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Aquaculture farmer organizations and cluster management

Concepts and experiences

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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

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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.