There could be significant social and economic benefits if the small-scale sector can be effectively serviced to become certified and participate in modern market chains. One way to do this is the promotion of group certification or certification of clusters of small-scale farmers. This approach is being successfully used in other agricultural sectors and is now beginning to be used in the aquaculture sector, with the organic certification of two of NaCSA's shrimp farmer societies in India.

6.3.3 Implementation of better management practices through cluster management

As discussed in Chapter 3, cluster management (the collaborative management of aquaculture production by farmers) has recently been shown to be a successful mechanism to empower small-scale rural aquaculture farmers by improving productivity

and ensuring safe and responsible aquaculture production. Cluster management has been successfully used as a tool by NACA and other organizations, including FAO, to facilitate the implementation of BMPs for small-scale aquaculture development in a number of countries, such as India, Indonesia, Sri Lanka and Viet Nam. The case study of the NaCSA's farmer societies and clusters in Andhra Pradesh, India (summarized in Chapter 3 and presented in full in Appendix 2), shows the very real potential that cluster management has for benefiting small-scale aquaculture farmers. Through collective implementation of BMPs, the NaCSA's farmer societies have succeeded in increasing production levels and the quality of shrimp, increasing their profits as a result of decreased costs, increased output prices, decreased disease risks and increased market access, even achieving organic certification of two societies. These achievements are due primarily to the implementation of BMPs within farmer societies and clusters and show what a significant opportunity this is for small-scale aquaculture farmers all over the world.

Central to the success of the NaCSA's farmer societies and clusters is the implementation of appropriate BMPs that were developed by NACA. BMPs are not fixed and the components of the BMPs need to be constantly reviewed and improved so as to meet the changing needs of the culture environment and technology. For this, continued assistance of support institutions would be necessary. Thus, in order for cluster management to provide a real opportunity for farmers, FOs need to be supported in developing appropriate BMPs for their different commodities and the range of contexts in which they operate. BMPs should reduce disease occurrence and costs of farming, improve growth performance, enhance environmental conditions by minimizing the impact of farming on the local environment, help farmers to attain food quality standards, improve the marketability of their produce and ultimately facilitate the sustainability of farmers' aquaculture production activities. In this way, cluster management and the adoption of BMPs provides a clear opportunity to achieve beneficial impacts to small-scale aquaculture farming systems.

6.3.4 Increasing market access

This review has pointed to the increasing challenges faced by small-scale aquaculture farmers in accessing lucrative output markets, both in terms of meeting market requirements and with accessing markets directly. FOs provide a way of increasing the ability of individual small-scale farmers to meet market requirements through measures such as group certification and group implementation of BMPs and internal standards (see above), along with meeting other requirements such as facilitating traceability mechanisms. In terms of accessing markets directly, many small-scale producers have to settle for the prices offered by local traders, as they are unable to access output markets directly. However, by acting as a group, small-scale farmers are more likely to be able to access processors, wholesale and other markets further down the market chain by bulking their produce together to reach the scale necessary to deal with buyers directly, bypassing local traders and other intermediaries. Both the Samroiyod Shrimp Farmers Cooperative and the NaCSA's farmer societies have been able to link up with processors and buyers and build partnerships, shortening the market chain and gaining higher prices. The increased ability and likelihood of FOs to achieve such partnerships with buyers presents small-scale aquaculture producers with an important opportunity to secure direct and sustainable access to output markets which is vital to their financial sustainability.

6.3.5 Increasing access to inputs and services

Due to liberalization of agricultural markets over the past three decades, governments in developing countries have withdrawn from input and service provision. Consequently, limited access to high-quality inputs and services continues to be challenging for small-scale aquaculture farmers. FOs provide a significant opportunity for small farmers to

access inputs and services due to economies of scale and lower transaction costs, which make it cheaper and easier for businesses, input suppliers and service providers to work with groups rather than individual producers. Increased credibility associated with legally registered FOs also makes it easier for members to access services, especially financial services. The case studies presented in this review have shown a range of different ways in which FOs can facilitate access to input markets and services. The CBOs in Bangladesh procured bulk inputs on behalf of members on commission. Farmer societies in India have developed a contract hatchery system where they are able to access high-quality seed (and test the seed themselves), which is well worth the premium price they pay. The Samroiyod Cooperative purchases seed and feed in bulk on credit from its suppliers for members. In all these cases, access to high- quality inputs has translated to increased production and quality of product, leading to increased income and access to output markets by being able to meet higher quality standards.

FOs can also provide services such as transport, credit and marketing to members, especially when private-sector service provision is lacking. FOs can also make it much easier for government and other organizations to deliver extension services and disseminate research outputs, ensuring they reach large numbers of producers. Farmers thus have increased opportunities to access extension, training and information services through involvement in a group. This has been the case with the dissemination of BMPs to aquaculture FOs and farmer clusters in India, Indonesia and Viet Nam.

6.3.6 Policy influence

Another opportunity that small-scale aquaculture FOs can capitalize on is their increased ability to influence change on a larger scale. As noted in Chapters 2 and 5, the institutional and wider economic environment has a considerable bearing on FO development and internal and external relations. Formal laws and government policies affect the environment for FO development and determine whether it is an enabling or disabling one. Thus, if FOs are to succeed, they need to function in a conducive environment and can play some role in ensuring that such an environment exists. However, it must be noted that moving from a disabling institutional environment associated with economic stagnation to an enabling environment associated with economic growth and development can be a slow and difficult process, and the process of change will be an incremental one. Thus, FOs cannot expect to make huge changes overnight; nevertheless, FOs provide one of the few effective ways in which small farmers can have their voices heard and their interests protected.

6.4 CONCLUDING COMMENTS

This review has sought to provide some guidance for public and private actors who are involved with supporting small-scale aquaculture development in developing countries. It has explored the challenges facing aquaculture farmers and has examined the role that small-scale aquaculture FOs can play in assisting small-scale aquaculture farmers to respond to these challenges. Through examining the experiences of successful aquaculture FOs, this review has shown how FOs can assist small-scale aquaculture farmers to connect to input suppliers and buyers of their products; address issues related to improving their compliance to international food safety standards; and improve small farmers' access to technical knowledge (including BMPs) and financial and technical services, particularly towards improving biosecurity and decreasing disease risks.

Through highlighting the recent success of the cluster management and farmer societies concept in India and distilling lessons for success from the case studies and the wider literature, the review shows how cluster management and aquaculture FOs can be applied as useful mechanisms to support aquaculture development in developing countries, enabling small farmers to increase their access to input and output markets

and services and to increase their productivity and income. Finally, the review has proposed certain support and actions needed to establish and develop FOs, which can successfully facilitate the delivery of services to small-scale aquaculture farmers and through advocacy can effectively influence the government to develop responsive policies that are focused towards support of the small-scale sector.

