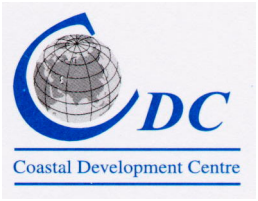
INTERACTIVE MECHANISMS FOR SMALL-SCALE FISHERIES MANAGEMENT

Food and Agriculture Organization of the United Nations
Regional Office for Asia and the Pacific
Bangkok, Thailand

RAP publication 2002/10



Interactive mechanisms for small-scale fisheries management

Report of the regional consultation
Bangkok, Thailand, 26-29 November 2001

Food and Agriculture Organization of the United Nations
Regional Office for Asia and the Pacific
Bangkok, Thailand

PREPARATION OF THIS DOCUMENT

This publication contains the report of and papers presented at the Regional Consultation on Interactive Mechanisms for Small-scale Fisheries management, organized by the FAO Regional Office for Asia and the Pacific (FAO/RAP) in collaboration with the Coastal Development Center (CDC) of Kasetsart University, Thailand, from 26 to 29 November 2001. The papers have been compiled and edited by Dr. Heiko Seilert, an FAO Consultant, and Mr. Marcel Barang, an independent editor.

SEILERT, H.E.W., ed. 2002. *Interactive mechanisms for small-scale fisheries management: Report of the regional consultation.* FAO Regional Office for Asia and the Pacific, Bangkok, Thailand. RAP Publication 2002/10, 153 pp.

ABSTRACT

The "Regional consultation on interactive mechanisms for small-scale fisheries management" was initiated by FAO and co-organized by the Coastal Development Centre, Kasetsart University, Bangkok, Thailand. The Consultation The consultation discussed issues concerning small-scale fisheries management based on experiences at both national and regional levels. To overcome various constraints encountered, the consultation developed an interactive plan to implement decentralized small-scale fisheries management. The plan is divided into three phases and describes in a matrix constraints and identified solutions in implementing small-scale fisheries management for six identified areas, namely Organization, Content/substance, Legal, Support, Training and Process. This interactive plan is designed for the needs of fisheries managers at different political levels, non-governmental organizations and others working in the field of small-scale fisheries management**.**

Distribution:

Participants of the Consultation
Members of the Asia-Pacific Fishery Commission
FAO Fisheries Department
Fishery Officers in FAO Regional Offices
Relevant international/regional fishery organizations

Table of contents

EXECUTIVE SUMMARY

The "Regional consultation on interactive mechanisms for small-scale fisheries management" was initiated by FAO and co-organized by the Coastal Development Centre, Kasetsart University, Bangkok, Thailand. The Consultation was held at the Miracle Grand Convention Hotel, Bangkok, from 26 to 29 November 2001 and attended by 28 participants from nine countries, i.e. Cambodia, India, Indonesia, Malaysia, Myanmar, the Philippines, Thailand, the United States of America and Viet Nam, and five organizations, i.e. the Mekong River Commission (MRC), the Food and Agriculture Organization (FAO), the Coastal Development Centre (CDC), the Southeast Asian Fisheries Development Center (SEAFDEC) and Kasetsart University, Thailand.

The Consultation reviewed the fisheries situation in the Asia-Pacific region, an ecosystem-based fisheries management approach and a regional synthesis on small-scale fisheries and their management in the region. The national experiences in implementing small-scale fisheries management as well as specific problems encountered at the project level in Asian countries were presented and extensively discussed at the Consultation.

In considering steps required in decentralizing small-scale fisheries management, technical terms to describe the action required for implementing small-scale fisheries management were compiled. These actions were modified and grouped into six areas, i.e. Organization, Content/substance, Legal, Support, Training and Process. A flowchart on actions from government-based, top-down, centralized fisheries management to community-based, bottom-up, decentralized fisheries management was then developed and the identified actions were grouped in this chart according to their need in such a decentralization process (see page 114).

For each action, the Consultation identified constraints in the implementation process. The resulting matrix of areas, divided into actions with their identified constraints, was then completed with recommended solutions to overcome these constraints. Extensive discussions about proposed solutions, better described as activities, took place as these solutions were largely depending on the political, cultural and social background of each participant.

The three-phased matrix is formulated as the **interactive plan for the implementation of small-scale fisheries management** (see pages 118-140). Although divided into three phases, the Consultation felt that the move towards decentralized fisheries management is not straight forward, i.e., routinely progressing from one phase to the next. Some of the identified activities are specific for only one phase in the plan, others may have to be repeated or done continuously in all phases. The need for clearly identified parameters to measure the necessity for such repetition or continuation of activities was discussed as a base for recommendations for further action that will lead to the next phase.

The structure of the developed interactive plan is as follows:

PHASE		
AREA		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**

This plan provides a mechanism to implement small-scale fisheries management for managers at different political levels, for non-governmental organizations and others working in the field of small-scale fisheries management. The plan recommends comprehensive activities needed for successful implementation. It can be read following the flow of the three phases or by looking at specific areas, for example the legal or training area.

Finally, the participants at the Consultation expressed the wish to provide a general statement for the readers of these proceedings for clarification and also the points below, which have evolved from the four days of discussion:

This document is intended to facilitate the process of decentralizing small-scale fisheries management. It offers suggestions for a decentralization process, based on experience of practitioners from various fields. The document would be useful for stakeholders, e.g. government agencies at all levels, communities, non-governmental organizations and others in the field.

Furthermore, the participants wished to state that:

a) The premise of this document is that the shift to decentralized small-scale fisheries management is considered desirable.
b) Constraints listed may not necessarily be seen as constraints only, they may also be seen as opportunities or prerequisites for decentralization of small-scale fisheries management;
c) The terms used may depend on national definitions (e.g. poverty) or understanding (environmental or fisheries point of view, etc), as they relate to the different objectives, e.g., conservation, use, development, holistic and ecosystem-based management;
d) Participatory monitoring is a prerequisite for the entire process of implementing decentralized small-scale fisheries management;
e) Political will and financial support are not a necessity but would facilitate the process;
f) The phases described do not provide a strict timeframe; they are intended to underline decentralization as a dynamic process with feedback and fine-tuning based on monitoring and evaluation;
g) Decentralization of small-scale fisheries management may not be necessary or appropriate at all levels. Some responsibilities might be better centralized.

Regional Consultation on Interactive Mechanisms for Small-scale Fisheries Management

Bangkok, Thailand, 26-29 November 2001

OPENING OF THE CONSULTATION

The participants were welcomed by Torkul Kanchanalai, Vice Rector, Kasetsart University and Veravat Hongskul, Senior Fisheries Officer of the FAO Regional Office for Asia and the Pacific. The welcoming speech of Prof. Kanchanalai is attached as Annex 5.

OBJECTIVES OF THE CONSULTATION

The consultation involved experts from governments, development agencies, donors and selected NGOs, experienced in implementing small-scale fisheries management, sharing their views and experiences. These experts discussed the constraints in decentralized small-scale fisheries management and possible ways to solve resulting problems.

The objectives of the consultation were as follows:

1. How best to address small-scale fisherfolk or fishing communities;
2. To identify responsibilities and obligations in decentralized small-scale fisheries management;
3. To identify the constraints in implementing local fisheries management and to group these in categories, such as social, economic, environmental, legal constraints, and interagency liaison;
4. To develop practical solutions for the different groups of constraints to assure environmentally sustainable, economically feasible and socially sound decentralized management decisions; and
5. To link these findings in a holistic scenario of interactive mechanisms for the implementation of decentralized small-scale fisheries management schemes.

PRESENTATIONS AT THE CONSULTATION

The papers presented at the consultation were divided into three groups: regional papers, country papers and experience papers.

The regional papers introduced the subject of small-scale fisheries management from different viewpoints, i.e. from the production side, using an ecosystem approach and based on the regional experience from a regional fisheries officer. The country papers summarized country experiences in small-scale fisheries management from the different Asian countries. The experience papers focused on experience in implementing small-scale fisheries management in different projects of the Asian region.

TOWARDS STRENGTHENING COASTAL FISHERIES MANAGEMENT IN SOUTH AND SOUTHEAST ASIA

Purwito Martosubroto
Fisheries resources Division
Fisheries Department
Food and Agriculture Organization of the United Nations

Introduction

Marine capture fisheries in many countries in the South and Southeast Asian region showed a rapid development in the 1970s and 1980s. The use of nylon material and the adoption of new fishing gear (e.g. trawls, purse seines) increased the catch. Many governments in boosting the development of fisheries introduced subsidy programmes through various means such as soft loans for boat purchase and reduced fuel prices. Motorization programmes were common in many countries to enable traditional fisherfolk to fish farther offshore. Meanwhile, national and foreign investment has contributed to the construction of infrastructures such as fishing ports and facilities such as ice plants, cold storage facilities, canneries and other processing plants. The entrance of fish and fisheries products from Asia into the global market has also played an important role as a driving force for further development. By the 1980s certain resources in the coastal areas started showing signs of overexploitation. Conflicts among fisherfolk with different gear became common news in the media, especially the conflict between trawlers and operators of other gear such as gillnets, trammel nets and other static types of gear.

The emergence of conflicts among fisherfolk prompted countries to develop rules and regulations as part of their fisheries management. Zoning schemes in the coastal areas had been common practice in the region for area allocation of fishing gear. Area and season closures were also introduced in some countries. Another management tool which emerged in the region was the introduction of licensing, especially for industrial fisheries. Law enforcement was stepped up through the strengthening of monitoring, control and surveillance programmes.

The development of fisheries in the region has resulted in the expansion of fishing operations further offshore, in particular for the fleets targeting pelagic resources. Some countries, especially those with a large exclusive economic zone such as India and Indonesia, offered licenses for foreign vessels through various bilateral arrangements. Joint venture in fishing through shared capital or vessel charters appeared even among developing countries in Asia (e.g. Bangladesh and Thailand, Indonesia and Thailand) or between developing and developed countries (e.g. Indonesia-Japan, India-Korea Rep., Indonesia-Taiwan).

Status and trend of fisheries

Developing countries in South and Southeast Asia border the two main oceans, the Eastern Indian Ocean (FAO statistical area-57, see Figure 1) with three countries in South Asia, India, Bangladesh and Sri Lanka, and four countries in Southeast Asia, Myanmar, Thailand, Malaysia and Indonesia. The developing countries in Southeast Asia, Cambodia, Indonesia,

Malaysia, the Philippines, Thailand and Viet Nam, border the Western Central Pacific Ocean (FAO statistical area-71).

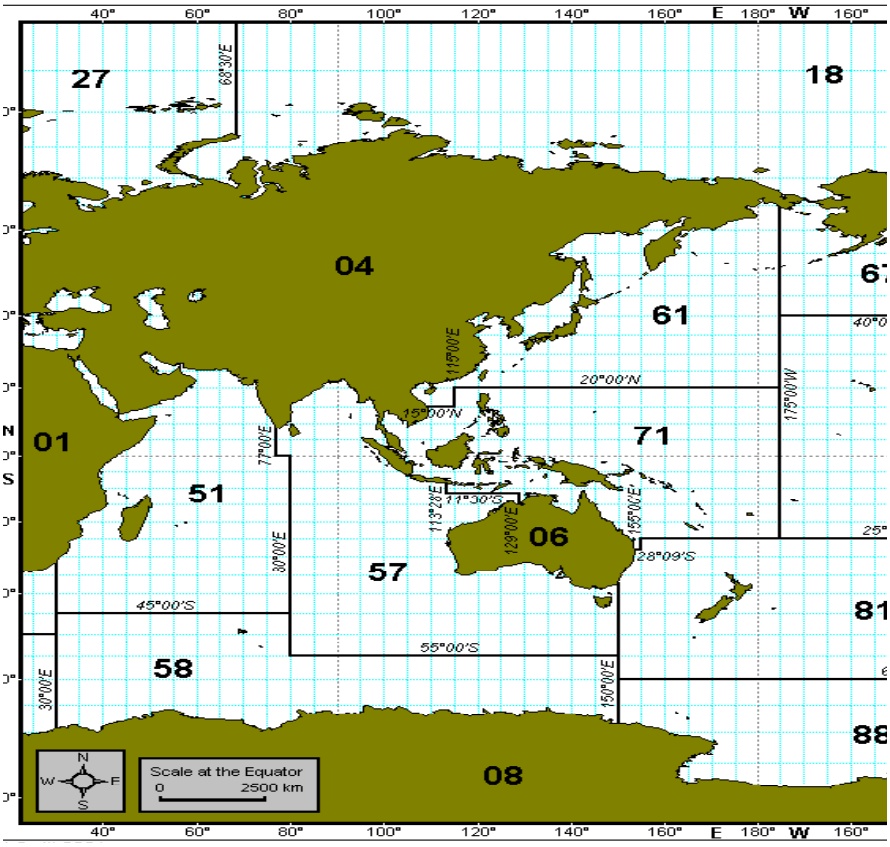


Figure 1. FAO statistical area: Eastern Indian Ocean (area-57) and Western Central Pacific (area-71)

Eastern Indian Ocean

Since 1970 the total catch from developing countries in the Eastern Indian Ocean has shown a steady increase from 1.0 million tonnes to 4.3 million tonnes in 1999 with an average annual increase of 5.1 percent (Figure 2). The total catch had increased more than fourfold during the last three decades. The main contributors for the total catch in 1999 were Thailand with 20.2 percent followed by India with 19.5 percent, Indonesia with 18.2 percent and Myanmar with 16.9 percent.

In terms of species-group composition, the small-pelagic fish catch contributed 28 percent, the demersal group 12 percent and the tuna group 8 percent (Figure 3). The high proportion of miscellaneous fish, i.e. 40 percent, was due to the coarse breakdown of species groups in Bangladesh and Myanmar. Trawl fishing was common in the eastern part of India, Myanmar and the west coast of Thailand. Purse seine fishing targeting pelagic fish is common in the eastern part of India and in the west coast of Thailand. Gillnet fishing for tuna is common in Sri Lanka while long-line fishing is popular in Indonesia.

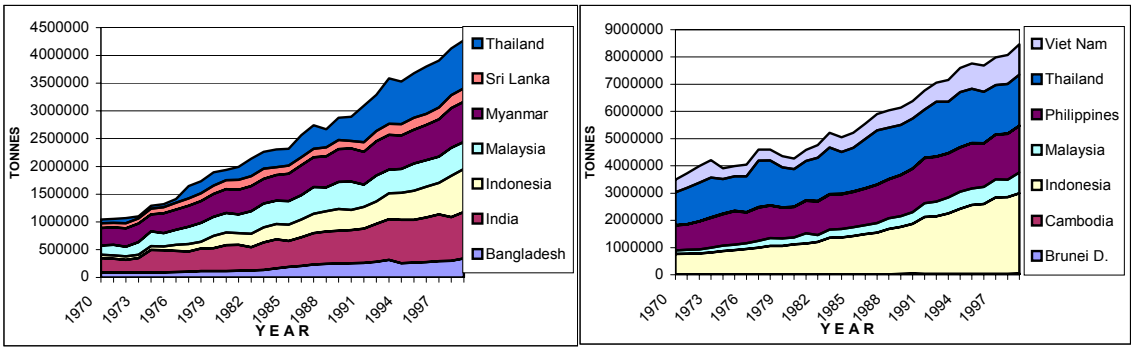


Figure 2. Trend of catch of the developing coastal states in South and Southeast Asia in the Eastern Indian Ocean (left) and Western Central Pacific Ocean (right)

Western Central Pacific Ocean

Catches in the developing countries facing the Western Central Pacific Ocean grew from 3.5 million tonnes in 1970 to 8.5 million tonnes in 1999, with an average annual increase of 3 percent, compared to 5 percent in the Eastern Indian Ocean. During the past three decades the catch hardly more than doubled (Figure 2). Trawl fishing concentrated in the shelf area from Viet Nam down to the Gulf of Thailand, the coastal waters of Malaysia and the Java and Arafura seas of Indonesia. Trawl fishing in the western part of Indonesia (including the Java Sea) came to an end in 1980 with the imposition of the trawl ban by the government. The main contributors to the total catch of the region in 1999 were Indonesia with 34.9 percent, Thailand with 22.1 percent and the Philippines with 20.3 percent.

In terms of catch composition small-pelagic fish contributed 36 percent, the tuna group 14 percent and the demersal group 12 percent (Figure 3). The contribution of miscellaneous fish was 26 percent, much less than in the Eastern Indian Ocean. Trawl and purse seine fishing played a significant role in coastal waters of the countries bordering the Western Central Pacific Ocean. Coastal purse seining mostly targets small-pelagic fish (mackerels, sardines and scads), while purse seining in offshore waters aims for tuna. Tuna purse seining is common in the Philippines and Thailand, while pole-and-line and long-line fishing as well as gill-netting are commonly practised in Indonesia.

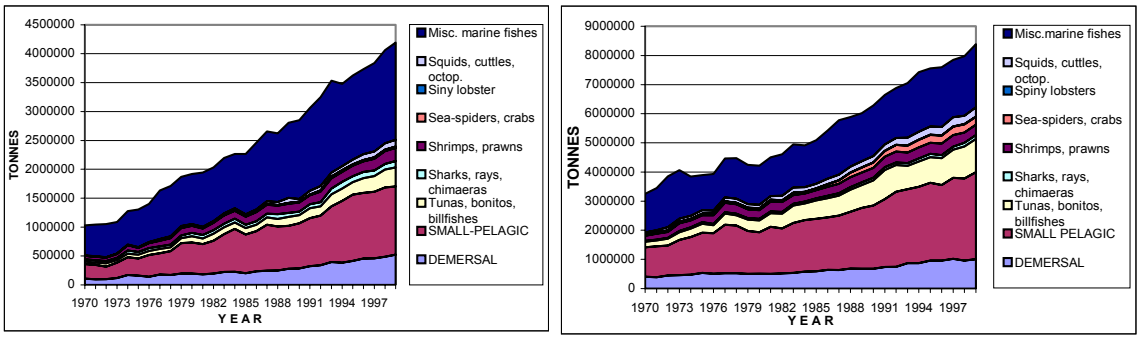


Figure 3. Trend of catch of the developing coastal states (by species groups) in the Eastern Indian Ocean (left) and the Western Central Pacific Ocean (right)

Distant-water fishing fleets

The fleets of distant-water fishing nations have fished in the Eastern Indian Ocean and in the Western Central Pacific Ocean (Figure 4). In the case of the Eastern Indian Ocean, the fleets from Japan, Korea (Republic of) and Taiwan have been active since early years. Meanwhile, with the fall of the communist regime in the Soviet Union, the Soviet fleets stopped their operations in 1985. China and the Philippines were latecomers, in 1995 for China and 1998 for the Philippines. The Philippine fleets were likely composed of re-flagged vessels from other countries as was the case for the Iran-flagged vessels.

The distant-water fleets were mostly fishing for tuna and the total catch in 1999 amounted to 61 300 tonnes for the Eastern Indian Ocean. Purse seine fleets of France and Spain have also expanded their operations from the Western Indian Ocean (FAO statistical area-51) to the Eastern Indian Ocean since 1996, although their 1999 catch was still below Taiwan's. The distant-water fleets fishing in the Western Indian Ocean caught slightly more than 800 000 tonnes in 1999 of which Taiwan contributed 33 percent, Japan 25 percent and the United States 22 percent.

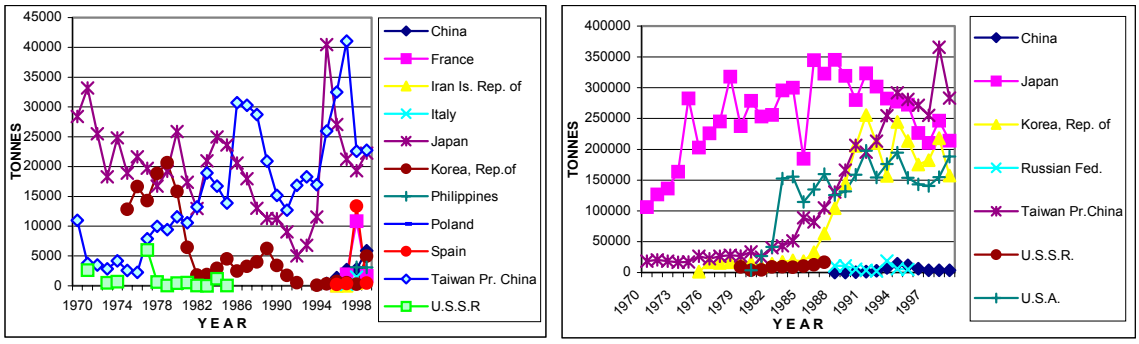


Figure 4. Trend of catch of the distant-water fleets fishing in the Eastern Indian Ocean (left) and the Western Central Pacific Ocean (right)

Issues confronting fisheries management in Asia

The fisheries sector plays an important role in Asia as a source of protein. In some coastal communities it is the only cheap source of animal protein. The sector also provides employment opportunities and foreign exchange earnings. Asia is one of the main suppliers of the global fish market and one of the main fish importers, to Japan and Korea in particular. Thailand has been the leader in fish export in Asia and the number one world exporter for a number of years. The amount of export from the developing countries in South and Southeast Asia bordering the Eastern Indian and Western Central Pacific oceans has steadily increased in the last three decades. The export value had increased from US$0.2 billion in 1976 to nearly US$9 billion in 1998, a 45-fold increase in two and a half decades (Figure 5). This extraordinary increase is largely due to the rapid rise of shrimp exports as a result of the fast development of the shrimp culture sector in the region.

Despite the impressive figures of catch and export of the developing countries in South and Southeast Asia, the sector faces serious challenges in the management of fisheries. Overexploitation of coastal resources has been reported in various regional and international

forums (IPFC 1987; 1994); the problem still persists. In addressing fisheries management in the developing countries of the region one should not disregard the general constraints confronting the region. They include:

- large number of population including fisherfolk
- poverty in the coastal area
- law and order is not well in place

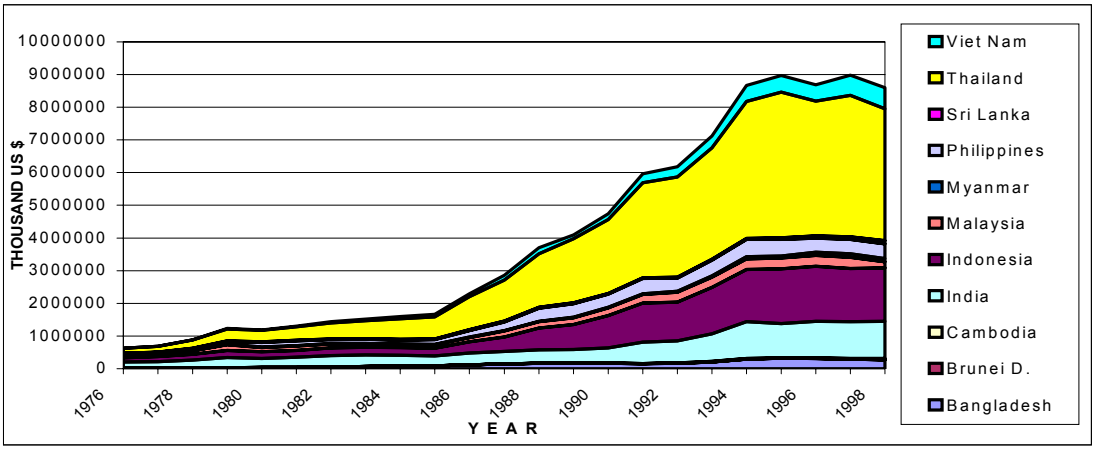


Figure 5. Trend of export of the developing coastal states in South and Southeast Asia

The status of fisheries management in the region is, to a large extent, conditioned by the above constraints. Countries are still struggling in building up fisheries management systems. Various management tools have been introduced and applied, some with successful results while others still face failures. In the end, sustainability of fisheries is measured by the performance of fisheries management. Problems in fisheries management in the region relate very much to the following issues:

- unlimited entry (open access) still persists in many coastal fisheries
- weakness of fisheries management systems
- inadequate law enforcement
- problems associated with multi-species and multi-gear fishing

Though a limited-entry policy has been applied in several countries, in most cases that policy only deals with industrial fisheries. Licensing has been granted but in many cases the attached conditions and requirements have not been duly observed. The requirement to provide catch information to the Department of Fisheries has not been strictly applied. This obviously constrains any effort in monitoring fish stocks. Development of gear and other appliances in vessels have not been well monitored and this has constrained fishing effort measurements. In most cases the management of fisheries is centralized, although very often it lacks systematic management planning. The absence of management planning hampers any effort to assess the impact of management on fisheries.

In the case of small-scale fisheries, a limited-entry policy is by and large absent. Although the fishing efficiency of traditional gear may be inferior to that of the industrial fisheries, the enormous number of fleets in a relatively limited area forms a magnified fishing effort leading to heavy fishing pressure.

For some countries, the existing fisheries management system is still weak. The lack of power in fisheries departments to control or influence vessel construction hinders their ability to

control the entrance of new fishing vessels. In other countries, permits for the construction of fish processing plants, i.e. canning factories and fishmeal processors, are delivered by other departments. Cooperation and integrated efforts are very much needed to prevent overinvestment in boat or processing plant construction, which leads to overfishing.

A similar situation occurs in the law enforcement system. In some countries, the fisheries department is not even the leading institution in this matter. Without good cooperation with other enforcement agencies, i.e. navy and police, effective law enforcement becomes remote. Law breaking in the ocean generally takes place out of sight and law enforcement is much more costly than on land and requires integrated efforts among the law enforcing agencies.

Multi-species and multi-gear fisheries have a special bearing on the collection of fisheries statistics. The high catch of miscellaneous fish in the statistics reflects the problem to analyse the species composition in the catch. In a limited number of countries the simple categorization of the catch, broken down into only four or five species groups, leads to the inclusion of unidentified fishes into the "miscellaneous fish" category. This results in the high catch of miscellaneous fish as appears in Figure 3. Multi-species and multi-gear fisheries also provide a special challenge for scientists to analyse potential species and technological interactions, which are important parameters in stock assessment.

How to strengthen management in the small-scale fisheries sector

There is no standard definition of small-scale fisheries (Panayotou, 1988). Is 'small scale' what is not 'large scale', but there is no exact boundary between the two. Other terms used include 'traditional sector' as opposed to 'modern sector', while the term 'subsistence sector' has the connotation that fishing is solely for the support of daily life. The Philippines uses the term 'municipal' as opposed to 'commercial' fishing. In trying to distinguish between the two groups of these various definitions, some countries use size of boat or type of motor, whether outboard or inboard engine, while some use the depth of water.

Regardless of the definition, small-scale fisheries, to a large extent, enjoy temporarily the absence of limited entry. This privilege, however, has its cost as it crowds fishing fleets in coastal waters, which leads eventually to overfishing. In addition, shrimp being the most expensive species group living in coastal waters, trawlers often invade the area and conflicts with these intruders cannot be avoided.

To address the management issues in small-scale fisheries, various elements need to be brought up. These include a code of conduct for responsible fisheries, a proper legal framework, fisherfolk's organizations, and the geographical area.

Code of conduct for responsible fisheries

Although a guideline for fisheries management is available, the code of conduct for responsible fisheries does not offer special guidelines for the management of small-scale fisheries. The general guidelines of fisheries management, however, mention the importance of community-based fisheries management when addressing small-scale fisheries. Some types of community-based fisheries management exist in several countries of Asia. Through a long process, community-based management has been well established in Japan (Yamamoto, 1998). In other countries, similar types of management exist in some selected fisheries, such

as beach seine fisheries in Sri Lanka (Dayaratne and Attapatu, 1992) and inland fisheries in South Sumatra (Naamin and Badrudin, 1992). It is disheartening to witness, in the process of governance evolution, failures of appreciating customary law in the new legislation of some countries (Panayotou; 1988; Zerner, 1992). The code of conduct for responsible fisheries recognizes the needs to respect customary law.

Legal framework

In many countries the management of marine capture fisheries rests with the central government. However, some sort of delegation of authority is given to state or provincial level and in some cases to district level. In Indonesia, the authority to license fishing boats of less than 30 GT has been given to the provincial governments. In the Philippines, with the 1998 fisheries code, the power of managing municipal waters has been delegated to the district governments. This type of legal provision when applied to other sectors may not have much constraint, but in the fisheries sector it could cause complications due to the mobility of resources and of the fishing fleets. Limiting the capacity of the central government to manage the fishing activities of the entire country, especially for the larger countries, might be useful. On the other hand, it could cause problems for the local governments when the latter are not yet ready to take the necessary action, including law enforcement.

In Japan, the provision of fishing rights to fishermen's associations plays an important role in the devolution of authority to fishing communities, which are represented by their associations. A community bound by customary laws is a potential candidate for the implementation of community-based management with fishing rights attached to it. It often happens, though, that fisheries legislation does not take into account the existing customary laws, which leads to direct conflicts with the locals.

Fishermen's organizations

Fisherfolk are important stakeholders of the fisheries sector and their participation in fisheries management is of importance. To be strong stakeholders, fisherfolk need to form organizations that represent them.

Illiteracy among fisherfolk is generally high. However, very often they have informal leaders, who could represent them. In some countries the government encourages fishing communities to establish fishermen's associations, with mixed results. In some countries, non-governmental organizations play a role in the formation of fishermen's associations. Such associations should participate actively in any management-related training that the government may initiate. A responsible association should take care of the property right delegated to the community or association.

In the absence of local organizations and despite the presence of fishing communities, local governments could play a role in the formation of community organizations through social mobilization as a part of project activities. Education is one of the most important components of project activities. Though in most cases it could be informal, it should be done continuously and sometimes facilitated on a one-on-one basis. White (1997) summarized lessons learned in a USAID project in the Philippines and Sri Lanka for the development of community-based management in a coral reef environment. Among the lessons learned, formation of capable and respected community groups was considered critical for the successful implementation of community resource management projects.

Geographical area

An important condition for community-based management is a defined geographical area for which the community will have the responsibility. If the resources are sedentary species, their geographical distribution could easily be observed and a boundary delineated. The geographical area may also be based on the depth of water where certain types of gear could operate. Consensus building is commonly used to delineate boundaries between communities. Without proper boundaries, it would be troublesome to implement any fisheries management and this may eventually contribute problems to the overall management planning. The geographical area of management should be linked to the distribution of the community. For a start, the larger the area the more chances for having problems in fisheries management. Normally one should start with a small area which may, in time, evolve to the agreed size.

Community-based management could also apply to small islands whose communities tend to be homogeneous. In the tropics, where coral reefs are common in association with islands, the geographical base for the establishment of community-based management could be the island itself. White (1997) summarized the successful development of community-based management in the reef islands of the Philippines and Sri Lanka.

Discussion

Small-scale fisheries play a significant role by contributing catch to the national production. With the continuously growing numbers of small-scale fisherfolk in developing countries, fishing becomes increasingly heavy in the coastal waters and eventually leads to conflicts among fisherfolk.

Related to the problems described above, many developing countries have embarked on projects addressing small-scale fisheries. Some donors have also supported regional projects in this regard such as the Bay of Bengal Programme (BOBP). The Asian Development Bank has financially assisted projects in the Philippines and Indonesia addressing coastal management issues. These projects encourage the promotion of community-based management and some lessons have been learned from them.

Important ingredients for the formation of community-based management in Japan have been described by Yamamoto (1998). The two principal elements are: the legal framework and the fisheries association. The legal provision gives the property right to the community through its association. Therefore, the property right issue becomes an important element as well. Thailand promoted a project of this kind in the Phang-nga bay which was also supported by BOBP (Nickerson, 1998). The results were encouraging. The success of the project was to a large extent related to the deployment of artificial reefs. The reefs served as communal property and every member of the community was responsible for their wellbeing. Through the process of building ownership in this regard, the fisherfolk developed communal responsibility for the wellbeing of the fisheries resources in the bay. This shows that the property right issue is important for the promotion of community-based management. The candidates for this type of management could be sedentary species but they could also be the immobile types of gear.

Fisheries management requires good planning. Through the FISHCODE project funded by Norway, FAO has promoted training workshops on management planning in Indonesia,

Malaysia and Thailand. Two workshops were organized in Indonesia, Denpasar, 1999 and Banyuwangi, 2001, on the management of sardine fisheries in the Bali Strait (FISHCODE, 1999a; 2001b). One workshop was organized in Thailand, at Cha-am, to discuss the management of anchovy fisheries in the Gulf of Thailand (FISHCODE, 2000a). In the meantime three workshops were conducted in Malaysia, Penang, 1999, Lumut, 2000 and Penang, 2001, to discuss and develop a management plan of small-pelagic fisheries on the west coast of Malaysia (FISHCODE, 1999b; 2000b; 2001a).

This project has promoted close cooperation among stakeholders through a series of discussions aiming at formulating the management plan for a concerned fishery. Anchovy fisheries in Thailand are highly developed and conflicts between fisherfolk using purse seine and those using other types of gear have been severe. The workshop did not produce the anticipated results as representatives of purse seine users did attend but those of other types of gear failed to show up. Nonetheless, the workshop was able to present the concept of fisheries management planning, a forefront element in the overall process of fisheries management. Malaysia, on the other hand, benefited from the three workshops and is currently preparing for a fourth workshop to further contribute to the elaboration of the draft management plan. The workshop will be supported by the remaining funds of BOBP. Understanding the concept of management planning is a prerequisite for a better formulation of a management regime. A management plan is not static and will evolve with time in line with the development and condition of the fisheries.

The establishment of community-based fisheries management demands an active role on the part of the local government in nurturing and promoting the need to manage the fisheries resources that the members of the community are concerned with. Time and effort are needed before the community is convinced of the need for collective action in management. Education and public awareness form the basic part of the process in which the government should work hand in hand with the community. Management planning could only be introduced at a later date in simple terms that the community can understand. A management plan is never perfect and always needs updating. Only when the community becomes mature can the adoption of a management plan become easy. Establishing community-based management normally takes time, but as a concept it seems to offer a good option for preventing overfishing and degradation in many coastal areas of the developing countries. As community-based management is locally specific, success and failure of its development need to be documented to enable one to learn from the lessons generated.

References

Atapattu A.R. & Dayaratne P. 1992: Case studies of community-based approaches to resource management in Sri Lanka. In: FAO/Japan Expert Consultation on the Development of Community-based Coastal Fisheries management System for Asia and the Pacific. Kobe, Japan, 8-12 June 1992, Vol.1: 205-210

FAO, 1995: *Code of Conduct for Responsible Fisheries*. Rome, FAO, 1995:41p.

FAO, 2001: FAO/FISHSTAT database at the FAO website http://www.fao.org/fi/statist/FISOFT/FISHPLUS.asp

FISHCODE, 1999a: Report of a workshop on the fisheries and management of Bali sardinella (*Sardinella lemuru*) in the Bali Strait. GCP/INT/648/NOR, Field Report F-3; 30p

FISHCODE, 1999b: Report of a workshop on the fisheries and management of short mackerel (*Rastrelliger spp.*) on the west coast of Peninsular Malaysia. GCP/INT/648/NOR. Field Report F-4; 25p

FISHCODE, 2000a: Report of a workshop on the fisheries and management of anchovies in the Gulf of Thailand. Field Report F-6; 24p

FISHCODE, 2000b: Report of the workshop on the fisheries management plan for the small-pelagic fisheries of the west coast of Peninsular Malaysia, Lumut 7-10 August 2000. GCP/INT/648/NOR, Field Report F-13; 38p

FISHCODE, 2001a: Report on a consultation with stakeholders on the fisheries management plan for small-pelagic fisheries of the west coast of Peninsular Malaysia, Penang 19-20 February 2001. GCP/INT/648/NOR, Field Report F-17: 34p

FISHCODE, 2001b: Report on a workshop to refine the draft management plan for the Bali Strait sardine (lemuru) fisheries, Banyuwangi 15-17 May 2001. GCP/INT/648/NOR, Field Report F-18; 33p

IPFC, 1987: Symposium on the exploitation and management of marine fisheries resources in Southeast Asia, Darwin (Australia), 16-19 February 1987. FAO/RAP. RAPA Report 1987/10; 552p

IPFC, 1994: Symposium on socioeconomic issues in coastal fisheries management. Proceedings of the IPFC symposium held in conjunction with the twenty-fourth session of IPFC, Bangkok, 23-26 November 1993. RAPA Publ. No. 1994/8; 448p

Naamin N. and Badrudin M. 1992: The role of village communities and fishermen's organizations in the management of coastal fisheries resources in Indonesia. In: FAO/Japan Expert Consultation on the Development of a Community-based Coastal Fisheries management System for Asia and the Pacific, Kobe, Japan, 8-12 June 1992, Vol. 2: 490-497

Nickerson D.J. (Ed.). 1998: Community-based fisheries management in the Phang-nga Bay, Thailand. Proceedings of the National Workshop on Community-based Fisheries management organized by the Department of Fisheries of Thailand, FAO and the Bay of Bengal Programme, Phuket, Thailand, 14-16 February 1996. FAO/RAP, Bangkok, Thailand. RAP Publ. 1998/3 (BOBP Report No.78); 227p

Panayotou T. 1988: Management concepts for small-scale fisheries. Economic and social aspects. FAO Fish. Tech. Paper No. 228; 53p

White A.T. 1997: Collaborative and community-based management of coral reef resources: lessons from Sri Lanka and the Philippines. Workshop on Integrated Reef Resource Management in the Maldives. Male, Maldives 16-20 March 1996, BOBP, Madras (India), 1997: 253-274

Yamamoto T. 1998: Community-based fisheries management in Japan. In: Nickerson D.J. (Ed.) (1998): Community-based Fisheries management in the Phang-nga Bay, Thailand. Proceedings of the National Workshop on Community-based Fisheries management organized by the Department of Fisheries of Thailand, FAO and the Bay of Bengal Programme, 14-16 February 1996: 209-227.

Zerner C. 1992: Community management of marine resources in the Maluku Islands. In: FAO/Japan Expert Consultation on the Development of a Community-based Coastal Fisheries management System for Asia and the Pacific, Kobe, 8-12 June 1992, Vol.1: 127-142.

ECOSYSTEM-BASED MANAGEMENT AND SMALL-SCALE FISHERIES: THINKING GLOBALLY, ACTING LOCALLY

Rebecca Metzner
Fisheries Policy & Planning Division
Fisheries Department, FAO

Introduction

"Responsible fisheries management should consider the impact of fisheries on the ecosystem as a whole, including its biodiversity, and should strive for sustainable use of whole ecosystems and biological communities...Harvesting any one species is almost certain to impact others…

[T]he impact of ecological linkages (e.g. through the trophic chain) between species may lead to changes in species dominance and affect the dynamic equilibriums of the resource system, potentially affecting future options.

These multi-species effects need to be considered in responsible fishing, which should aim to ensure that no species, whether targeted, by-catch or indirectly affected by fishing, is reduced to below sustainable levels" (FAO, 1997).

Trying to create a linkage between the local realities of small-scale fisheries and the grand concept of ecosystems is like trying to describe the linkage between an artist's paintbrush, the many brushes that the painter uses, the elements of a painting and the finished picture. Even if each paintbrush is carefully described, analysed and closely studied, it may not necessarily reveal how each one contributes to the total picture, even though we do know that the total picture could not have been without them. But how does this relate to fisheries, the management of people fishing them (especially in small-scale fisheries), and the ecosystem?

An overview of the GESAMP (2001) report provides a succinct summary of things that are currently affecting ecosystems:

- overfishing;
- direct impact of fishing on the environment;
- alteration and destruction of coastal habitats and ecosystems (e.g. wetlands, mangroves and coral reefs);
- sewage pollution leading to contamination of seafood (e.g. cholera, typhoid);
- industrial pollution (e.g. persistent pollutants (POPs), heavy metals, hormone-disrupting substances);
- changes (both increases and decreases) in sediment flows due to deforestation, public works, etc;
- pollution by nutrients (notably fertilizers) leading to widespread and increased eutrophication and contributing to the destruction of sea-grass beds and toxin-producing algal blooms; and
- global warming.

Indeed, it is not difficult to see that three of these things are directly related to humans' fishing activities. Thus, in responding to the question of how ecosystems and fishing activities (especially small scale fishing activities) are related, the response has several parts.

First, it is difficult to unequivocally determine when human fishing activities are the sole cause of impacts on the ecosystem. Despite this, however, it is clear that fisheries do have indirect effects caused by overfishing, modifying species composition, and genetic diversity. In addition, there are direct effects such as the physical impacts caused by dredging and trawling on the seabed, bycatch, and the use of destructive illegal techniques such as the use of dynamite and poisons.