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APPENDIX 1

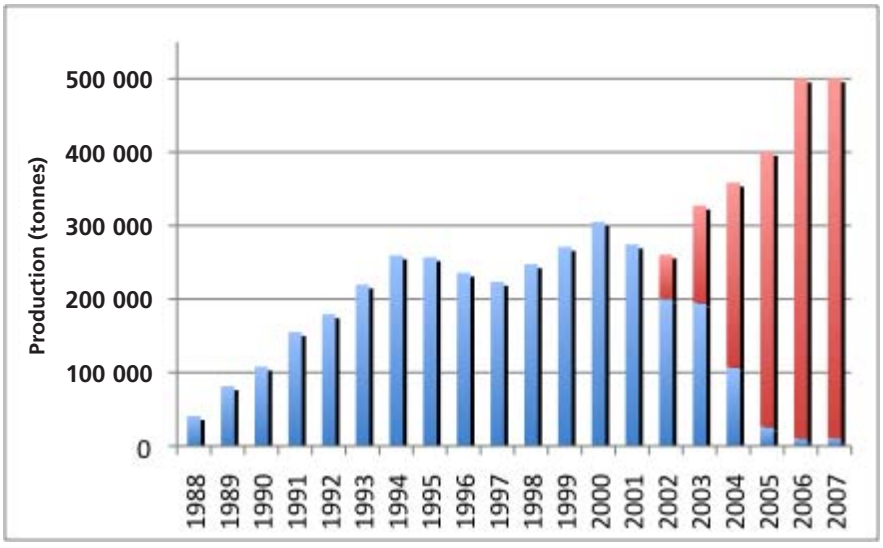
Case study of the Samroiyod Shrimp Farmers Cooperative in Thailand

BACKGROUND[1]

Thailand is the world's leading shrimp-farming country, exporting the most shrimp in terms of both volume and value, and the biggest supplier of farmed shrimp to the United States of America and Japan. Traditionally, the Thai shrimp industry farmed black tiger shrimp (*Penaeus monodon*) but owing to increased disease and other risks since 2001, it has undergone a dramatic transformation and switched species to farming Pacific white shrimp (*Litopenaeus vannamei*) and is now the world's leading supplier. In 2006, white shrimp made up 98 percent of Thailand's shrimp production, with black tiger shrimp making up the remaining 2 percent (Wyban, 2007). As a result of the switch to white shrimp, increased public and private investments and improvement of technologies, Thai shrimp production almost doubled between 2002 and 2006 to about 500 000 tonnes per year (Figure A1.1).

The generation of foreign revenue by the industry was USD 2.1 billion in 2007 (www.customs.go.th), and the direct and associated industries engaged at least 1 million people. In 2006, a total of 33 500 farmers producing shrimp in Thailand were registered with the government, 85 percent of whom were small-scale farmers.

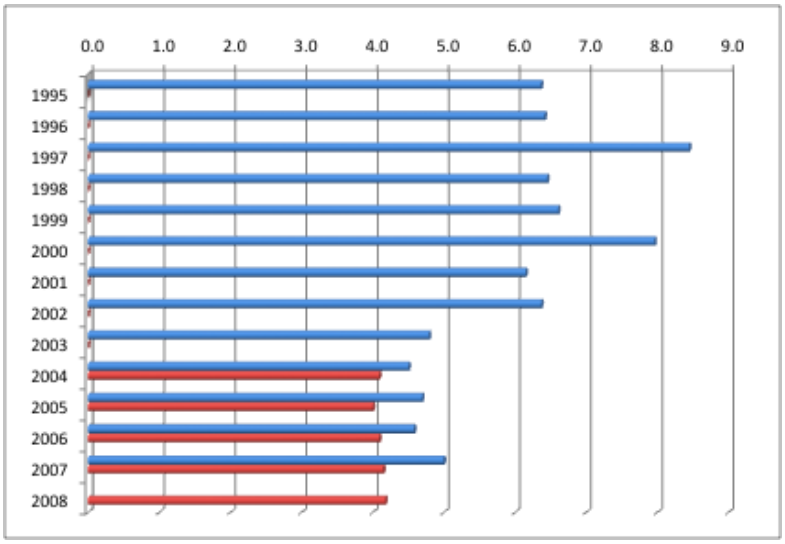
FIGURE A1.1
Annual production of farmed *Penaeus monodon* (blue bars) and *Litopenaeus vannamei* (red bars) in Thailand



Source: FAO.

[1] This section is based on interviews with Mr Somboon Laoprasert (Fisheries Biologist, Department of Fisheries) and Mr Ongpat Boonchuwong (Senior Expert on Fisheries Economics, Department of Fisheries).

FIGURE A1.2
Average farmgate prices in United States dollars of *Penaeus monodon* (blue bars) and *Litopenaeus vannamei* (red bars) for shrimp size of 50 pieces/kilogram in Thailand



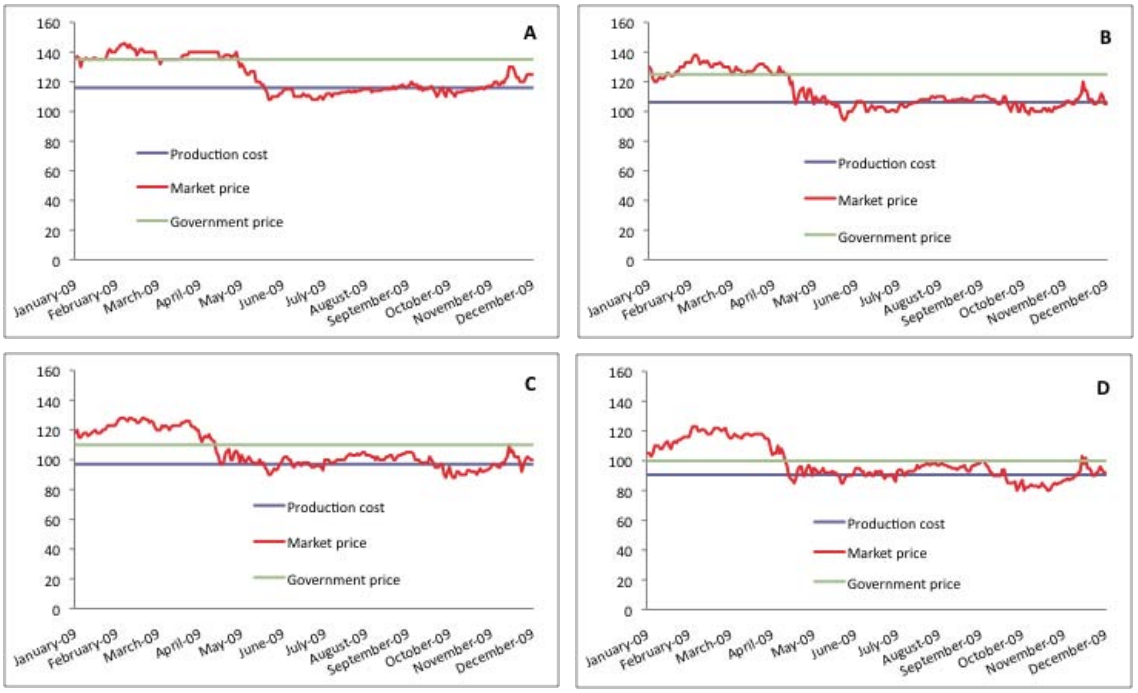
Sources: The National Center for Genetic Engendering and Biotechnology (1995–2003), www.biotec.or.th; and the Thai Union Feed Mill (2004–2008), www.thaiunionfeedmill.com.

However, according to Department of Fisheries (DoF) officials, over the past few years, the number of active shrimp farmers has decreased drastically to just 8 000, primarily due to the reduction in the international price of shrimp (Figure A1.2) along with increasing costs of production (Figure A1.3). At the same time, production has been increasing, which could suggest the number of small-scale farmers has decreased and a smaller number of large-scale farmers are now producing more.

The Thai Government is very supportive of the shrimp farming sector. In 1997, the DoF launched the Code of Conduct (CoC), which is voluntary, to implement an environmentally responsible management system for shrimp; and in 2000 it launched the Good Aquaculture Practice (GAP) quality/safety standard for shrimp production. Thailand was the first shrimp-producing country to establish both environmentally sustainable (CoC) and product quality/safety (GAP) guidelines. The GAP was launched specifically to enable shrimp farmers to access the European Union (EU) market. The GAP standard is currently in the process of being revised and upgraded. The standards cover social responsibility, animal health and welfare, traceability (using fry movement and movement documents enabling a computerized traceability system), food safety (to monitor and reduce the presence of prohibited antibiotics in feed, farm shrimp and shrimp products) and the environment. Shrimp farmers have received extension and training from the government in order to meet these minimum standards, which all shrimp farmers must meet. It seems the hardest standards for small-scale shrimp farmers to meet are those related to treatment of effluent and to the legality of their claim to the land they are farming owing to the complexities of the land titling system in Thailand.