Thus, small-scale fishing activities, depending on how they are carried out and the extent to which fish are caught, are part of the set of things that can impact ecosystems. The people engaging in small-scale fishing activities make up our fisheries paintbrushes and, together, they are an important part of the painting of fisheries and the greater ecosystem.

Describing ecosystems: issues of scope and purpose

There are many levels at which to describe ecosystems, thus it is important to determine the scope at which ecosystems are described and considered for management purposes. For example, large marine ecosystems (LMEs) are a very extensive and inclusive way of describing ecosystems. These are relatively large (200 000 km^2 or more) regions of ocean space. They encompass coastal areas from river basins and estuaries all the way out to the seaward boundaries of continental shelves and the seaward margins of coastal current systems.

Characterized by distinct bathymetry, hydrography, productivity and trophically dependent populations, fifty such areas have been identified. Several LMEs occupy semi-enclosed areas, such as the Black Sea or the Mediterranean, and can be divided in sub-areas (e.g. the Adriatic Sea). They include soft-bottom continental shelves, up-welling continental shelves, open oceans and polar oceans. Others are limited by open continental margins (e.g. the North-western Australian shelf) where their seaward limit extends beyond the continental shelf.

Defined by natural parameters, LMEs most often straddle political – and, thus, frequently national or other jurisdictional – boundaries. Although identified for the purpose of comprehensive monitoring of their condition, it is not implausible to hope that with increasingly productive regional cooperation they could be used as a basis for ecosystem-based management of any and all shared natural resources.

At the LME level of ecosystems, it may not be clear that there are obvious linkages to small-scale fisheries or their management - even though such linkages are present. However, within LMEs there are smaller systems that can also be considered as sub-sets of large marine ecosystems, and it is these smaller systems which, in fact, correspond to areas commonly used by small-scale fisheries and aquaculture activities.

For example, within a particular LME the scope of a smaller ecosystem can encompass:

- seas,
- coastal waters,
- gulfs,
- bays,
- lagoons, and
- estuaries.

Focusing even more, the scope of ecosystems can consist of local areas or systems such as coral reefs or artificial reefs. And, moving beyond the marine environment and onto land, in the context of inland fisheries ecosystems may be described by:

- estuarine systems,
- watersheds,
- river systems, and
- lakes.

Clearly, small-scale fisheries are found in these types of systems. Hence, the issue is simply one of scope, of subdividing larger ecosystems into subsets and finding the components of larger ecosystems that correspond to the size of the small-scale fisheries in the area that are under management consideration.

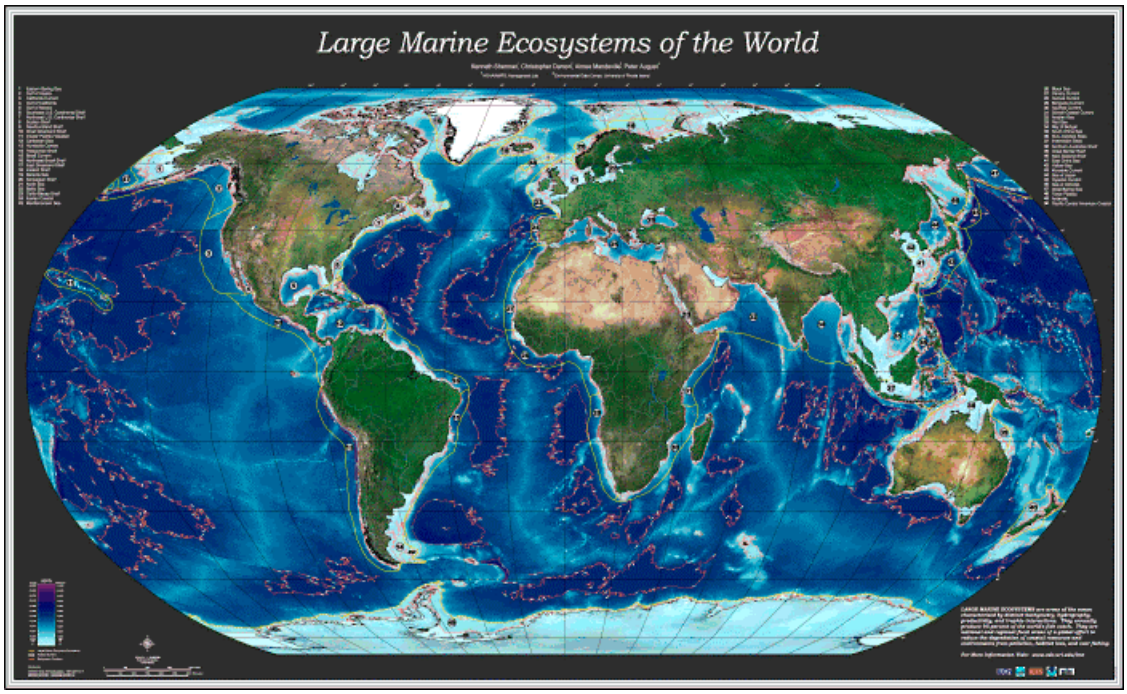


Figure 1. Map of the large marine ecosystems of the world
Courtesy of LME Project (hhtp:/www.edc.uri.edu/lme/data.htm)

Development of ecosystem-related issues

The concept of ecosystems is not a new consideration in fisheries governance, but it is becoming an increasingly explicit component of governance. For example, the 1982 United Nations Law of the Sea Convention (UNCLOS) requires that states ensure that harvested species and species associated with or dependent on harvested species are not overexploited in either of two relatively large ecosystem areas: namely, in national exclusive economic zones (Article 61) and in the high seas (Article 119). This ecosystem concept was strengthened by the 1992 United Nations Conference on Environment and Development and by other international instruments within and outside the fisheries sector.

In addition to the 1995 Code of Conduct on Responsible Fisheries, the 1993 FAO Compliance Agreement and the 1995 UN Fish Stocks Agreement, there is mention of ecosystems and management in:

- the 1995 Global Plan of Action for the Protection of the Marine Environment – adopted to address the fact that 80 percent of marine pollution is caused by human activities on land;
- the Convention on Biological Diversity, which came into force in 1993 and the Jakarta Mandate on Marine and Coastal Biodiversity, adopted in 1995 to provide a new global consensus on the importance of marine and coastal biological diversity;
- the mandate of the FAO Commission on Genetic Resources for Food and Agriculture, which was broadened to cover aquatic resources;
- the International Coral Reef Initiative (ICRI), which is dedicated to reef conservation and management since 1994; and
- the Marine Protected Areas initiative, which was launched by the Global Environment Facility and the World Bank, in collaboration with the World Conservation Union, the Commission on National Parks and Protected Areas and the Great Barrier Reef Marine Park Authority.

The Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem that was held 1-4 October 2001 in Reykjavik, Iceland, contained similar references to ecosystems and fisheries management. It was intended as a conference to identify the means by which ecosystem considerations can be included in fisheries management.

The Reykjavik Declaration (Attachment) urges all those involved with fisheries to have an increased awareness of the many interactions in ecosystems as they worked to continue the implementation of:

- the FAO Code of Conduct on Responsible Fisheries (which provides a common and agreed guide to strengthening and building fisheries management systems);
- International Plans of Action (IPOAs); and
- the Kyoto Declaration on the Contribution of Fisheries to Food Security.

Perhaps most important, in all of these initiatives there is the recognition that humans cannot manage ecosystems as such and can only try to manage the human activities affecting ecosystems. Thus, the use of the term "ecosystem management" can be somewhat confusing or inaccurate. There is science-based fisheries research that has the task, among other things, of understanding and forecasting the impact of humans' fishing activities on ecosystems. Similarly, there is the management of humans undertaking fishery-related activities, but this is not management of ecosystems per se. The task of fisheries management is to among other things, take a precautionary approach to trying to design regulatory systems that minimize the impact of humans on fisheries and on the ecosystems of which fisheries is a part.

Creating a bridge between small-scale fisheries management and ecosystems

The bridge between the management of small-scale fisheries and ecosystems involves combining issues of scope with issues of purpose. In other words, there is a need to describe

- a fishing community (or communities),
- the relevant corresponding ecosystem(s) and the fisheries relationships within them,
- the management objectives/purposes of the people and their small-scale fishing activities and

- the feedback loop of how their fisheries-related activities affect the ecosystem(s).

One of the first steps, therefore, needs to involve identifying and describing the fisheries-related (but not necessarily just fishing) communities in the local area and the different ecosystems and their boundaries. The results of these descriptions then need to be incorporated into the management objectives that the particular small-scale fisherfolk in the community have.

For example, if there is a small-scale fishery on a reef or lagoon that is used by a community, it is useful for the management of that fishery to explicitly recognize the scope of this ecosystem and to incorporate this information when managing the fishing activities. This may involve a combination of training, devolution of powers and the use of management strategies that create positive incentives for people and empower them:

- to be stewards and to take care of fisheries resources;
- to consider inter-related institutional, governance, policy, legal, regulatory, social, economic issues;
- to build on culture and to reinforce existing social norms, rules and traditional structures; and
- to cope with new forces of globalization, trade and commercialization.

Similarly, if there is a reef or lagoon system that may be negatively affected by local activities, one component of the fishery's management plan may include maintenance and/or rebuilding strategies. By working to maintain (or rebuild) local ecosystems, habitats and the biodiversity of the area, the community is actively working to obtain optimal benefits – i.e. to help the productivity of their fisheries. In short, they can be working to ensure that they are using the marine ecosystem in a sustainable manner and are also contributing to their:

- food security,
- economic and social safety nets,
- maintenance of culture and heritage,
- employment, and/or
- profit.

Another step involves identifying and describing how the various components of an ecosystem should be shared amongst users. If the ecosystem corresponds to a single group of small-scale fishermen, this may involve little more than incorporating existing mechanisms for sharing fisheries resources into a fisheries management plan as a way of reinforcing and strengthening them.

However, if there are overlaps between ecosystems and the communities using them, the process becomes more complex. If this is the situation, the communities need to find and to include mechanisms for cooperating among themselves and for sharing their uses of the overlapping ecosystems. Simply put, for fisheries management purposes – and especially in cases of overlapping communities, resources and/or ecosystems – there is a need to have clearly defined, incorruptible administrative procedures or rights-based allocation systems to determine who gets what or how much and where and when.

Yet another step of building the bridge between the management of small-scale fisheries and ecosystems involves finding a way of coping with the many contradictory objectives regarding the use of fisheries resources. This involves working with stakeholders towards establishing attainable management objectives that reflect a balance among the now-expanded

plethora of concerns. This is not a simple task, although in many respects the bridge between these two involves applying the basic principles of fisheries management:

- managing fishing capacity and avoiding excess capacity;
- building on existing social conditions and strengthening positive incentives that promote responsible fisheries;
- taking into account the social, economic and cultural interests of fisherfolk;
- conserving biodiversity and protecting and restoring endangered and depleted species;
- assessing adverse environmental impact on resources; and
- minimizing pollution, waste and discards as well as catch by lost or abandoned gear, the catch of non-target species, and impact on associated or dependent species (CCR, Art 7.2.2).

Summary

The bridge between small-scale fisheries management and ecosystems is created by making sure that large-scale inter-relationships and linkages in ecosystems are taken into consideration, even at very local and focused management levels.

Although we simply do not have the ability to manage ecosystems, we do have the capability to manage humans and their activities within marine and inland freshwater ecosystems for fisheries-related purposes and in a manner that is precautionary. Furthermore, we can use the growing amount of information about various ecosystems to support these management policies, structures and plans.

This will enable small-scale (and other) fishing communities to work on securing present and future options by maintaining their ecosystems and the biological diversity within them in a manner that the resources of most interest – as well as other resources in the ecosystem – can be used in a sustainable way and are not significantly perturbed or affected beyond the environment's natural variability.

References

FAO, 1995: Code of Conduct for Responsible Fisheries. Rome, FAO. 41pp

FAO Fisheries resources Division and Fisheries Policy and Planning Division, 1997: Fisheries management. FAO Technical Guidelines for Responsible Fisheries No. 4. Rome, FAO. 82pp

FAO, 2001: "Towards ecosystem-based fisheries management" background paper prepared for the Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem, 1-4 October 2001, Reykjavik, Iceland. hhtp:/www.refisheries2001.org/

FAO, 2001: World Fisheries and Aquaculture Atlas CD-ROM. Rome, FAO

GESAMP (IMO/FAO/UNESCO-IOC/WHO/IAEA/UN/UNEP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection) and Advisory Committee on Protection of the Sea, 2001: A Sea of Troubles. GESAMP Reports and Studies No. 70. 35pp

Large Marine Ecosystems Project Website. 2001 LME Poster. Hhttp://www.edc.uri.edu/lme/data.htm.

Vasconcellos M.C., 2001: The complementary roles of single species and ecosystem models in fisheries management. An example from a Southwest Atlantic fishery. FAO Fisheries Circular No. 970. Rome, FAO. 38pp

ATTACHMENT

REYKJAVIK DECLARATION ON RESPONSIBLE FISHERIES IN THE MARINE ECOSYSTEM

Having met at the Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem from 1 to 4 October 2001,

Appreciating the initiative taken by the Government of Iceland and the Food and Agriculture Organization of the United Nations (FAO) to organize the Conference with the co-sponsorship of the Government of Norway,

Recalling that this initiative was endorsed at the Twenty-fourth Session of the FAO Committee on Fisheries (26 February-2 March 2001) and at the One Hundred and Twentieth Session of the FAO Council (June 2001),

Reaffirming that the 1982 United Nations Convention on the Law of the Sea (the Convention) sets out the rights and duties of States with respect to the use and conservation of the ocean and its resources, including the conservation and management of living marine resources,

Recalling that in recent years the world community has agreed on several additional legal and political commitments that supplement the provisions of the Convention, including the Rio Declaration on Environment and Development and Agenda 21 (Chapter 17),

Reaffirming the principles of the FAO Code of Conduct for Responsible Fisheries,

Recalling further the four International Plans of Action formulated in accordance with the Code of Conduct, namely for the Management of Fishing Capacity, for the Conservation and Management of Sharks, for Reducing Incidental Catch of Seabirds in Long-line Fisheries, and to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing,

Reaffirming that the FAO Council during its One Hundred and Twentieth Session recommended that ecosystem-based fisheries management studies to be conducted by FAO as agreed in paragraph 39 of the Report at the Twenty-fourth Session of the FAO Committee on Fisheries should be balanced and holistic in approach,

Welcoming and taking into account the discussion in the scientific symposium of the Conference,

Recognizing that sustainable fisheries management incorporating ecosystem considerations entails taking into account the impact of fisheries on the marine ecosystem and the impact of the marine ecosystem on fisheries,

Confirming that the objective of including ecosystem considerations in fisheries management is to contribute to long-term food security and to human development and to assure the effective conservation and sustainable use of the ecosystem and its resources,

Appreciating that the Conference represented an important opportunity for all fisheries stakeholders to jointly assess the means for including ecosystem considerations in fisheries management,

Aware that the sustainable use of living marine resources contributes substantially to human food security, as well as dietary variety, provides for the livelihood of millions of people and is a central pillar of many national economies, especially low-income food-deficit countries and small island developing states,

Recognizing the complex interrelationship between fisheries and other components of the marine ecosystems,

Convinced that including ecosystem considerations in fisheries management provides a framework within which states and fisheries management organizations would enhance management performance,

Affirming that incorporation of ecosystem considerations implies more effective conservation of the ecosystem and sustainable use and an increased attention to interactions, such as predator-prey relationships, among different stocks and species of living marine resources; furthermore that it entails an understanding of the impact of human activities on the ecosystem, including the possible structural distortions they can cause in the ecosystem,

Recognizing the need to strengthen and sustain management capacity, including scientific, legal and institutional frameworks with the aim of incorporating among other things ecosystem considerations,

Emphasizing that the scientific basis for including ecosystem considerations in fisheries management needs further development and that there is incomplete scientific knowledge about the structure, functioning, components and properties of the ecosystem as well as about the ecological impact of fishing,

Recognizing that certain non-fisheries activities have an impact on the marine ecosystem and have consequences for management. These include land-based and sea-based activities which affect habitat, water quality, fisheries productivity, and food quality and safety,

Recognizing also that the majority of developing countries face major challenges in incorporating ecosystem considerations into fisheries management and that international cooperation and support are necessary,

Declare that, in an effort to reinforce responsible and sustainable fisheries in the marine ecosystem, we will individually and collectively work on incorporating ecosystem considerations into that management to that aim.

Towards this end, we further declare:

1. Our determination to continue effective implementation of the FAO Code of Conduct, which is our common and agreed guide in strengthening and building fisheries management systems, as well as the International Plans of Action as formulated in accordance with the Code, and the Kyoto Declaration on the Contribution of Fisheries to Food Security.

2. There is a clear need to introduce immediately effective management plans with incentives that encourage responsible fisheries and sustainable use of marine ecosystems, including mechanisms for reducing excessive fishing efforts to sustainable levels.

3. It is important to strengthen, improve and, where appropriate, establish regional and international fisheries management organizations and incorporate in their work ecosystem considerations and improve cooperation between those bodies and regional bodies in charge of managing and conserving the marine environment.

4. Prevention of adverse effects of non-fisheries activities on the marine ecosystems and fisheries requires action by relevant authorities and other stakeholders.

5. While it is necessary to take immediate action to address particularly urgent problems on the basis of the precautionary approach, it is important to advance the scientific basis for incorporating ecosystem considerations, building on existing and future available scientific knowledge. Towards this end we will undertake to:

(a) advance the scientific basis for developing and implementing management strategies that incorporate ecosystem considerations and which will ensure sustainable yields while

conserving stocks and maintaining the integrity of ecosystems and habitats on which they depend;

(b) identify and describe the structure, components and functioning of relevant marine ecosystems, diet composition and food webs, species interactions and predator-prey relationships, the role of habitat and the biological, physical and oceanographic factors affecting ecosystem stability and resilience;

(c) build or enhance systematic monitoring of natural variability and its relations to ecosystem productivity;

(d) improve the monitoring of by-catch and discards in all fisheries to obtain [a] better knowledge of the amount of fish actually taken;

(e) support research and technology developments of fishing gear and practices to improve gear selectivity and reduce adverse impact of fishing practices on habitat and biological diversity;

(f) assess adverse human impact of non-fisheries activities on the marine environment as well as [its] consequences for sustainable use.

6. The interaction between aquaculture development in the marine environment and capture fisheries should be monitored through relevant institutional and regulatory arrangements.

7. Our determination to strengthen international cooperation with the aim of supporting developing countries in incorporating ecosystem considerations into fisheries management, in particular in building their expertise through education and training for collecting and processing the biological, oceanographic, ecological and fisheries data needed for designing, implementing and upgrading management strategies.

8. We resolve to improve the enabling environment by encouraging technology transfer contributing to sustainable management where appropriate, introducing sound regulatory frameworks, examining and where necessary removing trade distortions, and promoting transparency.

9. We urge relevant technical and financial international organizations and the FAO to cooperate in providing states with access to technical advice and information about effective management regimes and about the experience from such arrangements, and other support, devoting special attention to developing countries.

10. We would encourage FAO to work with scientific and technical experts from all regions to develop technical guidelines for best practices with regard to introducing ecosystem considerations into fisheries management. These technical guidelines should be presented at the next session of the FAO Committee on Fisheries.

And request that the Government of Iceland convey this Declaration to the Secretary-General of the United Nations, the Director-General of the Food and Agriculture Organization of the United Nations, the Chairman of the World Summit on Sustainable Development to be held in Johannesburg in September 2002 and relevant fisheries management organizations for their consideration.

REGIONAL SYNTHESIS ON THE CURRENT STATUS OF SMALL-SCALE FISHERIES MANAGEMENT IN ASIA

Heiko Seilert
Fisheries Consultant
FAO RAP

Introduction

Global fisheries production has reached 130 million tonnes in 2000, including 36 million tonnes produced by aquaculture. Fifty percent of the world's 85 million tonnes of marine fisheries resources are fully exploited, 25 percent are overexploited and only 25 percent could support higher exploitation rates. The reported 11 million tonnes freshwater production is most likely underestimating the total production of these areas several-fold. The Asian region alone is responsible for about 50 percent of the global production, including 90 percent of the total aquaculture production.

For several reasons officially reported fisheries data underestimate fisheries production in the region, particularly from small-scale fisheries. Data from fisheries projects under the Mekong River Commission (MRC) indicate that the total fish production in the Mekong Basin, particularly from small-scale fisheries, is several times higher than that officially reported. Estimates of the total production from small-scale fisheries in coastal waters in the Philippines are three times as high as the officially reported total production. Data from a DANIDA-funded project in Viet Nam sets the production from marine capture fisheries for analysed fishing fleets at 3.5 million tons, compared to 1.3 million tons officially reported. Based on these observations, the real status of the exploitation of the living aquatic resources in the region is even worse than that described by FAO.

Production data alone do not properly reflect the importance of the fisheries sector for the food security and livelihood of millions of mostly rural poor people involved in fisheries. FAO estimates that about 90 percent of the world's 30 million fisherfolk work in Asia, roughly 80 percent of them as small-scale or artisanal fisherfolk. A careful look at some data from the Philippines shows a more alarming picture. Based on data from the Census of Fisheries (1980) and the Census of Population and Housing (1980) of the National Census and Statistics Office, the province of Cebu alone had 98 commercial fishing enterprises with about 1 427 employees but 54 299 artisanal fisherfolk (ratio 1:38). Half of these artisanal fisherfolk were full-time fishermen. Therefore, Philippine fisheries are characterized by a large number of artisanal and subsistence fisherfolk. Interpolating recent data from 1999, with about 1 million people employed in the fisheries industry (Ganaden, 2001), with the 1:38 ratio of industrial versus artisanal fisherfolk found for Cebu, about half of the whole population in the Philippines is somehow involved in artisanal fisheries. This figure definitely overestimates the total number of people employed in fisheries, but it underlines the importance of artisanal fisheries for the rural poor in the Philippines. Similar calculations, based on employment data or the presence of fishing gear in rural households, can be made for other Asian countries, indicating that the total number of people directly engaged in small-scale fisheries alone is probably several times higher than the officially reported data for the whole fishing sector.

One of the reasons for these discrepancies is the division of Asian fisheries into commercial fisheries and small-scale fisheries. While commercial fisheries, as a source of tax income, is under some control of the state, small-scale fisheries is largely uncontrolled. With a high number of mostly rural poor fisherfolk, a huge diversity of fishing gear and methods and almost no knowledge about the total production or resulting importance of this sub-sector, small-scale fisheries does not receive much public attention. Characterized by open access to the aquatic resources and small investment needed for fishing, small-scale fisheries provide the last livelihood opportunity for millions of poor people. As a result, the total number of small-scale fisherfolk will further increase.

Small-scale fisherfolk face increased competition from commercial fisheries, which moves closer to the shoreline and enters bays and estuaries. In addition, their grounds are under serious stress from pollution due to human and industrial settlements and degradation from the restructuring of waterways, estuaries and bays.

Small-scale fisheries provide employment, household income and food for the rural poor people in the riverine, estuarine and coastal areas in Asia. Although in most cases their fishing grounds are already overexploited and exposed to pollution and environmental degradation, millions of rural poor still see fishing as their only option to earn a living. In such a situation only fisheries management will make it possible to optimize the use of aquatic resources and provide the highest benefits for its users.

Small-scale fisheries management

Several concepts have been developed to manage the living coastal aquatic resources. While environmental projects have focused on manageable areas, as developed in various zoning approaches, fisheries projects focused on resource users, for example in co-management or community-based fisheries management concepts, which have proven to be useful. But only the combination of resource user and environmental management will lead to less destructive fishing and better protected coastal areas. The underlying idea is that local fisherfolk know best about the status of their aquatic resources and are therefore best qualified to make management decisions.

Resource management concepts were implemented through projects using scientific approaches in testing decentralized fisheries or resource management. Very little has been done or developed to implement small-scale fisheries management on the national scale. Some experience is available from the Philippines, where the 1998 fisheries code delegates fisheries management authority of coastal waters to municipalities and their fisherfolk's organizations.

The problems in small-scale fisheries management are related to social, economical, environmental, legal and administrative issues. A short list of the overall problems will describe this:

- a high and growing number of fisherfolk using fairly simple fishing techniques,
- fishing on already overfished coastal living aquatic resources, which are under stress because of pollution and coastal and riverine degradation, and
- free and open access to the resources due to the lack of specific fishing rights.

Small-scale fisheries management, dealing mainly with fishing activities in the near-shore areas, has to include measures assuring the protection and preservation of the coastal aquatic habitats. "A focus on the entire ecosystem and not only on individual stocks is urgently needed to protect and utilize marine resources," stated Serge Garcia, Director of FAO's Fisheries resources Division [FAO Press release: PR 01/58e The Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem (1-4 October 2001)].

Small-scale fisheries management has to address all these problems and has to implement solutions to these problems. The experience gained in co-management schemes over the last decade shows that decentralization of management authority is an effective tool to optimize resource management. However, for countrywide implementation the level of decentralization has to be identified.

The Philippines has successfully mobilized and organized her fishing communities to get involved in the taking-over of management authority. In other countries the idea is not that far developed. Many countries still lack mobilized and organized local fisherfolk. Depending on history, country-specific approaches have to be developed to involve fisherfolk in small-scale fisheries management. This is the initial step for the implementation of co-management schemes.

Forming communities

A prerequisite for the implementation of decentralized fisheries management is the existence of organized fishing communities. Once identified, the fisherfolk have to be mobilized and organized to form their own organizations to define their needs and demands. In general, it is recommended to use a participatory approach in mobilizing local fisherfolk. However, traditions and the existing political system may prevent people from speaking up and articulating their needs. In addition, in countries under former socialistic control the establishment of cooperatives and people's organizations may be seen critically. Already at this stage a lot of information exchange and some training will be needed to assure that the importance of the matter and the needs to get organized are fully understood.

Forming communities may be difficult if the fisherfolk in one area come from more than one village or belong to more than one ethnic or religious group. Depending on the given commonalties broad criteria should be chosen to form these communities. Clear and transparent ways of getting organized will help the members to see the advantages of such organization. Rules for members, as well as member exclusion and the way a membership is issued, have to be developed and applied equally to all.

Problems may occur if fisheries have not been properly managed and open access has led to a high number of competing fisherfolk. It might be difficult to find a common understanding for the formation of fisherfolk groups. It should be made clear that the new legal framework provides the opportunity to participate in the management of the near-shore living resources and that this has to result in the organization at the fisherfolk level to make decisions. Non-compliance with the rules established under the new fisheries organization will be a violation of existing national rules and regulations and punishable by law.

Additional problems occur if the local fisherfolk depend on boat owners and middlemen. One strategy is to break the dependence either legally or through financial support. Another strategy might be to involve boat owners and middlemen in the formulation process of

communities. Much mobilization and training for the fisherfolk would be needed before such a community has the capacity to make independent decisions. From limited experience in the field, the best way to overcome this problem is to break such dependence.

Informing fishing communities

Any decentralized management scheme is dependent on information exchange. The lowest level of co-management is to inform the local fisherfolk about management decisions that affect their fishing activities. This process needs well-organized channels of communication, the presence of the managing body at the community level and a certain technical background in the community to understand these management decisions.

The example of the Philippines shows that communication between the Bureau of Fisheries, the fisheries agency in the Philippines, and the local communities is inadequate due to the lack of staff in the field. Already at this stage of co-management it becomes clear that decentralized small-scale fisheries management is not a cheap option. Investments will only pay off in the long run; the beneficiaries will be the rural poor.

Listening to communities

Once communication is established, the managing agency must listen to the local fishing communities in regard to development or implementation of local fisheries management decisions. Local communities may have their own views and ideas regarding the use of the living aquatic resources and the outcome of such consultation may influence the decision-making process.

Advising communities

If communities have received rights to manage their living aquatic resources, they may seek advice on fisheries issues from the responsible government agency. Again, this process needs the presence of the government agency at the village level as well as established channels of communication. It also requires well-trained fisheries staff in the government offices responsible for giving such advice. Therefore, training and motivation are needed not only in the communities but also in the relevant government offices.

Cooperating with communities

Cooperation between the government agency and the fishing communities needs fine-tuned mechanisms of communication, well-established personal contacts, and trust in each other. It is a long process to reach this level of decentralized fisheries management. It further depends on input of other agencies to create

- awareness of biological issues,
- awareness of environmental issues and
- awareness of the legal framework.

This includes cooperation with environmental offices, which have to be present with qualified and trained staff at the grassroots level, and legal assistance from extension workers trained on the legal aspects of fisheries.

Facilitating intercommunity exchange

Although sharing the same coastal resources neighbouring fishing communities may have problems in communicating with each other. This may be related to a different ethnic origin of the two communities, different religions or even different languages. For successful co-management these communities need to establish mechanisms to communicate and to manage their aquatic resources. With the help of extension workers information exchange may be facilitated and a common understanding for management mechanisms for shared resources or fishing grounds may be developed. This has to be done in a, for both sides, transparent and non-discriminatory way.

Empowering communities

The last step in co-management is the empowerment of the communities. Once they have developed rules and regulations to manage their aquatic resources and have agreed with their neighbouring communities on such a regulatory framework, they automatically wish to enforce these rules. Normally, these functions are covered by other government authorities, i.e. police, fisheries department, coastguard, etc. However, in most countries in Asia the presence of these government authorities at sea is limited, mainly due to financial constraints. Fisherfolk might be trained to cover these responsibilities, namely monitoring, control and surveillance, and may take the oath of office to cover these functions. One example from Thailand shows that such empowerment is possible. However, it needs a common agreement not only within the community and neighbouring communities but also with all government authorities concerned. This step needs a well-developed legal framework at the national level, a lot of training not only for the fishing communities but also for cooperating government offices, like police or coastguard. It is the final step in implementing community-based fisheries management.

In community-based fisheries management the fishing community covers all functions regarding the management of living aquatic near-shore resources. Seen as the ultimate goal for small-scale fisheries management, community-based fisheries management needs much communication, training and mobilization. The above drafted strategy to implement such management schemes also shows that implementation is neither easy nor cheap. It needs commitment at all levels and a very careful approach adjusted to local situations. Once successfully implemented, it will benefit the rural poor fishing communities, who will get a better share of the living aquatic resources and have a stronger stake in managing their resources.

SMALL-SCALE FISHERIES MANAGEMENT IN CAMBODIA

Ing Try, Sao Vansereyvuth and Thay Somony
Fisheries Department, Phnom Penh, Cambodia

Background

The fisheries sector in Cambodia plays a very important role for the national economy and food security. Before the 1970s, Cambodia's fish production was regarded high with about 20 tonnes/km^2. This is reflected in a local proverb saying "where there is water there is fish". Inland capture fisheries is more important for Cambodian people than marine fisheries. Catch figures show that 80 percent of fish production comes from inland fisheries. However, freshwater fisheries productivity has declined dramatically due to increasing population, growing pressure on natural resources and the ecosystem, e.g. agricultural activity encroachment and development, deforestation, overexploitation of the fisheries resources as well as hunting and collection of wildlife and other resources.

Fisheries management in 1970-75 seriously suffered from warfare; control of fishing activities was neglected. During the communist Khmer Rouge period (1975-79), collective management was commonplace throughout Cambodia; there was no private sector; all fishing grounds belonged to the collectivity and most fishing activities were small-scale. Since 1979, Thay (2001) reports that the fisheries resources and exploitation have been managed in different arrangements which can be summarized as below:

- Public fishing area (1979-82)
  The country was just rid of the Pol Pot regime and people could fish freely in all fishing domains (public fishing areas). Fisheries management was unknown and there was no fisheries department.
- Solidarity groups (1982-89)
  The Department of Fisheries was organized and the exploitation of fisheries resources was managed through solidarity groups called *Krom Samaki*.
- Fishing lot auction (1989-98)
  The fisheries laws was promulgated. The basis of the law was a modification and upgrading of the fisheries laws of 1965. The fishing activities in that period were divided into three categories:
  - Large-scale fishing (fishing lots)
    Fishing lots (*loh nessaat*) are concessions auctioned by the Cambodian government to the highest bidder for exclusive exploitation over a two-year period. This was one of the main instruments of government to generate revenue from the rent of fisheries resources. (Van Zalinge et al. 2000)
  - Medium-scale fishing (*dai* fishing)
    A *dai* is a kind of bag net or stationery trawl positioned in the river to capture fish migrating downstream. (Van Zalinge et al. 2000)
  - Small-scale fisheries or family fishing
    Family fishing and paddy field fisheries have open access and do not require a license, but gear is subject to certain restrictions on size and use. Access to fishing lots is limited to the closed season (June-September). (Van Zalinge et al. 2000)

This paper will:

- describe the current status of small-scale fisheries management;
- discuss experiences in implementing small-scale fisheries management in which legal adjustment and legal instruments, problems and constraints are further discussed; and
- recommend possible solutions for overcoming constraints facing small-scale fisheries management in Cambodia.

Current status of small-scale fisheries management

Importance of small-scale fisheries for the rural poor

More than 85 percent of the Cambodian people live in rural areas and agriculture and fisheries are their main protein suppliers and income-generating activities. Azimi et al. (2000, cited in Gum 2000) note that 15 percent of the population of Cambodia depend on the Tonle Sap fisheries for their livelihood. Gum (2000) concludes that access to common property resources, especially fisheries, represents an insurance against agricultural risks. Loss of access to fisheries resources will affect the livelihood, in particular, of the rural poor and those with limited access to agricultural land.

In this paper, small-scale fisheries are classified into:

- *Small-scale fishing*, defined as open access fishing, where fishermen do not require a license but fishing gear is subject to restrictions on size and use. Also, this refers to rural inhabitants who live in or near the fishing domain (fishing lots and public fishing areas). People who live in the fishing domain and fish year round are regarded as direct primary users/stakeholders; those who live outside the fishing domain and come to fish during the dry season are categorized as indirect primary users/stakeholders (based on FAO Siem Reap PRA in Fishing lots #3 and #6, 2001). According to Ahmed et al. (1998, quoted in van Zalinge et al., 2000), family fishing is estimated to produce at least 115 000 tonnes annually.
- *Paddy field fisheries* are also significant and important for rural dwellers that live far from the main fishing domain or the main river. Generally, farmers, beside rice cultivation, depend on paddy field fisheries resources such as fish, crabs, shrimps, frogs, beetles, snails, aquatic plants (morning glory, lotus and water lily) and so on as protein sources. Wet season rain-fed, lowland and deep-water rice ecosystems covered about 1.8 million ha in Cambodia in 1994-95 (Nesbitt 1997, quoted in van Zalinge et al. 2000). Paddy field fisheries production ranges from 25 to 62 kg/ha (Leelaptra, 1992; Gregory, 1997, cited in van Zalinge et al., 2000). With the range of 25-62 kg/ha and the total paddy field areas of 1.8 million ha, the annual paddy field fisheries production could be 50 000-100 000 tonnes. Gregory & Guttman (1997 cited in van Zalinge et al. 2000) state that surplus yields of aquatic animals and plants from the paddy fields are sold and provide significant supplemental income in some cases.
- *Small-scale aquaculture* started in 1993 in Svay Rieng and Prey Veng provinces and then expanded to Takeo and Kompong Speu provinces, with the initiatives of PADEK, SAO and AIT. Currently, the organizations involved in aquaculture development in Cambodia are AIT, MRC, PADEK, FAO Siem Reap, GTZ and others. In areas where paddy field fisheries have declined considerably, small-scale aquaculture is considered a good alternative fish protein source for rural poor people. (More information can be found in Kaing Khim's thesis on the effects of small-scale aquaculture development practices in the Lower Mekong Delta, Cambodia, AIT, Bangkok).

Total small-scale fisheries production, excluding small-scale aquaculture production due to insufficient data for estimation, ranges between 165 000 and 215 000 tonnes annually. This represents 50 to 57 percent of the annual inland water catch in Cambodia. This shows that the family-scale or subsistence-fishing component of the total inland fisheries catch has great significance. In terms of production and distribution it can be considered as important as the commercial component. (Degen et al., 2000; Shams & Ahmed, 1998; Nao & Sina, 1997; van Zalinge & Nao, 1999, cited in Gum, 2000).

Typical and common small-scale fishing gear is similar to middle-scale gear but for smaller sizes. Examples of small-scale fishing equipment are gillnets, traps, dip nets, cast nets, hooks and lines, *tru*, cylindrical bamboo trap (*lop*), plunge baskets (*angruth*), spears (*snor*) and others.

Underestimates of the past and current status of small-scale fisheries management

As already mentioned, small-scale fisheries contributes significantly to the livelihood of rural poor people in terms of protein source and income generation. However, the importance of small-scale fisheries was overlooked and underestimated by the central government and local authorities and even other institutions. The past government policy towards commercial fishing lot auctioning and agricultural production had negative effects on people depending on aquatic resources. The intensification and expansion of lot boundaries and the pressures exerted by lot owners and operators have affected an increasing number of small-scale fisherfolk in the local communities (Thay, 2001). Gregory and Guttman (1999, cited in Gum 2000) raised concern about the many efforts of the Cambodian government and development agencies to increase rice production with little appreciation of the importance of paddy field fisheries resources that are significantly used by rice farming families. Gum (2000, cited in Thay, 2001) has documented from many authors reliable information on the general issues of fisheries management during the period 1998-2000. The main issues include:

- the focus on revenue collection from the fishing lots rather than sustainable fisheries resource management or equitable rural development;
- conflicts between conservation and conversion of inundated forests into agricultural lands;
- growing numbers of short-term benefit seekers (local and outside people and fishermen, military and police);
- tension and conflicts between local people and lot owners over the resource use; and
- sublease of the total lot areas to private interests for exclusive exploitation.

In consideration of how the above issues were affecting the poor people's livelihood, the government undertook a swift reform of fisheries management. The reform entailed the reshuffle of the high-level administration of the fisheries department and the provisional withdrawal of provincial fisheries inspection stations in all fishing lots throughout the country. Moreover, the request of local fisherfolk to reclaim their territory for public fishing areas was partly met by returning parts or the whole of fishing lots to the local communities. Fishing lots were recently handed over to local communities.

The challenges for all the parties involved, from government to fisherfolk, are to manage, develop, use and conserve in a sustainable manner the fishing areas released from fishing lots.

The concepts of community fisheries or fisheries co-management have been introduced recently.

Experiences in implementing small-scale fisheries management

Historically, the main objective of fisheries management has been the conservation of fish stocks (King 1995). In order to ensure the long-term sustainable use of fisheries resources, the Department of Fisheries had tried its best to manage them. The fisheries laws was established in 1980 to manage and allocate these resources for earning income for the nation and providing the Cambodian people with protein-rich food in the form of fish. The law mostly dealt with passive management objectives, in which input control is the main management tool. For example, the law strongly prohibited all kinds of illegal fishing gear such as light fishing, electro-fishing and *muro-ami* (Ly, 1990). It also prohibited fishing in the closed season (fish spawning season). Fish sanctuaries in freshwater water systems were also closed during fishing season to commercial and medium-sized fisheries but not to small-scale fisheries. Clearing or cutting down inundated forests and coral mining was prohibited by the fisheries laws. Furthermore, the fisheries department has acquired its own fisheries inspectors and patrol boats to monitor fishing activities in Cambodian waters. Touch (1995) mentioned that the department tried to increase and promote fisheries facilities and human capacity to manage fisheries resources. However, the law is very weak and passive, and it will be necessary to carefully revise it in order to ensure adaptively and scientifically optimal catches without decreasing the stocks. The law is being revised by the Department of Fisheries in collaboration with the World Bank, which provides funding.

Legal adjustment and legal instruments

Small-scale fisheries have open access, do not require a license to fish and use smaller gear than the middle-scale fisheries operators. It can be done in floodplain areas, in fishing lots during the closed season and in paddy fields during the rainy season. Family fisheries are estimated to produce 160 000-250 000 tons annually in Cambodia (Deap et al., 1998).

An example is a cylindrical drum trap, a small-scale fishing gear with a length of less than 0.80 metre and 0.30 metre in diameter. If it is larger, it is classified as middle-scale fishing gear. The gear is made of bamboo sticks sewed together by wild strings and has a double entrance to prevent fish or other aquatic animals from escaping. It is used to catch aquatic fauna everywhere within the water system during the rainy season, in particular freshwater fish.

The Mekong River system is rich in biodiversity, particularly in fish species. Rinboth (1996) recorded about 500 species of fish within the system. However, fewer than 100 species have been caught and recorded around the Tonle Sap by large and medium-sized fishing gear. Nao et al. (1996) stated that there were some 280 fish species gaining access to the productive floodplain, into which huge quantities of fish migrate from the main rivers and floodplains of the Mekong River system.

Apart from fisheries, the Mekong River system has other resources such as inundated forest. Many species of fauna use the flooded forest and floodplain as feeding and nursing grounds. The spawning strategy of many fish species also ensures that eggs and larvae are swept into the floodplain area, which has plentiful food resources for both brood stock and larvae.

Problems and constraints of fisheries management

The richness of fisheries resources leads to high competition for control. Some problems in small-scale fisheries management create conflicts among stakeholders. These include the sale of common-access areas by the lot owners and the military taking over open-access ground and selling it to individual fishermen. This means that the livelihood of the community is affected, and poaching inside the fishing lot by the village fishermen is very common, often involving electro-fishing. In addition, agricultural activities inside the fishing lot by the community conflict with the use of water for different purposes. Also, the extension of fishing lot boundaries, when they are not clearly demarcated, may cause problems.

The operational problems of small-scale fisheries management are as follows:

1. Overfishing: Inland fish stocks are overexploited for large-size fish stocks and fully exploited on small-size fish stocks. Van Zalinge and Nao (1999) hypothesized about the state of exploitation of fish stocks of large and small migratory fish species and showed that large fish and medium-sized fish are overexploited, while small fish are fully exploited. Csavas et al. (1994) pointed out that circumstantial evidence shows that inland fisheries of Cambodia are under stress as indicated by the decline of larger-sized fish in the catch reported by fishermen and the Department of Fisheries. Castro and Huber (1992) stated that if the fish population size is very small, the number of the newly born is also small because there are not many potential parents. In addition, the decrease of fish stocks is due to ecosystem changes within the freshwater environment such as habitat degradation.

2. The Department of Fisheries lacks human resources, especially personnel with degrees such as MSc and PhD. There are very few fisheries officers with postgraduate degrees compared to officers with lower degrees. At present, there is not a single graduated PhD fellow in the field of fisheries or living aquatic science.

3. The Department of Fisheries lacks scientific data. The data they have are not scientifically reliable. No time series data of fish stocks exist. Therefore, stock assessments are badly needed to estimate the fishing effort, the fish landed, the biological processes and the fishing operations. Other parameters are also needed such as natural mortality and recruitment in order to find out the maximum sustainable yield and maximum economic yield. When these parameters are found, wise management and allocation of resources may be implemented in a sustainable way for use by the generations to come.

4. Illegal fishing activities and transportation of fisheries products occur all over the country. Fishermen fish and transport fisheries products illegally, with the support of high-ranking officers, and sell them to neighbouring countries. In the absence of alternatives locals may catch fish to earn some income, even if they know that their activities are destructive or illegal.

5. Existing fisheries law and regulations are hardly applied. They do not provide the proper tools for scientifically based fisheries management and allocation of resources. The law deals with only passive fisheries management, for which input controls have been used as management tools such as ban on gear, gear size, mesh size, closed season, closed areas and the like. Even though the law has existed for decades, its

enforcement has been very poor due to the lack of means in the fisheries department such as patrol boats, and corruption scandals have occurred involving inspection officials right from the start.

6. There are too many conflicts between resource users and managers, especially as the population of Cambodia grows very fast. People need land to build their houses and to establish agricultural farms to support their families, while the government needs the land for fishing lots or fish sanctuaries. If more land is used as fishing ground or fishing lot or fish sanctuary, people do not have land for settlement. On the other hand, if all land is used by farmers, people will not have any fish to eat anymore. In addition, there have been many conflicts between lot owners and local people on fishing rights and property. The local people want to catch fish around their villages whose areas have become fishing lots auctioned by the owners, and these owners will not allow local people to fish within their lots. These matters have occurred in many provinces with freshwater fishing grounds, and high-ranking politicians, including the prime minister, have had to intervene.

7. There has been a problem of too much bureaucracy within the fisheries department and more generally the Ministry of Agriculture, Forestry and Fisheries. In order to deal with anything related to fisheries or fisheries management and development, there are long complicated procedures for decision-making, and it takes a very long time for a decision to be reached.

8. Finally, the Department of Fisheries faces budgetary limitations and infrastructure deficiency. It does not have enough money to run its administration and all offices in all provinces. Those offices are very poor and do not have any modern office materials such as computers, photocopy machines, fax, phones, etc. These commodities are only found at headquarters.

These are the problems and constraints that blight the fisheries sector of Cambodia. Long-term rehabilitation and improvements are required to lead the fisheries sector to a higher level in order to develop and manage fisheries in a sustainable way.

Some possible solutions to overcome constraints in small-scale fisheries management

The Department of Fisheries has to try its best to manage the resources and solve the conflict between users. Despite its 1500 employees – most of whom are in enforcement – fisheries are not well managed. This is illustrated by the increasing number of conflicts associated with the lot system (and some other fisheries) and the 1999 government decision allowing the 68 most valuable lots to be operated as "research" lots, which has led to increasing fishing pressure on the fish resources and conflicts with fishing communities.

The basic problem relates to the extremely low salaries of civil servants and the implicit possibility to use the power of the law for one's own benefit. Therefore, the ultimate solution must be the improvement of salaries and the scaling down of the number of employees. For this, internally generated tax revenues need to be increased.

In the short term, management could be improved by allowing people with more appropriate training to play a more responsible role in the fisheries department. (This has been under

implementation as of the end of October 2000.) The organizational structure of the department needs to be revised and responsibilities to be clarified. The new fisheries law should be completed after a consultation process with the principal stakeholders.

The solutions include:

- Making the auction system fully transparent and reducing the number of subleases and the amount of capital required to begin operation of lots.
- Determining fishing lot boundaries:
    - a transparent process to determine fishing lot boundaries by building up the fisheries department's capacity to use appropriate technology for boundary verification such as GIS and GPS;
    - include all fisheries habitats and exclude villages and agricultural lands, etc; and
    - hold consultations with all stakeholders in the area. For example, promote stakeholder participation, including both local communities and authorities.
- Increasing the transparency of the "burden" book rules for the management responsibilities. These should be made available to the public, especially to local communities and authorities.
- Improving lot management through longer leases, more responsible managers, year-round management and better relations among stakeholders.
- Raising ecological awareness.
- The rights of small-scale (family) fisherfolk need to be established, in such a manner that they will not increase the pressure on the fish stocks.
- Development issues: Particularly, the management and development projects for the Tonle Sap area, such as the building of harbours, roads, navigation channels, etc, will have a negative effect on fisheries if the management system is not improved. The ecosystem will deteriorate, as the development projects will increase accessibility to and employment in the area. This will intensify the population pressure on the environment through the destruction of natural habitats due to the increased need for farmlands, fuel wood, fishing, etc. Instead, creation of employment in the areas directly outside the floodplains could relieve these pressures.
- The present revision of the fisheries law provides an excellent opportunity to establish a stronger and more focused institutional framework that allows broader participation of local users in protecting habitats and allows them to benefit from improved yields. These users comprise lot operators, national and local authorities, military and militia groups and small-scale fisherfolk.

References

Castro P. and Huder M. 1992: *Marine Biology*. Wm. C. Brown. Dubuque

Csavas I., Debas L., Doulman D.J., Petr T.O. and Prado J. 1994: Cambodia: rehabilitation and development needs of the fisheries sector. FAO, Rome

Gum W. 2000: Inland Aquatic Resources and Livelihoods in Cambodia: A guide to the literature, legislation, institutional framework and recommendations. Oxfam GB and NGO Forum on Cambodia, Phnom Penh

Deap L., Ly S. and van Zalinge N.P. (Eds.) 1998: Catch statistics of the Cambodian freshwater fisheries. MRC/DoF/DANIDA Project for the Management of the Freshwater Capture Fisheries of Cambodia. Mekong River Commission, Phnom Penh. 186 p

King M. 1995: *Fisheries Biology, Assessment and Management*. Fishing News Books. Osney Mead, Oxford OX2 OEL

Ly K. 1990: Compiled Theme of Fisheries Laws. Department of Fisheries. Phnom Penh

Nao T. and Ly S. 1996: Review of the Fisheries and Aquaculture Sector in Cambodia. The Department of Fisheries, Phnom Penh

Rainboth W.J. 1996: Fishes of the Cambodia Mekong. FAO, Rome

Thay S. 2001: Current perceptions of local fishermen about community fisheries or co-management of fisheries. The Department of Fisheries, Phnom Penh

Touch S.T. 1995: Present Status of Fisheries in Cambodia and the Development Action Plans. The Department of Fisheries, Phnom Penh

Van Zalinge N.P. and Nao T. (Eds.) 1999: Present Status of Cambodia's Freshwater Capture Fisheries and Management Implications. Nine presentations given at the Annual Meeting of the Department of Fisheries of the Ministry of Agriculture, Forestry and Fisheries, 19-21 January 1999. Mekong River Commission and the Department of Fisheries, Phnom Penh, 149 p

Van Zalinge N.P, Nao T., Touch S.T. and Deap L. 2000: Where there is water there is Fish? Cambodian fisheries issues in a Mekong River Basin perspective. In: *Common Property in the Mekong: Issues of sustainability and subsistence* (2000). ICLARM, Australian Mekong Resource Centre and SIDA, Manila

SMALL-SCALE FISHERIES MANAGEMENT IN INDIA: NEED FOR A PARADIGM SHIFT

Sebastian Mathew
Executive Secretary
International Collective in Support of Fish Workers (ICSF)
Chennai, India

Introduction

After China, Peru and Japan, India is the fourth largest fish producer in the world. The combined marine, coastal and inland fish production of India, from capture and culture fisheries, stood at 5.4 million tonnes in 1999, of which the marine sub-sector alone accounted for 3 million tonnes. Almost the entire marine fish production is from the territorial waters under the jurisdiction of state governments. The estimated population of fisherfolk, both full-time and part-time, has grown from 2 million in 1973 to about 6 million in 1995. The majority operate from un-decked vessels.

'Small-scale' fisheries in India

'Small-scale' is not a recognized legal category in India. If overall length (OAL) or gross registered tonnage (GRT) is used – 20-m OAL or 25 GRT – for defining the small-scale sub-sector, almost the entire fishing fleet would fit these criteria. Trawling units are not generally considered small scale even if they are below 20-m OAL or below 25 GRT. Traditional, artisanal or small-scale fisheries range from rudimentary dugout canoes to motorized 16-m plywood or FRP vessels.

The expansion of small-scale fishing operations since the 1990s has had several effects. The gear base of small-scale fisheries has been losing its diversity. Artisanal fisheries have become more differentiated: they include both powered and non-powered vessels, and both active and passive gear groups. There has been a tremendous expansion of fishing capacity and increasing fishing pressure in the artisanal sector. In the traditional fisheries of Kerala, the number of plywood vessels has increased by 300 per cent, from less than 2 000 in 1991 to close to 6 000 in 1998, all motorized.

Conflicts over resources and overfishing pressure

There are exacerbating conflicts within the small-scale sub-sector among different gear groups as a result of the increased mobility of fishing vessels, capacity expansion and overfishing pressure. Thus, gear conflicts that were mainly confined to trawl and non-trawl groups have now become frequent among artisanal gear groups. With motorization, the division of labour seems to have broken down by making it easier for unskilled people to migrate into fishing activities. Built-in conditions of limited-access regimes have collapsed under the pressure of motorization.

According to the Central Marine Fisheries Research Institute (CMFRI) of India, the potential of current fishing grounds has already been exceeded. Although trends in marine fish production do not show a decline, recent observations by CMFRI indicate that fisheries are shifting from large piscivorous fish towards small invertebrates and planktivorous fish. There is fishing down the marine food chain, a shift in mean trophic level from close to 3.5 in the 1950s to 3.2 in the late 1990s.

The state of Gujarat, currently the biggest producer of marine fish in the country, faces economic and biological overfishing pressures. The marine fish production of Gujarat has dropped by over 27 per cent to 552 000 tonnes in 1998-99, from a peak of 702 000 tonnes in 1997-98. Since the formation of the state in 1960 until 1998-99, when its total marine fish production increased sevenfold, the size of its mechanized fleet (both IBM- and OBM-powered vessels) expanded 50-fold, and the value of fish production increased by over 500 times. There were about 17 000 mechanized fishing vessels on the register in 1998-99, of which over 14 000 vessels were IBM-powered vessels.

Fisheries management in India

According to the Seventh Schedule, Article 246 of the Constitution of India, fisheries within the territorial waters are under the jurisdiction of the state government and fishing and fisheries beyond territorial waters are under the jurisdiction of the central government.

The Territorial Waters, Continental Shelf, Exclusive Economic Zone and other Maritime Zones Act, 1976 of India recognizes [Section 7 Para (4) (a)] the sovereign rights to conservation and management of living resources in the Indian exclusive economic zone in addition to their exploration and exploitation. Section 15 (c) further gives power to the central government to make rules for conservation and management of the living resources of the exclusive economic zone, and Section 15 (e) for the protection of the marine environment.

The basic fisheries legislation that followed this act, namely the Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Act, 1981 and the Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Rules, 1982, however, does not make any mention of conservation or management. The only Indian legislation which mentions "undertaking measures for the conservation and management of offshore and deep-sea fisheries" is the Marine Products Export Development Authority Act, 1972 [Section 9(2)(a)], but no management measures are known to exist under this act. There is still an absence of a legal regime to manage fisheries operated by Indian nationals using vessels of Indian origin in the Indian exclusive economic zone beyond territorial limits.

All the maritime states of India (with the exception of Gujarat) have enacted the Marine Fishing Regulation (MFR) Act since the 1980s. It is based on a model piece of legislation prepared by the Ministry of Agriculture, Government of India, more than two decades ago "to protect the interests of different sections of persons, esp. those engaged in fishing with traditional fishing craft; to conserve fish; and to regulate fishing on a scientific basis; and to maintain law and order".

The act was drawn up at a time when coastal fisheries were mainly divided into mechanized and non-mechanized fishing units and when there were tremendous conflicts between the two sub-sectors over access to fishing space and resources, sometimes leading to destruction of

life and property. It has been primarily used to separate trawlers from other gear groups. In this sense, the act has been mainly used for the purpose of maintaining law and order at sea.

The main emphasis of the MFR Act is on regulating fishing vessels in their respective 12-mile territorial sea mainly to protect the interests of fishermen on board traditional fishing vessels. There are no legal mechanisms to address all aspects of fisheries management. There is no coordination between different maritime states, although vessels are increasingly migrating into the waters of adjacent states. Since the pressure of overfishing is felt most acutely within territorial waters, the most important requirement towards conservation and management would be to reform the state-level conservation and management regime. The MFR Act is in urgent need of amendment.

There is a need to see conservation and management of marine fisheries in proactive terms to rebuild, restore or maintain any fisheries resources and the marine environment and consistent with the UNCLOS and other international legal instruments that India has acceded to. Conservation and management are also to be made the collective responsibility of the central and the state governments in an integrated manner. Adopting the proactive principles to rebuild, restore or maintain any fisheries resource or the marine environment will be a major step ahead of the reactive principles to regulate, restrict and prohibit fishing by fishing vessels, as currently emphasised under the MFR Act of the maritime states.

Measures are required to protect the marine environment from pollution. The Water (Prevention and Control of Pollution) Act, 1974, although rarely invoked, has made provisions to protect the coastal sea from land-based sources of pollution subject to the discretion of the state government. This act, in conjunction with the Coastal Regulation Zone Notification of 1991 under the Environment (Protection) Act, 1986, can contribute to regulating land-based sources of pollution in the coastal waters up to a maximum distance as decided by the state government.

Gear selectivity is another area where there is scope for improvement. The negative impact of bottom trawling on fisheries resources and fish habitats, although recognized internationally is yet to translate into legal measures to restrict its negative cascade effects on fish resources and fishing communities. Similarly, the use of fine-meshed nets in estuaries also needs to be effectively regulated.

Conservation and management of fisheries resources and habitat protection measures should be accompanied by institutional mechanisms that bring about equitable allocation of these resources. One important requirement would be building up effective fish-worker organizations which can take up fisheries management functions and which can also draw from the strengths of traditional fisheries management systems wherever they exist.

Building up such fish-worker organizations is an important prerequisite for introducing limited access regimes in Indian fisheries since local organizations where fish-workers have full participation will have greater legitimacy among coastal communities. Consider that, according to a conservative estimate of FAO, there are about 182 000 un-decked and 57 000 decked fishing vessels in about 4 000 marine fishing villages, with an equal number of landing centres in India.

Kerala seems to be the only state that has recognized the importance of fisheries management, especially its ecological and social dimensions. It already has a fisheries development and

management policy initiated through a consultative process in 1994, which recognizes, inter alia, (1) the ecosystem dimensions of fisheries; (2) a reform "to ensure that the rights of ownership of fishing assets will rest only with those who fish"; (3) fisherfolk participation in fisheries management; and (4) the need to bring to the attention of other sectors their negative impact on marine and freshwater ecosystems. These policies, however, are yet to become legislation.

At the national level, efforts are beginning towards fisheries management although the details are still being worked on. It is believed that there will be financial allocation under the Tenth Five Year Plan of India (2002-2007) for fisheries management programmes for the first time. The plan document is expected by the end of November 2001.

Conclusion

Conservation of fisheries resources, protection of fish habitats and allocation to fisherfolk are the three most important considerations in fisheries management. The existing legislation and policies for the fisheries sector are still in the development mode of the 1980s. Within the industry and at the level of state governments there is no clear recognition of the need to introduce management measures, including limited access regimes. The state governments seem to be caught in a bind where they find it difficult to reverse fisheries policies developed at a time when fisheries resources were underutilized. Even for small-scale fish-worker organizations to agree to fisheries management requirements – for example, the need for fleet reduction or greater gear selectivity – it is almost conditional that such measures have to be preceded by greater regulation of trawl or large-scale fisheries. Given the length of its seaboard, the growing fisherfolk population and fleet size, lack of coordination between states and absence of enabling legislation, effective fisheries management policies and programmes are likely to take a long time to be conceived and implemented. The situation is exacerbated by chronic poverty and unemployment in many coastal areas, where the government has no easy position to see the problems and prospects of the fisheries sector in isolation from other social and economic problems. It is yet to be recognized and understood that sustainable marine fisheries are in the long run the best protection for coastal communities from poverty.

SMALL-SCALE FISHERIES MANAGEMENT IN INDONESIA

Victor P. H. Nikijuluw
Director, Socio-economic and Community Study
Ministry of Marine Affairs and Fisheries, Indonesia

Definition

There is no definition of Indonesian small-scale fisheries based on any formal law, either at the national or at the provincial level. The term of small-scale fisheries, however, is explicitly mentioned in government codes and ministerial decrees. The definition of small-scale fisheries is widely understood by scientists, academics, bureaucrats and politicians to mean fisheries undertaken by ordinary people in contrast to fisheries done by formal fishing enterprises. In terms of boat size and technology type, small-scale fisheries is often referred to as fishing activities without using boats, using non-powered boats, or boats with outboard engines or under 30 GT inboard engines. For the sake of management, small-scale fisheries is confined to activities within 12 nautical miles from the shore or in waters under the jurisdiction of provincial governments.

Current status of fisheries

Small-scale fisheries are growing steadily in numbers although mechanization, modernization and use of other fabricated inputs are taking place. The number of small-scale fishing households increases in magnitude and seems to be unchanged in percentage (Table 1). At the same time, the number of large-scale fisheries increases tremendously. It means that new entrants to the industry come from various scales and types of boat. Although small-scale fleets are converted to large ones, it is not enough to reduce the amount of small-scale fleets. As a consequence, about 82 percent of the small fishing fleets dominate Indonesian capture fisheries.

Table 1. Fishing establishments by scale and type of boat

Scale/Type	1989	2000	2000 [%]
Without boat	45 298	50 785	11.21
Non-powered boat	208 171	220 599	48.69
Outboard engine	64 723	98 647	21.77
Subtotal	318 192	370 031	81.67
Inboard engine	40 240	83 073	18.33
Total	358 432	453 104	100.00

In total, there are 2.3 million people who work directly as marine fishermen, of whom 1.2 million are full timers and 1.1 million are part timers. The definitions of full- and part-time fisherfolk are not based on time spent fishing but rather on the contribution of fishing to household income. Therefore the full-time fishers are those whose household income derives entirely from fishing, while the part timers are those whose income derives from fishing and other economic activities.

Aside from 2.3 million fisherfolk who directly depend on fishing, there are those who work in forward- and backward-linked activities. A recent study indicated that for every 100 fishermen, there are 40 supporting workers in input supply and fish processing and 5 working in fish marketing. Therefore, altogether there are about 3.4 million people who directly and indirectly work in fisheries.

Table 2. Number of fishing gear in 2000

Gear	Number (Unit)
BED-equipped net	541
Seine net	41 651
Purse seine	10 082
Gillnet	187 815
Lift net	45 196
Hook and line	247 905
Trap	71 549
Shell collection	8 885
Muro-ami	1 326
Cast net and harpoon	34 553

Various types of fishing gear are used ranging from modern, labour-saving ones like trawl and fish nets (modified trawl for fish), the labour-intensive technologies such as purse seine and pole and line, down to traditional technologies like beach seine and spear fishing. Before 1983, all types of fishing gear could be operated throughout Indonesian waters. But Presidential Decree Number 39/1980 banned trawling. By adding a by-catch excluder device (BED) in the net, trawl is allowed to operate in certain eastern waters of Indonesia. For statistics and data collection, fishing gear is categorized into 11 groups. The biggest group is hook and line, followed by gillnet, lift net and trap. The BED-equipped net is the smallest in number, but gives a substantial amount of commercial and export fish (Table 2).

Fisheries have a significant contribution as foreign exchange earner. The export of fisheries products had steadily increased and reached the peak value of about US$2 billion in 1998. However, due to global economic crises coupled with internal political, peace and order problems, exports have declined. In the year 2000, the export value reached US$1.6 billion only. The main exports were shrimp and tuna. Recently, some other species have been introduced for export to compete in the tough markets, although the volume and value of these products are small. In addition, export items have been diversified from frozen products to higher-value products such as block sashimi, and even fresh fish.

The performance of the fisheries sector can be seen from its contribution to GDP. As generally applied in Indonesia, GDP is based only on production and unprocessed or primary products. The value of activities resulting from fish processing, fish marketing and other fish-based products which are an essential part of the fisheries system are included in the GDP of the non-fisheries sector. Therefore the GDP of fisheries tends to be underestimated. Based on the primary products, fisheries' contribution to GDP is only about 2 percent. In the early 1970s, the share of the fisheries sector was three to four percent of GDP. The figure slowly went down to about 2 percent i the late 1970s and has remained unchanged until now.

Management experience

The management of small-scale fisheries in Indonesia is not as intensive as in large-scale fisheries. This is because there are many fishermen operating very small fishing units scattered throughout the remote islands and waters. Therefore, while laws and regulations are supposed to apply to the entire fisheries sector, only large-scale fisheries comply with them. Small-scale fisheries, on the other hand, tend to operate without any management approach. This may be due to the lack of facilities, personnel and operational funds.

Under the Fisheries Code No. 9/1985 and Government Regulation No. 15/1990, all fishing units should operate with licenses issued by the government. For the boats up to 30 GT, the licenses are issued by the local governments through local fisheries services at district or provincial level. Boats of more than 30 GT must get a license from the central government, through the Directorate General of Capture Fisheries. The exception to fish without license is for small-scale fishing for household consumption only. In other words, subsistence fisherfolk are not obliged to apply for licenses.

Problems arise from the interpretation of subsistence fishing. In the case of Indonesian fisheries, the meaning of subsistence and commercial fishing are intermingled, depending on the situation faced by the fishermen. Throughout the year, fisherfolk always bring home some fish for family consumption regardless of the scale of their equipment and the amount of landing. This means that every fisherman does subsistence fishing by nature. Outside peak fishing season most fishermen operate their gear just to fulfil their consumption needs and therefore totally act as subsistence fishermen. During peak season, however, they catch fish for consumption as well as for sale in the markets. However, they still claim that they are subsistence fishermen in order to avoid licensing.

Aside from the application of licenses as a tool of fisheries management, the government has taken a zoning or fishing belt approach so that a particular type and scale of technology can only fish in particular waters. There are three fishing zones: (1) within 4 miles from the shore, (2) between 4 and 12 miles and (3) from 12 miles outwards. The fishing zone approach has been applied since the 1980s, but it was never effectively implemented. In 1999, the approach was revived, with the number of zones reduced from four to three. The small-scale fishermen are privileged to catch in zones 1 and 2. They may go to zone 3 if they are able to do so. Yet, large-scale fisheries which are obliged to fish in zone 3 often enter zones 1 and 2. Consequently social conflicts between the two groups are unavoidable, and the fish resources, especially in inshore waters, tend to be degraded and are overexploited.

Another approach used in fisheries resource management is mesh size restrictions. Fishing methods which are perceivably destructive are strictly prohibited. Although the use of very fine mesh, cyanide, and blast fishing are prohibited, in reality there are many places (regions) where these methods are still practised. In other words, in regions where there are many small fisherfolk, they apparently do not comply with regulations. In other places, however, although local fisherfolk obey the regulations, fishermen from other places come and fish using destructive fishing methods.

Poaching by international fishermen is another problem faced by the Indonesian small-scale fisherfolk. Illegal fishing boats of neighbouring countries often fish in waters destined to small-scale fishermen. The Indonesian navy detained in the last two years 98 Thai boats and

two Vietnamese boats illegally fishing in Indonesian waters. Some cases were brought to court, fishermen were sentenced and their boats confiscated or destroyed.

Ineffective regulations are generally due to lack of enforcement. The geographical condition of Indonesia, which consists of 17 508 islands with a coastline of 81 000 km and water areas of 5.8 million km^2, has indeed the potential to further develop fisheries, but it also translates into problems of management. The lack of funds, personnel and facilities severely hampers the enforcement of law and regulations.

In Indonesia the management approaches in small-scale fisheries follow a government-led management scheme. However, considering that the approaches are not well implemented, one may say that there is no management in Indonesian small-scale fisheries. In other words, the fisheries are *de jure* under a government-managed regime but de facto enjoy open access.

The result of this fisheries management regime is very clear: the poverty of the small-scale fisherfolk. A recent study indicates that the average family gross income is about Rp400 000 (about US$40) per month. With the average family size of four, it means that the per capita monthly income of a fishing family is about US$10. This figure is far below the monthly income of workers in the manufacture and industrial sectors, which is about US$100 per month.

Solution to the problems

To overcome the above-mentioned problems, at least two main sets of policy have been devised recently by the government. The first policy set is a review of the political economics of fisheries, and the second is decentralization by giving more responsibilities to districts and provincial governments. Within the framework of the reform government policies are essentially directed to revitalizing people-based economics which are characterized by the promotion and development of small and medium-scale enterprises.

Within the first set of policy are (1) reformulation of the objectives of fisheries development, (2) establishment of the Department of Fisheries and Marine Affairs (DFMA), (3) establishment of the Indonesian Maritime Council (IMC) and (4) promotion of good governance in the fisheries sector.

The objectives in fisheries development used to be focused on export and production. The new policies' main objective is to increase the wellbeing of fisherfolk. This priority may be achieved by increasing production, especially from aquaculture, increasing added value of the products, promoting export, raising domestic demand and consumption of fish, and rationally managing fish resources. Therefore, there is a big shift in fisheries management. If before, the management was directed to producing fish in a sustainable manner, now it has shifted to a more rudimentary objective, that is, to improve the quality of life of fisherfolk.

Putting the fisherfolk first is not a slogan. With the new reform the government established DFMA. The main reasoning for the establishment of the department, according to President Abdurachman Wahid at the launching of his cabinet in October 1999, was to care and watch over small-scale fisherfolk so that they could be better off. Under DFMA, there is a special directorate whose main responsibility is to empower small-scale fisherfolk through the development of small and medium-sized enterprises, including cooperatives. The tasks of the

directorate include providing access to capital, markets and technology for small-scale fishermen and fostering community-based resource management through revitalization of custom and traditional practices owned by the people.

Along with the establishment of DFMA, the government established IMC whose function is to help the government in coordinating, synchronizing, harmonizing and integrating all marine activities so as to improve the economic situation of people whose life depends on marine resources. This implies that the fisherfolk's wellbeing is the concern of IMC, besides that of others also working in the marine sector in tourism and transportation.

The fourth policy is the promotion of good governance in fisheries. Good governance refers to the development of government services and practices of government tasks and obligations according to prevailing laws and regulations. To achieve this, control from people is encouraged. People's control can be realized if they are included at all stages of the development, from planning to programme evaluation and monitoring. In line with increasing participation of the people, non-governmental organizations and private voluntary organizations are encouraged and given more opportunity to participate in coastal community development.

Future development of decentralized management

Decentralization of management authority is now taking place in Indonesia in several sectors, except for foreign-related policies, national defence and financial policies. All other development activities including fisheries are decentralized. It means that district and provincial governments are given more responsibilities in development. In fisheries and community development, decentralization brings significant changes because district and provincial governments suddenly are given tasks, authorities and responsibilities they never had before.

With the enactment of Law No. 22/1999 on regional autonomy and Law No. 25/1999 on financial relations, regional autonomy has become reality. These two laws create the legal and financial framework for governance primarily by districts, with assistance from both the provincial and the central levels of government. Article 4 of Law No 22/1999 sets the general tone, that the law is intended to arrange and organize local societies, through their own decision, based on their own aspiration.

Law No. 22/1999 has tremendous bearing on coastal resource management. Most directly, Article 3 establishes a territorial sea under jurisdiction of the province that extends up to 12 nautical miles from the coastal shoreline. Within this territory, Article 10(2) elaborates that provincial authority includes three categories: (1) exploration, exploitation, conservation and management of the sea area, (2) administrative affairs and (3) law enforcement. Pursuant to Article 10(3), the district may establish jurisdiction over one third of the provincial waters, seaward from the island shoreline, or 4 nautical miles from the coastal shoreline. The elucidation of Article 10(2) explicitly states that traditional fishing rights are not restricted by the regional territorial sea delimitation.

With these autonomy laws, which were beginning to be implemented in January 2001, districts and provinces are free to set their own government structures. Of 30 provinces and about 270 coastal districts, all the provinces and about 200 districts have fisheries service

offices whose function is to develop fisheries in their areas. With decentralization, some districts have begun to identify types of resource management practices by their people that had vanished in the last 50 years. With the help of district parliaments that also have a fisheries and marine affairs section, district governments are now developing their own laws on marine fisheries in their areas. Traditional fisheries resource management, customary laws, traditional territorial use rights, indigenous technologies and most of all the aspirations of fisherfolk are included in local laws enacted by district parliaments.

Concluding remarks

Some districts are rich and some poor, so decentralization is not balanced and equal. Districts rich in natural resources can outsource people to develop their regions, they may provide infrastructure and facilities for development and they may finance their people to establish people-based economic activities. This is not the case for districts poor in natural resources. In the future there will be a discrepancy in the development of districts which may lead to conflicts over the utilization of fish resources especially in the bordering waters of districts.

The first problems of managing small-scale fisheries have arisen due to claims over waters by one district which has closed the opportunity for fishermen coming from other regions, although these waters are their traditional fishing grounds. Again, the definition of traditional and modern fisheries may vary from one district to another and lead to different interpretations and actions to protect and control the aquatic resources.

With the bigger roles, responsibilities and authorities accruing to district governments, community-based management systems have begun to be established by some districts. However, several other districts are still in the process of finding out the ways and approaches they have to follow. Advocacy, supervision, extension and empowerment of local people by the central government, NGOs and private voluntary organizations are going on. But they cannot reach all the districts that may have different interests and problems. The decentralization of fisheries management is still in the infancy stage. It can only grow if there are enough nutritious inputs supplied by the central government, NGOs and voluntary organizations under the auspices of international agencies.

CO-MANAGEMENT OF SMALL-SCALE FISHERIES IN MALAYSIA

Mohd Taupek Mohd Nasir
Marine Fisheries resources Development and Management Department
Southeast Asian Fisheries Development Centre,
Chendering, Kuala Terengganu, Malaysia

Introduction

As with most of her sister countries in Southeast Asia, Malaysia is greatly dependent on fish resources to satisfy the protein needs of her population. Fish resources in Malaysia may be obtained from three sources: fresh water (e.g. rivers, lakes), brackish water and marine water. Of these, marine fish resources are the most important, being connected to the eating habits of the people who greatly prefer the tastier marine fish to freshwater fish in their diet.

The fishing community of the country has always relied on traditional types of gear such as drift or gillnet, hook and line, fish trap, bag net, barrier net, etc, allowing for small-scale operations. In the 1960s, new fishing methods were introduced: mainly trawlers and purse seiners, collectively known as commercial fishing gear. But the greater number of fishermen still use traditional gear. Thus, management decisions undertaken to address the fisheries situation in this country inevitably affect the lives of the greater number of small-scale fisherfolk, even though they are primarily directed at commercial fisheries.

A number of terms are used when describing the various situations relating to small-scale fisheries. For the purpose of this paper, the following definitions have been adopted:

- Small-scale fisheries: fisheries that is undertaken using small-scale boat, gear and equipment.
- Artisanal fisheries: fisheries that is undertaken mostly for home consumption using selected traditional gear.
- Subsistence fisheries: fisheries that is undertaken mainly for home consumption using selected traditional gear.

Current status of small-scale fisheries in Malaysia

The 1998 Malaysian Annual Fisheries Statistics estimated that 81 548 fisherfolk earned their livelihood by catching fish. Out of these, 51.6 percent (42 111) operated traditional fishing gear in small-scale fisheries throughout the country (see Table 1 at the end of this paper). In terms of fish production, an estimated 289 275 tonnes of fish (23.63 percent of total fish landing) were caught by these small-scale fishermen in 1998 (Table 2).

Operating mostly in inshore coastal waters, small-scale fishermen use common traditional gear such as drift or gillnet, hook and line, fish trap (both stationary and portable), lift net, bag net, barrier net, push net and shellfish collection apparatus to support their livelihood. Depending on the geographical location and availability of the fish resources, some types of gear are preferred to others.

On the west coast of Peninsular Malaysia, the drift or gillnet is extremely popular and is the dominant traditional gear used (in terms of number of fishermen and catch): 87.5 percent of the small-scale fishermen used this gear in 1998 (Table 3). The annual catch of this gear in 1998 was about 74 000 tonnes – or slightly over 66 percent of the annual total fish landed by small-scale fisheries in the area. Second in dominance was the bag net (employed by some 4.3 percent of the small-scale fishermen in 1998), and this was followed by hook and line (2.4 percent).

On the east coast of Peninsular Malaysia, the drift or gillnet and hook and line are the two most important gear types employed by small-scale fishermen (Table 4). In 1998, the drift or gillnet was the dominant gear in terms of number of fishermen, followed by hook and line. But in terms of highest catch by traditional gear, the open nature of the South China Sea appropriately supports the effective use of hook and line. An estimated 24 000 tonnes of top-quality fish was caught by this gear in 1998.

In Sarawak, the dominating traditional gear types are the drift or gillnet, bag net and hook and line (in this order of importance); in Sabah waters, the main gear types are the drift or gillnet, hook and line, and lift net.

In the 1960s and 1970s, small-scale fishermen made up to 80 percent of the total fishing workforce. But gradually, over the last few decades, due to marked improvement in commercial fishing technology, an increasing number of these traditional fisherfolk have switched to commercial gear, thus increasing profitability. At present, the remaining number of small-scale fishermen exceeds only slightly the number of commercial fishermen.

Figures 1 to 12 provide the catch trends of the dominant traditional gear types operating in the waters on the west and east coasts of Peninsular Malaysia, Sarawak and Sabah between 1988 and 1998.

Annual fluctuation in the catch, within a specific range limit, is normal, and is to be expected within fisheries modes. In most observed cases, however, the catch trends appear as rising or horizontal, especially among the predominant small-scale fisheries by drift or gillnet and hook and line in Peninsular Malaysia, Sarawak and Sabah, indicating that fish resources will still be available in their coastal waters in the years to come.

Portable trap fisheries on the west coast of Peninsular Malaysia registered some reduction in catch in recent years, however, in contrast to the activities on the east coast which appeared to be making increasing profits. Bag net fisheries on the peninsular west coast also showed less catches, partly related to the decreasing number of fishermen within this fisheries.

The challenge for fisheries managers now would thus be in initiating proper management responses to ensure that fish resources will continue to be available in future, and in this regard, small-scale fisheries managers have chosen co-management to further develop and manage their fisheries.

Experiences in implementing small-scale fisheries management schemes

The development of the fishing industry for both commercial and small-scale fisheries in Malaysia has followed closely the guidelines of the National Agriculture Policy, which aims

to bring about changes in the industry so that it evolves into a commercial, modern and progressive sector. To fulfil its mission, the Malaysian Department of Fisheries has identified four broad objectives under the marine capture fisheries sector that need to be achieved, namely:

1. To increase the national fish production
2. To rationally manage fishing resources
3. To develop the deep-sea fishing industry
4. To maximize the income of the fishing industry

However, the policy is also sensitive to environmental and socioeconomic needs for a balance between fishing efforts, sustainability of resources and environmental conservation. To achieve this balance, various conservation and management strategies have been implemented, which among others include the following:

a) Limitation of fishing effort through the issuance of fishing gear and fishing vessel licences.
b) Restructuring of ownership patterns of fishing licences.
c) Management of a zoning system, which gives an exclusive right to the traditional small-scale fisherman to fish in Zone A, which is within 5 nautical miles from the coast, while other fishing zones are based on the tonnage of fishing vessels and types of fishing gear used.
d) Relocation or deployment of fishermen to other economic activities such as aquaculture, eco-tourism or other downstream activities.
e) Conservation and rehabilitation of the marine ecosystem through the establishment of marine parks and artificial reefs.
f) Continuous research and development, particularly in the monitoring of resource potential, and development of eco-friendly fishing technology.

To further enhance the effectiveness of the above-mentioned conservation and management strategies for small-scale fisheries, the fisheries department is adopting the co-management approach, which, when duly implemented, is hoped to instil, collectively within the fisherfolk community, a sense of positive values, conduct and responsibility, in order to increase their productivity and competitiveness.

The terms of reference which have been identified using this approach include:

1. To increase the awareness among the fishermen and fisheries department staff of the importance of the co-management approach to address local fisheries development and management issues.
2. To provide the required technical and human skills to both fisheries department staff and targeted stakeholders involved in the implementation of co-management programmes.
3. To provide the required platform and acceptable mechanisms appropriate to local conditions under which fisheries planning, implementation and monitoring programmes can be undertaken effectively.
4. To help identify and comprehend local fisheries development and management issues.
5. To reach a workable consensus after close discussions between fisheries department staff and stakeholders on ways to resolve these local fisheries development and management issues.
6. To evaluate the performance and effectiveness of fisheries management policies and programmes given local conditions.

7. To help determine new techniques or strategies, applicable under sustainable fisheries development and management, that may help increase the productivity and competitiveness of small-scale fishermen.
8. To closely monitor co-management programmes to ensure their effective implementation.
9. To identify the roles that need to be played by the various stakeholders in order to obtain their active participation to ensure the success of the co-management programmes.

Using this approach, the Department of Fisheries and small-scale fishermen, through their respective fishermen's associations, have established Kumpulan Ekonomi Nelayan or fishermen's economic groups (FEG) at selected main fishing villages throughout the country, aimed at upgrading the socioeconomic status of these fishermen. Some examples of these groups that have shown credible success in the implementation of co-management projects are:

a) FEG of Batin village at Seberang Takir, Kuala Terengganu
b) FEG of Pachakan Semerak at Pasir Putih, Kelantan
c) FEG of Sungai Buloh, Selangor
d) FEG of Sungai Ular at Kuantan, Pahang
e) FEG of Kuala Pontian at Rompin, Pahang
f) FEG of Penyabung at Sedeli, Johor

Economic co-management projects that have been undertaken jointly by FEGs and the fisheries department, with the funding coming mostly from the department or the government, include the launching and setting up of fish aggregating devices (FADs) and artificial reefs at specific sites in the coastal inshore waters, to facilitate the fishing activities of the small-scale fishermen. Such projects have given a sense of belonging to these fishermen, who rightly feel that the FADs and artificial reefs now belong to them and should be properly used, preserved and protected.

Other economic activities undertaken by the FEGs include the sale of fuel to fishing boats, wholesale of fish and fish products, and even an attempt to culture selected crab and fish species, as some of the FEGs in Selangor did. Attempts to resolve conflicts that commonly arise between small-scale and commercial fishermen, especially those pertaining to the destruction of traditional gear by commercial fishermen, are made using the FEG platform.