The Thai Government is actively trying to build on this standard and encourage farmers to form farmer groups and apply for group certification, which has been achieved for agricultural subsectors such as rice but has not yet been achieved for any aquaculture products. The government established an emergency fund four years ago to buy shrimp during a short period each year (15 July to 30 September) from farmers who are unable to sell their produce at a good price on the market. The government takes a loss, as it purchases the shrimp at a high price and then sells it, usually at a lower price. Another

FIGURE A1.3
Comparison of government price with production costs (as assessed by the Thai Department of Fisheries) and central Thai market price for 2009



Note: A = shrimp size of 50 pieces/kg; B = shrimp size of 60 pieces/kg; C = shrimp size of 70 pieces/kg; D = shrimp size of 80 pieces/kg.

Source: Thai Union Frozen.

government fund totalling THB 600 million has just been established for shrimp farmers. This fund is hoped to be a longer-term more sustainable project aimed specifically at facilitating small-scale shrimp farmer groups to engage in contract farming.

Four types of aquaculture FOs exist in Thailand: farmer groups (mainly made up of small farmers registered with the Department of Cooperative Promotion [DCP] of the Ministry of Agriculture); cooperatives (made up of small and medium farmers and registered with the DCP); "natural groups" (unregistered informal groups); and farmer associations (registered and made up of larger farmers undertaking activities including advocacy). This case study will explore the experiences of the Samroiyod Shrimp Farmers Cooperative, a member of the Federation of Shrimp Cooperatives of Thailand (FOSCOT). Samroiyod is a well-known cooperative made up mainly of small farmers, which in a short space of time has succeeded in increasing production and access to input and output markets and services through collective action.

COOPERATIVE STRUCTURE AND MANAGEMENT[2]

The Samroiyod Cooperative is located approximately 275 kilometres southwest of Bangkok, on the Gulf of Thailand, in Samroiyod and Kuiburi Districts, Prachuap Khiri Khan Province. Along with four other shrimp cooperatives, it makes up the FOSCOT and is the most successful of the five cooperatives. The Samroiyod Cooperative was established in 2006 and formally registered by the DCP of the Ministry of Agriculture on 6 March 2007. It follows their regulations, such as financial audits by government agents to verify accounts and ensure a democratic and transparent management. It is

[2] This section is based on interviews with Mr Pinyo Kiatpinyo, President of FOSCOT, and Mr Decha, President of the Samroiyod Cooperative and a village leader and member of the Samroiyod Cooperative Executive Committee.

endorsed by the DoF, the Department of Internal Trade and the Ministry of Commerce for supporting small-scale shrimp farmers.

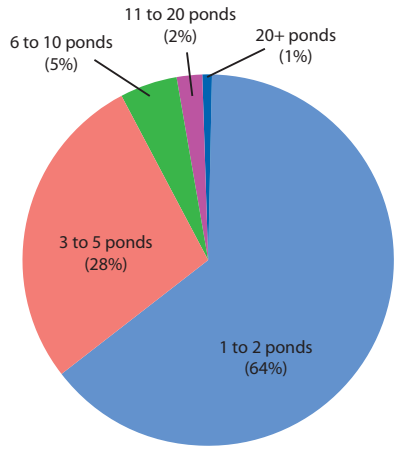
The main reason the Samroiyod Cooperative was established was to help small-scale shrimp farmers respond to the decreasing international price of shrimp by increasing productivity through group-regulated production, provision of financial support and enabling farmers to access sustainable output markets offering higher and more stable prices.

Cooperative membership is growing fast and currently stands at 158 members (115 men and 43 women). Members come from four districts in Prachuap Khiri Khan Province and most members are small-scale farmers with one or two ponds (Figure A1.4). The conditions of membership include farm registration with the DoF, GAP certification, Thai citizenship, a legal right to the land (e.g. by land title of leasing contract), minimum purchase of 200 cooperative shares at THB 10 per share, and an administration fee of THB 120. Regardless of how many shares or how many ponds a member has, each member is only allowed to access cooperative services for one pond. Members also have to agree to follow the cooperative's regulations, established in 2006 by the Executive Committee, in order to increase the productivity and quality of shrimp, which is maximized when all group members follow the regulations. The regulations, which are similar to better management practices (BMPs) promoted by the National Centre for Sustainable Aquaculture (NaCSA) in India and by the Network of Aquaculture Centres in Asia-Pacific (NACA) elsewhere in the region, include maximum stocking densities, and the prohibited use of banned chemicals and certain antibiotics, etc.

The cooperative has a president and an Executive Committee of 12 members elected by the General Assembly annually on the basis of one member one vote. The Executive Committee includes a vice-president, secretary, treasurer, technical specialist, public relations manager and a debt collector. The Executive Committee meets on a monthly basis and the cooperative has a general meeting at least twice a year. The cooperative members vote on the cooperative's expenditures and borrowing and on other general matters such as whether or not to be part of FOSCOT. The cooperative also employs six staff members: a manager, an accountant, an administrative assistant, an information technology (IT) support person, an extension officer, and a maid.

The cooperative is made up of 17 subgroups according to location. Each group is headed by one of the 12 committee members and a further five group leaders (who also attend the monthly Executive Committee meetings). These groups were established at the suggestion of the DCP in order to better service the needs of the members. The group leaders are experts in shrimp farming and advise their group members on production and good management practices, at the same time serving as an internal control system to ensure members are following the cooperative regulations.

FIGURE A1.4
Number of ponds owned by members of the Samroiyod Cooperative



The cooperative earns the majority of its income from charging THB 2 per kilogram of shrimp harvested from cooperative farmers based on the production going through the cooperative's contract farming marketing channels and the shrimp that has been produced as a result of cooperative-provided credit. So far, however, the cooperative has not made a profit.

SERVICES PROVIDED BY THE COOPERATIVE[3]

Credit for farm inputs

The majority of cooperative members interviewed stated that access to credit was the main reason they joined the cooperative. Farmers used to struggle to obtain credit, as the majority of input suppliers expected cash up front or charged a high interest rate. However, the cooperative president has succeeded in negotiating with certain hatcheries, feed mills and chemical suppliers to provide these inputs on credit for a four-month period at a low interest rate. The cooperative members are then sold these inputs on credit (for a maximum of one pond each) and agree that the revenue from the produce will be paid directly to the cooperative, which will then deduct the cost of inputs plus 6 percent interest and pay the remainder to the farmers. The cooperative seems to borrow between THB 7–10 million during a four-month period. The government's Bank for Agriculture and Agriculture Cooperatives (BAAC), where the cooperative holds an account, has also lent the cooperative THB 2.5 million over a five-year period (2008–2013) at an interest rate of 7.5 percent, which is being used to support the cooperative's cash flow.

Provision of technical advice

The cooperative employs an extension officer who supports members in production-related matters and advises them on how to meet the cooperative's regulations. The group leaders and Executive Committee members and cooperative president, all experienced shrimp farmers, also give technical advice to members.

Computerized traceability system

The cooperative is obtaining seed from CoC-certified hatcheries, which are from a local breeding programme originally based on a Hawaiian source. The importation and movement of seed is controlled by DoF through its Movement Document (MD) and Fry Movement Document (FMD). These documents are mandatory during business transactions, and the cooperative keeps the records and hard copies of these documents in their office for members. Farmers are also provided with pond record books to record farm-level data. All of this information is entered into a computerized traceability system by the cooperative. This is a helpful service for members, as it enables them to show credible traceability records to buyers, which is an increasingly common requirement.

Market access through FOSCOT membership

The cooperative receives certain marketing services from FOSCOT, which acts as an agent and aims to contract with processors on behalf of members. Farmers give the federation THB 1 per kilogram of shrimp that they are able to sell through the federation's contracts. Through the federation, the cooperative is also able to access the new THB 600 000 government fund.[4]

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[3] This section is based on interviews with the cooperative president and five cooperative members.

[4] So far, FOSCOT has only made one contract on behalf of the cooperatives, and it seems that this contract is only viable with support from the government fund. The federation has been contracted to supply shrimp to a large national seafood processing plant, which has agreed to pay the federation a premium price for its shrimp in exchange for waiting four months to be paid (as opposed to a maximum of 45 days that their usual suppliers are able to wait). Once the shrimp has been delivered, the processing plant gives the federation a four-month post-dated cheque, which it takes to Krung Thai Bank (a government-owned but commercial bank), which cashes the cheque for the federation at a discounted rate (equivalent of 6.125 percent per annum). The government then pays the federation the interest that has been discounted by the bank from the THB 600 million fund. In this way, the federation and cooperative members are able to obtain a premium price for their shrimp, and the processing plant is able to have free credit for four months. However, it is unclear how sustainable this arrangement is, due to the fact that it is based on an indirect government subsidy.

Market access through developing links with processors and buyers

One of the cooperative's main business strategies is to access output markets through negotiating the bulk sale of shrimp to processors and buyers using a contract farming approach. An example of this is the cooperative's partnership with an EU buyer and a local processing plant in Chumphon Province since early 2008. This EU buyer had been exploring the possibility of sourcing shrimp from small-scale farmers and, after discussions with NACA, approached the cooperative along with a local processor. A partnership between the cooperative, the processor and the buyer was made, and since then the processor and a NACA field coordinator have worked closely with the cooperative to identify members who are willing and able to meet the food safety, environmental and social standards of the EU buyer and produce high-quality shrimp in return for a premium price of THB 20 per kilogram more (approximately 15 percent higher) than the market price. In late 2008 and early 2009, 88 tonnes of shrimp produced by the cooperative were contracted and purchased by this processor, based on the requirements set by the EU buyer. The cooperative, with support from NACA, has helped farmers to meet the buyer's standards on sustainable farming practices as well as other standards which have involved strict record-keeping (e.g. recording the lot number of each feeding bag used), environmental monitoring, and collection of labour and land title data. To date, 17 cooperative members are involved in this partnership, and it is hoped this number will increase.

Based on this partnership, the Fairtrade Foundation has become interested in developing a Fairtrade-certified shrimp product and has conducted assessments in partnership with the cooperative and the actors in this particular market chain.

Improved quality and safety of shrimp

The cooperative, through its regulations, helps to improve the overall quality of the shrimp being produced by members. The production of good-quality shrimp is supported by an internal control system where five to ten neighbouring farms are clustered together and their practices monitored by the cooperative. Food safety is also one of the focus issues for the DoF, and is covered extensively by the GAP certification system. Free antibiotic residual test services are available for GAP-certified farmers, and farmers normally check their shrimp a few weeks prior to the harvest. Results and records of residual tests are kept at the cooperative office.

Environment

The cooperative supports a local conservation group that conducts various activities to protect the wetlands it is located in, such as World Wetland Day, fish stocking, cleaning, education and tourism, patrolling the area for illegal fishing (traditional fishing is allowed), recycling renewable items and wastewater management. The cooperative and the NACA field coordinator conduct salinity checks for groundwater and irrigation canals and water quality checks for the river (supported by the DoF and the EU buyer).

PROGRESS TO DATE

The cooperative has made good progress in a short space of time. Since its establishment in March 2007 with 52 members, the cooperative has grown to 158 members. It is also a member of FOSCOT, which has approximately 900 members.

In 2008, 73 percent of cooperative members bought inputs on credit from the cooperative and sold 500 tonnes of shrimp through the cooperative. Sixty percent of these farmers sold to brokers, 14 of the 20 farmers chosen sold under a contract arrangement with the local processing plant, and 10 to 15 farmers sold to the government's emergency fund. So far in 2009, 80 percent of members have accessed the cooperative's input credit service. Eighteen farmers have sold their shrimp to the

government's emergency fund, three farmers have already sold under the contract farming arrangement with the local processing plant and a further nine farmers plan to do so before the end of the year.

Even though the majority of members are still selling to brokers (and some to the government's emergency fund) as they were doing before the cooperative was established, in less than two years the cooperative has developed links with at least two new output markets (the EU and the national seafood processing plant through FOSCOT). This is an important achievement, which the cooperative will continue to build on, especially with new opportunities arising for group certification such as with Fairtrade.

ACHIEVEMENTS

Market access

A major achievement for the cooperative is their collaboration with the local processing plant and the EU buyer. Products from the cooperative have been sold contentiously since the second half of 2008. Farmers have obtained a good price on these occasions (on average THB 20 per kilogram more than the market price). These products are sold indicating a socially and environmentally sustainable product, i.e. shrimp produced by small-scale farmers using sustainable practices. This is a potentially profitable and sustainable partnership that could serve as a model for other small-scale FOs to access lucrative output markets with strict entry requirements.

WWF shrimp aquaculture dialogue standards

The World Wide Fund for Nature (WWF) has initiated Aquaculture Dialogues aiming to create standards for at least 12 aquaculture species by the end of 2009. The standards will be given to a new or existing standards-holding entity that will use third-party auditors to certify farms according to the new ecolabel generated by the dialogues. The Aquaculture Dialogues build on previous work by the WWF. Since the early 1990s, the WWF has spearheaded the creation of certification programmes for forestry (the Forestry Stewardship Council), fisheries (the Marine Stewardship Council [MSC]), agriculture (Protected Harvest) and climate (the Climate Savers Programme). If the standard for aquaculture products should gain the interest of the MSC label, this will become another requirement for Asian aquaculture producers in market access in the future (Joker and Christensen, 2009).

The Shrimp Aquaculture Dialogue (ShAD) standards for responsible shrimp farming are intended to measurably reduce the environmental impacts of shrimp farming. The ShAD aims to:

- assess the feasibility of implementation of standards at a small-scale farm level;
- field test environmental indicators; and
- facilitate the adoption of the standards by buyers.

Taking account the importance of the small-scale shrimp farming sector in Asia, the WWF has selected the Samroiyod Cooperative to pilot test the feasibility of the ShAD standards for small-scale *Litopenaeus vannamei* farmers as well as *P. monodon* farmers in India.

Increased access to good-quality inputs

Cooperative members are now able to access higher-quality inputs such as seed, for which the cooperative has negotiated credit for members along with a 30-day guarantee period. The new seed is faster growing and results in a shorter harvest time, resulting in reduced costs for energy and feed. Two of the farmers interviewed estimated the savings to be approximately THB 30 000 per pond per crop.

Premium price

Cooperative members who have sold their product under contract arrangement are receiving a price that is 15 percent higher than that offered by the market. The FOSCOT's contract with the national seafood processing plant also gives cooperative members a premium price.

Improved quality, production and income

Before the cooperative was established, farmers experienced many production problems related to high stocking densities and other bad management practices. However, implementation of cooperative regulations has resulted in higher levels of productivity and larger and healthier shrimp. This has led to increased prices and income for cooperative members. In addition, 80 percent of farmers are producing "Bio Shrimp", which is based on a set of standards including de-intensification of culture practices and maintaining seaweed in the pond. The cooperative-branded "Bio Shrimp" has been copyrighted and registered with the Ministry of Commerce (however, the brand is not yet achieving a price premium on the market).