Legal adjustments and legal instruments

Malaysia is a federation of states, which means some matters are within the powers of the federal legislature and others within the powers of the state legislatures to legislate. Fishing in both maritime and estuarine waters is a federal matter, but fishing in the rivers and other fresh waters comes under state jurisdiction.

Under the Fisheries Act, 1985, the Ministry of Agriculture is empowered to make regulations for the proper management of marine fisheries resources. Small-scale fisheries, being related mostly to the estuaries and maritime coastal waters, thus come directly under this act as well as other provisions, notably as follows:

- Fisheries (Prohibition of Methods of Fishing) Regulation 1980: This regulation prohibits the use of destructive methods of fishing practices, which can result in

indiscriminate destruction of the coastal ecosystem, and its associated biodiversity. Under this regulation, pair trawling, cyanide fishing, electric fishing, and the use of explosives are banned. The use of the push net and large-mesh gillnets is also prohibited.

- Fisheries (Prohibited Areas) (Rantau Abang) Regulation 1991: The main objective of this regulation is to protect nesting turtles in the vicinity of the Rantau Abang turtle sanctuary area. This area, of approximately 160 square nautical miles of maritime coastal water, as specified in the schedule, is declared as a fisheries prohibited area. No person is allowed to kill or capture any fish within this specified area, except for fishing using anchovies seine net, hook and line, lift net and squid jigging, which are not harmful to turtles.
- Fisheries (Establishment of Marine Parks Malaysia) Order 1994: The establishment of marine parks and marine reserves is directly relevant to the conservation and management of fish resources, as it will ensure the protection of the environment, hence the sustainability of the resources in the protected area. This is in line with the principal goal of establishing the marine parks and marine reserves, which is to protect, conserve and manage marine ecosystems of significance, with the objective of directly protecting the aquatic flora and fauna, their habitat and natural breeding grounds. At present, four marine parks, which group the waters of 40 islands off the west and east coasts of Peninsular Malaysia, have been gazetted. The act for the establishment of marine parks in the state of Sabah comes under the state legislation, and, to date, three marine parks consisting of 10 islands have been established in the state.

Constraints in implementing small-scale fisheries management schemes

Since these small-scale fisheries management schemes for improving the standard of livelihood of fishermen have only been implemented within the last couple of years, a complete evaluation of the effectiveness of such schemes has still not been made. However, existing constraints that were known to hamper its smooth running, especially during the initial stages, would include:

Funding limitations

Funding has always remained the greatest factor that inhibits the effective implementation of any small-scale fisheries management project. In most cases, the government remains the sole fund provider for the project, and as such, only limited funding is available for the implementation of a limited number of projects, all these again to be completed within a specified period of time.

Human resource limitations

There is a need to upgrade the present levels of education, skill and responsibility of fishermen and fisheries department staff to become more productive, committed, skilful and competitive. A large number of fisherfolk are either unaware of or not impressed by the basic tenets of conservation and sustainable yields, and as such need special consideration for the further improvement of their knowledge.

Fishermen's dependence on middlemen

The dependence of a large number of small-scale fishermen on middlemen or *towkays* has likewise created some reluctance in their active participation in fisheries management schemes. The influence of these *towkays* on the fishermen is still considerable, since small-scale fishermen depend on them to borrow money to cover the initial operating expenditures in their fishing activities. In return, the fishermen often sell back their catches to these *towkays*, mostly at lower market value.

Awareness campaigns

There is a general lack of awareness campaigns by the authorities concerned, whether at national or local level, regarding the benefits of these small-scale fisheries management projects for small-scale fishermen.

Lessons learned

The following points illustrate some lessons that have been drawn from the co-management scheme:

- The basic philosophy of the government, i.e. the relevant ministry and department, to the co-management concept of small-scale fisheries as an initial step, which could in turn lead to rights-based fisheries, is important, and should be correctly portrayed and widely disseminated.
- Institutional arrangements for rights-based fisheries might take time before such fisheries can be fully implemented.
- The general level of education, responsibility and expertise of fishermen needs further improvement, with the government and relevant agencies spearheading the implementation of all activities that may result in the attainment of such goals.

Solutions to overcome constraints in small-scale fisheries management

A possible solution to funding limitations might lie with the ability to garner greater support for small-scale fishermen by the government. For this to be achieved, more extensive management schemes covering certain periods of time, which can promise greater economic returns to both the fishermen and the government, would definitely be more acceptable, and would thus have greater potential to be funded at higher cost. In the end, funding might even come from within the industry itself should such management schemes be successful in attaining greater economic returns for the fishermen concerned.

Human resource development programmes are useful tools to overcome this type of limitation, both in the short and long terms. The end products from such programmes should effectively raise the present levels of education, skill and responsibility of the fishermen concerned in matters relating to resource conservation and sustainable yields, for their benefit as well as that of future generations. Better economic returns that might be obtained after undertaking these programmes and applying them in their fishing activities might also result in lesser dependence on the middlemen.

Future development of decentralized small-scale fisheries management schemes including proposed solutions to noted constraints

It is rather difficult at present to indicate when decentralized small-scale fisheries management can be fully applied in Malaysia. To a large extent, such a move would depend on how effective and successful the ongoing co-management programme in small-scale fisheries is.

Estimated funding requirements for future initiatives

The funding requirements are difficult to estimate at the moment since they depend on a complete listing of the various activities and initiatives that may be undertaken for the benefit of small-scale fisherfolk, which would be considerable. Malaysia as a developing nation would of course welcome any assistance from recognized parties to help raise the economic level of her small-scale fisherfolk and the sustainable development of these fisheries.

Conclusion

Malaysia is committed to helping her small-scale fishermen and fishing industry to reach their maximum potential, and for this purpose the use of co-management scheme appears to suffice and is acceptable to all relevant parties, although a complete evaluation and success of the scheme has yet to be made.

Table 1. Estimated number of fishermen in small-scale fisheries from various parts of Malaysia and for the whole country between 1988 and 1998

	West Coast P'sular	East Coast P'sular	Sarawak	Sabah	Labuan	Malaysia
1988	19 919	10 770	8 959	9 679	371	49 698
1989	23 530	9 997	7 320	9 790	305	50 942
1990	21 621	10 446	7 503	9 017	349	48 936
1991	20 933	10 360	4 173	9 015	364	44 845
1992	19 953	10 002	4 127	10 931	392	45 405
1993	16 143	8 463	4 632	11 954	287	41 479
1994	15 010	8 399	4 500	13 345	280	41 534
1995	18 060	8 472	4 297	13 345	251	44 425
1996	15 500	8 596	3 747	14 070	281	42 194
1997						
1998	13 865	8 144	5 563	14 225	314	42 111

Table 2. Annual landings of the small-scale fisheries from various parts of Malaysia and for the whole country between 1988 and 1998

	West coast P'sular Landings (tonnes)	East coast P'sular Landings (tonnes)	Sarawak Landings (tonnes)	Sabah Landings (tonnes)	Labuan Landings (tonnes)	Malaysia Landings (tonnes)
1988	72 355	48 830	40 135	28 877	1 653	191 850
1989	100 884	49 918	29 071	21 815	4 681	206 369
1990	90 787	39 200	31 842	19 640	4 596	186 065
1991	75 777	36 361	29 677	57 432	5 347	204 594
1992	91 776	42 481	30 804	77 887	9 197	252 145
1993	106 858	46 742	30 717	71 871	6 588	262 776
1994	116 150	43 922	34 205	76 560	6 871	277 708
1995	131 555	36 753	35 984	81 052	8 274	293 618
1996	132 403	37 992	49 033	80 165	9 952	309 545
1997						
1998	111 393	57 302	36 793	73 910	9 877	289 275

Table 3. Annual catches of the traditional fishing gear on the west coast of Peninsular Malaysia in 1998 and number of fisherfolk involved

	Annual catch (tonnes)	Percent of total catch	Number of fisherman	Percent of group
Drift/gillnet	73 948	66.38	12 125	87.45
Lift net				
Stationary trap	659	0.59	135	0.97
Portable trap	529	0.47	96	0.69
Hook and line	5 693	5.11	337	2.43
Bag net	16 149	14.50	598	4.31
Barrier net	1 710	1.54	17	0.12
Push net	6 583	5.91	57	0.41
Shellfish collection	5 121	4.60	153	1.10
Miscellaneous	1 001	0.90	347	2.50
Total	111 393		13 865	

Table 4. Annual catches of the traditional fishing gear on the east coast of Peninsular Malaysia in 1998 and number of fishermen involved

	Annual catch (Tonnes)	Percent of total catch	Number of fishermen	Percent of group
Drift/gillnet	12 449	21.73	4 556	55.94
Lift net	9 460	16.51	218	2.68
Stationary trap	76	0.13	42	0.52
Portable trap	9 240	16.13	749	9.20
Hook and line	24 670	43.05	2 502	30.72
Bag net	1 354	2.36	32	0.39
Barrier net				
Push net				
Shellfish collection				
Miscellaneous	53	0.09	45	0.55
Total	57 302		8 144	

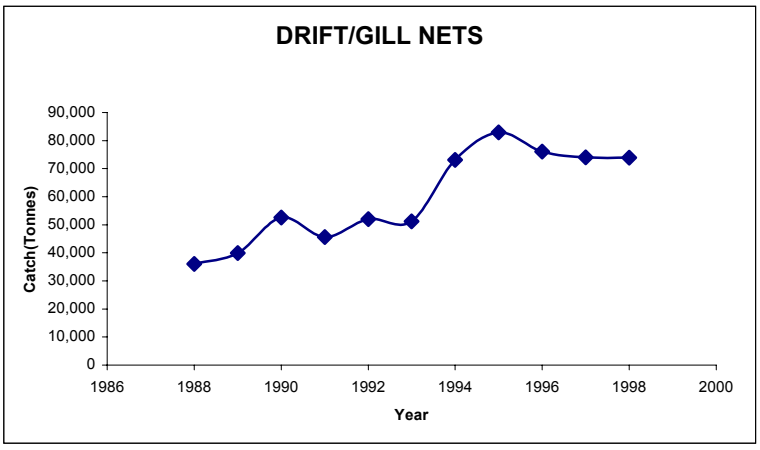


Figure 1. Catch trend of drift/gillnet fisheries on the west coast of Peninsular Malaysia between 1988 and 1998

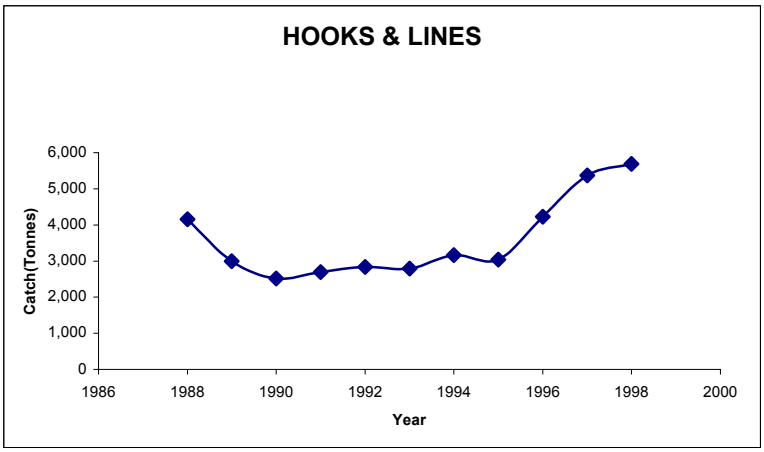


Figure 2. Catch trend of hook-and-line fisheries on the west coast of Peninsular Malaysia between 1988 and 1998

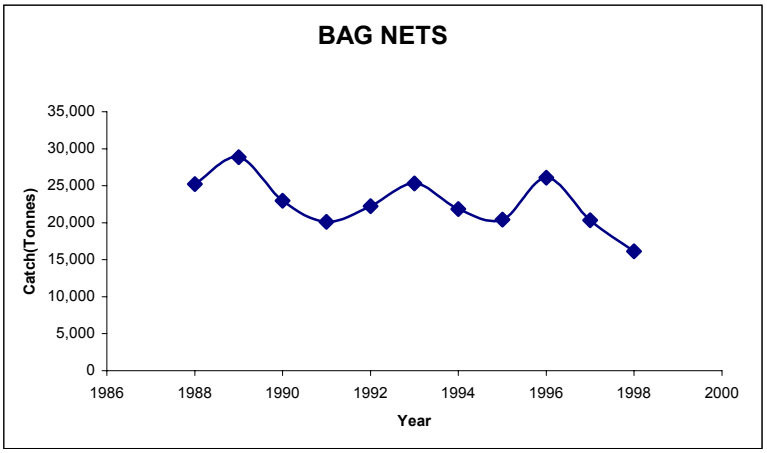


Figure 3. Catch trend of bag net fisheries on the west coast of Peninsular Malaysia between 1988 and 1998

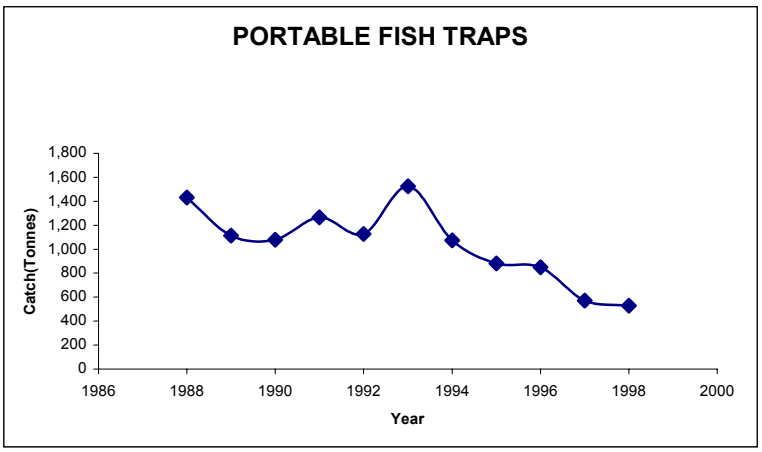


Figure 4. Catch trend of portable fish trap (*bubu*) fisheries on the west coast of Peninsular Malaysia between 1988 and 1998

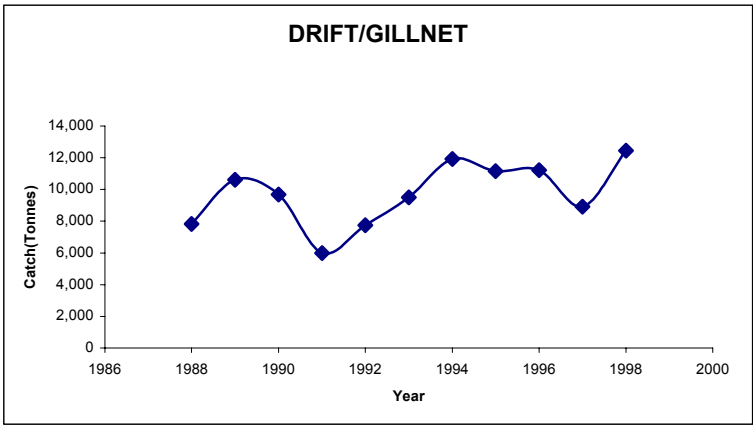


Figure 5. Catch trend of drift/gillnet fisheries on the east coast of Peninsular Malaysia between 1988 and 1998

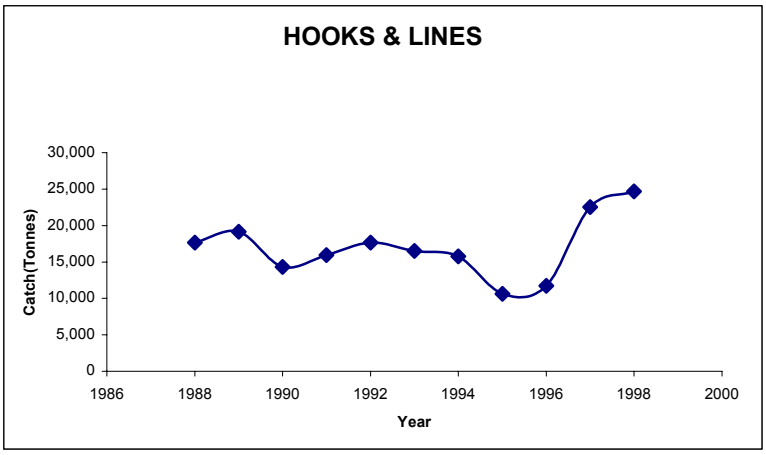


Figure 6. Catch trend of hook-and-line fisheries on the east coast of Peninsular Malaysia between 1988 and 1998

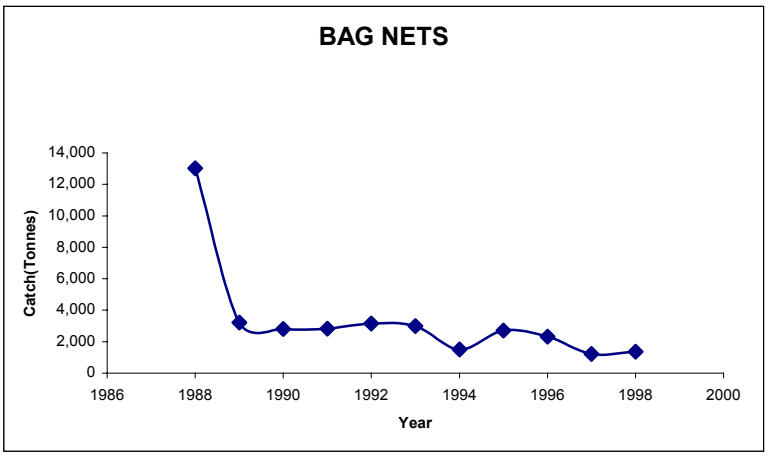


Figure 7. Catch trend of bag net fisheries on the east coast of Peninsular Malaysia between 1988 and 1998

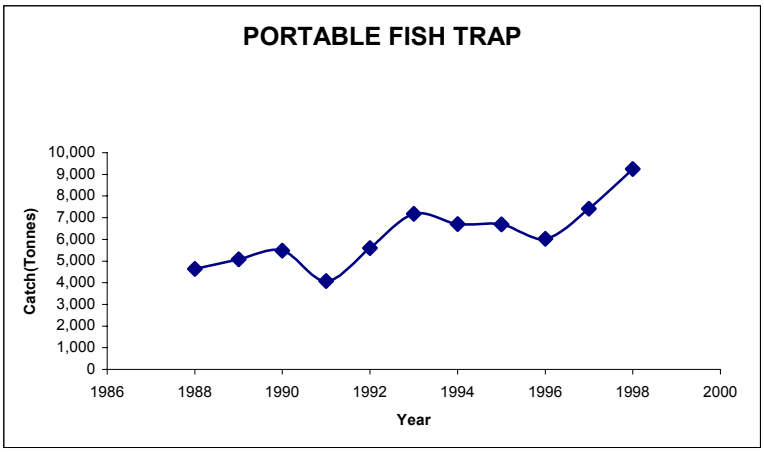


Figure 8. Catch trend of portable fish trap (*bubu*) fisheries on the east coast of Peninsular Malaysia between 1988 and 1998

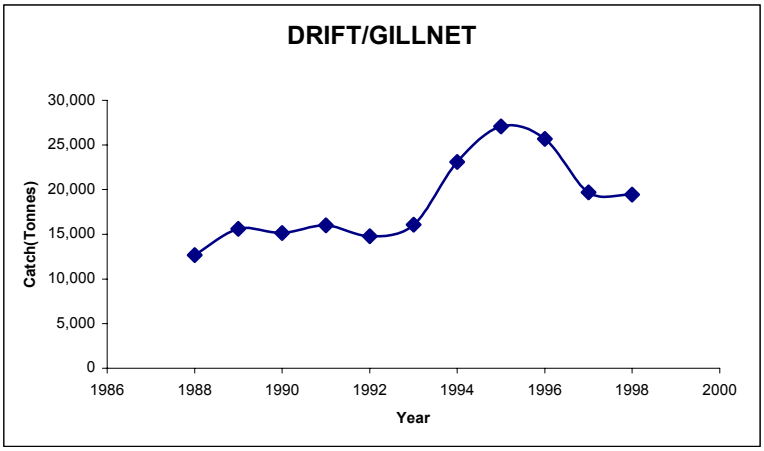


Figure 9. Catch trend of drift/gillnet fisheries in Sarawak waters between 1988 and 1998

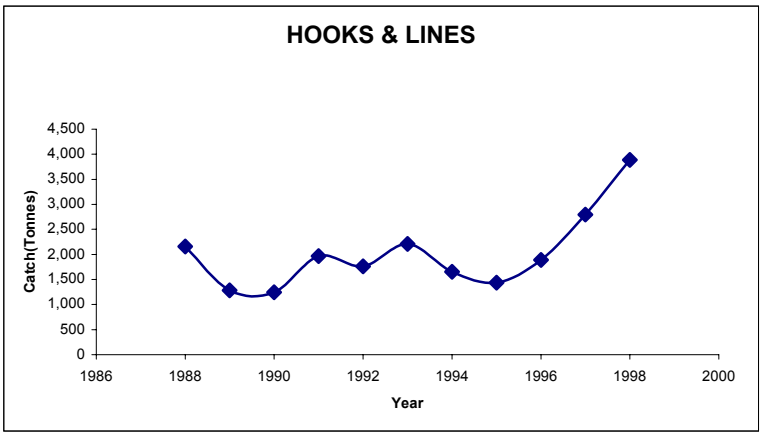


Figure 10. Catch trend of hook-and-line fisheries in Sarawak waters between 1988 and 1998

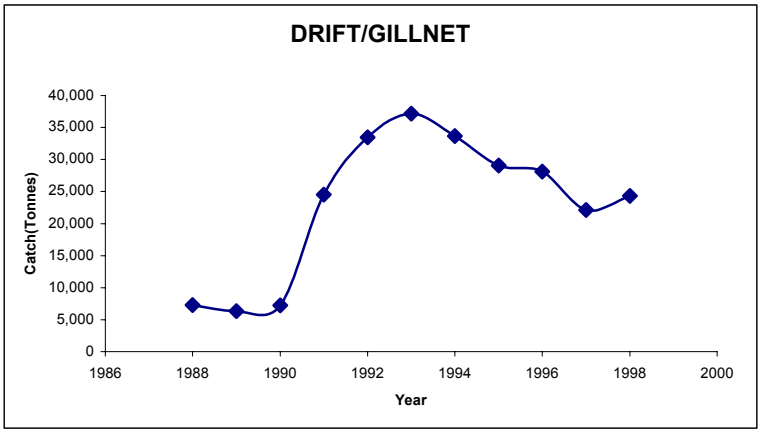


Figure 11. Catch trend of drift/gillnet fisheries in Sabah waters between 1988 and 1998

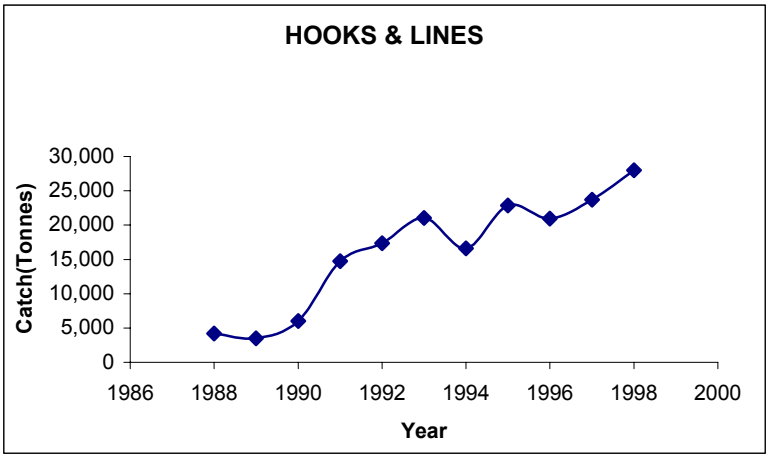


Figure 12. Catch trend of hook-and-line fisheries in Sabah waters between 1988 and 1998

SMALL-SCALE FISHERIES IN MYANMAR

Hla Win and Khin Maung Aye
Department of Fisheries, Ministry of Livestock and Fisheries
Yangon, Myanmar

Introduction

Small-scale fisheries contribute over 50 percent to the total national catch. This report is primarily concerned with traditional fisheries, such as fishing with indigenous fishing gear, fishing for daily family consumption and income in coastal and brackish water areas, and flooded and open water bodies. However, frequent references are made to other types of fisheries, such as freshwater fisheries and offshore fisheries in order to put the small-scale sector in a proper perspective.

Fish is an important source of protein and it contributes up to 80 percent of daily protein consumption for the 51 million people in Myanmar. The main role of fisheries in Myanmar is to be a provider of food and employment. The production for 1999 amounts to 1.19 million tonnes of which marine fisheries accounts for 896 530 tonnes, or 67 percent of total production. The per capita consumption of fish is 22.7 kg. Freshwater fisheries including aquaculture provide 33 percent of the total production. Consumers still prefer freshwater fish, which sell at high prices. Marine fish is available at much lower prices and increasing quantities of it are available in the markets.

Small-scale coastal fisheries have great potential for development. In spite of having reached a considerable level through increased production, investments have been mainly been directed towards industrial fisheries and aquaculture.

The productivity of small-scale fisheries in Myanmar is attributed to the use of traditional fishing gear and methods. Priority should be given to the development of boat design, construction, fishing gear and methods. There is a shortage of appropriate fishing gear and equipment, engine spare parts and fuel. Myanmar still relies on imports. The country needs domestic manufacturers of fishing equipment. With local manufacturing of fishing materials and equipment, leading to a sufficient supply of cheap and high-grade fishing materials, readily available to fishermen, the production of the small-scale sector would be boosted substantially.

The total export production amounted to 144 623.85 tonnes with a value of US$218 million during 2000-2001. The export of fisheries products has an upward trend. The prospect of small-scale fisheries development in Myanmar is certainly bright since the resource potential is great and a huge market is waiting on the doorstep because of the big gap between demand and supply of fish in the international markets.

Current status of small-scale fisheries

Small-scale fishing activities in coastal areas are carried out within 5 nautical miles away from the shoreline in the Rakhine coast and 10 nautical miles in the Ayeyarwady and

Taninthayi coasts. Fishing is done by set fishing gear without boat or fishing gear with non-mechanized boats. If the boat is mechanized to assist moving fishing gear the engine should not exceed 12 HP and the overall length of the boat should not be more than 30 feet. The fishing season is from the beginning of September to the last day of June the following year. In fact, due to the severity of the weather during the monsoon season the actual fishing period is only seven months.

Fisheries resources

Myanmar has a coastline that stretches approximately from 21°N to 10°N over a distance of 1 800 km. With its large number of estuaries and islands, the total coastline will be close to 3 000 km. The continental shelf (0-200 metre depth) covers an area of 225 000 km^2.

Since the total investment in the marine fisheries sector is considerable, it was felt that at least a rough estimate of marine fisheries resources should be made, so that the risk of overfishing, overinvestment and consequent financial failure could be avoided.

With a view to identify new fishing grounds, stocks and a rationale for exploitation, a marine fisheries resource survey and exploratory fishing project was carried out with the assistance of FAO during 1979-83. Project activities consisted of acoustic/experimental fishing surveys with R.V. Fridtjof Nansan and trawl surveys with a vessel contributed by Myanmar.

According to surveys undertaken in marine fisheries, about 1.0 million tonnes of pelagic fish and 0.8 million tonnes of demersal fish exist as biomass in Myanmar marine fisheries waters. Out of the total biomass 0.5 million tonnes of pelagic fish and 0.55 million tonnes of demersal fish have been identified as total allowable catch or annual maximum sustainable yield (MSY).

Table 1: Total biomass and MSY in Myanmar marine waters

Area	Biomass			MSY		
	Demersal	Pelagic	Total	Demersal	Pelagic	Total
	[million tonnes]					
Rakhine	0.194	0.175	0.369	0.160	0.087	0.247
Delta (Yangon, Ayeyarwady, Mon)	0.334	0.505	0.839	0.220	0.252	0.472
Thanitharyi	0.256	0.295	0.551	0.170	0.147	0.317
Total	**0.784**	**0.975**	**1.759**	**0.550**	**0.486**	**1.036**

Since the surveys were conducted two decades ago a new survey is needed to identify the standing stock and MSY with the help of modern equipment and advanced technology.

Small-scale fishing gear

The common types of fishing gear in small-scale fisheries are lift net, stake net and cast net for onshore fisheries, gillnet, drift net, small shore seine, set net and hook and line for inshore fisheries. Small-scale fishery is done mainly with passive fishing techniques, catching the fish

by luring it or by chance. The most important and active fishing gear types are the encircling gillnet used for catching Hilsa species and the seine for small fishes such as anchovies and mackerels.

The small-scale fisheries sector has succeeded, to some extent, in increasing production due to mechanization of the craft and the introduction of imported synthetic fishing nets.

Table 2: Number of fishing implements and boats in inshore areas (1998-99)

Area	Implement	Boat (mechanized)	Boat (non-mechanized)	Boat Total
Thaninthayi	17 997	10 533	1 471	12 004
Ayeyarwady	3 220	361	1 368	1 729
Yangon	124	124	-	124
Mon	1 959	1 103	856	1 959
Rakhine	9 128	2 124	7 025	9 149
Total	**32 428**	**14 245**	**10 720**	**24 965**

Production

It is reported that the catch of traditional fishing gear without boat and inshore gear is about 60 *viss* per month (1 kg = 0.625 *viss*) and the catch with mechanized boats about 150 *viss* per month. There are fluctuations depending on season and the kind of fish caught.

Table 3: Inshore landing, indigenous fishing implements with small boats and not more than 12 HP in 1999-2000

State / Division	Implement of catch		Boat and landing		Total
	Number	Weight (ton)	Number	Weight (ton)	Weight (ton)
Rakhine	9 128	6 264.31	9 149	15 696.81	21 961.12
Ayeyarwady	3 230	2 216.66	1 729	2 966.42	5 183.08
Yangon	124	85.09	124	212.74	297.83
Mon	1 959	1 344.41	1 959	3 361.03	4 705.44
Thaninthayi	17 997	12 350.88	12 004	20 595.10	32 945.98
Total	**32 438**	**22 261.35**	**24 965**	**42 832.10**	**65 093.45**

Due to the long coastline and poor access to remote scattered fishing villages it is hard to collect the data from these remote areas. Nevertheless, based on experience and some sampling it is estimated that the total landing from the area is about two times in weight and the total production from the inshore areas is taken as 195 280.45 tons.

Small-scale fisheries management schemes

The Ministry of Livestock and Fisheries is responsible for the development of the livestock and fisheries sector. Under the ministry, the Department of Fisheries is the sole competent authority for fisheries management, conservation of resources, providing extension services,

conducting research and compiling national statistics in fisheries and fisheries-related infrastructure.

Though Myanmar marine fisheries have been steadily growing it is found that the diverse aquatic resources are not yet fully utilized. Catch reports, landing statistics and frequent research and surveys show the possibility of further expansion of fishing capacities and efforts for these underutilized resources. Fisheries management is pursued by proper licensing, prescribing exploitable species, prescribing environmentally friendly fishing gear and methods and regulating closed areas, closed season, etc.

Management activities should be based on assessments of the available fisheries resources, existing technology and markets, social and economic conditions, impact of other economic activities and other relevant factors, including foreign operation, where applicable. The objectives are to provide a legislative framework for a fisheries management system and to ensure, as much as possible, that both the fisheries people and the authorities concerned perform their roles within a sustainable framework.

Management measures

In order to conduct proper fisheries management the government has promulgated four fisheries laws. The main features of these laws relating to management are:

- reduction and eradication of mortality caused by men apart from legal fishing,
- preservation of areas, habitats and fishing grounds,
- protection of specific stocks and species,
- exploitation of resources on a rational, sustainable basis,
- inhibition of environment adverse effects on the industry and environment deterioration induced by the industry, and
- enforcement of fisheries laws and regulations.

In expending and promoting the fisheries industry, the Department of Fisheries exercises the above practices, making sure that there is no depletion of resources, environmental degradation or overfishing.

To conserve the juvenile fish and shrimp and to avoid conflicts between artisanal fishermen and trawlers, trawling is banned within five miles from the shoreline at the Rakhine coast and within ten miles from the shoreline in the Ayeyarwady and Taninthayi coasts. In addition, July and August are declared as closed season.

As most marine production comes from artisanal fishermen, it is essential to fulfil the needs of small-scale indigenous fishermen communities by increasing their income and improving their livelihood and their environment. Accordingly, zoning of fishing is based on the policy of protecting local fisheries. The Department of Fisheries gives priority to local fishermen by allowing them to operate in all zones. As declared in the Territorial Sea and Maritime Zone Law the waters between baseline and coast are reserved for local fishermen.

The rapid increase in demand for marine high-quality products has significantly accelerated the exploitation of shrimp and other demersal resources, resulting in resource use conflicts and violence between trawlers and small-scale fishermen. To ensure a more equitable exploitation and distribution of resources and to support the sustainability of small-scale

artisanal fisheries, efforts have been made by the fisheries department to limit the size and engine power of fishing boats in inshore areas. For effective management and control the department also determines the type of fisheries, the volume of business and method of fishing, the species of fish permitted to be caught, the size of the fish, the fishing implements and the fishing grounds. These conditions are attached to all fishing licenses.

Minimum mesh sizes and minimum catchable sizes for the main economic fish species have been established based on the rule of expansion and protection of the fisheries resources. For instance, the mesh size on fish trawl cod ends shall not be smaller than 2.5 inches, and 2 inches for the shrimp trawl cod ends. For the large mesh drift net, the minimum mesh size shall be 8 inches and for small mesh drift nets the size shall be 3.5 inches.

Socioeconomics

The total marine population engaged in fishing is 2 646 710 fisherfolk. They are broadly classified into two categories based on the nature of their work, as full-time and part-time fishermen. Full-time fishermen are those who have no income other than from fishing. Part-time fishermen are those who earn income from both fishing and other activities. Besides fishing, they may engage in fish processing, marketing and mending of fishing gear. As the income from fishing is seasonal and the bulk of the earning is often obtained during a few months of the years, fishermen are also involved in other activities such as agriculture and other works.

The majority of the fishermen do not own fishing vessels. Fishing vessels are owned by absentee boat owners, who take a major share of the catch. Due to the lack of surveys and of other information, the financial patterns among fishing communities are unknown. Collection of baseline information is already being made by fisheries officers in order to obtain a better understanding of the traditional fisheries system of the country.

Policy and objectives

The sectoral policies and principal objectives of the fisheries sector are

- to promote all-round development in the livestock and fisheries sector,
- to increase fish production for domestic consumption and share the surplus with neighbouring countries,
- to encourage the expansion of marine and freshwater aquaculture and
- to improve the socioeconomic status of fishing communities.

Requirements for the development of small-scale fisheries

1. Assess the potential of marine and coastal living resources including underutilized and unutilized stocks and species; develop methodologies and take measures for their conservation and sustainable use; and undertake studies on maximum sustainable yields of the various fish species.
2. Encourage research and develop long-term monitoring programmes, including databases, as well as information exchange with international conservation communities for technical and logistic support.

3. Develop and implement strategies for the sustainable use of marine living resources, taking into account the special needs and interests of small-scale artisanal fishermen, local communities and indigenous people to meet nutritional and other development needs, integrate small-scale fisheries development in marine and coastal planning taking into account their interest and, where appropriate, encourage representation of fishermen, small-scale fish workers, women, local communities and indigenous people.

In fact, the export potential of fish is still limited due to shortage of market structures, insufficient onshore facilities such as ice plants, cold storage, fishmeal and value-added fish processing plants. In order to increase fish production and export, Myanmar is building a relatively complete industrial infrastructure and systems integrating aquaculture, fishing, processing, marketing, technology, fishing port, fishing vessel dockyard, net factories, etc; thus fisheries is going to play a key role in national economic development. Myanmar is also taking international affairs seriously. Bound by the international agreements and conventions she has signed, Myanmar is responsibly fulfilling its obligations in order to fully participate in global and regional fisheries development activities.

Besides the national effort to support small-scale fisheries development, we need assistance from international fisheries-related agencies such as FAO, NACA, BOBP and SEAFDEC. Apart from the government's efforts in fisheries development, international or regional collaboration is needed in the following areas:

a. assessment of fisheries resources,
b. development of appropriate technology,
c. training of skilled manpower,
d. establishment of extension services,
e. identification and preparation of projects,
f. pilot or pioneering fishing operation and
g. funding schemes for commercial operation.

CURRENT STATUS OF SMALL-SCALE FISHERIES IN THE PHILIPPINES

Jonathan O. Dickson
Chief, Fishing Technology Division
Bureau of Fisheries and Aquatic Resources
Manila, Philippines

Introduction

Small-scale fishing is synonymous to artisanal, municipal, coastal and subsistence fishing. In the Philippines, however, we normally call it municipal fisheries.

More specifically, 'subsistence fisheries' refers to fisheries wherein fishing units catch marine products mainly for household consumption. 'Coastal fisheries' are defined as fisheries by fishing ground or area. In the Philippines, we use the range from 0 to 15 km to describe coastal fisheries. Countries differentiate their definition by water depth (SEAFDEC 2000).

Municipal fisheries is defined as small-scale fisheries with boats of less than 3 GT that are allowed to operate in Zone 1, from shoreline to 15 km, and Zone 2, from 15 km to the EEZ limit (SEAFDEC 2000). In this sub-sector, the persons involved are referred to as municipal fisherfolk who are directly or indirectly engaged in municipal fishing and other related fishing activities (BFAR 2001). These fisherfolk use *bancas* (a type of boat) with a capacity of 2-5 persons, usually without engine, and fishing gear like hook and line, gillnet and others (BFAR 1987).

By area of operation, municipal fisheries can be classified into two types, namely: marine municipal fisheries in coastal waters and inland municipal fisheries for freshwater areas such as lakes, rivers and streams.

According to the BFAR Fisheries Profile 2000, this sector has contributed 943 951 tonnes or 32.91 percent of the country's total fish production, valued at Peso32.5 billion, which is equivalent to 34 percent of the value.

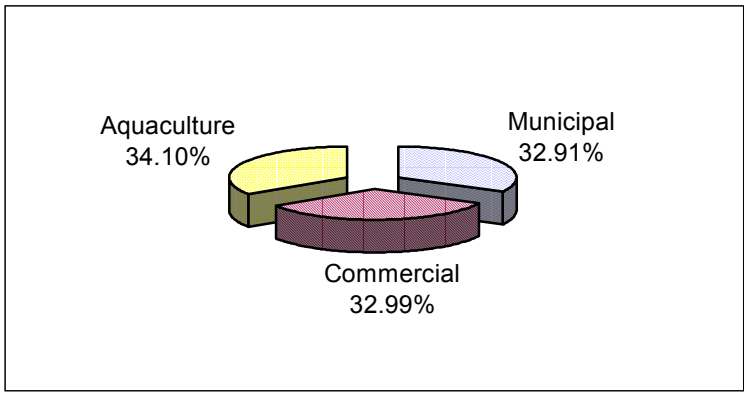


Figure 1. Fisheries production by sector, 2000

Based on the National Statistics Office 1990 Census of Population and Housing, the number of municipal fisherfolk employed totalled 374 408 or 46.40 percent of the 806 929 fisherfolk.

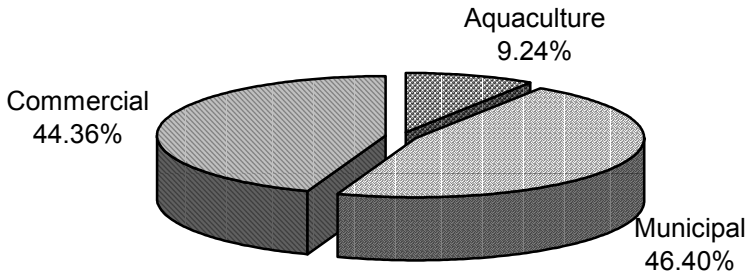


Figure 2. Fisheries employment by sector

Municipal fisheries structure

Fishing units

The municipal fishing *bancas* for the year 2000, categorized as motorized and non-motorized, totalled 177 627 and 292 180 units, respectively. The estimated fish production of these *bancas* were 289 131.84 tonnes for motorized *bancas* or 37.81 percent, and for non-motorized *bancas* 475 595.16 tonnes or 62.19 percent. (BFAR 2000)

The *bancas* used by the municipal fishermen have a relatively narrow hull, the base of which is a dugout made of tropical hardwood, and the walls are of plywood. The size ranges from 7 to 9 m in length, and if motorized, they are powered with 6 to 16 HP petrol engines. Most of them are equipped with outriggers for stabilization; those without outriggers only use sails and paddles. Small-scale fishermen also use bamboo rafts to carry their small fishing gear in shallow waters of the coast where *bancas* cannot operate. (BFAR-RFTC Project Coordinating Staff 1981)

Fishing gear

The main municipal fishing gear types in the Philippines are gillnet, hook and line, fish corral, beach seine, baby trawl, ring net, Danish seine, spear, long line, purse seine, fish pot, bag net, crab lift net, troll line, jigger, push net, round haul seine, filter net, drive-in net, lift net, fyke net, pole and line, drift filter net, cast net and others.