FUTURE OPPORTUNITIES AND PRIORITIES

Access to financial services

Access to financial services such as insurance and credit is a challenge for many small-scale farmers, including the cooperative members. An insurance workshop was arranged by FAO and the DoF[5] to help develop innovative ways in which small-scale shrimp farmers can access insurance from private insurance companies without being charged prohibitively high premiums. National and international insurance companies, along with other development organizations and small-scale farmers, attended the workshop and discussed options for the way forward. Access to credit is also a big constraint for farmers. Currently, they cannot access credit from commercial banks and have to rely on moneylenders who charge extremely high interest rates. The cooperative has gone some way to addressing this constraint by arranging group credit for some inputs; however, members still require credit for other purchases (e.g. for shifting from diesel to electricity-powered aeration). Access to affordable credit would create many opportunities for farmers and is a pressing priority for the cooperative.

Certification

At present, only a small proportion of cooperative members are selling to the local processor under a contract arrangement. The cooperative has also been approached by Fairtrade to see whether the produce of the farmers that have sold their shrimp to the EU meets the Fairtrade criteria, along with their contract farming operation practices (as Fairtrade certification requires the whole market chain for the product to be certified covering social, economic and environmental issues, and ensures a minimum price and premium for community-development projects is paid to the producers). Assessment of a processor could be challenging; however, the currently engaged processing plant is not a large operation and specializes in high-quality produce and seems more socially conscious than the average private sector company and is looking to target a niche segment of the market through taking this approach. Fairtrade is conducting a pilot study with those selected members of the cooperative, and there is the opportunity to increase substantially if Fairtrade certification for the cooperative's product is achieved. Certification would lead to increased demand from the existing EU buyer, with the potential of attracting other processors and buyers. There have been difficulties for

[5] FAO/DOF Workshop on the Options for a Potential Insurance Scheme for Aquaculture in Thailand, 23–25 September 2009, Bangkok, Thailand.

farmers to meet all the Fairtrade requirements, but the cooperative is optimistic and willing to make the necessary changes.

Increased access to output markets

Currently, the majority of members are still selling to brokers at low and unpredictable prices. The FOSCOT's contract with the national seafood processing plant is potentially unsustainable; therefore, the cooperative needs to actively strengthen partnerships with other processors such as Thai Union Frozen and Marine Gold. Developing partnerships with a range of processors and buyers (shortening the market chain as they have done with the current contract arrangement with the local processor and the EU buyer) provides the best opportunity for cooperative members to benefit from working together and enabling them to maximize their returns from shrimp farming in a sustainable way.

KEY LESSONS

Similar objectives of members

The cooperative is made up of farmers with different needs, interests, skills and assets. However, these farmers are united by a small number of common interests and objectives. The main problems related to decreasing and unpredictable prices and unsustainable market access are being successfully addressed by the cooperative. The cooperative is providing members with access to good-quality inputs on credit along with negotiating new partnerships for market access. By working together and building partnerships along the market chain, members also now have the chance to become Fairtrade-certified, which would be virtually impossible if they were working individually. It is the existence of common problems being successfully addressed by the cooperative that has kept the cooperative strong and its membership growing.

Strong leadership

The cooperative president is extremely motivated and committed. He is a successful shrimp farmer and understands the problems members are facing. The strength and commitment of his leadership is a key reason why the cooperative has moved forward and grown so quickly in such a short space of time. The cooperative president is also supported by another strong and charismatic leader, the FOSCOT president, who has creativity and vision, and is highly educated and well connected both nationally and internationally.

Partnerships

Strong external partnerships between the cooperative and NACA, the government through the DoF and the DCP, the private sector (input suppliers, processors and buyers), NGOs such as the WWF and Fairtrade, along with the other cooperatives that form the FOSCOT, have been important factors in the growing success of the cooperative. These partnerships have provided the cooperative with increased influence with government (by forming a federation with other cooperatives, they have increased their voice and lobbying power), increased exposure and national and international awareness of the cooperative, strategic guidance and technical support from NACA and others, all of which have contributed to its growing success.

Responsive management

The cooperative is managed in a very transparent and democratic way. Members interviewed noted how responsive and approachable the Executive Committee is. The division of members into small subgroups based on geographical location has also enabled committee members to better understand and respond to members' needs.

Coordination

The cooperative's main business strategy is to link farmers to input and output markets and services and coordinate the activities of market chain actors. Lack of coordination among market actors is a big constraint in many sectors in many countries, and especially so for more highly institutionally demanding products such as shrimp and other aquaculture products, making coordination an important key to success.

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APPENDIX 2

Case study of farmer societies and the National Centre for Sustainable Aquaculture, India

BACKGROUND

Shrimp represents over 80 percent of total coastal aquaculture production in India, contributing 44 percent in value and 19 percent in quantity to India's seafood exports (MPEDA Newsletter, July 2009). Small-scale farmers with landholdings of less than two hectares make up over 90 percent of the estimated 100 000 shrimp producers in coastal India (NaCSA, 2009). However, as with many small-scale farmers in developing countries, small-scale shrimp farmers in India face various challenges. These challenges include lack of access to good-quality inputs like feed and seed; limited access to services; high risk of disease; difficulties complying with market requirements, such as food safety standards, traceability and certification; limited access to output markets and volatile shrimp prices. Due to a lack of organization, skills, information and knowledge, small-scale farmers are vulnerable to these risks that affect their livelihoods, farm productivity and competitiveness (Umesh *et al*., 2009).

In 2000, the Network of Aquaculture Centres in Asia-Pacific (NACA) began cooperating with the Marine Products Export Development Authority (MPEDA) of India's Ministry of Commerce, providing it with technical assistance for a "Shrimp disease control and coastal management" project focusing on black tiger shrimp (*Penaeus monodon*) to address increasing anxiety over disease and the sustainability of the shrimp sector. An epidemiological study was carried out to identify risk factors for white spot disease, which had become highly prevalent in the 1990s. Based on the results of the study, the MPEDA-NACA project team worked with farmers and scientists to develop appropriate risk management interventions to minimize farm-level risk factors for disease outbreaks and improve management of coastal environments and farm sustainability as follows:

- Better management practices (BMPs) were developed to address the key risk factors of white spot disease, which were later expanded to include all relevant shrimp disease risk factors along with food safety and environmental risks. The BMPs used included recommendations for good pond preparation, high-quality seed selection, water quality management, feed management, health monitoring, pond bottom monitoring, disease management, emergency harvest, food safety and environmental awareness. The BMPs were disseminated through farmer meetings, regular pond visits, training of extension workers and the publication of ten brochures on BMP adoption, along with booklets on shrimp health management and extension.
- Farmers were organized into self-help groups, originally called "aqua clubs" and now called farmer societies, which joined to form "clusters" (i.e. groups of interdependent shrimp ponds situated in a specified geographical locality, typically comprising farmers who share resources or infrastructure such as water sources). The cluster concept was found to be a practical and effective way to communicate risks and risk management to farmers to reduce risks and maximize returns. Thus, the organization of farmers into groups and clusters was used to

facilitate the effective dissemination of BMPs among group members and also enable them to more easily address the social and financial risks associated with small-scale shrimp farming (Umesh *et al.*, 2008).

Although BMPs are often basic farm-level plans, their adoption by groups of farmers for disease management and sustainable production is relatively recent, and the MPEDA-NACA project was the first to take this approach in the region (Umesh *et al.*, 2009).

NATIONAL CENTRE FOR SUSTAINABLE AQUACULTURE

In order to continue the work initiated by the MPEDA-NACA project, MPEDA created a separate agency, the National Centre for Sustainable Aquaculture (NaCSA) in 2007, with the approval of the Government of India. NaCSA was established as an outreach organization of MPEDA to address the need for capacity building of small-scale shrimp farmers for shrimp health and quality management through the collective use of BMPs, cluster formation and management. NaCSA was also tasked with building on the MPEDA-NACA project by covering more areas, farmers and aquaculture commodities other than black tiger shrimp, such as giant river prawn (*Macrobrachium rosenbergii*), along with facilitating the development of an enabling policy environment to address the needs of small-scale shrimp farmers and increase the competitiveness of the Indian aquaculture sector in regional and world markets.