Fishing grounds

In 1995, there were at least 13 fishing grounds considered as major production areas for the municipal sub-sector. The top four highest producing areas were the Visayan Sea with 11.28 percent, followed by the Moro Gulf with 9.41 percent, the East Sulu Sea with 9.01 percent and the Bohol Sea with 9.10 percent (Table 1).

Table 1. Marine municipal fisheries production by main fishing grounds, 1995, BFAR Fisheries Profile 2000

Fishing ground	Total [tonnes]	% of total
Visayan Sea	88 616	11.28
Moro Gulf	73 938	9.41
East Sulu Sea	71 486	9.10
Bohol Sea	70 756	9.01
Guimaras Strait	51 332	6.54
Leyte Gulf	49 901	6.35
West Palawan Waters	46 948	5.98
South Sulu Sea	42 019	5.35
Lamon Bay	41 862	5.33
Samar Sea	40 236	5.12
Davao Gulf	33 743	4.30
Cuyo Pass	25 587	3.26
Tayabas Bay	17 498	2.23
Other	131 447	16.74
Total	785 369	100.00

Regional municipal production

In terms of production by region, Region IV contributed 257 835 tonnes or 27.31 percent, followed by Region VI with 134 227 tonnes or 14.22 percent and Region IX with 122 479 tonnes or 12.97 percent (Table 2).

Table 2. Municipal fisheries production by region, 2000 (in tonnes), BFAR Fisheries Profile, 2000

Region	Marine	Inland	Total	% of total
NCR	3 982	0	3 982	0.422
CAR	0	1 075	1 075	0.114
I	22 844	548	23 392	2.478
II	13 809	3 228	17 037	1.805
III	8 867	2 309	11 176	1.184
IV	153 004	104 831	257 835	27.314
V	73 247	556	73 803	7.819
VI	132 838	1 389	134 227	14.220
VII	47 424	58	47 482	5.030
VIII	37 199	4	37 203	3.941
IX	122 225	254	122 479	12.975
X	16 840	239	17 079	1.809
XI	47 197	922	48 119	5.098
XII	6 295	13 378	19 673	2.084
XIII	63 709	2 890	66 599	7.055
ARMM	44 344	18 446	62 790	6.652
Total	793 824	150 127	943 951	100.000

Fisheries management schemes for small-scale/municipal fisheries

The fisheries resource management project (FRMP)

FRMP is a project executed by the Department of Agriculture through the Bureau of Fisheries and Aquatic Resources and each Department of Agriculture regional office. It is co-financed by the Asian Development Bank (ADB) and the Overseas Economic Cooperation Fund of Japan (OECF) and is implemented in six years from 1999 to 2004.

The project financing comes from the loan proceeds under the ADB Loan No. 1562 PHI (SF); ADB Loan No. 1563 PHI and OECF-JBIC PH-P197. Table 3 shows the total project cost per financing agreement.

Table 3. Total project cost per financing agreement

	In original currency	Philippine Peso
Loan proceeds	ADB 1562 PHI - SDR11.022 M	P484 431 000.00
	ADB 1563 PHI - US$20.22 M	556 479 000.00
	JBIC PH-P197 - YEN2.428 M	622 017 000.00
	Total loan proceeds	**P1 662 927 000.00**
Peso counterpart	GOP	P532 249 000.00
	LGU	657 421 000.00
	Total peso counterpart	**P1 189 670 000.00**
Total		**P2 852 597 000.00**

The project is an impetus on the part of the government to shift the sector focus from increasing capture fisheries production to fisheries resource protection, conservation and sustainable management. It is a reflection of the demand of municipal fisherfolk for public assistance to protect their basic livelihood and the national and local governments' concern over poverty and environmental degradation. The objectives of the project are to:

- achieve sustainable development of the fisheries sector and
- reduce poverty among municipal fisherfolk.

The primary objective is to reverse the trend of the fisheries resource depletion in municipal waters.

The project covers 100 municipalities in 18 bays, 11 of which were formerly under the Fisheries Sector Programme (FSP), namely Calauag Bay, San Miguel Bay, Tayabas Bay, Ragay Gulf, Lagonoy Gulf, Sorsogon Bay, Carigara Bay, San Pedro Bay, Ormoc Bay, Sogod Bay, Panguil Bay and seven new gulfs and bays, namely Honda Bay, Puerto Princesa Bay, Davao Gulf, Lingayen Gulf, Gingoog Bay, Butuan Bay and Sapian Bayare.

One of the project components is the coastal resource management (CRM) planning and implementation. This will be done through an information, education and communication campaign that will be launched to elicit the participation of various stakeholder groups, especially municipal fisherfolk in CRM planning and implementation.

Key strategies under this are:

a) Resource and social assessments (RSA) which include rapid social appraisal;
b) Through the RSAs, CRM plans will be developed in the new bays and updated in the old bays after consultation among the stakeholders;
c) Guided by the CRM plans, resource rehabilitation will be implemented to include:
   - establishment of fish sanctuaries
   - mangrove reforestation and
   - management of fish stocks

Accomplishments

FRMP, in line with its approach to reach a more sustainable fisheries management strategy, has prioritized the establishment of marine protected areas and the rehabilitation of damaged habitats. To date, this project has undertaken the establishment and maintenance of 106 fish sanctuaries in 66 municipalities, the rehabilitation of 26 mangrove areas in 26 municipalities and the maintenance of the rehabilitated portion of the Irawan River in Puerto Princesa City.

The community-based coastal resource management programme (CB-CRM)

This project is one of the components under the BFAR programme in the Ginintuang Masaganang Ani. It provides technical assistance and training to coastal communities and local government for managing their coastal resources. This will assist the communities in developing coastal resource management plans through a participatory process. The main activities include: territorial delineation of the bays, control of fishing effort, law enforcement, management and conservation of marine habitats, resource and ecological assessments, community organizing and involvement of local government units.

Accomplishments

CRM activities follow plans based on scientifically gathered data. Under FRMP, RSAs in priority bays were conducted. RSAs for Lingayen Gulf, Honda Bay, Puerto Princesa Bay and Sapian Bay are being prepared for the final report. RSAs for Gingoog Bay, Butuan Bay, Davao Gulf, Ormoc Bay, San Pedro Bay and Sogod Bay are still ongoing.

Likewise, 59 percent of the project's 1063 coastal *barangays* have prepared their community action plans which serve as inputs to the municipal CRM plans. The CRM plans will include boundaries properly delineated to avoid conflict. Pilot activities have already been undertaken in Davao Gulf, Butuan Bay and Sapian Bay (BFAR-FRMP, 2001).

In terms of the implementation of integrated coastal resource management in Puerto Princesa City, a river/watershed eco-profiling project was conducted. The delineation and mapping of management areas in Honda and Puerto Princesa bays were realized. Planting of forest tree seedlings in the watershed of the Magarwak River in Honda Bay covering 20 ha was also conducted.

The designing of a comprehensive community-based fisheries laws enforcement system is being undertaken. In addition, a model municipal fisheries ordinance is being distributed for adoption through a guidebook. Patrol boats are acquired in order to improve the capability of the Bantay Dagat (law enforcement).

On the Geographic Information System, the ground verification of satellite data, i.e. a base and coastal habitat map, has been completed. The ground validation of Sapian Bay focusing on the assessment of substrate, sea grass, coral reef, mangrove forests and land use was conducted.

In terms of income diversification, FRMP continuously engaged the services of NGOs in organizing communities and fisherfolk for their more effective involvement in bays to include Carigara Bay, Butuan Bay, Gingoog Bay, Ragay Gulf, Honda Bay, Calauag Bay, Puerto Princesa Bay, Tayabas Bay, Lagonoy Gulf, Sapian Bay, San Pedro Bay, Davao Gulf, Lingayen Gulf, Panguil Bay and Sorsogon Bay. The fisherfolk organizations have acquired internal savings and at least 51 micro-enterprises have been pilot tested by a number of cooperatives and fisherfolk organizations (BFAR-FRMP, 2001).

The implementation of the CB-CRM programmes and projects involves one or a combination of the following interventions, such as technology for increased fish production, artificial reefs, mangrove reforestation, policy formulation on environmental protection and resource management, alternative livelihood development and credit support, establishment and operation of protected areas and marine sanctuaries, and institutional capability development (Pomeroy and Carlos, 1997).

*The **SEAFDEC/IDRC community fisheries resource management project***

This project is a development-oriented research project specifically for Malalison Island in Panay, which integrates biology, economics, sociology, engineering and public administration in its studies. It is a two-phase project. Phase I concentrates its activities on community organizing, institution building and introducing alternative livelihoods, i.e. seaweed farming. Phase II implements the territorial use rights in fisheries and tests the deployment of prototype concrete artificial reefs including impact assessments, institutional arrangements in fisheries co-management, ethnographic studies, economics of sea-farming techniques and management of fisheries cooperatives (Agbayani, 1997).

Fisheries administrative orders and regulations applied to small-scale fisheries

As one of the Republic Act (RA) 8550 policies, the government manages fisheries and aquatic resources in a manner consistent with the concept of an integrated coastal area management in specific natural fisheries management areas, appropriately supported by research, technical services and guidance. Thus, BFAR has issued various fisheries administrative orders (FAOs):

- FAO 201 provides the list of active gear types banned for operation in municipal waters, bays and fisheries management areas.
- FAO 202 provides guidelines on the banning of coral exploitation and exportation.
- FAO 203 is on banning of fishing by means of *muro-ami* and the like which is destructive to coral reefs and other marine habitats.
- FAO 204 is on restricting the use of super lights in Philippine waters.
- FAO 206 provides guidelines on the disposal of confiscated fish and other items in fishing with explosives and noxious or poisonous substances.
- FAO 208 regulates and implements the conservation of rare, threatened and endangered fisheries/aquatic species.

- FAO 209 provides guidelines on the production, harvesting, handling and transportation of shellfish for implementation by the local governments.
- FAO 216 provides guidelines on the obstruction to navigation in streams, rivers, lakes and bays.
- FAO 217 provides guidelines on the obstruction to defined migration paths.

Fisheries and aquatic resource management councils

Linked to the implementation of RA 8550, Sec. 68 provides for the development of fisheries and aquatic resources in municipal waters and bays by the fisherfolk and their organizations residing within the geographical jurisdiction of the *barangays*, municipalities or cities with the concerned local government units.

Sec. 69 provides for the establishment of fisheries and aquatic resource management councils (FARMCs) at the national level and in all municipalities/cities abutting municipal waters. The councils will be formed by fisherfolk's organizations/cooperatives and NGOs in the locality and be assisted by the local government units and other government entities. Consultation and orientation on the formation of the councils is also required before they are organized.

At present, there are at least 6 397 Barangay Fisheries and Aquatic Resource Management Councils (BFARMC), 876 Municipal/City Fisheries and Aquatic Resource Management Councils (M/CFARMCs) and 45 Integrated Fisheries and Aquatic Resource Management Councils (IFARMCs) organized countrywide (Table 3).

Table. 3 Number of FARMCs organized by region, BFAR, 2001, National FARMC Programme Management Centre

Region	No. of coastal *brgys*	No. of BFARMCs organized	No. of coastal municipalities/ cities	No. of M/CFARMCs organized	No. of I/FARMCs organized
CAR		2		20	1
I	378	335	53	53	1
II	179	240	25	37	1
III	223	201	37	40	1
IV	1 671	1 054	185	145	13
V	1 067	956	94	91	2
VI	771	398	83	70	9
VII	1 023	318	110	99	3
VIII	1 557	856	122	68	1
IX	605	501	61	60	2
X	292	275	44	41	5
XI	330	299	36	32	3
XII	370	210	34	27	2
XIII	582	389	65	50	-
ARMM	615	363	65	43	1
Total	**9 663**	**6397**	**1014**	**876**	**45**

RA 8550 also provides the legal framework for the role of National Fisheries and Aquatic Resource Management Councils (NFARMC), M/CFARMC and IFARMC. Fisheries Administrative Order (FAO) 196 provides the guidelines creating and implementing FARMCs. The creation of a FARMC will institutionalize the major participation of the fisherfolk and other resource users in the planning and formulation of policies and programmes for the management, conservation, protection and sustainable development of fisheries and aquatic resources.

The NFARMC functions are 1) assisting in the formulation of national policies for the protection, sustainable development and management of fisheries and aquatic resources for the approval of the Secretary; 2) assisting the fisheries department in the preparation of the National Fisheries and Industry Development Plan.

On the other hand, BFARMCs and LFARMCs will serve in an advisory capacity to the local government units, whereas the M/CFARMCs exercise functions such as assisting in the preparation of the municipal fisheries development plan and submit this plan to the Municipal Development Council, recommend the enactment of municipal fisheries ordinances to the *sangguniang bayan* or *sangguniang panlungsod* through its committee on fisheries, assist in the enforcement of fisheries laws, rules and regulations in municipal waters and advise the *sangguniang bayan* or *panlungsod* on fisheries matters through its committee on fisheries, if such has been organized.

The IFARMC functions are as follows:

- assist in the preparation of the Integrated Fisheries Development Plan and submit the plan to the concerned municipal development councils;
- recommend the enactment of integrated fisheries ordinances to the concerned *sangguniang bayan* or *panlungsod* through its committee on fisheries, if such has been organized;
- assist in the enforcement of fisheries laws, rules and regulations in concerned municipal waters; advise the concerned sangguniang bayan or panlungsod on fisheries matters through its committee on fisheries, if such has been organized.

In addition, Executive Order (EO) No. 240 was initially the offshoot of the creation of FARMCs in *barangays*, cities and municipalities. Its implementing guidelines elaborate the function of the FARMCs. Its framework seeks the enhancement of their empowerment through meaningful participation in the management, development and protection of fisheries and aquatic resources for sustainable production. This executive order enumerates the primary functions such as in the preparation and advisory role in fisheries and aquatic resource management policies and plans for integration into the local development plan. It also provides the local government units and special agencies with guidelines including the evaluation of all projects and applications. These guidelines concern the development and implementation of projects and issuance of permits and licenses for the appropriate use of the resources and to ensure that resource use limits and controls are imposed.

Joint Administrative Order No. 2, which implements the rules and regulations of EO 240 issued by the departments of Agriculture (DA), Environment and Natural Resources (DENR), Interior and Local Government (DILG) and Justice (DOJ), provided the specific powers and functions under sections 11, 14, 17 and 20. In addition, Joint Administrative Order No. 3, known as the "Implementing Guidelines on the Granting of Preferential Treatment to Small Fisherfolk relative to the 15-Km Municipal Waters", specified the functions of MFARMC.

These guidelines will determine a definite zone or zones within municipal waters. A registry of municipal fisherfolk and their organization will also be maintained. The FARMCs existing or those to be organized adopt the structural framework illustrated in Figure 3.

FARMCs have carried out significant activities relative to their functions. At the national level, they have organized forums, conferences and workshops to deliberate and review the various fisheries administrative orders. Besides, the councils continuously strengthen the current mechanism addressing specific fisheries issues affecting the small-scale fisherfolk. The formulation of a national FARMC programme of key strategic thrusts has been undertaken.

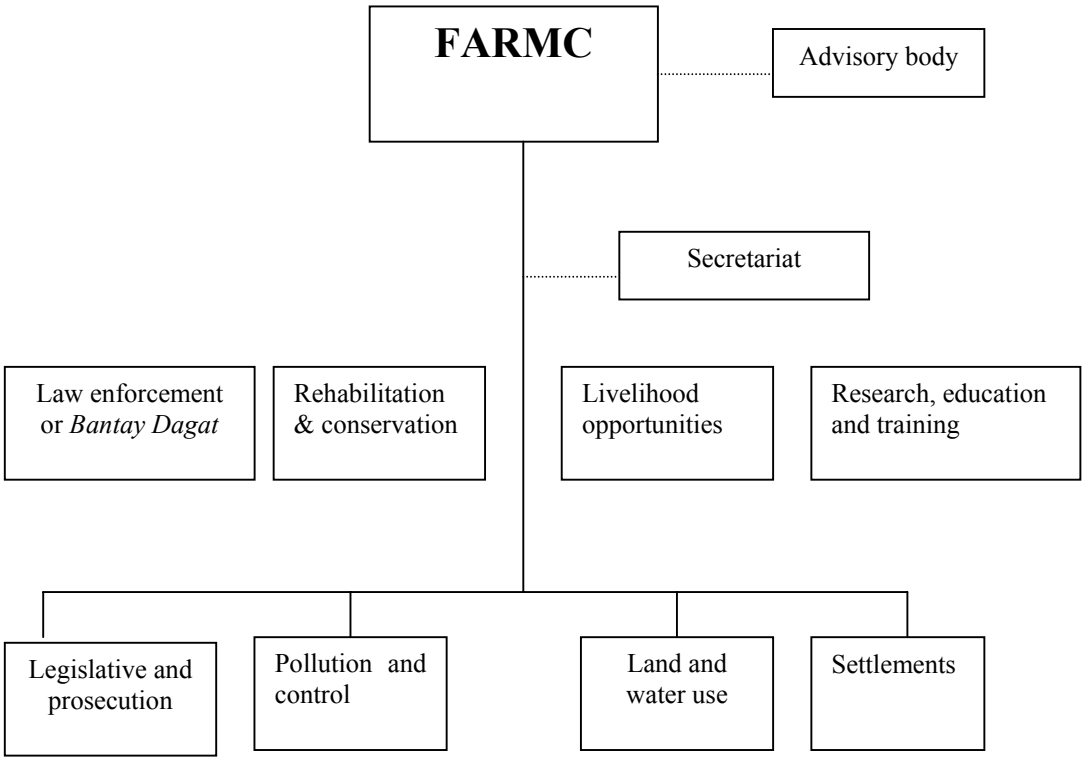


Figure 3. Structural framework of the Fisheries and Aquatic Resource Management Council (FARMC)

The FARMC secretariat was pledged to be revitalized to serve as the link between local fisherfolk, the bureaucracy and the FARMC leadership. In addition, activities are being organized such as the formulation of an effective management scheme for the fisherfolk mariculture parks project and fisherfolk-BFAR-PNP project on networking coastal communities for fisheries laws enforcement, the Coastal Information Network. The signing of a memorandum of agreement for an effective surveillance and community-based law enforcement programme has been accomplished. The government, through the DA Secretary, has vowed to ensure the broad and meaningful participation of the fisherfolk sector in the execution of RA 8435 and RA 8550.

Republic Act (RA) 7160, also known as the Local Government Code of 1991, had made some structural changes in terms of the devolution of functions related to the transfer of basic

services and technology to the fishing communities. This code intends to give greater autonomy to local government units in the management of their aquatic resources.

In relation to this, a memorandum of agreement between DA and DILG would authorize the devolution of fisheries regulatory functions within municipal waters. The jurisdiction over the municipal waters has been transferred to the local government units concerned. The functions include the following:

- Enforcement of fisheries laws in municipal waters including the conservation of mangroves [Section 17 (b), (2), (i)];
- Issuance of licenses for the operation of fishing vessels of three tons or less [Section 149, (b), (3)];
- Granting of fisheries privileges to erect fish corrals, oyster, mussel or other aquatic beds or *bangus* fry areas [Section 149, (b), (1)];
- Granting privileges to gather or catch *bangus* fry, prawn fry or fry of other species of fish [Section 149, (b), (2)];
- Enactment of the ordinance penalizing the use of explosive, obnoxious or poisonous substances, electricity, *muro-ami* and other deleterious methods of fishing. The *sangguniang bayan* concerned shall also have the authority to prosecute any violation of the provisions of applicable fisheries laws [Section 149, (b), (3)];
- Protection of the marine environment and imposition of appropriate penalties for acts which endanger the environment such as dynamite fishing and other activities which result in pollution or ecological imbalance [Section 447, (a), (1),(vi)];
- Authorization of the establishment and operation of ferries, wharves and other structures. Also included are marine and seashore activities intended to accelerate productivity [Section 447, (a), (5), (iii)];
- Regulation of the preparation and sale of fish for public consumption [Section 447, (a), (5), (iv)]; and
- Approval of measures and adoption of quarantine regulations to prevent the introduction and spread of diseases [Section 447, (a), (5) (xii)]

The other functions, which were devolved and had caused the exercise of general supervision of local government units are:

- Issuance of permits to construct fish cages within municipal waters
- Issuance of permits to gather aquarium fishes within municipal waters
- Issuance of permits to gather *kapis* shells within municipal waters
- Issuance of permits to establish seaweed farms within municipal waters
- Issuance of licenses to establish culture pearls within municipal waters
- Issuance of auxiliary invoice to transport fish and fisheries products, and
- Establishment of closed season in municipal waters

Section 3 (f) indicated that local government units might group themselves, consolidate or coordinate their efforts, services and resources for purposes commonly beneficial to them. "The local government units shall share with the national government the responsibility in the management and maintenance of ecological balance within their territorial jurisdiction, subject to the provisions of RA7160 and national policies."

Section 17 on the Basic Services and Facilities: "local government units shall endeavour to be self reliant and shall continue exercising the powers and discharging the duties and functions currently vested upon them. They shall exercise other powers and discharge such other

functions and responsibilities as are necessary, appropriate or incidental to the efficient and effective provision of the basic services enumerated such as 1) agricultural support services, infrastructure facilities and maintenance of *barangay* roads and water supply systems as well as satellite or public market; 2) extension and onsite research services and facilities related to agriculture and fisheries activities; and 3) assistance in the organization of farmers' and fishermen's cooperatives and other collective organizations as well as transfer of appropriate technology".

Under Section 447 (a) (1) (vi), "the *sangguniang bayan* shall enact ordinances, approved resolutions and appropriate funds for the general welfare of the municipality and its inhabitants and in accordance the local government unit shall protect the environment and impose appropriate penalties for acts which endanger the environment such as dynamite fishing and other forms of destructive fishing … and smuggling of natural resource products and endangered species of flora and fauna, and …. such other activities which result in pollution, acceleration of eutrophication of rivers and lakes or of ecological imbalance".

Under Section 458 (a) (1) (vi), "the *sangguniang panglungsod* shall enact ordinances, approved resolutions and appropriate funds for the general welfare of the municipality and its inhabitants and in accordance the local government unit shall protect the environment and impose appropriate penalties for acts which endanger the environment such as dynamite fishing and other forms of destructive fishing … and smuggling of natural resource products and endangered species of flora and fauna, and such other activities which results in pollution, acceleration of eutrophication of rivers and lakes or of ecological imbalance".

Under Section 465 (a) (3) (v), "the provincial governor shall adopt measures to safeguard and conserve … marine, forest and other resources of the province, in coordination with the mayors of component cities and municipalities … protect the funds, credit and other properties of the provinces thereof".

Under Section 468, (a) (1) (vi), "the *sangguniang panlalawigan* shall approve ordinances and pass resolutions necessary for an efficient and effective provincial government and in this connection shall protect the environment and impose appropriate penalties for acts which endanger the environment such as dynamite fishing and other forms of destructive fishing … and smuggling of natural resource products and endangered species of flora and fauna, and …. such other activities which results in pollution, acceleration of eutrophication of rivers and lakes or of ecological imbalance".

Problems of the small-scale fisheries industry (FIRM and DAP 1987)

The problems and needs of the municipal fisheries industry are classified into industrial, socioeconomic, political and institutional.

1. **Industrial**
   - low fish production
   - underutilization of fisheries resources
   - mal exploitation of some fishing grounds
   - proliferation of illegal fishing
   - lack of ice plants and cold storage facilities
   - lack of effective organizational and extension machinery

- dearth of integrated research systems
- poor delivery and dissemination of technological packages
- ineffective promotion and implementation of fishing industry financing programmes

2. **Socioeconomic**
   - inequities in access to resources, opportunities and sources

3. **Political**
   - unequal, inadequate and poor delivery of government services
   - mal intervention of local officials especially during site selection, endorsement and implementation of a fisheries project
   - poor peace and order situation

4. **Institutional**
   - poor accessibility to institutional e.g. technical, extension, information and financial support

Furthermore, a study conducted by the BFAR RFTC project coordinating staff in 1981 had identified some major constraints in small-scale fisheries industry as follows: a) dearth of trained manpower; b) few fish markets; c) dynamite fishing; d) poaching by alien fishermen; e) competition from commercial fishing boats; f) increasing fuel costs and g) lack of mechanization.

Solutions to these constraints (FIRM and DAP 1987)

To address these problems, the following measures may be considered:

1. **Industrial**
   - Introduction of new and modern fishing gear and technology
   - Promotion of fish conservation measures and proper resource utilization by adopting the concept of maximum sustainable yield
   - Support for fisheries infrastructure projects such as ice plants, fish storage and transport facilities, ports, wharves and markets
   - Development of an effective organizational extension machinery
   - Sustaining and strengthening research and development and extension services
   - Development of a more effective information and technological transfer system
   - Development and installation of a more effective warden system
   - Development of effective financing programmes
   - Strengthening rural credit systems
   - Identification, prioritization and solution of fisheries-related problems

2. **Socioeconomic**
   - Empowerment of the people through community organizations for more effective implementation of socioeconomic projects
   - Participation of subsistence fishermen in designing policies, strategies and programmes involving them
   - Promotion of fisheries-related alternative income-generating projects e.g. net making, boat building, engine repair and maintenance and salt making

- Development of an insurance programme to benefit the small-scale fishermen and their families

3. Political

- Development of a more effective delivery of government services to small-scale fishermen through proper decentralization of government efforts
- Increase government support for fisheries research and extension
- Limited and proper intervention of local officials in the project
- Promotion of peace and order

4. Institutional

- Carry out institutional reforms to democratize access by the sustenance fishermen to services, resources and opportunities
- Check the duplication of functions and fragmented efforts towards fisheries development by synchronization/integration of service delivery of all line agencies

Future development of a decentralized small-scale fisheries management scheme

A decentralized system of management of coastal resources has long been acclaimed. The local governments and resource users were appraised to become part and parcel of the development and sustenance of community-based management and co-management projects and programmes. It is recognized that the early and continuing involvement of project beneficiaries is one of the factors that contribute to the success of the project development, implementation and evaluation. (Pomeroy et al. 1996)

Pomeroy et al. (1996) noted in an impact evaluation study that future CBCRM projects should be build on the existing occupational multiplicity of most fishermen and fishing households. These interventions are more likely to be sustainable since they would fit into the successful adaptive strategy of occupational multiplicity. Community organizing and consensus building are also encouraged. But such a strategy may experience difficulties, especially where the people in the community have no history of collective action.

Support from government through legislation, funding and enforcement is necessary to sustain such interventions. In most instances, local initiatives require collaboration with government to enforce user rights. It is crucial to continue the capability-building efforts from various sectors to enhance empowerment and a sense of reliance among municipal fishermen. The schemes must not only cover a short range but consider the long-term impact of conservation measures for the overall benefit of the users of municipal waters.

SMALL-SCALE FISHERIES MANAGEMENT IN THAILAND

Jate Pimoljinda
Andaman Sea Fisheries Development Centre
Department of Fisheries, Phuket, Thailand

Current status of small-scale fisheries in Thailand

Marine fisheries in Thailand have developed rapidly with the introduction of otter board trawling in Thai waters in 1960. As a result, the coastal marine fisheries resources have been overexploited. At present trawlers encroach the protected areas within 3 km of the shoreline and illegally enter bays for fishing. This results in the destruction of coastal resources and habitats and creates conflicts with small-scale fishermen who have the exclusive right for fishing in these areas. For their survival, these fishermen, who normally fish with artisanal fishing gear for household consumption and to earn some additional money, have to improve their gear to catch more fish to compete with those trawlers that encroach on the prohibited areas. The typical small-scale fishing boat, the long-tailed boat, that used to be a non-powered boat in the past, has been modified by installing an engine to enable it to fish further offshore. The competition for fisheries resources among the different groups of fishermen further increases the degradation of coastal fisheries resources.

Marine fisheries in Thailand is done mostly in coastal waters of the 378 000 km^2 of both the Gulf of Thailand and the Andaman Sea coast. Based on the Marine Fisheries Census 1995, the majority of the 47 620 fishing households are small-scale households and only 5 492 or about 10 percent of them are involved in commercial fisheries. Fisheries in coastal areas are characterized as follows:

- Artisanal fishing gear refers to non-powered, outboard-powered and inboard-powered boats of less than 10 gross tonnage with gillnets, traps, set bag nets, push nets, lift nets, hooks and lines, etc.
- Commercial fishing gear consists of trawlers, otter beam trawl, purse seines, surrounding nets, etc, using inboard-powered boats of more than 10 gross tonnage.

The employment of new fishing gear as well as the development of more efficient gear in combination with the constantly increasing number of boats in the Gulf of Thailand and along the Andaman Sea coast have resulted in gradually decreasing catches and have led to overexploitation. To address this problem more research work has to be conducted and law enforcement has to be strengthened. However, due to the limitations in patrolling facilities, manpower and budget, effective monitoring, control and surveillance cannot be achieved and stress remains on the small-scale fisherfolk.

There are 54 538 fishing boats along the coasts of Thailand, both in the Gulf and on the Andaman Sea. These are classified according to the type of fishing gear (from the 1995 Marine Fisheries Census):

- 7 226 trawl nets including otter board trawl, pair trawl and beam trawl.
- 1 288 surrounding nets including anchovy purse seine, Thai purse seine, luring purse seine, mackerel purse seine, bonito purse seine, rocky fish surrounding net and Chinese purse seine.
- 25 946 gillnets including those for king mackerel, mackerel, mullet, whiting, crab and shrimp, trammel net, mackerel encircling gillnet and other gillnets.

- 6 375 traps including fish trap, squid trap, shrimp trap, crab trap, small grouper trap and other traps.
- 2 202 lift nets including anchovy stick-held lift net, black pomfret lift net, crab portable lift net, acetes dip net, fish lift net and other lift nets.
- 2 624 falling nets including squid falling net, anchovy stick-held box net and other cast nets.
- 3 591 push nets of all kinds.
- 5 286 other small scale/artisanal fishing gear including beach seine, clam dredge, bamboo stake trap, set bag net, hook and line and miscellaneous.

In the Thai fisheries laws and regulations do not allow trawling and push netting within 3 km from the shoreline as well as in areas such as the Phang-nga Bay where such activities are specifically prohibited. But in reality, trawlers and push nets have been encroaching into the prohibited areas, thus creating more stress for small-scale fisherfolk.

Experiences in implementing small-scale fisheries management schemes

In the past, small-scale fisheries were subsistence fisheries in the coastal communities using simple fishing gear that does not harm the resources and environment. Today, due to the rapid development of commercial fisheries with modern and effective fishing gear, the marine resources have been depleted and overexploited.

Commercial fishing boats shifted to fish beyond the line 3 km off the shore, but they still fish inside this area and in restricted bays, particularly trawlers. The destruction of undersized aquatic animals and of spawning and nursery grounds in these areas has widened the conflict between the small-scale and commercial fisherfolk.

The Department of Fisheries has addressed this problem through a small-scale fisheries development project launched in the early 1990s. The project aimed to provide essential infrastructure along the coast such as landing sites, piers, freshwater stocking tanks, gear-repairing shelter, etc. To enhance the livelihood of fisherfolk, cages and fish fry were provided and the fishermen were given training courses on gear repairing, boat engine maintenance, fish cage culture methods and fish processing. Artificial reef installations were built to protect nearshore areas for the exclusive use of small-scale fishermen.

There were ministerial regulations on the prohibition of trawlers and push netters to operate within 3000 m from the shoreline throughout the country, as well as in some specific areas. The ministerial regulation issued on 14 December 1998 prohibits every kind of trawler and bag net with motorized boat to fish in the Phang-Nga Bay; the ministerial regulation issued on 11 April 1985 prohibits every kind and every size of trawler, enclosed net and gillnet with a mesh size of less than 4.7 cm to fish in the Phang-Nga Bay and the Krabi area during closed season from 15 April to 15 June, etc. To strengthen these regulations, the Department of Fisheries has established a Fisheries Patrolling Section equipped with patrol boats to conduct monitoring, control and surveillance of illegal fishing along the coast. However, due to the limitations in budget and manpower, efficient enforcement of the law could not be effected. Violations are still detected at present and more than 750 cases are reported every year.

The majority of the small-scale fisherfolk live in poverty and they are stuck with indigenous fishing methods just to feed their families. To change their attitude or to introduce new fishing technologies is rather difficult unless they are proven to be useful, which needs a lot of time.

Solutions to overcome constraints in small-scale fisheries management

The experience gained from the small-scale fisheries development project was that the strategy used in the past was a top-down approach and that the fishermen never understood the objectives of such projects and their process of implementation. In order to achieve better results in the new project, the bottom-up approach was used. The project was implemented in collaboration with FAO/BOBP during 1996-2000. The Phang-nga Bay was selected as the pilot area. The objectives of the project were clarified and the confidence of the fisherfolk in the fisheries officers was gained before the project started. The project activities included the following:

- **Management of mangrove resources**: Campaign on conservation and protection of mangroves in the target area was initiated by fisherfolk under the supervision of fisheries department officers by installing notice boards "Do not cut the mangrove trees" in mangrove areas. Apart from conservation campaigns, mangrove reforestation and community forest activities have also been performed in these areas.
- **Management of sea-grass resources**: There are several areas in the Phang-nga Bay that used to be sea-grass beds but many of them were destroyed by human activities such as fishing operations or by pollution. Sea-grass transplantation that was conducted in some areas showed good results with the subsequent appearance of other commercially important aquatic animals in the sea-grass beds.
- **Campaign on releasing gravid female blue swimming crab**: A large number of gravid females of the blue swimming crab species were sold daily in local markets. To prevent overexploitation of this crab, a campaign releasing the fry of gravid female crabs was initiated. Two sets of cages 2x2x2 m were distributed to the fishing communities in the target area. The gravid female crabs caught were stocked in the cages until they spawned and were then sold. The money obtained from selling these crabs was kept as a revolving fund for the group. With this method, some communities have increased their revolving funds. In addition to the money earned from selling crabs, each member of the fishing group agreed to provide monthly contributions. Every fisherman is obliged to hold at least 3 stocks costing Bath 20 each. At present the revolving funds of the fishing groups amount to more than B100 000.
- **Sea ranching activity**: the fisheries department provided seeds of shrimp or fish or crab which were released in the natural waters particularly in areas in front of fishing villages, with the participation of the fisherfolk. This activity aimed to promote a sense of ownership and responsible fishing behaviour within the fishing communities for their fisheries resources and the aquatic environment in coastal waters.
- **Extension of coastal aquaculture**: To encourage aquaculture, particularly cage culture of sea bass and red snapper, fish fry was provided. The fishermen prepared and paid for the cages and feed. This activity supplemented their income.
- **Grouping and training**: This activity aims to form and strengthen groups within the fishing communities. The members of the fishing communities were divided into two main groups, the fishermen's group and the students' group. The fishermen's group received training on conservation measures, gear and boat-engine repair as well as lectures on fisheries laws and regulations and culture techniques. The students' group received training on conservation of aquatic resources, which is included in the

curriculum of the schools to build awareness about the need to protect the aquatic environment.

- **Establishment of information centres**: Some communities established information centres by modifying some disused building. These centres store all information by way of newspapers, posters, announcements and other kinds of media. They are also used for other purposes, i.e. as meeting place, reading place, etc.
- **Determination of conservation zones**: The initiative to determine conservation zones came from the fisherfolk. After the project had been implemented for a period of time, fishermen's groups asked for buoys to mark areas for the conservation of aquatic habitats and also requested a notice board to warn against fishing operations in these areas.
- **Surveillance measures**: To protect their fishing grounds from illegal or destructive fishing, the fishermen have grouped themselves and requested the governor of Phang-nga province to designate or appoint them as "Volunteers to protect the aquatic resources in the bay of Phang-nga". Monitoring, control and surveillance was conducted continuously at night with the competent authority, i.e. the police force, and this activity is still continuing.
- **Fishing gear replacement**: As mentioned earlier, push net is one of the most destructive fishing gear types in the area. To protect the interests of small-scale fishermen this gear had to be banned. When complaints became serious, some push net operators agreed to use other types of fishing gear, subsidized by the fisheries department. At present, no more push nets can be found in the target villages. Since the coastal resources in Thailand are considered common property, the banning of push nets cannot be done in the target villages only. It has to be implemented all over the bay of Phang-nga, otherwise the objectives of the project will not be achieved. Due to budgetary limitations, this activity has proceeded rather slowly and with limited scope.
- **Strategy on persuading large-scale fishermen to participate in coastal resources management**: The representative of the Fisheries Association of Phuket, which represents the trawl boat owners, whose operations are particularly destructive, has been frequently invited to attend the bimonthly meeting of the fisherfolk in the target area. The intention was to close the Phang-nga Bay to trawling and to develop a better understanding of the hardships of small-scale fishermen. Finally the chairman of the association was convinced and persuaded the commercial fishing boat operators and owners of fisheries-related businesses to donate money for the construction of artificial reefs at the entrance of the Phang-nga Bay. One of the main functions of these artificial reefs was to prevent trawlers from entering the bay. Some B2 600 000 was donated and artificial reefs were installed on 15 May 1998.
- **Establishment of a community fish market**: Traditionally fisherfolk sold their catch to middlemen and the middlemen dictated the prices. After the implementation of the project, the idea of establishing local fish markets was presented by a group of fishermen. The intention was to develop a fish market in their community, so that there would be no need to sell fish to the middlemen. All catches were sent to the market and auctioned off. This system provided better benefits to the fishermen and became the main requirement for many fishing communities along the bay.

The results of the community-based fisheries management project implemented in the Phang-nga Bay showed that the described activities and approaches helped to move in the right and appropriate direction for fisheries management. However, as it was a pilot project, many details of the activities needed improvement or modification to achieve a better outcome in

the future as well as clearly defined authority to facilitate the implementation of all these measures.

Future development of a decentralized small-scale fisheries management scheme

For the decentralization of authority to the local level, the government has to pay more attention to the functions and responsibilities to be decentralized in order to increase the effectiveness of decentralized small-scale fisheries management. But the process should be conducted with the clear understanding and full acceptance of the communities involved. The successful implementation of the community-based fisheries management project in the Phang-nga Bay provides a good example. This project paved the way for the local government level and the communities to be ready to cover functions and responsibilities given in the decentralization process. The new Thai Fisheries Act has been revised and is being amended. The content of this new act involves communities, the local government level and other stakeholders with an interest in the harvest, use and protection of aquatic resources in the decision-making process. The communities will receive rights to harvest aquatic resources within designated community fisheries areas and will be given the authority to implement measures related to aquatic resource management within these areas.

Conclusion and recommendation

Coastal states have to pay more attention to coastal fisheries management. In the past, national policies emphasized the development of fishing technologies. They must now move towards management of coastal resources for sustainable utilization. The policy whereby the central government keeps all authority and responsibilities will lose its effectiveness in the future. Decentralization will be an effective strategy for the management of coastal aquatic resources that could solve some problems in the fisheries sector. But the process of decentralization is complicated and delicate and has to be conducted step by step in suitable selected areas. Three main points have to be taken into consideration:

- Once all stakeholders, in particular the agencies concerned and the fishing communities, are ready to accept and participate in the process, the national policy and an appropriate legal framework to support the process have to be established.
- The capacity of the local institutions, financial provisions and human resources, which are the key issues to meet successful implementation, should be well prepared and sufficient.
- In particular enforcement of laws and regulations should be strengthened to control illegal fishing operations of fishermen from other unselected fishing communities.