The overall goal of NaCSA is to achieve sustainable aquaculture through empowering small-scale farmers, and its objectives are to:

- promote science-based management to improve aquaculture sustainability using a participatory approach;
- empower and build capacity of small-scale aquaculture farmers;
- facilitate improved service provision to small-scale aquaculture farmers;
- connect farmers to markets to receive better prices for good-quality products; and
- facilitate interaction among stakeholders.

FARMER SOCIETIES

The aqua clubs first established by the MPEDA-NACA project and now being established by NaCSA are known officially as Aquaculture Farmers Welfare Societies. A farmer society constitutes a group of aquaculture farmers in a specific locality or farming cluster who implement and manage their aquaculture activities using a participatory approach in order to achieve the three main objectives of reducing disease risks, reducing costs of production, and meeting market demands through sustainable farming (NaCSA, 2009). The farmer societies are set up according to a model established by the Indian Government, registered by the Ministry of Revenue under the Societies Registration Act and subject to annual audits by MPEDA to verify accounts and ensure democratic and transparent management. Each society consists of 20–75 farmers who have registered their farms with the Coastal Aquaculture Authority (CAA) and obtained a licence. Membership is voluntary and subject to certain conditions, including an admission fee of INR 1 000 (USD 25) and payment of 0.5 percent of farmers' revenue to the society corpus fund. Each society has a clear organizational structure including a president and democratically elected board and has weekly general meetings where farmers can share information and collective decisions can be made. The societies are eligible for financial assistance from MPEDA and other agencies for various common farming activities (Umesh *et al.*, 2009).

Each farmer society has a society coordinator with a prescribed minimum educational level who is selected from among its members or from the community by society farmers. The MPEDA's society scheme provides partial financial assistance for farmers to employ a society coordinator for the first two years. The society

coordinator is responsible for implementing BMPs in societies, undertakes activities such as monitoring of water quality and acts as a link between society farmers and NaCSA.

Society activities include the collective preparation of a crop calendar two months before stocking to ensure all society and cluster farmers stock their ponds within a two-week period of each other. The maximum stocking density for each society is decided on and society farmers agree not to use any antibiotics and to minimize the use of chemicals. High-quality seed is also purchased by the societies using a contract hatchery system (see below). Societies agree to practices such as synchronized water intake and discharge, simultaneous cropping, observing early warning signs of disease onset, learning from one another, assuring product quality and safety and, overall, agree to act collectively (which is also in their own best interests). Each society has standard operating procedures (SOPs). Internal control systems (ICSs) are being established in societies to ensure compliance with minimum standards by all society members.

NACSA SUPPORT TO FARMER SOCIETIES

NaCSA not only facilitates the formation of farmer societies but builds their capacity and supports their activities to maximize their chances of success in achieving sustainable and profitable shrimp farming. Key activities of NaCSA include: village meetings; assistance with registration of society farmers with the CAA using a group registration approach, and demonstration programmes where adoption of risk management measures is promoted, BMPs are disseminated and awareness is raised about the benefits of collective action and farmer organization; farmer field days where farmers' success stories are shared with other farmers who are encouraged to form societies; daily field visits by field staff to support farmers' production activities and maintain their commitment and confidence (each NaCSA field manager coordinates and manages the activities of ten farmer societies); organization of exchange visits by key farmers from successful farmer societies to new villages to share their experiences; development of extension materials on BMP adoption, including ten brochures on key thematic areas; and training of society coordinators in society management, BMPs, and extension techniques (NaCSA, 2009).

PROGRESS

The project has made significant progress, with the number of farmers adopting the cluster management approach growing exponentially from 5 in 2002 (covering 7 hectares in one state) to 7 402 farmers in 312 societies (covering 8 616 hectares in four coastal states) to date. The majority of these societies are in the state of Andhra Pradesh, which produces half of the farmed shrimp in India. The production of BMP shrimp through the project increased from 4 tonnes in 2001 to 4 160 tonnes for the first crop of 2009.

ACHIEVEMENTS

The NaCSA model has often been described as a success story of collective action and cluster management for sustainable small-scale aquaculture development. This is understandable given the numerous achievements of the project, which started with the collaboration of MPEDA and NACA and was then institutionalized and scaled up through the establishment of NaCSA. The achievements of the project are outlined below.

Reduced disease incidence

The incidence of disease in society shrimp ponds has decreased substantially in the past six years as a result of the introduction of BMPs, as shown in Table A2.1. Disease affected 82 percent of society ponds in 2003 and 21 percent in 2009 (a reduction of

TABLE A2.1
Disease prevalence in society and non-society ponds

Year	No. of society ponds	Disease prevalence in society ponds (%)	No. of non-society ponds	Disease prevalence in non-society ponds (%)	Improvement (percentage points)
2003	108	82	164	89	+7
2004	254	37	187	52	+20
2005	1 187	15	517	42	+27
2006	1 370	17	901	44	+27
2009	7 402	21	N/A	>50	+29

Note: N/A = Not available.

62 percentage points), while in the same period disease incidence in non-society shrimp ponds decreased by 39 percentage points. Currently, disease prevalence in non-society ponds is approximately two and half times higher than in society ponds.

Increased productivity and quality

As shown in Table A2.2, the productivity of society ponds improved greatly between 2004 and 2006 due to the implementation of simple, science-based farm practices (BMPs). In 2004, society farmers were producing 0.231 tonnes of shrimp per hectare, which increased to 1.07 tonnes per hectare in 2006. However, as the productivity of farmers varies according to the area, this is not as reliable an indicator of success as reduction in disease prevalence (above) and increase in profitability (below).

The quality and safety of shrimp from society farms has also increased owing to their improved management practices, reduction in use of banned chemicals, no use of antibiotics and use of disease-free healthy shrimp (see below). The size of society-produced shrimp has also increased by 8 percent.

TABLE A2.2
Productivity of society and non-society farmers

Year	No. of society farmers	Production per hectare of society farmers (tonnes)	No. of non-society farmers	Production per hectare of non-society farmers (tonnes)	Improvement (tonnes)
2004	130	0.231	111	0.210	0.021
2005	736	1.013	425	0.592	0.421
2006	730	1.070	741	1.024	0.046

Increased access to good-quality inputs

One of the main reasons that the productivity of society farmers has increased substantially since 2003 is due to their use of good-quality seed facilitated by the formation of farmer societies. High-quality and healthy seed is fundamental to the success of shrimp farming. Small-scale farmers in India find it difficult to buy good-quality seed due to a combination of factors including lack of information on the quality of seed being bought, limited negotiating power with hatcheries and a high risk of being unable to get quality seed at the right time. In order to address these problems, NaCSA helped societies develop a "contract hatchery system". Under this system, society farmers bypass intermediaries and place bulk orders for the required quality and quantity of seed directly with a government-registered hatchery 45–60 days before the planned stocking date. Society leaders visit several hatcheries to observe processes and procedures, and mutual agreement is reached between selected hatcheries and society farmers. These agreements cover issues related to BMPs to be used in hatcheries and other requirements for the production and procurement of quality seed (NaCSA, 2009). In exchange for meeting the societies' requirements, hatcheries usually receive a 20–30 percent premium price for shrimp seed, ensuring that both the farmers and hatchery benefit, making this an effective and sustainable solution to the problem of obtaining good-quality seed. So far, 200 society farmers have been trained by NaCSA

in obtaining quality shrimp seed. Societies have started buying inputs in bulk, thereby reducing the cost, and in 2009 societies purchased more than 100 million seed through the contract hatchery system.

Increased profit through reduced production costs

Shrimp farmers have been able to make increased profits through joining farmer societies by increasing production; increasing the quality, size and survival of the shrimp; reducing the use of chemicals and using no antibiotics; and sharing expenses related to common activities such as deepening canals, seed testing and transportation of inputs. Table A2.3 shows the increase in average profit per INR 1 000 invested by society and non-society farmers from 2004 to 2006 and shows that farmers who adopted BMPs earned much higher profits (more than double) than those who had not.