SMALL-SCALE FISHERIES MANAGEMENT IN VIET NAM

Nguyen Long
Deputy Director, Research Institute of Marine Products
Haiphong, Viet Nam

Current status of small-scale fisheries management in Viet Nam

In the last two decades the number of fishing boats and the total engine power have increased continuously. During 1980-2000 the number of fishing boats increased from 28 021 to 75 928; the total engine power increased from 553 915 HP to 3 185 558 HP, a total increase of 5.75 times. Boats with engines of less than 90 HP made up 84 percent of all mechanized boats in 2000. This shows that fisheries in Viet Nam in general are small scale. The larger part of the marine catch comes from coastal fleets; most fishing activities take place in near-shore waters, resulting in high fishing pressure on the coastal zones. Viet Nam's coastal areas are overfished; 82.1 percent of the total marine catch comes from waters with less than 50-m depth.

Quite a number of small fishing boats are active in coastal waters. Corresponding to the increased number of fishing boats and the volume of catch, the coastal resources are declining. In 1985, the average catch per horsepower was 1.11 ton/HP but in 2000 it was only 0.45 ton/HP, or 41 percent of the 1985 figure. With a lower percentage of commercial fish, a higher percentage of trash fish in the catch and the smaller size of fish caught, the income per fishing trip is decreasing.

Some 2 300 boats are added to the coastal fleets every year.

Coastal fishing pressure is increasingly threatening and possibly depleting the coastal aquatic resources. The economic efficiency of fishing activities in coastal waters is declining; the income per horsepower is dropping. To cover costs, fishing boats have to raise their fishing effort in many ways, such as increasing the hauling number of gear operations per fishing day, increasing the number of fishing days, reducing the mesh size, strengthening the light power to increase catches, and even fishing in forbidden areas or using harmful fishing gear or techniques. Such competition is threatening the coastal resources.

The number of people employed in the fisheries sector has increased in recent years. From 1990 to 2000, this number increased by 99.5 percent, from 270 587 to 540 000, with an average annual increase of 7.2 percent.

According to 1995 statistics, there were about 420 000 people involved in capture fisheries, 86 percent of them men and 14 percent women. Female workers are often involved in trading products at markets, in small-scale processing, making nets, repairing gear, etc. Of the total, 91 percent were working in private businesses, 8.6 percent in cooperatives and only 0.43 percent in state-owned enterprises. Of the total involved in capture fisheries, 73 percent were small-scale fishermen and 27 percent offshore fishermen.

The educational level in the fishing communities is low: 68 percent did not finish primary school, more than 20 percent did not finish secondary school, about 10 percent graduated

from secondary schools and only 0.65 percent had certificates or diplomas from vocational schools or universities.

This very complicated socioeconomic situation in coastal fisheries will bear on any strategy for fisheries development in the future.

Experiences in implementing small-scale fisheries management schemes

Legal adjustment and legal instrument

The state has promulgated a legislative framework including laws and regulations for fisheries management in all fields: marine fishing, fisheries environment and resources. The main features are:

- A government decree on the management of fishing activities of people and means from foreign countries inside Vietnamese waters.
- A directive of the prime minister banning the use of explosives, electricity and poisons in fishing.
- A state law protecting and developing aquatic resources issued by the State Committee in 1989 and revised in 1996.
- A 1989 law of the State Committee and a 1990 decree of the Council of Ministers on the protection and development of aquatic resources.
- A decision of the minister of Fisheries on the passing of a regulation for the exploitation and management of marine resources in key fishing grounds in 1993.
- A decision of the minister of Fisheries on the passing of a regulation organizing and protecting aquatic resources.
- The Fisheries laws being made by the Ministry of Fisheries.
- The structure of the fisheries management system and fisheries institutions at national, provincial, district and commune levels.

The fisheries management system is structured as follows: Ministry of Fisheries; provincial fisheries departments; district fisheries divisions (or agriculture and rural development divisions); commune fisheries divisions.

The function of controlling and checking all fishing activities is assigned to the Fisheries Conservation Department of the Ministry of Fisheries and its branches in the provinces. Every provincial fisheries conservation department has patrol boats and staff to control fishing activities within the provincial coastal waters. The legislative base of the controlling task is in accordance with the relevant legal stipulations, decrees and circular letters promulgated by the government.

The controlling activities are concentrated on stopping illegal fishing activities such as fishing with explosives, electricity or poison and on limiting the use of harmful fishing gear and the use of strong lights for fishing. However, the provincial fisheries conservation departments are not able to enforce effectively community management, so the effects of the controlling-checking task are limited.

Constraints in implementing small-scale fisheries management schemes

Although the government has put forward many supportive policies and huge investments for fisheries development programmes, there are still problems to be solved:

- Uncontrolled number of fishing boats: As mentioned above, the total catch from marine waters less than 50 m deep in 1998 was 928 272 tons, exceeding the total allowable catch 1.59 times. The number of small fishing boats active in coastal waters keeps increasing, causing higher pressure on the resources. On average, 22 500 people enter marine fisheries every year. These people are poor, unable to invest in big fishing boats for offshore fishing and do not see alternative ways of earning a living. The Ministry of Fisheries has oriented its strategy towards the reduction of the number of fishing boats, which should limit the building of small boats. However, this is a complicated socioeconomic matter and there have been no solutions for it until now.

- It is necessary to have effective management measures to limit the use of harmful fishing gear and fishing techniques. The violation of the resource conservation regulations of the Ministry of Fisheries by using harmful fishing gear and fishing techniques is very common in many sea areas. To solve this problem, it is necessary not only to reinforce controlling and checking measures but also to apply management measures taking into account the socioeconomic aspects. It is necessary to develop a community management regime, as enforcement of conservation regulations and responsible fishing can only be done well if the fishermen understand and benefit from them.

- Mismanagement of the allowable quantity of catches in coastal waters and forbidden areas: There is a lack of efficient statistics for fisheries. Statistical data on the number of fishing boats by horsepower group and by fishing gear, catches by fishing gear and by key species have not been reliable and adequate enough for fisheries management. Besides, the number of fishing boats grows continuously and the percentage of small fishing boats is very high. Those fishing boats often move freely from one place to another causing an underestimation of the catch. The establishment of temporary closed areas has not been enforced.

- The division of fishing areas by distance to the shore, as applied to fishing boats by horsepower group and to different fishing gear, is still a concern. Big fishing boats of 200-300 HP or even 450 HP still commonly fish in waters of 15/25-m depth, affecting the coastal resources. In fact, there have been no laws to limit this fishing. In some countries boat categories for each fishing area are clearly defined. Viet Nam should also have clear policies and regulations to establish fishing areas for every category of fishing boat so that the above situation can be contained.

- Environment pollution: Oil sludge and waste of fishing boats being let out into the sea are a common problem in many fishing villages in Viet Nam. Many fishing villages do not have a sanitary system, all the wastes are let out to the beach often where fish are landed, affecting to the quality of the food.

Lessons learned

From results obtained and existing difficulties after implementing the policy of small-scale management, the following lessons were learned:

- There is a need to control the number of fishing boats in every sea region to match the actual condition of resources and actual status of the fishing fleets in each sea region. Coastal waters are currently overexploited; the number of fishing boats active in those areas should be reduced and the number of fishing boats active further offshore should be increased. The question of how many small fishing boats should be taken out of fisheries and how many big boats should be built still lacks answers based on scientific evidence. To develop fisheries in a sustainable way, it is necessary to study and define the right number of fishing boats by legal fishing gear in every sea region based on scientific evidence for the actual resources condition, the actual fishing fleets in every place and taking into account the economic efficiency of these fishing fleets. To do this will avoid overinvestment and overexploitation and assure the sustainable development of the fisheries sector.

- The development of offshore fisheries should go together with the cutting down of fishing pressure in coastal waters. In recent years, the government has provided support for fishermen in coastal provinces to increase offshore fisheries. However, the number of small fishing boats active near shore is still increasing. Although government units at different levels and in different sectors are aware of this matter, no policies, programmes or actions have been taken to solve this. To develop offshore fishing and to limit the exploitation in coastal waters are closely related. It is impossible to develop offshore fishing if coastal resources are being overexploited, so there must be solutions for both problems at the same time.

- The policy for management of small-scale fisheries must always link closely with resolving the socioeconomic problems of fishing communities.

Solutions to overcome constraints in small-scale fisheries management

- To adjust the structure of the fishing gear system and fishing capacity in every sea region: Scientific research is needed urgently on the actual resources, the current fishing capacity and the socioeconomic situation to define the structure of a proper gear system in every sea region. To define the structure of a proper gear system is to define the number of fishing boats, by horsepower group, by legal gear and by sea region to develop fisheries in a sustainable way. It is also necessary to have negotiations between coastal provinces of the same region to allocate the allowable number of fishing boats in each province, to standardize fisheries management and to avoid competition in fishing.

- To decide concrete policies and measures to reduce the number of fishing boats active near shore: Though they are aware that the number of small fishing boats has to be reduced, it is still very hard for fisheries managers to do so, as this bears on the lives of millions of people in fishing communities. The government is financially unable to purchase fishing boats from fishermen to reduce the number of fishing boats like other countries have done. A possible solution is for the government on the one hand to set up a coastal fishing pressure decreasing programme forbidding the construction of

small-size fishing boats and unplanned recruitment of fishing boats into coastal fisheries, and on the other hand to create good conditions for alternative livelihood programmes in areas such as aquaculture, processing or tourism.

- To apply the guidelines on responsible fishing published by FAO and the regional guidelines for responsible fisheries in Southeast Asia in accordance with actual fisheries reality in Viet Nam, i.e.
    - to apply resources conservation measures, use artificial reefs, establish conservation areas and establish fish sanctuaries;
    - to ban harmful fishing gear and fishing techniques;
    - to indoctrinate and guide fishermen to consciously execute resource conservation regulations through the community management model; and
    - to take concrete measures for marine environment management and protection.

- To implement a community management model and assign coastal waters to coastal fishing communities for management. Such a model is a very new issue in Viet Nam. It is necessary to learn about its operating mechanisms, design a Vietnamese model, and apply it in a pilot area to draw experience from it. The matter of assigning the right to use coastal water areas for the management of coastal fishing communities needs to be considered right away. This is a complex matter but it is necessary to address it to ensure that the coastal waters (the scope of how many miles away from shore is to be considered later) will be better managed and protected and to avoid irrational competition in fishing.

- To set up a statistical system throughout the country: To have a base for research, planning, management and direction for fisheries resource conservation tasks as well as economy development plans for the fisheries sector, it is necessary to set up a statistical system for the whole country. Up to now, fisheries statistics in Viet Nam are very poor, current data are neither comprehensive nor reliable enough to meet the requirements.

- The division of fishing areas according to the distance to the shore for fishing boats by horsepower group and fishing gear.

Future development of decentralized small-scale fisheries management schemes including proposed solutions to noted constraints

- *Community management matter*: The operating mechanisms of community management models are based on the concept of fishermen participating in fisheries associations in fishing villages. The task of those associations is to encourage the assistance among fishermen themselves in fishing or in case of accidents at sea, to help fishermen to consume their landings and to build a link between fishermen and fisheries authorities. To set up a community management system also means to set up a bridge between state fisheries management units and fishermen in support of the fisheries management task.
- *The assignment of the right to utilize water areas*: One measure that can possibly solve the matter of hard competition in fishing which would also help in conserving resources is to assign the right to use coastal water areas to local fishing communities

for management purposes. To implement this measure, careful study of the management mechanisms in assigned water areas is needed. The scope of each area (how many miles away from shore is enough) and other socioeconomic matters have to be included in such study.

Estimated funding requirements for future initiatives

It is necessary to fund the following future programmes for fisheries management:

- *To carry out the project on sustainable fisheries management*: In order to implement such a project, a survey of all socioeconomic problems in coastal areas needs to be done. In addition, the status of small-scale and commercial fisheries as well as the relationship between the size of fish stocks and the fishing capacity in coastal areas needs to be assessed. The results of such a project will show which policy and actions are needed for sustainable fisheries management in the country. Estimated funding for the project countrywide is about US$3 million.

- *The programme of capital loans for offshore fishing fleet investment in Viet Nam*: To solve the urgent needs in fisheries regarding the overexploitation of coastal waters and the decline of coastal resources, it is necessary to develop offshore fisheries with big fishing boats. Taking into account the limited financial abilities of fishermen, the government has launched a programme of capital loans for the development of an offshore fishing fleet in combination with special privileges. Since 1997 the government has provided loans of VND2 500 billion (equal to US$166.6 million) to fishermen.

- *The aquaculture development programme*: The objective of this programme is to develop aquaculture to assure food security and export earnings. This strives for a total aquaculture production of more than 2 million tons with an export value of more than US$2 500 million in the year 2010 and job and income creation for about 2 million people.

- *The fisheries product export programme*: The objective of this programme is to push for industrialization and modernization of the fisheries sector, to increase the fisheries export turnover, fisheries product processing and export together with aquaculture, storage and consumption and to develop markets for Viet Nam's fisheries products.

References

Chung, Bui Dinh et al., 1999: Summary results of stock abundance and marine fishing capacity in Viet Nam. Research Institute of Marine Products (RIMP), Haiphong, Viet Nam

FAO, 1995: *Code of Conduct for Responsible Fisheries*. Rome, FAO, 1995:41p

Long Nguyen, 1997: Report of the project "Evaluation of the current fisheries status and fishing technology in offshore fisheries". RIMP. Haiphong, Viet Nam

Long Nguyen, 1998: Report of the subproject "Scientific base on the fishing in order to utilize reasonably marine resources". RIMP. Haiphong, Viet Nam

Ministry of Fisheries. Annual fisheries statistics of the Ministry of Fisheries. MOFI. Hanoi

Ministry of Fisheries, 2000: Report on offshore fishing status in 2000. MOFI. Hanoi

Ministry of Fisheries, 1990-2000: Reports of provincial fisheries departments. MOFI. Hanoi

SEAFDEC, 1999: *Regional guidelines for responsible fisheries in Southeast Asia – responsible fishing operations*. SEAFDEC. Bangkok

Vinh Chu Tien, 1998: Survey report on coastal resources in the Tonkin Gulf. RIMP. Hanoi

Vinh Chu Tien, 1999: Report on exploring marine resources to support offshore fisheries development. RIMP. Hanoi

INTERACTIVE MECHANISMS IN THE MANAGEMENT OF RESERVOIR FISHERIES IN THE MEKONG BASIN: THE MRF II EXPERIENCE

Wolf D. Hartmann
Programme Coordinator, MRF II, Vientiane, Laos

The project

MRF II is a component of the Fisheries Programme of the Mekong River Commission. Its first phase ran from 1995 to 2000, and its second phase (2000-2004) is under implementation.

Main areas of operation and coverage

The project is operational at 20 water bodies in four countries of the Lower Mekong Basin, of which 18 are reservoirs and 2 are natural water bodies. More specifically:

- Lao PDR – 5 reservoirs in Vientiane province and prefecture and Bolikamsay province;
- Thailand – 4 reservoirs in 4 north-eastern provinces
- Viet Nam – 5 reservoirs and 1 lake in Dak Lak province
- Cambodia – 4 reservoirs and 1 ex-fishing lot in 2 provinces

It covers a total area of 70 000 ha (less than one percent of the 1 000 000 ha of reservoir area in the Lower Mekong Basin) with about 170 villages with a total population of about 130 000, some 15 percent of whom are fishermen and fisherwomen.

Interactive mechanisms in MRF II

MRF II has developed and applied interactive mechanisms on two occasions:

- Interactive mechanisms in project formulation and
- Setting up and/or strengthening interactive mechanisms in reservoir fisheries management.

Interactive mechanisms in project formulation

This refers to the conduct of an inception process at the start of the project's second phase, during the first half of 2000. The inception process consisted of four steps:

- Step 1: Reservoir/water body selection;
- Step 2: Participatory rural appraisal of reservoir fishery management needs and objectives at community level;
- Step 3: Joint (communities + government agencies) appraisal at national level; and
- Step 4: Regional workshop synthesizing national appraisals into an overall logical framework.

This sequential, bottom-up process aimed at achieving project ownership by all concerned. Participants in the inception process were:

- 1 400 reservoir users (more than half of them women);
- 50 community heads/representatives;

- 75 senior fishery officials;
- 17 representatives of other government agencies;
- 4 representatives of national Mekong committees.

The results of this process were a reformulation of project objectives, outputs and activities.

The immediate objective now is "Fishing communities and concerned authorities jointly develop, implement and disseminate sustainable reservoir co-management models". The outputs are as follows:

1. Recommendations for the development or improvement of reservoir (fisheries) management strategies are elaborated for each participating country;
2. A structure for the preparation and implementation of reservoir fisheries co-management plans is established for selected reservoirs;
3. The reservoir fisheries co-management capacity of all participating institutions and fisherfolk and other local water users is strengthened.

The outputs are not to be achieved sequentially but cyclically: one output leads to another and receives inputs from all the other areas of activity. However, emphasis is on output 2.

Setting up and strengthening interactive mechanisms in reservoir fisheries management

This refers to interactive mechanisms related to the project's three outputs:

- In fisheries (management) policy formulation
- In fisheries management planning and implementation
- In capacity building of fisheries co-managers

Interactive mechanisms in fisheries (management) policy formulation

An example of the project's activities relating to strengthening and/or setting up interactive mechanisms in fisheries (management) policy and strategy is its involvement in the recent fishery policy reform in Cambodia. This involvement occurred in three areas:

- Support to consultation processes;
- Monitoring of outcomes and recommendations for further action;
- Awareness creation (users and government).

Interactive mechanisms in local fisheries management planning and implementation

The starting point of activities in this area is an analysis of the local management situation and of to what extent interactive mechanisms (or co-management) already exist and which could be strengthened and further developed.

Before embarking on public participation, it is always advisable to try to find out to what extent such participation already exists. The slides below represent an analysis of co-management at a small water body in Lao PDR. Some crosses are within brackets, as it was sometimes not very clear who was government and who was the public. For example, should village headmen in Thailand and Lao PDR be considered government employees or community members?

Table 1. Is there co-management at Bung Wa Tai, Lao PDR?

Role/management function	Community	Government
Who makes regulations	X	X
Enforcement/patrolling	X	X
Stocking	X?	X
Fish marketing	(X)	-
Capacity building	-	X
Pond construction/maintenance	X	X
Facility/equipment provision	-	X

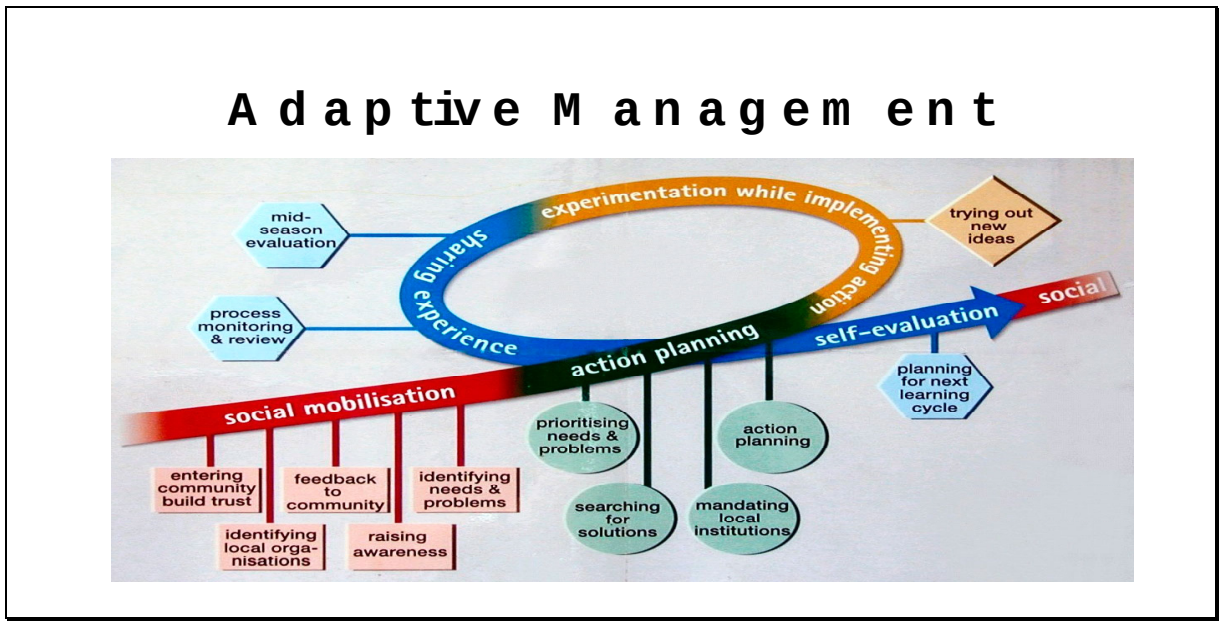


Figure 1. Adaptive management in community-based fisheries management

Table 2. Reservoir plans, Lao PDR

Activities	Reservoirs				**Remarks**
	NH	NS	HS	P P	
Organize reservoir fishing committee	√	√	√	√	Consult with distr. Governor and headmen
Review fishing regulations	√	√	√	√	Improve existing regulations
Create conservation zones	√	√	√	√	Permission from provincial authority
Stocking	√	√	√	√	Coordination with organizations concerned
Training in cage culture	√	-	√	√	Contacting technical schools
Organize fishermen's groups	√	√	-	-	Permission from provincial authorities

Interactive mechanisms in capacity-building of fisheries co-managers

Interactive mechanisms have been developed for three types of capacity-building events for fisheries co-managers:

- On-the-job support and training
- Joint user/government officer (technical) workshops
- Regional training courses

On-the-job support and training emphasizes, among other issues, support to government officers in their new role as facilitators of participatory processes.

***Joint user/government officer workshops*:** Instead of traditional training, a new format for joint learning has been developed, the joint user/government officer workshops. They follow a four-step process:

- Preliminary proposal by co-management team;
- Background (specialist) information (lecture);
- Study visit to existing examples; and
- Formulation of final proposal/action plan.

***Regional training courses on co-management in inland fishery*:** as a response to a request of the technical advisory body of fisheries line agencies in the Lower Mekong Basin, an innovative format for a series of regional training courses on co-management in inland fisheries has been developed and implemented. The objective is, with regard to co-management, for the participants (mid- and senior-level government staff) to be able to:

- explore (that is, understand and creatively apply) the main principles;
- contrast positive and negative elements;
- contribute to the development of a concept; and
- act as resource people

in a sustained and continuous way.

Over a period of three years, each yearly course consists of a main course, in English and at the regional level, and of a follow-up workshop, in the national language and at the national level (hence "sustained"); regional training course participants attend all follow-up workshops (hence "continuous").

The methodological approach follows the principle that the training process itself is an exercise in co-management. Thus, it exhibits the main characteristics of co-management:

- It is aimed at creating ownership of contents and results;
- Learning-by-doing/adaptive management;
- Valuation of existing knowledge;
- No distinction between experts and users (resource persons and trainees).

Themes and issues discussed in regional training courses are: co-management; participation; community; conflict; resource tenure; policies and legislation; local knowledge; alternative livelihood strategies; institutional development; partners in implementation; process for co-management, action planning and implementation. However, emphasis is on delivery and facilitation, i.e. interactive mechanisms.

Discussion points

A few questions and ideas for discussion:

- What is management?
- Where has all the interaction gone? How do we get it back?
- Does interaction equal democracy?
- What are the skills required? What changes of attitude?
- Where are interactive mechanisms most needed (at user level? at government level?);
- etc.

COMMUNITY FISHERIES DEVELOPMENT ON THE TONLE SAP IN CAMBODIA

Patrick Evans
Chief Technical Adviser, Phnom Penh, Cambodia

Introduction

Community fisheries are a new form of resource management adopted by the government of Cambodia in 2001. An FAO implemented project, "Participatory natural resource management in the Tonle Sap region", has been working to develop and promote community-based natural resource management on the north shore of the Tonle Sap in the province of Siem Reap. This project has been instrumental in developing the approach and in sparking a reform process throughout the inland fisheries sector that has resulted in some 500 000 hectares of commercial fishing grounds being released to local communities for community fisheries management. This paper presents a brief history of the sector and the facilitation process and current status of community fisheries development in the province of Siem Reap.

The Tonle Sap

The Tonle Sap is the "great lake" of Cambodia. During the dry season the lake covers some 250 000 hectares, but as the Mekong River rises at the start of the monsoon the drainage of the lake reverses direction and flows into the lake until some 1.25 million ha are under water several months later. Surrounding the great lake are extensive forests and shrub lands which provide food, shelter and spawning habitat to many of the one hundred plus fish species found in the lake. This unique annual hydrological cycle of the lake has created an exceptionally productive ecosystem for fish and wildlife. The high productivity of the lake was central to the development of the Angkor empire a millennium ago and today still serves as the foundation for development in the region.

The project

The project "Participatory natural resource management in the Tonle Sap region" was drafted in 1994 to address concern over rapid clearing of the inundated forest ecosystem and subsequent threats to fisheries productivity. The project is funded by the government of Belgium and implemented through FAO. The project has been of a pilot nature with the first phase (1995-1997) focusing on research and data collection on fishing communities and the flora and fauna of the Tonle Sap within the Siem Reap province. The second phase (1998-2001) expanded the target area throughout the province and focused on field implementation of community-based natural resource management both within the forestry and fisheries sectors. Now the project has entered a third phase which will focus on consolidation and standardization of approaches for both community fisheries and community forestry and will emphasize training for government staff from around the Tonle Sap to promote appropriate strategies and techniques.

Fisheries on the lake

Fisheries on the lake were traditionally managed through a system of fishing concessions (fishing lots) which were auctioned at two-year intervals. This system, dating back about a hundred years during the French colonial times, was designed to extract revenue from the lake while providing some degree of protection to the inundated forest habitat. However, in practice the system was managed to generate maximum revenue which involved subleasing and sub-subleasing of a given fishing lot. The large amounts of money involved dictated a total-harvest mentality. For years, fishing lots were jealously guarded by armed militias and a tense armed atmosphere prevailed around the lake. Consequently, the thousands of fishermen living on the lake or on its borders were subjected to threats, intimidation and gunfire when straying too close to fishing lot boundaries. By the late 1990s, some 80 percent of the entire dry-season lakeshore was under the control of 18 fishing lots.

In mid 1999, the government converted all the large fishing lots on the lake into so-called research lots under four-year contract agreements without any auction process. This further empowered fishing lot operators and many illegally expanded their lot boundaries outward further diminishing access to fishing grounds for the numerous subsistence fishermen. At the same time, however, the disintegration of the Khmer Rouge and the cessation of armed conflict in the country gave fishing communities the confidence to speak out against the injustices of the fishing lot system. The number of conflicts reported increased exponentially. In the year 2000, as more and more conflicts were being reported in the news, the issue of fisheries management on the lake gained the attention of the donor community through their working group on natural resources. Dialogue was initiated between the donors and the government to start addressing the reported problems associated with the fishing lot system and the increasing conflicts between local people and fishing lots.

The opportunity for reform opened in October 2000, when the prime minister visited Siem Reap to provide aid to flood victims. After discussions with local officials regarding conflicts between fishermen and fishing lots, HE Hun Sen announced the release of 8 000 ha (from the 84 000 ha under fishing lots in the Siem Reap province) to local communities for community management. A complaint against this decision from the director general of Fisheries resulted in his removal and a commission was sanctioned to conduct a more thorough review of conflicts within the inland fisheries sector. This commission held meetings with fishing communities in Siem Reap and later around the entire lake and asked the people what they wanted. The demands soared and by February it was agreed to release some 56 percent of the entire area under fishing lots in Cambodia (more than 500 000 ha) at the end of the fishing season in June 2001. Communities gained immediate access to fishing grounds taken from lots that were reduced in size. For lots that were to be abolished entirely, the lot owners were permitted to fish out the season. Fisheries reform became the mantra of the day.

Changes were occurring rapidly and as the fisheries department scrambled under new leadership to address the new challenges, the prime minister stepped forward in February 2001 and ordered all fisheries staff back to their offices for two months and threw the lake open to fishing – by anyone and by any means. It was open season as had never been seen before. No one was permitted to enforce laws against illegal fishing and any size of gear was acceptable without license fees. Everyone went fishing. People who had never fished before were down on the lake with their batteries. Push nets mounted on the front of large boats became standard and emptied the fish sanctuaries. Within the fishing lots to be released, this was their final fishing season and therefore, take everything was the rule. The lake had never been fished so thoroughly as during

February through May 2001. The wealthy fishermen and wealthy businessmen benefited while the poor fishing communities watched their resources stripped before their eyes. This rapid depletion of fisheries resources around the lake left the fishing communities wanting and requesting assistance to establish some form of control and management over the resources: the stage was set for community fisheries development.

Community fisheries development

The FAO project in Siem Reap had established some 33 community forestry sites by early 2001 with seven sites totalling some 10 000 ha located within the fisheries domain of the Tonle Sap. These were within the open-access fishing grounds located between the existing seven fishing lots. By February 2001, it was decided that four of the seven Siem Reap fishing lots would be abolished and that the remaining three would be reduced by at least 50 percent. This totalled some 61 000 ha of fishing grounds to be released to the local communities.

When the fisheries department personnel were ordered off the lake and back to their offices, the project received permission from the new director general of Fisheries to provide facilitator training to the fisheries officers from Siem Reap. After a one-week training on facilitation techniques and concepts of community resource management, 15 of the 28 officers trained elected to work in community fisheries. These 15 were interviewed and seven were selected for further training and sent to the field as facilitators with previously trained project counterpart staff. Seven two-person teams began work in April, one team for each fishing lot, and have continued to the present. The teams spend Monday through Friday in the field and return to the provincial fisheries department on Friday afternoons for a meeting with the provincial director and project staff to discuss what has been accomplished during the week and to plan the next week's activities.

Establishment of community control over the resources

The facilitation teams began by meeting with local authorities to discuss the concept of community fisheries and to gather information on who were the primary users of a specific fishing ground. The facilitators then visited each village and held discussions with the people about resource use to accurately identify primary and secondary (seasonal) users. Participatory resource assessment was conducted in each location and information collected from all segments of each village (old, young, male, female, etc). Through this exercise, problems, constraints and opportunities were identified for each location. Subsequent meetings and workshops were held at each village and eventually each village elected a village fisheries management committee to represent the people of that village. After village fisheries management committees were elected and initial draft rules and regulations of resource use drafted, a large workshop was held with all village representatives and local authorities and a central management committee was elected. Members of that committee then elected their own chairman, deputy, secretary and treasurer from among its members. From within the central committee, people were chosen to be in charge of protection and others were made responsible for extension within the community. The project has been encouraging participation of women on these central management committees (as well as on the village committees) and if not for this top-down intervention, very few women would be represented on the committees. Local commune chiefs serve as advisors but cannot be members of the committees.

Rules and regulations of resource use are formulated at the village level and discussed and negotiated into a common set of rules and regulations by the central committee. These by-laws cover everything from types of fishing gear permitted, size of fishing gear, timing of use, placement, protection of wildlife, protection of the inundated forest, and associated fines for violators. Each site is mapped and demarcated to inform outsiders of the boundaries of the community fisheries site. Some communities have divided the protection responsibilities for the resource into village-allocated areas under a common set of rules and regulations while other sites have agreed to protect and manage the resource in common.

As this process was taking place, project staff travelled to meet other secondary or seasonal users in villages and communes at a distance from the resource, in some cases in other provinces. The development of community fisheries was discussed with all identified secondary users and they were invited to attend workshops with the primary users to participate in the discussion of boundaries and rules and regulations. In all cases, the secondary users are allowed access but under the approved rules and regulations of each site.

A key element has been to keep the district governors involved in all the workshops and to also have the provincial director of Fisheries participate in all the workshops. This establishes legitimacy of the community fisheries development process and confidence among the participants.

Current status

There are now 10 central management committees overseeing protection and management of some 70 000 ha of inundated forest/fishing grounds within the Siem Reap province. The people and committees are taking their new responsibilities very seriously and are actively patrolling their areas to stop destructive fishing practices such as electric fishing and other illegal activities from forest cutting to wildlife poaching. They have been confiscating illegal fishing gear and charging fines according to their rules and regulations. Provincial fisheries department personnel who are responsible for law enforcement in each district are assisting the communities with enforcement of their rules and regulations. Tens of thousands of illegally captured fish fry have been released back to the lake as well as monkeys, turtles and snakes that the communities have confiscated from poachers.

The communities are gaining confidence in their ability to protect and manage their resources. The press has been giving coverage to their activities and the governor of one district (Puok) is planning a ceremonial destruction of illegal fishing gear to highlight the importance of using non-destructive fishing gear.

To strengthen implementation, the project is now assisting the communities to establish a provincial community fisheries network. The first meeting of all the central committee chiefs and deputies will take place in the town of Siem Reap on 28 November 2001. The committee members are formulating the agenda and will decide at this meeting how frequently they would like to meet to discuss issues of common concern.

In the coming months, the project will conduct additional training for the facilitators on management plan preparation. This training will provide the basics to the facilitation teams to assist communities with drafting five-year operational plans that look at both forest and fish resources and actions to not only protect and manage the resources but to increase their overall productivity.

Government support

Community fisheries development is happening at a rapid pace in response to the release of more than 500 000 ha of fishing grounds to local communities in 2001. The government wants all of these lands to come under the control of local communities and not to be left in an open-resource type of situation. The prime minister started this process and wants to see it develop successfully. He has instructed the Department of Fisheries to draft a sub-decree for community fisheries and to implement community fisheries now and not wait for the sub-decree to be finalized.

The sub-decree was drafted in mid 2001 through a consultative process with fishing communities and other officials from around the country. The draft is still being discussed and revised to meet the needs of the communities. Simultaneously a new fisheries law for the country is being drafted and discussed.

The Department of Fisheries has reorganized itself to address the new demands of community fisheries development. It has established a new community fisheries section within the central office as well as within the provincial offices. The government is taking its new job responsibilities seriously and is seeking additional assistance from donors to undertake the extensive amount of community fisheries development required around the country.

Project support

The project "Participatory natural resource management in the Tonle Sap region" will continue to support community fisheries development throughout its third phase until February 2004. During this time, the project objectives are to:

- support and ensure establishment of community fisheries throughout the province of Siem Reap;
- strengthen and standardize the process of community forestry in upland forests;
- provide training to fisheries, forestry and environment staff from around the Tonle Sap in community-based natural resource management and extension; and
- implement a focused environmental education and extension programme throughout the fisheries domain in support of community fisheries development.

The project will continue to implement a number of activities in support of community-based natural resource management including: aquaculture extension, seedling production and agroforestry extension, horticulture development, rural credit and income-generating activities. Within the community fisheries sector, greater emphasis will be placed on fish processing and marketing by local communities. In all activities, the project emphasizes the role of women.

As always, there are questions regarding the sustainability of project activities after the current phase of the project. Empowerment of the people will last; however, the ability of the government to support field activities is questionable. The reality in Cambodia is that the government is poor and currently unable to pay civil servants sufficient salaries to support themselves nor are there funds available for field activities. Extensive governmental reforms are underway and are expected to eventually establish a proper functioning civil service. However, this will take time. For the present, donor support is needed. Currently the Asian Development Bank, in collaboration with UNDP and the Global Environmental Facility, is preparing a proposal to fund the fourth phase of the FAO Siem Reap project and to expand activities to the

remaining four provinces bordering the Tonle Sap. This is needed as the project in Siem Reap has always been considered a pilot activity that must one day move around the lake.

Summary

The process of community fisheries development used in the province of Siem Reap has been developed by the project over the past four years primarily in the upland forest areas. It is being adapted to issues specific to community fisheries and is being applied rapidly due to the urgent need to establish community control over the lands released from fishing lots. In summary, the process is as follows:

1) Contact with local authorities
   - letters of authorization are provided from the provincial authorities and delivered to the district governors by the facilitation teams
   - objectives and work involved are clearly explained
   - district governors and other authorities (military, police) are kept informed and involved in the process
2) Identification of users
   - primary and secondary users are identified through local authorities, village chiefs and local fishermen
   - discussions are held to ensure accuracy of information
3) Participatory resource assessment
   - for each site a participatory resource assessment is conducted with all the primary and secondary users regarding resource use, supply and demand, conflicts, etc
4) Village meetings
   - meetings are held in each village to discuss participatory resource assessment results and review sketch maps
   - to define the resource area that individual villages use and want to manage
   - to elect village representatives to a village-level community fisheries committee
   - to define objectives of resource management and to draft rules and regulations

5) Central workshops
   - held with village committee members, commune and provincial authorities to elect a central committee with representatives from each village
   - to clearly define the resource boundaries
   - to name those responsible for protection activities and extension work

6) Demarcation and mapping
   - community fisheries resources are defined and mapped with GPS
   - demarcation is done with painted poles if needed

7) Rules and regulations
   - these are finalized for each community fisheries site by its central committee and made public with maps to inform all other potential users as to the location and user obligations for a given resource
   - the rules and regulations are endorsed and signed by the central committee, the district governor, the provincial director of Fisheries and the provincial director of MAFF (DAFF)

8) Management plans
    - the central management committee in consultation with village committees and fishermen in general drafts a five-year operational plan defining activities and actions related to resource protection, management and enhancement as well as benefit distribution

The objective of this process is to empower the local communities for the protection and management of the forest and fisheries resources upon which they depend.

Conclusion

The basic strategy in community fisheries is to transfer responsibility for resource protection and management from the government to local resident communities. In Cambodia, the actual resource that communities protect and manage is physical land, i.e. thousands of hectares of seasonally flooded forest and shrub lands dotted with ponds and streams in the dry season. The lands recently released from the fishing lot system for community management are highly productive fishing grounds. If managed properly, community fisheries have great potential to ensure food security and to stimulate local economic development. The legislation is being formulated to support this new policy and the government is working to ensure its implementation. It is an unexpected and massive reform within the inland fisheries sector of Cambodia, which will directly benefit many thousands of rural people.

SMALL-SCALE FISHERIES MANAGEMENT BY PHILIPPINE LINE AGENCIES AND LOCAL GOVERNMENT UNITS: STATUS AND SUGGESTIONS FOR IMPROVEMENT

Winfried Wiedemeyer
Office of the Governor of Negros Oriental
Environment and Natural Resources Division
Dumaguete City, Philippines

Introduction

During the last decade, the Philippine political and administrative systems have undergone several major changes leading to a highly beneficial decentralization of decision-making processes. As part of a wide array of changes, the Philippine new Local Government Code (RA 7160), which is the central legal bill governing these changes, also ensures a clear-cut autonomy of all local government units in the country concerning the management of all kinds of resources in their areas. This management autonomy includes coastal resource management in general and fisheries management in particular, which was further specified in the New Fisheries code (RA 8550).

As a result, the Philippine provinces and municipalities are given a very impressive legal and far-reaching jurisdictional authority within their 10 or 15 km exclusive municipal water boundaries. A common expression heard at all fisheries management levels including government line agencies is "There are no national waters; there are only municipal waters". This is of course not true but comes close to the actual situation in a country of more than 7 000 mostly closely neighbouring islands. Very often, municipal water boundaries, whether delineated or not, do immediately interconnect because inter-island distances of water bodies are less than 30 km or two times 15 km, which is the maximum extent of municipal waters in the Philippines.

The main question has to be whether this rather rigorous turning over of decision-making power is in fact supported by the existence of all or at least basic essential monitoring and management capacities and tools to ensure the intended executive improvements. Based on my experience as a consultant in fisheries management and coastal resource management to a local government unit, there is still room for improvement.

Background

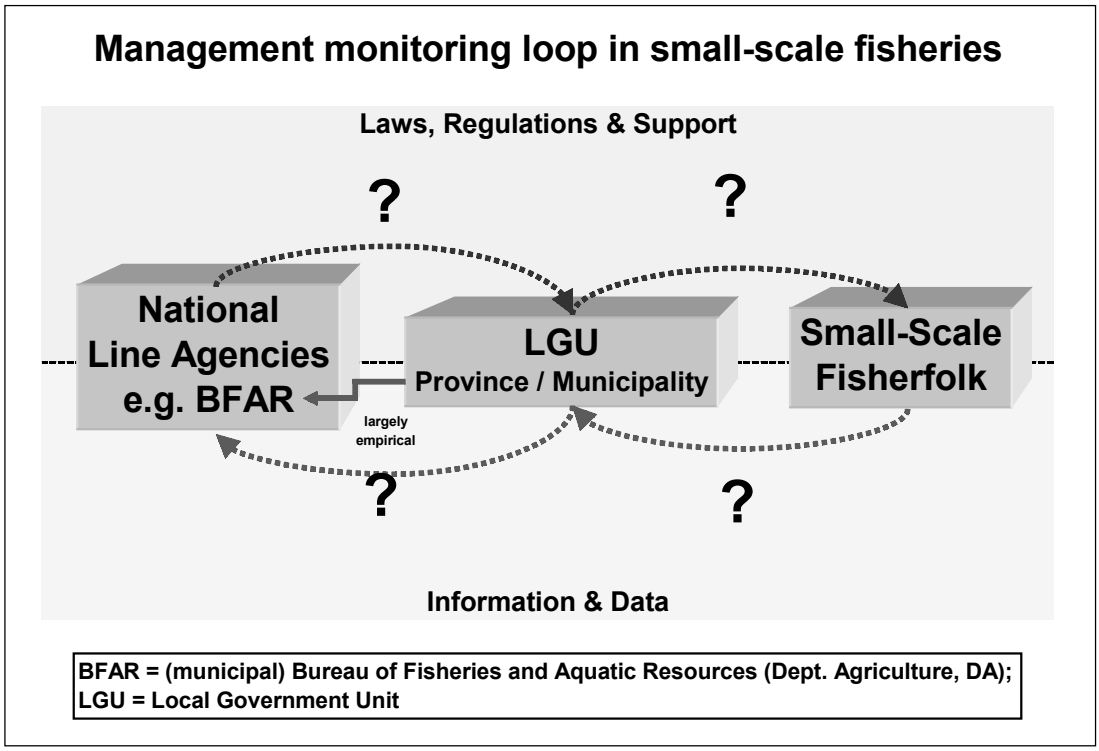
Coastal areas in the Philippines are overfished and constantly under high pressure also because of non-regulated small-scale and/or marginal subsistence fisheries of a magnitude which greatly exceeds the already poorly managed commercial fisheries.

Through the Local Government Code and its elemental decentralization aspect, Philippine local government units have been given the responsibility for local fisheries management. They are however left with very limited technical support and fisheries management advice.

Looking at the essential requirements for a functional monitoring-management loop in small-scale fisheries, as for fisheries in general, it has to be asked whether these loops do already exist. For a decisive assessment of their functionality, we have to take a look at the outer ends of the chart and pose two simple questions:

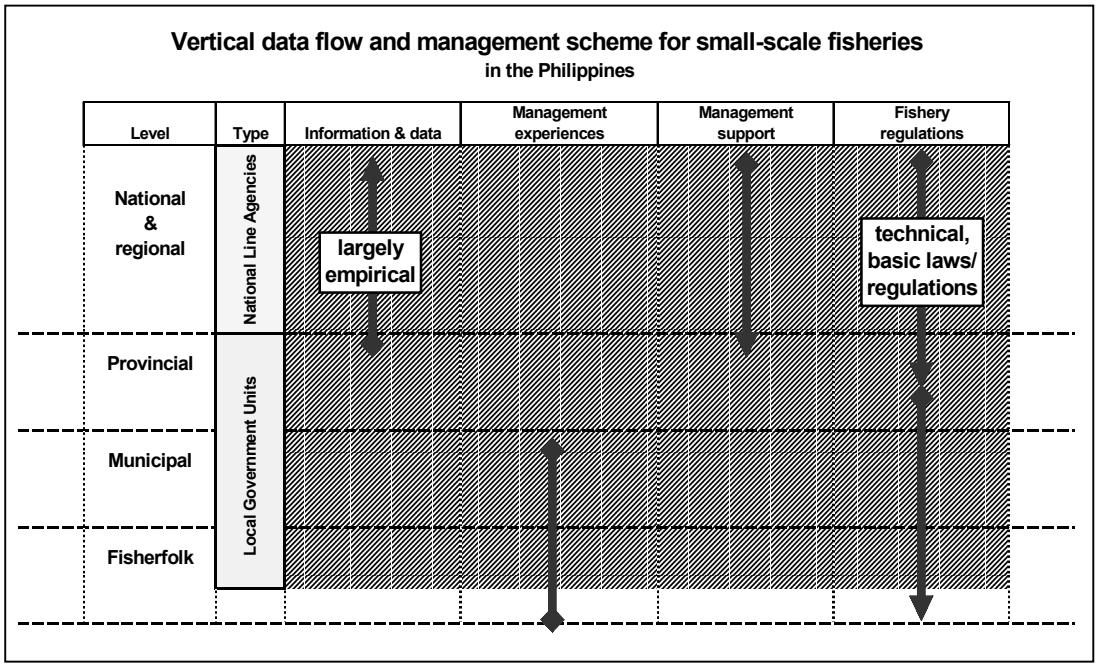
1. Are the small-scale fisherfolk experiencing an efficient monitoring and management of their fisheries resources, possibly even participating in these processes?
2. Do sufficient data sets on small-scale fisheries exist with national line agencies?

Unfortunately, in most places, both questions still have to be answered with "No".



In an ideal management-loop situation four basic processes should exist, which can be divided into two groups: an information and data flow, and a flow of laws, regulations and support.

Small-scale fisheries data gathered from or even by fishermen has to be forwarded to responsible local government units, which will forward condensed and/or analysed data sets to the national line agencies. While the latter process could be accomplished through existing structures at local government unit level, e.g. Provincial Fisheries and Aquatic Resources Management Council (PFARMC), Provincial Agriculturist Office – Fisheries Section (PAO-FS, no longer provided for in RA 8550), etc, the initial process of data gathering does not exist. Thus, a comprehensive data set on small-scale fisheries cannot be produced.



Since functional management of small-scale fisheries depends on reliable information and data sets, this portion of the monitoring-management loop cannot exist. Fisheries laws and regulations are enacted and enforced at the local government unit level as well as along the coastline. However, they do not include the highly diverse local situations in different parts of the Philippines. Additionally, neither the Bureau of Fisheries and Aquatic Resources nor the local government units are able to provide efficient management support to coastal fisherfolk or fisherfolk's associations or cooperatives.

This leads to the unbalanced situation:

1. Enforcement of fisheries regulations Yes
2. Management of fisheries, particularly small-scale No

For a better understanding of why this is the case, we should have a closer look at the existing vertical fisheries management scheme as well as at the existing vertical information and data flow in the Philippines.

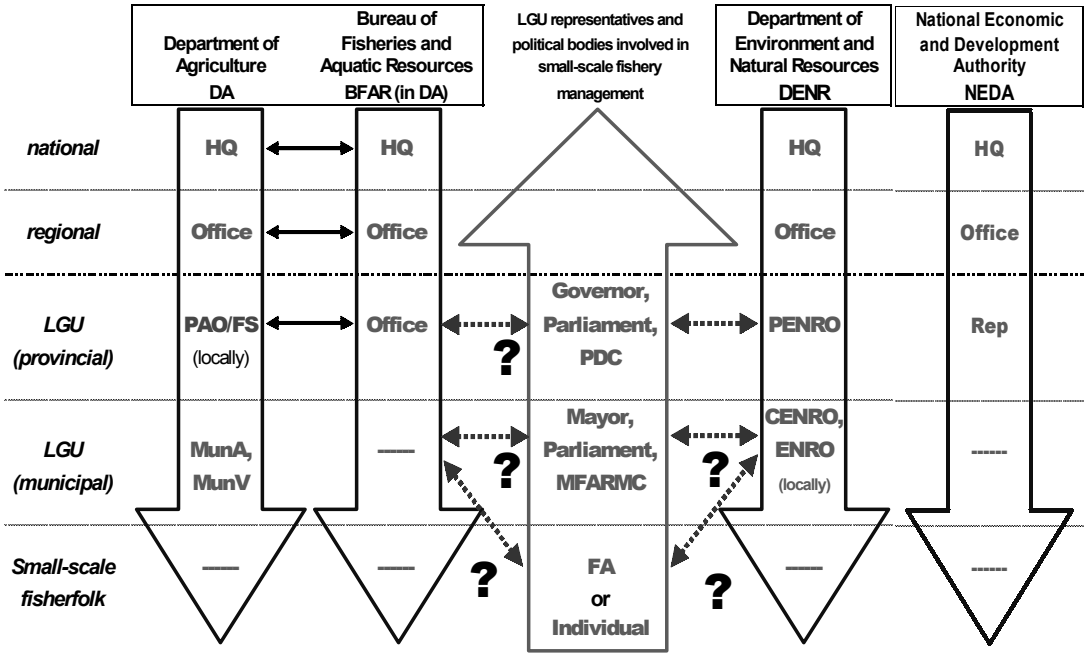
The upward data and information flow does not efficiently overlap with the downward regulatory and management flows. Not surprisingly this results in non-existing or inappropriate or even counterproductive management approaches for small-scale fisheries.

This situation is partly caused by conflicts between the Local Government Code and older laws as well as by budgetary problems when providing the line agencies with sufficient manpower and logistics. It is also caused by overlapping or insufficiently defined areas of responsibilities between different line agencies. Another hindering factor is the vertical organizational setup of government line agencies and local government units involved in fisheries management. To clarify these problems, we may have a look at the organizational and administrative structure of these administrative and regulatory bodies.

Some reasons for the lack of appropriate small-scale fisheries management in the Philippines

---

Vertical political and administrative fisheries management scheme in the Philippines



CENRO = City Environment and Natural Resources Office; ENRO = Environment and Natural Resources Office (municipal); HQ = Headquarters/National office; LGU = Local Government Unit (Province/ Municipality); MFARMC = Municipal Fisheries and Aquatic Resources Management Committee; MunA = Municipal Agriculturist Office; MunV = Municipal Veterinarian Office; PAO/FS = Provincial Agriculturist Office/Fisheries Section; PDC = Provincial Development Council; PENRO = Provincial Environment and Natural Resources Office; Rep = Representative

- Fisheries management, general natural resource management and environmental management are almost completely separated at all political and administrative management levels. Coordination, data exchange and concerted approaches within clearly interlinked fields are almost non-existent.
- No fish catch data from small-scale fisheries.
- Small-scale fisheries management approaches, if adapted, are almost never supported by appropriate monitoring schemes or impact assessment.
- Already constituting a high obstacle in commercial fisheries, the monitoring of small-scale fish catches does not exist or is marginal and limited to the individual efforts of a very limited number of considerate local government units. Instead, very limited empirical fish catch data of questionable representative character are gathered. These data sets are very often questionably extrapolated from population census data of marginal fishermen per area.
- Fisheries management decisions are very often based or have to be based on outdated or insufficient or non-representative data and information. In fact, many times, they have to be based on empirical data or no data at all.
- Existing national and regional fisheries management regulations are not properly implemented at the local government unit level due to the lack of government line-agency personnel in combination with the almost absolute autonomy of the local government units.

- Laws and regulations are written in English. Translations of these documents, which would be readable by the fisherfolk, do not exist or have been prepared only locally by local government units or non-governmental organizations.
- One questionable result of the strict application of the Philippine Local Government Code and its subsequent decentralization of political and legislative powers is that national and regional fisheries management approaches are largely limited to the inspection of legal fishing gear and the licensing of fishing vessels above a certain size.
- DA-BFAR personnel are far from sufficient in numbers in local government units at provincial level to ensure an adequate management support and proper monitoring of any fisheries management including small-scale fisheries management. At the even more crucial municipal level of local government units no personnel is assigned at all.
- Although highly technically capable in aspects such as legal mesh sizes or types of fishing gear, DA-BFAR personnel are very often not properly trained or experienced in conducting resourceful fish population or fish catch analyses. The development of locally adaptable management approaches on commercial and small-scale fisheries is thus made impossible. Instead, national or regional fisheries management is applied, which does rarely reflect and suit the local situation regarding fish populations or fish catch statistics.
- At all levels of local government units, very often local political constraints and incomplete resource management schemes, if they exist at all, do regulate commercial and small-scale fisheries.
- A high percentage of the existing commercial fishing vessels are not designed to operate beyond municipal water boundaries. Continuous illegal intrusions are therefore provoked.
- There are no trained or experienced fisheries management personnel at local government unit levels due to insufficient budget and insufficient logistics (e.g. boats, data management units, etc).
- Local government units are reluctant to license or grant access rights to their water bodies even to locally-based commercial fishing vessels due to their predictable lack of enforcement and regulatory capabilities. For the commercial operators this does very often lead to a "no access anywhere" situation because there are only municipal waters within their acceptable operational range due to typically small inter-island distances in the archipelago.
- Poor living conditions of the people in large parts of the upland and hinterland and their need to access protein sources in combination with the "free-access right to coastlines" lead to massive additional fishing pressure on coastal fish stocks accessed by small-scale fisheries.

Possible approaches leading to a functional management of small-scale fisheries

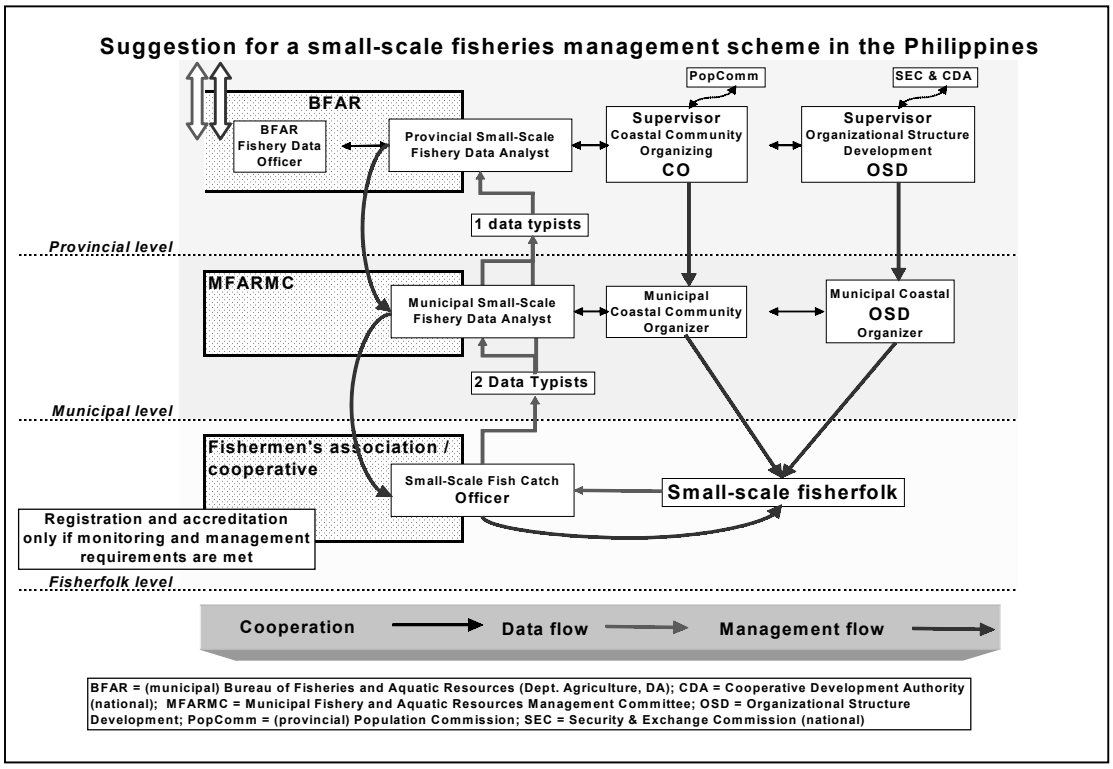
Two approaches are suggested:

- Coupling national and local registrations of fisherfolk's associations to compulsory fish catch monitoring and basic local fisheries management
- Establishing small-scale fisheries management bodies with local government units (province, municipality/city, *barangay*)

Some supporting aspects to these approaches

- Far-reaching legislative autonomy of local government units
- Immediate access to human population and census data
- Basic organizational structures like community organizations do already widely exist
- High fisheries management motivation due to immediate massive dependence
- Short/fast decision making coupled to local empowerment of enforcement
- High level of locally available rural fisheries management experience and knowledge
- (Locally existing) high problem awareness concerning the interdependence of environmental, biological, ecological and fisheries management aspects

Suggestions for a programme leading to a small-scale fisheries management scheme



When establishing government institutions/administrative bodies for small-scale fisheries management these should have the following structures, resources and capabilities:

- Personnel with basic knowledge/experience in fisheries and fish catch monitoring
- Personnel with basic knowledge/experience in fisheries management
- Personnel with capabilities in community organizing
- Personnel with capabilities in organizational structure development
- Personnel with the ability to understand and communicate in the local language
- Politically independent
- Sufficient budget to ensure long-term sustainability of the above-mentioned activities
- Connection (input/output) with a functional national small-scale fisheries management network providing
  - General information on small-scale fisheries and fisheries in general
  - Updated monitoring data
  - Comprehensive data analysis of own data sets (presentable to fisherfolk)

- Comprehensive data analysis of all local data sets
- Updated local, regional and national management guidelines for small-scale fisheries
- Updated operational recommendations and management tools

Programme cost calculation (approximation)

The following is a very rough estimation of establishment costs for an initial 10-year programme for small-scale fisheries management in the Philippines, based on eight-year local experience in the province of Negros Oriental. Comparable parameters can be assumed when making projections for the other Philippine provinces. All possible groups of programme costs have been considered. Some items may however be locally redundant, for example when technical and administrative personnel as well as office space already exist at other target provinces.

A. Municipal level

Cost calculation for a small-scale fisheries monitoring and management programme

1. Municipal level

Item	no.	unit	month	per year or total
Personnel cost				
1. Municipal Small-Scale Fishery Data Analyst	1		400	$5,200.00
2. Fish-Catch / Fishery Data Typist	1		300	$3,900.00
3. Municipal Coastal Community Organizer	1		300	$3,900.00
4. Municipal Coastal Organizer "Organizational Structure Development"	1		300	$3,900.00
5.& 6. Boat Operators*	2	200	400	$5,200.00
Limited Honorary Contracts to Third Parties	n.a.		100	$1,200.00
			Subtotal	**$23,300.00**
General operational budget				
Office Space Rental*			200	$2,400.00
Office Supplies			300	$3,600.00
Communication Cost			300	$3,600.00
Travel Expenses			300	$3,600.00
Seminar, Workshop, Training to Fisherfolk			200	$2,400.00
Internal Capability Building			200	$2,400.00
Maintenance and Replacement of Equipment			200	$2,400.00
			Subtotal	**$20,400.00**
Operational field aupplies				
Petrol			100	$1,200.00
Vehicle Maintenance			100	$1,200.00
Sets of Field Tools to Fisherfolk			50	$600.00
Data Sheets, Info Fliers, etc to Fisherfolk			200	$2,400.00
			Subtotal	**$5,400.00**
Equipment				
Set of Field Tools (seminars and workshops)	2		300	$600.00
Boat*	1		5000	$5,000.00
Personal Computer Units for Data Management	2		1500	$3,000.00
Software (Data Management, Office, Communication)	1		2000	$2,000.00
Copy Machine	1		3000	$3,000.00
			Subtotal	**$13,600.00**
Contengency cost			500	$6,000.00
			Subtotal	**$6,000.00**
Subtotal programme installation cost per municipality				**$13,600.00**
Subtotal yearly operational cost per municipality				**$55,100.00**

Cost calculation for a small-scale fisheries monitoring and management programme

2. Provincial level

Item	no.	unit	month	per year or total
Personnel cost				
1. Provincial Small-Scale Fishery Data Analyst	1		500	$6,500.00
2. Fish-Catch / Fishery Data Typist	2	300	600	$7,800.00
3. Provincial Supervisor "Coastal Community Organizing"	1		400	$5,200.00
4. Provincial Supervisor "Coastal Organizational Structure Development"	1		400	$5,200.00
5. Driver	1		250	$3,250.00
Limited Honorary Contracts to Third Parties	n.a.		100	$1,200.00
			Subtotal	**$29,150.00**
General operational budget				
Office Space Rental*			200	$2,400.00
Office Supplies			300	$3,600.00
Communication Cost			400	$4,800.00
Travel Expenses			500	$6,000.00
Seminar, Workshop, Training to LGU-personnel			400	$4,800.00
Internal Capability Building			200	$2,400.00
Maintenance and Replacement of Equipment			200	$2,400.00
			Subtotal	**$26,400.00**
Operational field supplies				
Petrol			200	$2,400.00
Vehicle Maintenance			200	$2,400.00
Data Sheets, Info Fliers, etc			300	$3,600.00
			Subtotal	**$8,400.00**
Equipment				
Set of Field Tools (also for seminars and workshops)			300	$300.00
Vehicle			25000	$25,000.00
Personal Computer Units for Data Management			1500	$1,500.00
Software (Data Management, Office, Communication)			2000	$2,000.00
Copy Machine			3000	$3,000.00
			Subtotal	**$31,800.00**
Contengency cost			600	$7,200.00
			Subtotal	**$7,200.00**
Subtotal programme installation cost per province				**$31,800.00**
Subtotal yearly operational cost per province				**$71,150.00**

Total costs estimations:

1. Subtotal of programme installation cost per municipality, approximately US$13 600.00
2. Subtotal of yearly operational cost per municipality, approximately US$55 100.00
3. Subtotal of programme installation cost at provincial level and per province, approximately US$31 800.00
4. Subtotal of yearly operational cost at provincial level and per province, approximately US$71 150.00
5. Total of programme installation cost per province at provincial and (10) municipal levels, approximately US$167 800.00
6. Total of yearly operational cost per province at provincial and (10) municipal levels, approximately US$592 150.00
7. Total programme cost per province and over a minimum programme period of 10 years, approximately US$5 921 500.00

The Philippines has 55 provinces with coastal areas.

WORKING SESSION I:

IDENTIFICATION OF STEPS IN DECENTRALIZING SMALL-SCALE FISHERIES MANAGEMENT

In the first session the participants discussed the need for definitions. Several terms like

- small-scale
- scale of target groups
- management
- community-based management
- co-management

need definition regarding the special focus of this consultation. It became clear that these definitions are in fact to be developed while progressing through the working sessions of the consultation.

It was also agreed that the final output of all sessions would have to meet the requirement to be applicable to the very dissimilar geographical, marine and terrestrial ecological, cultural and political situations in the region.

It was agreed that a set of tools should be refined from which technical staff, social staff and policymakers might choose specific items matching specific needs while advancing from centralized fisheries management towards decentralized or community-based fisheries management.

As an example and to catalyze the discussion the participants gave their perceptions and ideas concerning a possible definition of the term "management". Selected keywords were:

- Doing things through others
- Target-oriented development
- Altering human behaviour
- Set of action
- Utilization and conservation of resources
- Allocation

The need for an intensive interaction between many sectors in order to reach a community-based management of small-scale fisheries was recognized. These sectors may be environmental, ecological, research, fisheries, social, political, legal, etc. The general importance of a holistic approach was underlined.

Several more specific aspects of community-based management in general and community development in particular were discussed, such as the question of the need to assist the communities financially during any kind of programme. It was agreed that this particular aspect had to be treated very carefully in order not to jeopardize the motivation background of the target group. "Where there is money, there is no community; where there is community, there is no money."

As primary activity of Session I, an initial collection of terms was made among the participants describing central activities and aspects to be considered while trying any community-based small-scale fisheries management:

1. Organizing community;
2. Providing alternative livelihood;
3. Empowering a community/providing legal support (assistant) and enforcement;
4. Simplifying communication and facilitation;
5. Listening and translating (comprehensible);
6. Collaborating among fisherfolk networking;
7. Identifying stakeholders' needs;
8. Meeting and grouping;
9. Identifying options for management;
10. Identifying opportunities for management;
11. Having a clear policy;
12. Establishing fisheries associations;
13. Facilitating conflict resolution;
14. Collecting baseline information;
15. Defining and transferring responsibility and authority;
16. Providing incentives/motivating;
17. Identifying constraints;
18. Legitimizing domestic laws;
19. Checking and controlling measures;
20. Providing political support;
21. Building upon traditional knowledge;
22. Transferring knowledge and technology;
23. Understanding the legal system;
24. Providing financial support; and
25. Monitoring.

These terms were later grouped into six areas of activities (colours refer to the colours used in Figure 1).

- Organization (green)
- Content/substance (pink)
- Legal (blue)
- Support (red)
- Training (yellow)
- Process (violet)

Figure 1 on the next page shows the identified activities with a theoretical progressive flow leading from centralized to decentralized community-based fisheries management. The colour of each box groups the activity into one of the above-identified areas. The flowchart presented in Figure 1 shows the final chart. This chart was modified and changed during the whole period of the meeting. The first draft of this chart was used as the starting point for further discussions in Session II. All following sessions are built on each other. The outcome of the whole exercise is presented at the end of the chapter on "Working Session V".

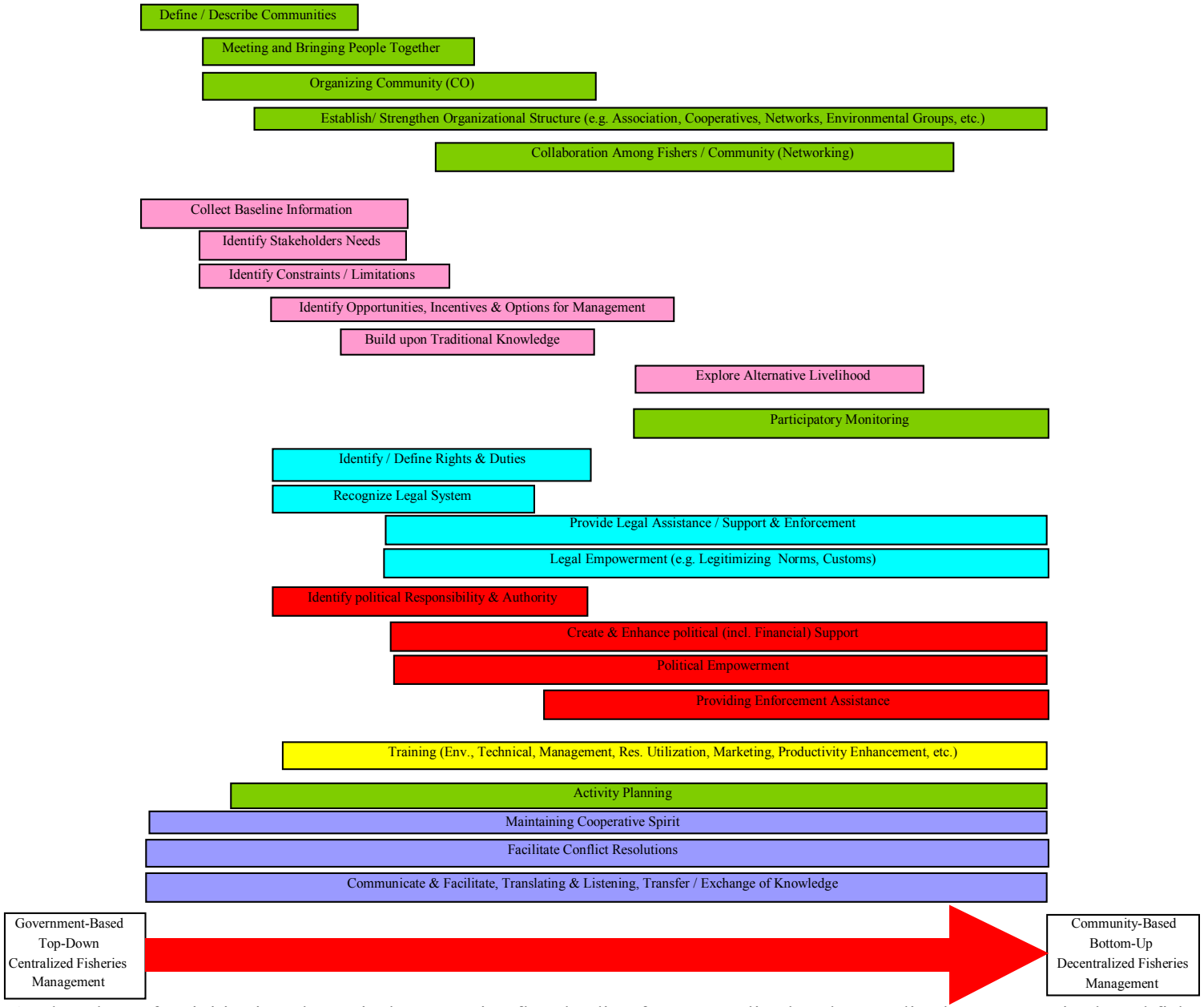


Figure 1: Flowchart of activities in a theoretical progressive flow leading from centralized to decentralized or community-based fisheries management.

WORKING SESSION II:

IDENTIFICATION OF AREAS/SECTORS AND RESPONSIBILITIES INVOLVED IN DECENTRALIZED SMALL-SCALE FISHERIES MANAGEMENT

Working Session II started with a discussion of the need to define small-scale fisheries. The characteristics of small-scale fisheries in Asia vary significantly from country to country. Instead of trying to develop a definition it was decided, in order to be more useful, to catalogue small-scale fishing activities covered in each country under the general term small-scale fisheries.

The development process from centralized, government-based, top-down fisheries management to decentralized, community-based, bottom-up fisheries management is not just a movement from A to B. It is a devolving process, with several layers and feedback loops. Activity planning is an output of this reiterative process. It is a dynamic, three-dimensional process and the needed timeframe as well as the financial support it requires largely depend on the situation in each country.

Decentralized fisheries management has to be implemented at two levels, i.e. the policy level and the activity level. At the policy level the process needs political will to change the fisheries management setup. There was a discussion on whether political support, particularly financial support, was needed. It was felt that, once the communities act, the governments and bureaucrats show interest. At the activity level the process needs to maintain the cooperative spirit within the communities. Only through constant contact with the community could the needed motivation be established to move forward in managing small-scale fisheries.

In the ASEAN region the implementation of management schemes moves through the political system. However, it was agreed that many politicians are not aware of the needed process and of the financial implications to implement community-based fisheries management.

Although it was not a particular subject of the meeting, the discussion also covered the need for clearly defined objectives for the decentralization process. Political will may be based on different objectives to solve the problem. It may be an excuse not to deal with fisheries problems at the local level, i.e. let the communities solve their own problems. The objectives of such decentralization process may include, among others, prosperity, social wellbeing, improvement of human quality of health or increased productivity.

The participants saw the need to provide support to the communities with infrastructure like streets or telephones. This largely depends on the situation in each country. The group agreed that the communities should not receive financial support for establishing management structures like fishing cooperatives or for running these organizations.

It was agreed that management arrangements have to come under the legal system of the country, with clear policies at all levels. In most cases, political support would go hand in hand with financial assistance.

The discussion on grouping the activities identified on the first day was continued and six areas or fields of action, as described earlier, were identified.

WORKING SESSION III – PART ONE:

IDENTIFICATION OF CONSTRAINTS IN IMPLEMENTING DECENTRALIZED SMALL-SCALE FISHERIES MANAGEMENT

The participants identified a list of constraints in moving from centralized to decentralized small-scale fisheries management and grouped them according to the identified fields of action.

Solutions were given for the two levels of intervention, i.e. the policy level and the activity level. The participants agreed that such decentralization process had loops and layers. Depending on the level reached, activities may have to be repeated and further training may be needed to reach the next level. It was also agreed that by moving through this process, the feedback received provides and sharpens the activity planning in the communities.

WORKING SESSION III – PART TWO:

IDENTIFICATION OF MECHANISMS OR SOLUTIONS TO OVERCOME THE CONSTRAINTS IN IMPLEMENTING DECENTRALIZED SMALL-SCALE FISHERIES MANAGEMENT

The participants were divided into groups to recommend possible solutions for the constraints identified in the first part of Working Session III.

WORKING SESSION IV:

DEVELOPMENT OF AN INTERACTIVE PLAN FOR THE IMPLEMENTATION OF SMALL-SCALE FISHERIES MANAGEMENT

The session was used to discuss and fine-tune the solutions developed by all the participants.

The discussion covered the problem of identifying key persons. It was agreed that key persons, or a group of key players in the decentralization process, have to be carefully chosen. In some instances they may be government officers, village heads, etc. Depending on the country, political situation, social structure, etc, identifying key persons should focus on the questions of what to do and how to achieve it.

Some participants felt that NGOs are not always qualified groups to assist in implementing co-management schemes. In contrast to that, the 1998 Philippine Fisheries Code specifically asks for NGOs to represent the people in the decision-making process. Experiences in other countries showed that such involvement does not always lead to success. The group agreed to use the term competent groups or individuals instead of organizations, cooperatives, etc.

The lack of education or knowledge and the resulting lack of leadership were identified as a major constraint in implementing decentralized fisheries management schemes. It was generally felt that such lack of knowledge exists not only at the local but also at the national level and that the decentralization process has to address this problem at both levels.

Originally, the group was also asked to specify who should implement the identified activities. However, the discussion showed that depending on the political and legal situation as well as on the social structure of the country, implementation might be done by different groups, organizations or government entities.

WORKING SESSION V:

DEVELOPMENT OF THE MONITORING AND EVALUATION FRAMEWORK

The last day was used to frame and structure the identified groups of constraints and solutions in a three-phase model, i.e. the Initial Phase, the Intermediate Phase and Phase III. Whether such a division was necessary or useful was much debated. The group felt that such a process had a continuous character and that some activities would have to be repeated constantly, some would have to be done only once and others repeated until a certain level of will had been reached. It was also pointed out that even when such a level had been reached training and continuous upgrading would be needed to assure continuity of the process. The tables at the end of this chapter provide the complete plan, as discussed during the consultation.

In this regard the need for indicators was discussed. These indicators should provide the status of the decentralization process for the activities and the different areas of action. They also should assist in identifying whether the fisherfolk's group or the government entity would be ready to implement the next step or phase.

Lastly, the group worked on the general statement capping these proceedings.

PHASE I: INITIAL STAGE		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
Organization		
Define/describe communities **Meet & bring people together** **Activity planning**	Heterogeneous composition of people - Ethnic - Gender - Interest - Religion - Language - Economic status - etc.	Respect/recognize differences Use existing governance structures where appropriate Observe gender sensitivity Use simple language Use national/official language or local dialect (if needed) Ensure and support participation of relevant stakeholders Find common ground
	Lack of trained personnel to define communities	Provide assistance for training Ask assistance for training Ask proper agency/organization for assistance Facilitate trainers' training
	Lack of political will at community level	Identify key person(s)/leader(s) with access to the group Try to convince key person/leader Key person/leader has to convene the community
	Lack/scarcity of skilled leader (inappropriate type & style)	Community has exclusive responsibility & should elect a different leader
	Lack of formal education/ skills/knowledge	Assist in basic education
	Low cohesiveness	Socialization events Initiate community projects
	Mobility between sectors/ regions	Identify movement patterns
	Lack of confidence	Socialization events
	Lack of awareness	Information drives through media (TV, radio, poster, fliers, etc)
	Difficulty in internal communication	Channelling communication through key persons (religious, local leaders, community elders)

PHASE I: INITIAL STAGE		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
Contents		
Collect baseline information **Identify stake-holders' needs** **Identify constraints/ limitations** **Identify opportunities, incentives & options for management** **Build upon traditional knowledge**	Lack of manpower Skilled persons to identify management options Skilled persons to identify baseline information Quality/quantity personnel	Identification of village-based facilitators to be employed and trained by local government and community groups Government commitment to employ, train and post required staff to each location
	Lack of logistics at various levels (e.g. organization, transport, finance, basic amenities)	Prioritization of requirement should be promoted by community in consultation with concerned agencies. Planning, programming and budgeting must be strongly committed Involvement of NGOs, IOs and other interested organizations (local governments, fisherfolk, fishermen's groups) to facilitate the process of decentralized fisheries management (DFM)
	Lack of identification of required information	Development of guidelines (information required, collecting methods) by government agencies and community for the use of governments and communities
	Social insensitivity of some scientists	Multidisciplinary approach (national and international levels) Promoting exposure to local conditions
	Poor awareness/responsibility on the part of stakeholders	Provide sufficient incentives to encourage responsible management by concerned agencies
	Lack of recognition/ integration for indigenous/ traditional/local knowledge	Include indigenous/traditional/ local knowledge in training and education as well as in the guidelines for community-based natural resource management from local to national levels

PHASE I: INITIAL STAGE		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
	Reluctance to share indigenous/traditional/local knowledge	Demonstrate the benefits of improving communication and information exchange (e.g. through exhibition) among all sectors by local governments, community groups, academics and NGOs
	Problem of size (geographical, people, etc)	Work with community to devise workable solution by the local governments and community groups involved
	Lack of livelihood ideas/ opportunities/skills	Work with several agencies to identify options
	Lack of methodology	Develop through pilot activities and prepare guidelines by concerned agencies and/or donors
Legal		
Identify/define rights & duties **Recognize the legal system** **Provide legal assistance/support & enforcement**	Lack of appropriate legislative framework & legislation	Study existing legislation Amend or initiate/make new legislation
	Lack of legal literacy/skills - Manpower/operationally - Intellectually/substantively	Prepare training material Organize training
	Lack of consultation mechanisms (legitimate or otherwise) - Design - Implement	Set up consultation mechanisms
	Misunderstandings of rights, duties and responsibilities	Education
	Lack of recognition of customary law	Incorporate relevant customary norms that reinforce community values, sustainability and equitable distribution into decision making
	Unavailability of customary law	Compile customary laws
	Too broad/ill-defined fisheries policy leading to conflicting interpretation	Clarify and streamline policies Educate

PHASE I: INITIAL STAGE		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
	Inadequate enforcement mechanisms - Information provision - Consultation - Clear penal provisions - Principle of fairness	Establish & promote information provision Establish & promote consultation Establish & promote clear penal provisions Establish & promote principle of fairness
Process		
Maintaining cooperative spirit **Facilitate conflict resolution** **Communicate & facilitate, translating & listening, transfer/ exchange of knowledge**	Lack of facilitation skills/few facilitators	Provision of training for trainers
	Lack of common understanding (due to different concepts)	Develop glossary Communicate, discuss, interact
	Lack of common language	Select the trainers knowledgeable in the local language Consider using interpreters
	Poor compliance with rules/norms	Identify underlying reasons for non-compliance and take necessary action, e.g. promote awareness and strengthen enforcement of rules and regulations
	Lack of community participation in formulating rules and regulations	Ensure full participation of community in formulating rules
	Too many provocateurs	Recommend involvement of provocateurs in the whole process
	Lack of flexibility	Facilitate regular review of the process (negotiation, collaboration, etc)
	Inability to accept limitation	Provide clear understanding of the issues of the process from the beginning
	Lack of accountability	Create accountability mechanisms Transparent mechanisms
	Lack of courage to act despite the limitations	Provide authority and responsibility to the community leader to act despite the limitations

PHASE I: INITIAL STAGE		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
Training		
Training on **- environment,** **- techniques,** **- management,** **- resource utilization,** **- marketing,** **- productivity enhancement, etc**	Lack of trained personnel, Manpower Quality	Trainer capacity building
	Lack of logistics - Financial - Facilities - Materials	Provide finance Provide facilities Be flexible in using local facilities
	Lack of trainers' training	Provide training course for trainers
	Size [geographical, people]	Scaling by appropriate sub-grouping
	Lack of curriculum	Develop more practical and comprehensive courses
	Communication gaps - between groups - between local agencies	Develop linkage between relevant parties through collaboration and cooperation by meetings, workshops, publishing
	Insufficient integration of local knowledge into the training programme	Identify and incorporate local knowledge and skills into the training programme
	Lack of community participation in the design of training	Motivate, participatory involvement of relevant communities in training design Enable community members to participate, e.g. by providing some financial support Get assistance from religious or informal leaders
	Low acceptance of new concepts	Motivating, teaching, explaining to the stakeholders regarding the benefits of the new concept
	Insufficient examples/indicators/templates	Giving examples from other successful projects
	Cultural, religious, social and economic differences within target groups	Identify and determine the best solution acceptable to the groups
	Insufficient training needs assessment	Provide more socioeconomic survey regarding the actual situation of the people
	Lack of training evaluation and feedback mechanism	Set up and appraise the training evaluation and feedback mechanism

PHASE I: INITIAL STAGE		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
	Lack of field experience of trainees	Provide more incentive and/or collaboration between trainers/ trainees and local community
	Lack of continuity and sustained training	Set up series of training and follow-up programmes
Support		
Identify political responsibility & authority **Create & enhance political (incl. financial) support** **Political empowerment** **Providing enforcement assistance**	Lack of or a change in political will, national, local	Advocate at national and local levels Create power base at local level
	Lack of a clear policy/legislation	Create database/information in order to update/review of policy/legislation Make proposal based on participatory approach of stakeholders Make new legislation accommodating the needs and requirements in the CCRF
	Lack of administrative/structure support at various levels	Enhance/improve awareness of administrators Create self-help mechanism
	Lack of general supports (e.g. human, financial, facility, etc) - Budgetary constraints - Qualified manpower & budgetary constraints for enforcement - Marketing - Credit - Social security and safety at sea Limited access to formal and informal political linkage/circle	Promote systems and build capacity of lean management Create support mechanisms for marketing, credit and social security and safety Create examples of best management experience from pilot cases Promote educational role of community members in enforcement Educate community members to vote strategically Improvement of participation of informal leaders
	Lack of involvement of community in decision-making process	Convincing by doing Involve community at all stages of activities
	Lack of influential person to promote the process	Identify such an individual and convince him/her in selling idea