During field visits, one society reported the profit per hectare of society farmers was INR 45 000 during the last crop, while the profit for non-society farmers was less than INR 15 000 per hectare.

TABLE A2.3
Profit earned by society and non-society farmers

Year	No. of society farmers	Average profit per INR 1 000 invested by society farmers	No. of non-society farmers	Average profit per INR 1 000 invested by non-society farmers	Average increase in profit per INR 1 000
2004	130	246	111	204	42
2005	736	129	425	40	89
2006	730	520	741	250	270

Improved market access through increased ability to meet market requirements

Small-scale aquaculture farmers are facing increasing challenges to access markets owing to increasingly strict requirements such as meeting food safety standards, certification, ecolabelling and traceability, pushing the costs and risks of complying with these standards further down the market chain to farmers. These requirements are especially stringent for export commodities (such as shrimp), thus small-scale shrimp farmers in India face many challenges in accessing markets even though there is strong demand for their products. However, through the society model and the collective use of BMPs to control the hygiene and safety of shrimp, small-scale shrimp farmers are much better placed to address these challenges and meet retailer demands related to social, environment and food safety standards by working together. As such, farmer societies have been making real progress in accessing export markets.

Certification

One of the biggest achievements of farmer societies related to market access is the recent organic certification of giant river prawn (scampi as sold in Europe) from two societies in Andhra Pradesh by Naturland, one of the major certification organizations for organic produce in the world, with the financial help of MPEDA's "Indian Organic Aquaculture Project", a collaborative project with the Swiss Import Promotion Programme. This is the first of its kind in the aquaculture sector, making it an extremely important achievement and a big step forward for small-scale aquaculture farmers looking to access increasingly difficult export markets. The idea to become organically certified originated with the farmers themselves, who approached NaCSA for support. NACA is currently collaborating with NaCSA to develop "Cluster Certification Guidelines" in order to help all farmer societies increase their chances of achieving group certification of any type, ranging from Fairtrade to GLOBALGAP to the Aquaculture Certification Council (ACC), for example. By achieving group organic certification, these farmer societies have proved themselves to be a good model

for small-scale farmers to meet market requirements as a group. Group certification seems the best way forward for small-scale farmers to become certified, as the costs of individual certification are often prohibitively high. NaCSA is currently working with the Fairtrade Foundation to pilot test "Fairtrade standards for small-scale shrimp farmer societies" in India. Independent certifiers are also showing increased interest in societies for cluster certification.

Traceability

A record of traceability is another common requirement from buyers that is often hard for small-scale farmers to comply with. However, NaCSA has trained society farmers and coordinators in record-keeping and supplies them with pond record books, enabling society farmers to keep full records on general management, key parameters, purchasing and distribution. Satellite maps are also used to identify locations of the ponds, thus making it much easier for society farmers to meet traceability requirements of buyers. NaCSA, with the help of experts, is developing a comprehensive traceability system linking all the stakeholders involved, including hatcheries, society farmers, processors, antibiotic screening laboratories, MPEDA and NaCSA.

Ecofriendly sustainable production

Buyers often require small-scale farmers to show that they are producing shrimp in an ecofriendly and sustainable way, especially in light of recent public concerns over the environmental impacts of shrimp farming. Farmer societies do not have farms in wetlands, mangrove or other sensitive areas. Farmers maintain lower stocking densities than shrimp farmers in other countries and minimize environmental risks by efficient use of resources such as energy and feed, along with minimizing the use of chemicals and antibiotics. NaCSA is also in the process of helping societies to substitute diesel for the more environmentally friendly option of electricity, as currently only 7 percent of farms use electricity. For this, NaCSA is targeting 200 societies in the coming year and hopes to save 2.4 million litres of diesel, the equivalent of a 5 400 tonne reduction in carbon dioxide (CO_2) emissions.

Improved market access through linking societies to processors and retailers

NaCSA aims to directly link each society to one processor or exporter and cut out the intermediary. This type of vertical integration will ensure decreased transaction costs for farmers and processors/exporters, allowing farmers to receive a better price for their produce and coordinate harvest and post-harvest practices to improve the overall quality of the shrimp and maintain traceability. NaCSA is raising awareness among exporters about the society model and its advantages in ensuring food safety and quality. Many exporters have shown interest in sourcing from society farms, especially those working with sustainability-conscious buyers who are keen to respond to environmental organizations and sell aquaculture products from sustainable sources. One such buyer is Sysco Corporation in the United States of America, which, according to its Web site, is "the global leader in selling, marketing and distributing food products to restaurants, healthcare and educational facilities, lodging establishments and other customers who prepare meals away from home".[1] Sysco is currently working with NaCSA to buy shrimp from farmer societies to sell under a premium brand. The contract between MPEDA (the NaCSA's parent body) and Sysco Corporation, which was signed on 6 October 2009, is for 10 000 tonnes of shrimp and will involve 10 000 farmers in 525 societies. This is a huge achievement for NaCSA and the farmer societies.

[1] See www.sysco.com (last accessed on 30 September 2009).

Revival of abandoned ponds

The disease outbreak in the 1990s led to large-scale abandonment of shrimp ponds in Andhra Pradesh and other states. Prior to this, farmers had earned good returns despite not focusing heavily on good management practices. Through NaCSA's demonstrations and activities, farmers have been encouraged to revive abandoned ponds and start shrimp farming again. Over 50 societies have been organized in Krishna District of Andhra Pradesh, where one-third of shrimp farms had been abandoned. So far, 79 societies (totaling 1 914 farmers and covering 2 074 hectares) have been established in abandoned areas. It is hoped that 100 000 hectares of abandoned shrimp ponds will be revived in the next two years.

Food security and sustainable livelihoods

The development of small-scale coastal aquaculture in India through the farmer society model is enhancing the socio-economic condition of rural communities. Direct as well as indirect employment opportunities are arising out of increased shrimp production and marketing, especially for women who are involved in more delicate tasks such as transfer of seed and segregation of juveniles. Increased employment and rising income of shrimp farmers through increased profit (Table A2.3) has great potential to improve livelihoods, food security, and stimulate pro-poor economic growth through consumption linkages and the multiplier effect.

Empowering small-scale farmers and giving them "voice"

By working together with farmers in the same locality, sharing information and experiences with each other, and building their individual and collective capacity to produce good-quality shrimp in a sustainable manner, society farmers are becoming more empowered, with increased self-esteem of farmers being highlighted during interviews with society presidents. Increased interaction among farmers, improved community dialogue and more opportunities for mutual help have created goodwill among farmers and enabled capacity building and development. Cooperation and a collective approach have also enabled shrimp farmers to be more responsive to environmental concerns and forged strong unity in dealing with common problems (e.g. desilting of drains) (Umesh *et al*., 2008). Through this process, farmers have emerged from a situation where they were passive recipients of information, services, policies and assistance to now taking responsibility for and playing an active role in their own development. By being part of a larger group, farmers now have more power to access good-quality inputs, services and markets, interact with stakeholders, and have a stronger voice overall. This voice is shown by their increased access to and involvement with policy-makers and other public and private institutions that are taking their concerns and ideas seriously. Two of the society presidents are members of NaCSA's Governing Council, enabling them to influence the strategic direction and activities of NaCSA, as well as having a direct link to policy-makers to ensure the concerns of small-scale farmers are heard and addressed. Recently, society farmers have also experienced a higher profile in the media, further supporting their feeling of empowerment and a new-found voice.

Replication of approach

The success of the cluster management approach to implement BMPs has now led to increasingly wide application in India and elsewhere in Asia. Indonesia and Viet Nam have been developing this model for milkfish and shrimp in the former and catfish and shrimp in the latter.