PHASE I: INITIAL STAGE		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
	Insufficient level of readiness	Develop medium/long-term plans/vision Keep informed/establish line of communication
	Lack of sustainability/ durability/continuity of support	Impress with internal success cases

PHASE II		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
Organization		
Define/describe communities **Meet & bring people together** **Organizing the community** **Establish/ strengthen the organizational structure** **Collaboration among fisherfolk /community (networking)** **Activity planning**	Heterogeneous composition of people Ethnic Gender Interest Religion Language Economic status etc	Respect/recognize these differences Use existing governance structures where appropriate Observe gender sensitivity Use simple language Use national/official language or local dialect (if needed) Ensure and support participation of relevant stakeholders Find common ground
	Lack of trained personnel to define communities	Ask assistance for training Facilitate trainers' training Provide assistance for training
	Lack of political will at community level	Try to convince key person/ leader Key person/leader has to convene the community
	Lack/scarcity of skilled leader (inappropriate type & style)	Community has exclusive responsibility & should elect a different leader
	Lack of formal education/skills/ knowledge	Assist in basic education Initiate basic education
	Size of community (too large)	Efficient/appropriate sub-grouping
	Low cohesiveness	Socialization events Initiate community projects
	Mobility between sectors/regions	Identify movement pattern Convene individuals and initiate grouping process
	Lack of confidence	Socialization events Initiate community projects

PHASE II		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
	Lack of awareness	Information drives through media (TV, radio, poster, fliers, etc) Information drives through extension staff/key persons
	Difficulty in internal communication	Channelling communication through key persons (religious leaders, local leaders, community elders)
	Malfunction of marketing system	Give marketing training Include the hindering community members (middlemen) into your marketing approach and ask for their assistance
	High dependence on middlemen (organization conflicts with interest of the middlemen)	Consider including the hindering community members (middlemen) into your marketing approach and ask for their assistance Promote rural credit programme Help establish auction market
Contents		
Identify stakeholders' needs **Identify constraints/ limitations** **Identify opportunities, incentives & options for management** **Build upon traditional knowledge** **Explore alternative livelihood**	Lack of manpower - Skilled persons to identify management option - Skilled persons to identify baseline information - Quality/quantity of personnel	Identification of village-based facilitators to be employed and trained by local government and community groups Government commitment to employ, train and post required staff to each location
	Lack of logistics at various levels (e.g. organization, transport, finance, basic amenities)	Prioritization of requirement should be promoted by community in consultation with concerned agencies Planning, programming and budgeting must be strongly committed Involvement of NGOs, IOs and other interested organizations (local governments, fisherfolk, fishermen's groups) to facilitate the process of decentralized fisheries management (DFM)

PHASE II		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
	Lack of identification of required information	Development of guidelines (information required, collecting methods) by government agencies and community for the use of governments and community
	Social insensitivity of some scientists	Multidisciplinary approach (national and international levels) Stronger inputs from community in research and development Promoting exposure to local conditions
	Poor awareness/responsibility on the part of stakeholders	Design better extension and education programmes targeting unaware stakeholders by national and local governments with support from NGOs, donors, etc Provide sufficient incentives to encourage responsible management by concerned agencies
	Lack of recognition/integration for indigenous/traditional/local knowledge	Include indigenous/traditional/ local knowledge in training and education as well as in the guidelines for community-based natural resource management from local to national levels
	Reluctance to share indigenous/ traditional/local knowledge	Demonstrate benefits of improving communication and information exchange (e.g. through exhibition) among all sectors by local government, community groups, academics and NGOs
	Unavailability of published or unpublished data	Improve communication and information exchange within and among all sectors
	Problem of size (geographical, people, etc)	Work with community to devise workable solution by local governments and community groups involved
	Lack of livelihood ideas/ opportunities/skills	Work with several agencies to identify options
	Lack of methodology	Develop through pilot activities and prepare guidelines by concerned agencies and/or donors

PHASE II		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
Legal		
Provide legal assistance/ support & enforcement **Legal empowerment (e.g. legitimizing norms, customs)**	Lack of appropriate legislative framework & legislation	Study existing legislation Amend or initiate/make new legislation
	Lack of legal literacy/skills – manpower/operationally/ intellectually/substantively	Organize training
	Lack of consultation mechanisms (legitimate or otherwise) - Design - Implement	Set up consultation mechanisms
	Misunderstandings of rights, duties and responsibilities	Educate
	Lack of recognition of customary law	Incorporate relevant customary norms that reinforce community values, sustainability and equitable distribution into decision making
	Unavailability of customary law	Compile customary laws
	Too broad/ill-defined fisheries policy leading to conflicting interpretation	Clarify and streamline policies Educate
	Lack of independent dispute settlement system	Seek out and inform community about additional legislative tools Use public pressure to settle disputes
	Lack of appropriate dispute settlement system, intra-community, inter-community, government	Set up dispute management mechanisms

PHASE II		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
	Inadequate enforcement mechanisms - Information provision - Consultation - Clear penal provisions - Principle of fairness	Strengthen enforcement mechanisms through arrangements that enjoy full legitimacy Promote community-based enforcement strategies Establish & promote social sanctions Establish & promote information provision Establish & promote consultation Establish & promote clear penal provisions Establish & promote principle of fairness
Support		
Identify political responsibility & authority **Create & enhance political (incl. financial) support** **Political empowerment** **Providing enforcement assistance**	Lack of or a change in political will, national, local	Advocate at national and local levels Create constituency at local level
	Lack of a clear policy/legislation	Create database/information in order to update/review of policy/legislation Make proposal based on participatory approach of stakeholders Make new legislation accommodating the needs and requirements in the CCRF Clarify policy through media
	Lack of administrative/structure support at various levels	Enhance/improve awareness of administrators Create self-help mechanism

PHASE II		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
	Lack of general support (e.g. human, financial, facility, etc.) - Budgetary constraints - Qualified manpower & budgetary constraints for enforcement - Marketing - Credit - Social security and safety at sea	Promote systems and build capacity of lean management Encourage self-financing scheme Create support mechanisms for marketing, credit and social security and safety Create examples of best management experience from pilot cases Promote educational role of community members in enforcement
	Limited access to formal and informal political linkage/circle	Encourage local community members to be elected into the formal political system Educate community members to vote strategically Improvement of participation of informal leaders
	Lack of involvement of community in the decision-making process	Convince by doing Involve community in all stages of activities
	Insufficient level of readiness	Develop medium/long-term plans/vision Keep informed/establish line of communication
	Lack of sustainability/durability/ continuity of support	Provide medium/long-term plan to supporting agency Impress with internal success cases
Training		
Training on **- environment,** **- techniques,** **- management,** **- resource utilization,** **- productivity, enhancement, etc,**	Lack of trainers - Manpower - Quality	Trainer capacity building
	Lack of logistics: - Financial - Facilities - Materials	Provide finance Provide facilities Be flexible in using local facilities

PHASE II		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
	Lack of trainers' training	Provide training course for trainers
	Lack of curriculum	Develop more practical and comprehensive courses
	Communication gaps - between groups - between local agencies	Develop linkage between relevant parties through collaboration and cooperation by meeting, workshop, publishing
	Insufficient integration of local knowledge into training programme	Identify and incorporate local knowledge and skills into the training programme
	Lack of community participation in training design	Motivate, participatory involvement of relevant communities in training design Enable community members to participate e.g. by providing some financial support Get assistance from religious or informal leaders
	Low acceptance of new concepts	Motivating, teaching, explaining to the stakeholders regarding the benefits of the new concept
	Insufficient examples/ indicators/templates	Giving examples from other successful projects
	Cultural, religious, social and economic differences within target groups	Identify and determine the best solution acceptable to the groups
	Insufficient training needs assessment	Provide more detailed socioeconomic survey regarding the actual situation of the people
	Lack of training evaluation and feedback mechanism	Set up and appraise the training evaluation and feedback mechanism
	Lack of field experience of trainees	Provide more incentive and/or collaboration between trainers/ trainees and local community
	Lack of continuity and sustained training	Set up a series of training and follow up programmes

PHASE II		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
Process		
Maintaining cooperative spirit **Facilitate conflict resolution** **Communicate & facilitate, Translating & listening, Transfer/ exchange of knowledge**	Lack of facilitation skills/few facilitators	Provision of training for trainers
	Lack of common understanding (due to different concepts)	Communicate, discuss, interact
	Lack of common language	Consider using interpreters
	Lack of progressive sanctions	Formulation of appropriate sanctions of rules and regulations
	Lack of effective sanctions/rules	Provision of sustainable monitoring of sanctions implemented
	Poor compliance with rules/norms	Identify underlying reasons for non-compliance and take necessary action, e.g. promote awareness and strengthen enforcement of rules and regulations
	Lack of community participation in formulating rules and regulations	Ensure full participation of the community in formulating rules
	Too many provocateurs	Recommend involvement of provocateurs in the whole process
	Lack of flexibility	Facilitate regular review of the process (negotiation, collaboration, etc)
	Inability to accept limitation	Provide clear understanding of the issues of the process from the beginning
	Lack of accountability	Create accountability mechanisms Transparent mechanisms
	Lack of courage to act despite the limitations	Provide authority and responsibility to the community leader to act despite the limitations

PHASE III		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
Organization		
Organizing the community **Establish/ strengthen the organizational structure** **Collaboration among fisherfolk/ community (networking)** **Activity planning**	Heterogeneous composition of people - Ethnic - Gender - Interest - Religion - Language - Economic status - etc	Respect/recognize these differences Use existing governance structures where appropriate Observe gender sensitivity Use simple language Use national/official language or local dialect (if needed) Ensure and support participation of relevant stakeholders Find common ground
	Lack of trained personnel to define communities	Provide assistance for training Ask assistance for training Facilitate trainers' training
	Lack of political will at community level	Try to convince key person/ leader Key person/leader has to convene the community
	Lack/scarcity of skilled leader (inappropriate type & style)	Community has exclusive responsibility & should elect a different leader
	Lack of formal education/skills/ knowledge	Assist in basic education Initiate basic education
	Size of community (too large)	Efficient/appropriate sub-grouping
	Low cohesiveness	Socialization events Initiate community projects
	Mobility between sectors/ regions	Convene individuals and initiate grouping process
	Lack of confidence	Socialization events Initiate community projects

PHASE III		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
	Lack of awareness	Information drives through media (TV, radio, poster, fliers, etc) Information drives through extension staff/key persons
	Difficulty in internal communication	Channelling communication through key persons (religious leaders, local leaders, community elders)
	Malfunction of marketing system	Give marketing training Include the hindering community members (middlemen) into your marketing approach and ask for their assistance
	High dependence on middlemen (organization conflicts with the interest of the middlemen)	Consider including the hindering community members (middlemen) into your marketing approach and ask for their assistance Promote rural credit programme Help establish auction market
Contents		
Initiate management planning process	Lack of manpower - Skilled persons to identify management options - Skilled persons to identify baseline information - Quality/quantity personnel	Government commitment to employ, train and post required staff to each location Curriculum development (in consultation with line agencies, donors, etc) should respond to changing human resource needs
	Lack of logistics at various levels (e.g. organization, transport, finance, basic amenities)	Prioritization of requirement should be promoted by community in consultation with concerned agencies Planning, programming and budgeting must be strongly committed Involvement of NGOs, IOs and other interested organizations (local governments, fisherfolk, fishermen's groups) to facilitate the process of decentralized fisheries management (DFM)

PHASE III		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
	Lack of identification of required information	Development of guidelines (information required, collecting methods) by government agencies and community for the use of governments and community
	Social insensitivity of some scientists	Multidisciplinary approach (national and international levels) Stronger inputs from community in research and development Promoting exposure to local conditions
	Poor awareness/responsibility on part of stakeholders	Design better extension and education programmes targeting unaware stakeholders by national and local governments with support from NGOs, donors, etc Provide sufficient incentives to encourage responsible management by concerned agencies
	Lack of recognition/integration for indigenous/traditional/local knowledge	Include indigenous/traditional/ local knowledge in training and education as well as in the guidelines for community-based natural resource management from local to national levels
	Reluctance to share indigenous/ traditional/local knowledge	Demonstrate benefits of improving communication and information exchange (e.g. through exhibition) among all sectors by local government, community groups, academics and NGOs
	Unavailability of published or unpublished data	Improve communication and information exchange within and among all sectors Create local library/information centre Provide incentive to publish data
	Lack of livelihood ideas/ opportunities/skills	Consider institutional reforms Information exchange by all concerned

PHASE III		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
	Lack of methodology	Develop through pilot activities and prepare guidelines by concerned agencies and/or donors
Legal		
Provide legal assistance/ support & enforcement **Legal empowerment (e.g. legitimizing norms, customs)**	Lack of appropriate legislative framework & legislation	Study existing legislation Amend or initiate/make new legislation
	Lack of legal literacy/skills - Manpower/operationally - Intellectually/substantively	Organize training
	Lack of consultation mechanisms (legitimate or otherwise) - Design - Implement	Set up consultation mechanisms
	Misunderstandings of rights, duties and responsibilities	Education
	Too broad/ill-defined fisheries policy leading to conflicting interpretation	Clarify and streamline policies Educate
	Lack of independent dispute settlement system	Seek out and inform community about additional legislative tools Use public pressure to settle disputes
	Lack of appropriate dispute settlement system intra-community, inter-community, government	Set up dispute management mechanisms

PHASE III		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
	Inadequate enforcement mechanisms - Information provision - Consultation - Clear penal provisions - Principle of fairness	Strengthen enforcement mechanisms through arrangements that enjoy full legitimacy Promote community-based enforcement strategies Establish & promote social sanctions Establish & promote information provision Establish & promote consultation Establish & promote clear penal provisions Establish & promote principle of fairness
Support		
Identify political responsibility & authority **Providing enforcement assistance**	Lack of or a change in political will - Local - National	Advocate at national and local levels Create constituency at local level
	Lack of a clear policy/legislation	Create database/information in order to update/review of policy/legislation Make proposal based on participatory approach of stakeholders Make new legislation accommodating the needs and requirements in the CCRF Clarify policy through media
	Lack of administrative/structure support at various levels	Enhance/improve awareness of administrators Create self-help mechanism

PHASE III		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
	Lack of general supports (e.g. human, financial, facility, etc) - Budgetary constraints - Qualified manpower & budgetary constraints for enforcement - Marketing - Social security and safety at sea	Promote systems and build capacity of lean management Encourage self-financing scheme Create support mechanisms for marketing, credit and social security and safety Create examples of best management experience from pilot cases Promote educational role of community members in enforcement
	Limited access to formal and informal political linkage/circle	Encourage local community members to be elected into the formal political system Educate community members to vote strategically Improvement of participation of informal leaders
	Lack of involvement of community in the decision-making process	Convincing by doing Involve community at all stages of activities
	Insufficient level of readiness	Develop medium/long-term plans/vision Keep informed/ establish line of communication
	Lack of sustainability/durability/ continuity of support	Provide medium/long-term plan to supporting agency Develop a phased change-over plan Impress with internal success cases

PHASE III		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
Training		
Training on **- environment** **- techniques** **- management** **- resources utilization** **- marketing** **- productivity enhancement, etc.**	Lack of trainers, manpower, quality	Trainer capacity building
	Lack of trainers' training	Provide training course for trainers
	Size [geographical, people]	Scaling by appropriate sub-grouping
	Lack of curriculum	Develop more practical and comprehensive courses
	Communication gaps, between groups, between local agencies	Develop linkage between relevant parties through collaboration and cooperation by meeting, workshop, publishing
	Lack of community participation in training design	Motivate, participatory involvement of relevant communities in training design Enable community members to participate, e.g. by providing some financial support
	Low acceptance of new concepts	Motivating, teaching, explaining to the stakeholders regarding the benefits of the new concept
	Insufficient examples/indicators/templates	Giving examples from other successful projects
	Insufficient training needs assessment	Provide more social-economic survey regarding the actual situation of the people
	Lack of training evaluation and feedback mechanism	Set up and appraise the training evaluation and feedback mechanism
	Lack of field experience of trainees	Provide more incentive and/or collaboration between trainers/ trainees and local community
	Lack of continuity and sustained training	Set up series of training and follow up programmes

PHASE III		
ACTIONS	**CONSTRAINTS**	**ACTIVITIES (Solutions)**
Process		
Maintaining cooperative spirit **Facilitate conflict resolution** **Communicate & facilitate** **Translating & listening** **Transfer/ exchange of knowledge**	Lack of facilitation skills/few facilitators	Provision of training for trainers
	Lack of common understanding (due to different concepts)	Communicate, discuss, interact
	Lack of common language	Consider using interpreters
	Lack of progressive sanctions	Formulate appropriate sanctions of rules and regulations
	Lack of effective sanctions/rules	Provide sustainable monitoring of sanctions implemented
	Poor compliance with rules/norms	Identify underlying reasons for non-compliance and take necessary actions, e.g. promote awareness and strengthen enforcement of rules and regulations
	Lack of community participation in formulating rules and regulations	Ensure full participation of community in formulating rules
	Too many provocateurs	Recommend involvement of provocateurs in the whole process
	Lack of flexibility	Facilitate regular review of the process (negotiation, collaboration, etc)
	Inability to accept limitation	Provide clear understanding of the issues of the process from the beginning
	Lack of accountability	Transparent mechanisms
	Lack of courage to act despite the limitations	Provide authority and responsibility to the community leader to act despite the limitations

Annex 1

List of Participants

AUJIMANGKUL, SANGTIEN
Department of Fisheries management
Faculty of Fisheries, Kasetsart University
Jatujak, Bangkok 10903
Thailand
Tel. : (66) 2-5797642
Fax. : (66) 2-5797642
E-mail : ffissaa@nontri.ku.ac.th

CHUENPAGDEE, RATANA
Lecturer
Virginia Institute of Marine Science
School of Marine Science
P.O. Box 1346
Route 1208 Great Road
Gloucester Point
Virginia 23062
USA
Tel. : (804) 6847335
Fax. : (804) 6847843
E-mail : ratana@vims.edu

DICKSON, JONATHAN O.
Chief, Capture Fisheries Division
Bureau of Fisheries and Aquatic Resources
860 Quezon Ave., Arcadia Bldg.
Quezon City 3008
Philippines
Tel. : (63) 2-3725051
Fax. : (63) 2-3725056
E-mail : bfarnmfd@info.com.ph

DULYAPURK, VARUNTHAT
Department of Fisheries Management
Faculty of Fisheries, Kasetsart University
Jatujak, Bangkok 10903
Thailand
Tel. : (66) 2-5797642
Fax. : (66) 2-5797642
E-mail : ffisvtd@nontri.ku.ac.th

EVANS, PATRICK T.
Chief Technical Adviser
GCP/CMB/008/BEL
P.O.Box 2
Siem Reap Province
Cambodia
Tel. : (855) 012-826125
Fax. : (855) 063-963525
E-mail : pte@rep.forum.org.kh

FUNGE-SMITH, SIMON
Aquaculture Officer
FAO Regional Office for Asia and the Pacific
Maliwan Mansion
39 Phra Athit Road
Bangkok 10200
Thailand
Tel. : (66) 2-6974149
Fax. : (66) 2-6974149
E-mail : Simon.fungesmith@fao.org

HARTMANN, WOLF
Programme Coordinator
Management of Reservoir Fisheries in the Mekong Basin II
Mekong River Commission
P.O. Box 7035
Vientiane
Lao PDR
Tel. : (856) 21-223436
Fax. : (856) 21-223610
E-mail : merops@laotel.com

HISASHI, OGAWA
Room 314, Capital Mansion 1371
Phaholyothin Rd.
Bangkok
Thailand
Tel. : (66) 2-2797070
Fax. : -
E-mail : hisashia69@hotmail.com

HONGSKUL, VERAVAT
Senior Fisheries Officer
FAO Regional Office for Asia and the Pacific
Maliwan Mansion
39 Phra Athit Road
Bangkok 10200
Thailand
Tel. : (66) 2-6974176

Fax : (66) 2-6974445
E-mail : veravat.hongskul@fao.org

JUNTARASHOTE, KUNGWAN
Director
Coastal Development Centre
Faculty of Fisheries, Kasetsart University
Jatujak, Bangkok 10903
Thailand
Tel. : (66) 2-5611947 ext.24
Fax. : (66) 2-9825815
E-mail : ffiskwj@ku.ac.th

KAEWNERN, METHEE
Coastal Development Centre
Faculty of Fisheries, Kasetsart University
Jatujak, Bangkok 10903
Thailand
Tel. : (66) 2-5797642
Fax. : (66) 2-5797642
E-mail : ffismtk@ku.ac.th

U KHIN MAUNG AYE
Head of Fisheries Training Institute
Department of Fisheries
Sinmin Rd. Ahlone T/S
Yangon
Myanmar
Tel. : (95) 01-680745
Fax. : (95) 01-228258
E-mail : DOF@ mpt mail.net.mm

LONG, NGUYEN
Deputy Director
Research Institute for Marine Fisheries
Ministry of Fisheries
170 Le Lai Str.
Haiphong City
Viet Nam
Tel. : (84) 31-826046
Fax. : (84) 31-836812
E-mail : nlong@hn.vnn.vn

MARTOSUBROTO, PURWITO
Fisheries resources Officer
Marine Resources Service
Fisheries resources Division
Fisheries Department
Viale delle Terme di Caracalla
00100 Rome
Italy
Tel. : (39) 06-57056469
Fax. : (39) 06-57053020
E-mail : Purwito.martosubroto@fao.org

MATHEW, SEBASTIAN
Executive Secretary
International Collective in Support of Fishworkers (ICSF)
27 College Rd.
Chennai 600006
India
Tel. : (91) 44-8275303
Fax. : (91) 44-8254457
E-mail : icsf@vsnl.com

METZNER, REBECCA
Fisheries Officer
Fisheries Policy and Planning Division
Fisheries Department
Viale delle Terme di Caracalla
00100 Rome
Italy
Tel. : (39) 06-57056718
Fax. : (39) 06-57056500
E-mail : Rebecca.Metzner@fao.org

MOHD. TAUPEX B MOHD. NASIR
Head of Stock Assessment Unit
Marine Fisheries Research Development and Management Department
Southeast Asian Fisheries Development Center
21080 Chendering, Kuala Terengganu
Malaysia
Tel. : (60) 9-6174042
Fax. : (60) 9-6174042
E-mail : tpkseafdec@po.jaring.my

NIKIJULUW, VICTOR
Director of Coastal Society
Department of Fisheries & Marine Affairs
J. MT Haryono Kav. 52-53
Jakarta-12770
Indonesia
Tel. : (62) 21-79080303
Fax. : (62) 21-79080304
E-mail : vicniki@indo.net.id

PIMOLJINDA, JATE
Director
Andaman Sea Fisheries Development Centre
Department of Fisheries
77 Sakdidej Rd.
Muang District, Phuket Province
Thailand
Tel. : (66) 076-391140
Fax. : (66) 076-391139
E-mail : jpafdec@phuket.ksc.co.th

SANGCHAN, SUCHAT
Fisheries Biologist
Phang-Nga Marine Fisheries Station
Department of Fisheries
91 Petchkasem Rd.
Thaimuang District, Phong-Nga Province
Thailand
Tel. : (66) 076-412788
Fax. : (66) 076-412788
E-mail : -

SEILERT, HEIKO
Fisheries Consultant
FAO Regional Office for Asia and the Pacific
Maliwan Mansion
39 Phra Athit Road
Bangkok 10200
Thailand
Tel. : (66) 2-6974281
Fax. : (66) 2-6974445
E-mail : heiko.seilert@fao.org

SUPONGPAN, MALA
Senior Fisheries Biologist
Bangkok Marine Fisheries Development Centre
49 Soi Wat Bangpeong
Prayaviriyaporn Road
Prapradaeng, Samut Prakarn Province
Thailand
Tel. : (66) 2-8167636 to 38
Fax. : (66) 2-8167634
E-mail : malas@fisheries.go.th, mala@seafdec.org

THUMMACHUA, SMITH
Fisheries Officer
Department of Fisheries
Ministry of Agriculture and Cooperatives
Jatujak, Bangkok 10900
Thailand
Tel. : -
Fax. : -
E-mail : thumma@u.washington.edu

TRISAK, JIRAPORN
Department of Fisheries management
Faculty of Fisheries, Kasetsart University
Jatujak, Bangkok 10903
Thailand
Tel. : (66) 2-5797642
Fax. : (66) 2-5797642
E-mail : ffisjpt@nontri.ku.ac.th

TRY, ING
Deputy Director
Fisheries Department
Ministry of Agriculture Forestry & Fisheries
Department of Fisheries
186 Norodom Blvd
P.O.Box 582 Phnom Penh
Cambodia
Tel. : (855) 23-219256 H/P : (855)-(0) 11-957884
Fax. : (855) 23- 427048
E-mail : tmmp.cam@bigpond.com.kh

VICHITLEKARN, SURIYAN
Information Officer
SEAFDEC Secretariat
Suraswadi Building, Kasetsart University Campus
P.O.Box 1046, Kasetsart Post Office
Bangkok 10903
Thailand
Tel. : (66) 2-9406326 to 9
Fax. : (66) 2-9406336
E-mail : Suriyan@seafdec.org

WONGSANGA, POUCHAMARN
SEAFDEC Secretariat
Suraswadi Building, Kasetsart University Campus
P.O.Box 1046, Kasetsart Post Office
Bangkok 10903
Thailand
Tel. : (66) 2-9406326 to 9,
Fax. : (66) 2-9406336
E-mail : pouch@seafdec.org

WIEDEMEYER, WINFRIED
Consultant in Coastal Resources Management
and Fisheries
ENRD, Office of the Governor
6200 Dumaguete City
Philippines
Tel. : (63) 35-4229273
Fax. : (63) 35-2251643
E-mail : symcor2@mozcom.com

SECRETARIAT

Coastal Development Centre
Faculty of Fisheries
Kasetsart University
Jatujak, Bangkok 10903
Thailand

KUNGWAN JUNTARASHOTE
Organizer and Liaison Officer

RATANA CHUENPAGDEE
Facilitator

HEIKO SEILERT
Technical Coordinator

Passara Rattanaphisit

Sansanee Wangworarak

Urairat Netharn

Sirisuda Jumnongsong

Kanjana Narksangthong

Annex 2

Prospectus

Regional consultation on an interactive mechanisms for small-scale fisheries management

Background and rationale

The review of the state of world fisheries resources by FAO indicates that about 60 percent of all marine fish stocks are overfished or fished at their limits, described as maximum sustainable yields. Furthermore, FAO recognizes that fisheries data are weak, especially that for inland fisheries. These latter data most probably underestimate several-fold the importance of this sector to food security. Based on these facts, efficiently managed aquatic resources are seen as the only option to further improve fisheries production and to overcome the devastating impact, to the point of degradation, of the fast-developing fishing sector. The fisheries industry is literally able to catch the last fish and this potential is increased by the lack of appropriate legislative support and implementation of sustainable management practices. Only efficient fisheries management in marine as well as freshwater habitats will be able to provide future generations with a constant and sustainable supply of fish and fish products. This is addressed in the FAO Code of Conduct for Responsible Fisheries under Article 7 on fisheries management.

In the Asian region, which is responsible for roughly 50 percent of the global fish production, the measures described under Article 7 of the Code of Conduct are generally not accepted or implemented as imperative management tools for a sustainable fisheries management. The reasons for this are complex in nature. First, the Asian region has the highest aquatic biological diversity in the world, equally true for freshwater as well as marine habitats. This leads to a great variety of fishing techniques, described as multi-species and multi-gear fisheries. Second, fishing techniques and fisheries management are further diversified by a rich ethnic diversity, with very divergent cultural backgrounds, religious beliefs as well as very different social and political systems. Third, about 90 percent of the world's 30 million fishermen work in Asia, roughly 80 percent of them as small-scale or artisanal fishermen, a growth of 240 percent since 1970. This data significantly underestimates the total number of people involved in part-time or full-time fisheries. Any fisheries management attempt has to consider the above points to avoid an unrealistic approach. In addition the rapidly increasing number of people involved in fisheries in Asia, the dependence on fisheries as last-resort employers and for food security, must urge fisheries managers to look at the socioeconomic side of fisheries, since millions are dependent on this sector.

In Article 7 of the FAO Code of Conduct, however, fisheries management measures almost exclusively focus on fish stocks for commercial fisheries requiring data to support management decisions based on the best scientific evidence. In most Asian fisheries, the resource diversity as well as the diverse fishing activities in combination with the large and increasing fisherfolk in both inland and coastal areas suggest a refocus. In addition, the lack of data concerning the entire small-scale fishing sector, depending on so-called subsistence fishing, municipal fisheries, family fisheries, etc, further hampers national management approaches and has led to a severe underestimation of the small-scale fishing sector, particularly in the coastal areas, which are responsible for 90 percent of the overall catch in

marine habitats. Any management focusing solely on commercially important fish species (i.e. export, local luxury fish) would ignore the social and economical importance of small-scale fisheries and its impact on resource sustainability as well as environmental degradation.

A holistic management approach to address the needed management issues, with local management of coastal resources, has received increased attention in the last decade. The implementation of management schemes was attempted for whole coastal areas including onshore, inland and even upland activities that affect renewable resource management, i.e. resource management, coastal zone management, integrated coastal management, etc. Similar concepts have been developed to manage and enhance inland fisheries. However, most of these management concepts require input, commitment and activity from the local fishing communities, as well as knowledge and understanding of ecological interactions between aquatic resources and complex land-water interactions. The provision of such knowledge is the target of many ongoing national and regional consultations and programmes. Nonetheless, these concepts do not seem to highlight the required intersectoral approach and developmental linkages, to assure the sustainable use of the resources, whether for fisheries or for other human activities. Successful small-scale fisheries management should not confine itself to fishing alone; other factors influencing the socioeconomic development of the community must also be included. A multidisciplinary, intersectoral development approach is suggested as more effective to achieve fisheries management goals. Unfortunately, the lack of interactive decision-making mechanisms in most developing countries hampers this development. The question of how to reach and involve small-scale fisherfolk in fisheries management decisions is of utmost importance for community involvement in fisheries management.

Common to all current management approaches is the involvement of local fisherfolk as well as decision-makers at the lower level in the decision-making process. Considerable effort has gone into establishing co-management or community-based fisheries management schemes. However, in most countries the final decision is still made at the national level. Few success stories have been reported using the current strategy to date. Most of the consultations and programmes, whether government-funded or donor-driven, have failed to overcome a variety of constraints. These constraints and revisions to strategy are the focus for your input during this consultation.

The underlying concept behind this decentralized approach is the participatory approach – that local people directly involved in fishing activities would also be the best managers of their resources. Efforts have been made to capacitate local fisherfolk and to mobilize fishing communities. In many cases, however, the fact that the fishermen are already best adapted to the given social, economic, environmental and legal framework in which they earn their living has been ignored. Understandably, their focus lies on earning a living and not on managing the resources. Economic pressures and other constraints on most small-scale fisherfolk in Asia do not allow them to think in the long term or for future generations. For example, dependence on middlemen has increased the competition among small-scale fisherfolk and has led to the use of destructive fishing practices and to migration into neighbouring fishing areas, further accelerating the destruction of fishing grounds. In most cases the fishermen are well aware of the destructive character of their fishing activities, but they do not see or are not enabled to see other ways to earn a living in fisheries. Therefore, it is suggested that the training of local fisherfolk needs to be augmented with interagency and higher level linkages to succeed in the establishment of local fisheries management schemes.

Any attempt to localize fisheries management needs careful analysis of all constraints that have, until now, prevented the implementation of sustainable fishing activities. Such analysis has to include, inter alia, the dependence on middlemen, the proposed functions of local government offices and line agencies and their actual role in small-scale fisheries, the status of the resources, the environmental status, the mentality of the fisherfolk, their religion, social status and educational background. With all this in mind, a closer look is needed to identify the economical, social, legal and institutional requirements for an appropriate implementation of a community-based fisheries management. Such analysis shall lead to an appropriate implementation plan to overcome observed constraints. Furthermore, the legislative, technical and coordinating support from district-, provincial- and national-level government agencies need to be factored into the exercise for it to gain acceptance and commitment for the project. Failure to address these linkages has often resulted in non-support of the project at the national level and its neglect once donor funding came to an end.

Decentralized fisheries management has not only far-reaching consequences for the local fisherfolk: for national government agencies this means a loss of authority and responsibility; for the local communities, people's organizations of the civil society, as well as for local government units, it means much increased responsibilities and obligations that go beyond short-term initial benefits. Part of this consultation shall be devoted to the identification of these responsibilities and obligations and of ways and means to most efficiently involve communities, local fisheries offices and other government agencies in such management approaches. Furthermore, decentralization alone does not solve any fisheries-related problem; it only transfers large parts of the responsibilities and problems to local communities. In many cases, unfortunately, this is done without appropriate training and preparation of the communities and, sometimes, not even with an appropriate legal framework. The participants in this consultation are encouraged to discuss and develop practical interactive mechanisms to enable the local communities to identify problems in fisheries, to enforce community-based decisions and to link them with the responsibilities and obligations that are still in the hands of the local fisheries offices of the governments and under national coordination.

Objectives

A consultation composed of experts from governments, development agencies, donors and selected NGOs, experienced in implementing small-scale fisheries management, will be asked to provide their views and share experiences. These experts will discuss the constraints in decentralized management and possible ways to solve resulting problems.

To achieve this, the participants would be specifically asked to discuss the following issues:

1. How best to address small-scale fisherfolk or fishing communities;
2. To identify responsibilities and obligations in decentralized small-scale fisheries management;
3. To identify the constraints in implementing local fisheries management and to group these in categories such as social, economic, environmental, legal constraints, interagency liaison;
4. To develop practical solutions for the different groups of constraints to assure environmentally sustainable, economically feasible and socially sound decentralized management decisions; and
5. To link these findings in a holistic scenario of interactive mechanisms for the implementation of decentralized small-scale fisheries management schemes.

Annex 3

Programme

Sunday 25 November 2001
Arrival of the participants

Day 1: Monday 26 November 2001

08:00 Registration

09:00 Welcome address by Torkul Kanchanalai, Vice Rector, Kasetsart University

Opening address by Veravat Hongskul, Senior Fisheries Officer, FAO

Introduction of the participants

9:30 **Presentation of regional papers**

Purwito Martosubroto: Towards strengthening coastal fisheries management in South and Southeast Asia

Rebecca Metzner: Ecosystem-based management and small-scale fisheries

Heiko Seilert: Regional synthesis of the current status of small-scale fisheries management in Asia

10:15 Coffee break - Group photo

10:45 **Presentation of country papers**

Ing Try: Small-scale fisheries management in Cambodia

Sebastian Mathew: Managing small-scale fisheries in India: need for a paradigm shift

Victor P. H. Nikijuluw: Small-scale fisheries management in Indonesia

Mohd Taupek Mohd Nasir: Co-management of small-scale fisheries in Malaysia

Khin Maung Aye: Small-scale fisheries in Myanmar

Jonathan O. Dickson: Current status of small-scale fisheries in the Philippines

Jate Pimoljinda: Small-scale fisheries management in Thailand

Nguyen Long: Small-scale fisheries management in Viet Nam

Presentation of experience papers

Wolf D. Hartmann: Interactive mechanisms in the management of reservoir fisheries in the Mekong Basin: the MRF II experience

Patrick Evans: Community fisheries development on the Tonle Sap in Cambodia

Winfried Wiedemeyer: Small-scale fisheries management by Philippine line agencies and local government units: status and suggestions for improvement

12:45 Lunch

14:15 **Working Session I**
Identification of steps in decentralizing small-scale fisheries management

16:00 Coffee break

16:30 **Working Session II**
Identification of areas/sectors and responsibilities involved in decentralized small-scale fisheries management

18:30 Dinner hosted by FAO

Day 2: Tuesday 27 November 2001

09:00 Presentation of the findings of Day 1

09:15 **Working Session III – Part One**
Identification of constraints in implementing decentralized small-scale fisheries management

12:30 Lunch break

14:00 **Working Session III – Part Two**
Identification of mechanisms or solutions to overcome the constraints in implementing decentralized small-scale fisheries management

Day 3: Wednesday 28 November 2001

09:00 Presentation of the findings of Day 2

09:15 **Working Session IV**
Development of an interactive plan for the implementation of small-scale fisheries management

12:30 Lunch break

14:00 Continuation of Session IV

15:30 Coffee break

16:00 **Working Session V**
Development of the monitoring and evaluation framework

16.30 Dinner hosted by the Coastal Development Centre

Day 4: Thursday 29 November 2001

09:00 Presentation of the draft interactive plan and discussion

10:30 Coffee break

11:00 Discussion of the draft plan (continued)

12:30 Lunch break

14:00 Conclusion and recommendations

Annex 4

List of Documents

Regional papers

Purwito Martosubroto: Towards strengthening coastal fisheries management in South and Southeast Asia

Rebecca Metzner: Ecosystem-based management and small-scale fisheries

Heiko Seilert: Regional synthesis of the current status of small-scale fisheries management in Asia

Country papers

Ing Try, Sao Vansereyvuth and Thay Somony: Small-scale fisheries management in Cambodia

Sebastian Mathew: Managing small-scale fisheries in India: need for a paradigm shift

Victor P. H. Nikijuluw: Small-scale fisheries management in Indonesia

Mohd Taupek Mohd Nasir: Co-management of small-scale fisheries in Malaysia

Hla Win and Khin Maung Aye: Small-scale fisheries in Myanmar

Jonathan O Dickson: Current status of small-scale fisheries in the Philippines

Jate Pimoljinda: Small-scale fisheries management in Thailand

Nguyen Long: Small-scale fisheries management in Viet Nam

Experience papers

Wolf D. Hartmann: Interactive mechanisms in the management of reservoir fisheries in the Mekong Basin: the MRF II experience

Patrick Evans: Community fisheries development on the Tonle Sap in Cambodia

Winfried Wiedemeyer: Small-scale fisheries management by Philippine line agencies and local government units: status and suggestions for improvement

Information papers

Ratana Chuenpagdee: Involving fisherfolk and their knowledge in small-scale fisheries co-management

FAO: Code of Conduct for Responsible Fisheries, Article 7: fisheries management

HVC Fernando: Sri Lankan experiences on small-scale fisheries management initiatives

Sebastian Mathew: Small-scale fisheries perspectives on an ecosystem-based approach to fisheries management

Jiraporn Trisak: An investigation of the influence of growth and initial stock size characteristics on cooperation in fisheries co-management

Fikret Berkes, Robin Mahon, Patrick McConney, Richard Pollnac and Robert Pomeroy (2001): Managing Small-Scale Fisheries: Alternative Directions and Methods, International Development Research Centre, Ottawa, 308 pp. Excerpts from page 86-90 and 193-254

Annex 5

Welcome Address

Torkul Kanchanalai
Vice Rector, Kasetsart University, Bangkok

Good morning, ladies and gentlemen.

It is my great pleasure and a true honour to welcome you to the FAO/CDC Regional Consultation on Interactive Mechanisms for Small-Scale Fisheries management. Many of you have been here since last week at the ASEAN-SEAFDEC conference, and some of you just arrived yesterday. On behalf of the Coastal Development Centre of Kasetsart University, the co-host of this workshop, I would like to extend my warmest welcome to you all.

This meeting marks two very important occasions. First, as we all know, the importance of small-scale fisheries in the region cannot be overemphasized. It is thus imperative that we develop a holistic and effective management framework, as well as a practical and interactive plan for successful implementation to manage the small-scale fisheries. Needless to say, this is a very challenging task, but I trust that through this workshop, you will be able to work together to achieve this ambitious goal, using your vast experience and knowledge.

This meeting is the first collaboration between the FAO Regional Office and the Coastal Development Centre (or CDC) of Kasetsart University. While FAO has long established its superb reputation as a leading organization in the management of fisheries, CDC is a young institute, aspiring to work collaboratively with scientists, decision-makers, resource users and other interest groups in the region to address emerging problems in our coastal areas, using integrated approaches. It is therefore very encouraging to see such collaboration and I hope that this will lead naturally to future collaborative endeavours.

Please accept again my hearty welcome. I wish you a great success in this consultation and I hope as well that you will enjoy your stay in Thailand.

Thank you.