BMPs for shrimp farming in Viet Nam

The Government of Viet Nam has used the "International Principles for Responsible Shrimp Farming" (developed by a consortium of organizations including FAO and

NACA) to adapt legislation and develop its national programme towards better managed and sustainable shrimp farming. Projects have been initiated to translate the principles into practices targeting better production, product quality, and environmental and socio-economic sustainability. In 2003, NACA and the Ministry of Fisheries, supported by the DANIDA-funded Fisheries Sector Programme Support, began implementing a project to support the promotion of responsible shrimp farming at all levels and for all links in the production chain, demonstrating the private and social benefits of adopting BMPs.

BMPs for tra catfish farming in Viet Nam

Realizing the need to ensure the sustainability of the tra catfish farming sector in the Mekong Delta, NACA, together with Fisheries Victoria, and in conjunction with key stakeholders, developed BMPs for catfish farming. The project plans to use the cluster management approach to implement BMPs and address small-scale tra catfish producers' limited negotiating power in the market chain. Tra catfish farmers are in the process of adopting BMPs to ensure acceptable farming practices and achieve globally desired food quality standards as has been achieved in other commodities.

BMPs for shrimp farming in Indonesia

In Indonesia, BMP experiences from India were used in the rehabilitation of the shrimp farming sector in the Province of Aceh following the 2004 tsunami. A practical BMP manual was prepared during 2006 based on the "International Principles for Responsible Shrimp Farming", and the manual has been widely promoted by various agencies involved in assistance to rehabilitation of livelihoods in Aceh and used by shrimp farmers and FOs. The results from practical implementation are also promising, with similar outcomes of reduced disease risks and improved productivity in traditional shrimp farms compared with farmers not adopting better practices. The adoption of BMPs has been supported by the development of Aquaculture Livelihood Service Centres.

FUTURE OPPORTUNITIES AND PRIORITIES

Improved service provision to the sector

Provision of improved inputs to the sector through the facilitation of sector-servicing initiatives could help to further strengthen and sustain the small-scale shrimp sector. Such an initiative could encompass services, including finance, microcredit, diagnostics, insurance, quality inputs and technical inputs. A critical priority for societies is access to credit and reducing their current interest burden on loans from moneylenders and other private sources.

Linking farmers to processors to achieve increased market access

Establishing links between societies and output markets is vital to the success of societies but, so far, despite some progress, has proved difficult. Developing partnerships with local processors provides a good opportunity for societies to access better markets as well as bank credit (agreements with processors provide societies with a market guarantee, which is a major concern of banks). NaCSA will continue work towards bringing processors and farmers together for market access and to obtain premium prices for farmers for a quality product. The implementation of BMPs by farmers provides them with an opportunity to achieve higher prices for a high-quality product and also to create a niche for such products in the global market.

Group certification

New trends and requirements in production and marketing of aquaculture products, such as traceability, ecolabelling and certification, were first seen as a challenge by

farmer societies; however, with the recent achievement of organic certification by two societies, they are now viewed as an opportunity. NACA, NaCSA and MPEDA are currently developing guidelines for group certification to enable societies to seek group certification from independent third-party certifiers or to propose voluntary self-certification. These guidelines are being developed independent of commodity and certification standards in order to support farmers to potentially meet a wide range of certification standards such as organic, Fairtrade, ACC and GLOBALGAP.

Policy influence

With the increasing success and high profile of farmer societies and their strong links to the government through NaCSA and MPEDA, there is great opportunity for farmer societies to influence policies in favour of small-scale aquaculture farmers and aquaculture farmer organizations. Favourable policies, such as registration of input suppliers and mandatory testing for antibiotics, have helped to improve the quality of inputs and prevent advantage being taken of farmers. The agriculture sector receives many government benefits such as infrastructure and subsidies; however, aquaculture is not viewed as being part of the agriculture sector and thus does not receive the same benefits. The involvement of society leaders in NaCSA's Governing Council is the first step in the process of influencing policy decisions in favour of small-scale aquaculture farmers. Once there are a substantial number of societies in the country (more than 500), societies are planning to establish a national-level federation of all societies that will help influence national government policies.

KEY LESSONS

Common problems successfully addressed

The farmer societies comprise farmers with different needs, interests, skills, and financial and technical capacity. However, these farmers are united by a small number of common interests and objectives. Their common problem of high prevalence of disease in their ponds has been successfully addressed through collective action and implementation of BMPs (which has developed into a "self-propagating" model where farmers believe the success of other farmers). The "win-win" situation created by adoption of better management has provided a strong incentive for positive change. It is the existence of this common problem that is being successfully addressed by the cluster management model that has kept the farmer societies strong by providing them with a strong incentive to work together and has enabled them to grow.

Participatory approach

From the beginning of the MPEDA-NACA project through to the establishment and activities of NaCSA, a participatory approach has been taken. This is shown, for example, by the importance placed on farmer-to-farmer information exchange through demonstrations and farmer field days, which has led to farmers learning from other farmers in a bottom-up way. This participatory approach has also enabled farmers to articulate their needs, to which the project has been able to respond in a meaningful way. Farmers have thus been empowered to take control of their own development.

Strong leadership

The most successful farmer societies have strong leaders who have vision and commitment, which is very important for society management and success.

Slow progress

This project has been active for nearly ten years but has only recently begun to show success on a large scale. Societies have only begun to achieve market access through organic certification and building links with processors and overseas retailers such

as Sysco in the last year or so. This shows that it takes a long time to lay strong foundations and achieve success.

Capacity building

From the beginning, the MPEDA-NACA project was based on building farmers' collective and individual capacity to implement BMPs. This has been the approach taken up to now, and NaCSA still focuses mainly on provision of independent technical advice and capacity building at the grassroots level. This independent advice and capacity building have secured the confidence of farmers and are key to its success and sustainability. Also, as the main services provided by NaCSA are capacity building and technical advice, farmers are not coming together to receive any subsidies or monetary handouts, for example, but to address their common problems together through the services being offered.

Institutionalization

The MPEDA-NACA project was successful in building farmers' capacity to combat disease through group implementation of BMPs. However, the project would not have been able to be scaled up without its institutionalization into government structures through the establishment of NaCSA. This has been important for continuing and building on the success of the original project and has been vital for sustainability. However, institutionalization of successful projects into government structures may not always be successful. NaCSA's success is likely due to a combination of factors, including the genuine and strong support from government through MPEDA, continued cooperation with NACA and the motivation and commitment of NaCSA's staff, who provide continuing support to the societies through regular field visits and attending society meetings, ensuring they are constantly in touch with farmers and remain responsive to their needs.

Partnerships

Strong external partnerships between farmer societies and the NACA, NaCSA, MPEDA and the government have been important factors in the scaling up of the MPEDA-NACA project and the continued success of the farmer societies. These partnerships have provided the NaCSA and the societies with funding, strategic guidance and technical support, along with raising the profile of the project, all of which have contributed to the continued success of the farmer societies.

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Small-scale aquaculture producers in developing countries are facing new opportunities and challenges related to market liberalization, globalization and increasingly stringent quality and safety requirements for their products, making it harder for them to access markets. Collective action through participation in farmers' organizations (FOs) can provide an effective mechanism to assist small-scale producers overcome these challenges and contribute to and influence modern market chains and trade. Literature on agriculture and aquaculture FOs and case studies of successful aquaculture FOs were reviewed and field research on successful aquaculture FOs in India and Thailand was undertaken to bring together current knowledge on the formation, operation and impact of aquaculture FOs. A range of FOs was examined and potential opportunities for success such as "cluster management" and group certification were highlighted. The publication presents factors associated with successful FOs and guiding principles for development organizations that wish to support aquaculture FOs in developing countries, followed by a summary of challenges and opportunities for the development of small-scale aquaculture FOs.

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