

漁村の多面的機能と Ecosystem Based Co-Management
～東南アジアにおける参加型の統合沿岸域資源管理の発展～

Multi-functionality of Fishing Community and
Ecosystem Based Co-management

平成 16 年度～ 18 年度科学研究費補助金（基盤研究（B）（1））
課題番号 16405028
海外学術調査研究成果報告書（Ⅳ）

PROGRESS REPORTS OF THE SURVEY IN SOUTH THAILAND
No.2

New Movements and Development of Locally Based Coastal
Resource Management, and Resource Utilization

平成 19 年 3 月

研究代表者 山尾政博
(広島大学大学院生物圏科学研究科・教授)

PROGRESS REPORT OF THE SURVEY IN SOUTH THAILAND

No.2

**New Movements and Development of Locally Based Coastal Resource Management,
and Resource Utilization**

PREFACE

This volume is titled with “Progress Report of the Survey in South Thailand No.2”, focusing mainly on the new movements of locally based coastal resource management. We have already made an in-depth description of the basic structure of fisheries and resource utilization in our research sites of South Thailand, which was appeared in the “Progress Report of the Survey in South Thailand No.1.” Decentralized and participatory approach has widely been accepted as an effective tool to develop a sustainable framework of coastal resource management. There are a number of successful pilot projects modifying community-based coastal resource management (CBRM) and co-management. Especially, Coastal Habitats and Resource Management (CHARM), financially supported by EU, has planned and implemented to build workable institutions of coastal management at provincial levels while encouraging local people to improve their livelihood. The key concept of these projects is on how to make co-management frameworks in which central and local would share responsibility for management issues. Like CHARM’s projects, we have so far investigated good practices in some selected coastal communities in the Phna-nga Bay. Now, it is time to make much effort to convert some important lessons and knowledge into suggestion and recommendation of policy formulation.

The contents of this volume are divided into three parts.

The first part focuses mainly on the development process of CBRM strategy, and discusses its future direction of CBRM and co-management. **Yamao** analyzed knowledge and technologies gained and accumulated through experiences of CBRM and co-management projects not only in Thailand and the Philippines, but also in other parts of Southeast Asia. The author proposed to establish networks of community-based management bodies that would be able to cover a wider coastal zone. Local governments had a greater role of controlling, management and surveillance while supporting people’s self-help management activity. Decentralized mechanism of coastal resource management should be designed to effectively work for further development of participatory approach.

Chenkitsokol and Yamao proposed the new concept of locally based coastal resource management, with a greater emphasis on the increasing role of sub-district local administration (namely, Ao.Bo.To). This is a primary unit of Thai local administration. There is still much argument over if Ao.Bo.To can afford to take part of responsibility for local resources and environment, due to lack of personnel and budget. However, they admitted that there was no alternative choice as regards Ao.Bo.To.’s involvement in coastal resource management. More practical and in-depth analysis was conducted to formulate a policy for setting up a new type of coastal resource management. It may be in middle course between top-down and bottom-up approaches. The local administration would strengthen legal framework of people’s participation in decision-making process and formulate local rules and ordinances according to their consensus. Efficient, but simple arrangements of decentralized and participatory management should be established.

In the second part, two papers focus on the recovery processes of tsunami affected communities in the Phang-nga Bay. **Suanrathanachai (co-operate researcher, JSPS research fellow) and others** purposed to identify the loss and damage of fishers by the tsunami while referring to small-scale fisheries development programs in coastal communities in Phang-nga province. They assessed the relief programs having been implemented so far and their contribution to the rehabilitation of fishing communities. Fishers' and community-based groups played a very important role in rehabilitation. They observed that relief help both from government and NGOs might bring much more catch effort than before the tsunami.

In Thailand as well as other countries affected by the tsunami, recovery programs have entered into the second phase. Almost all relief agencies have nowadays prepared for phasing out from direct involvement in the operation of rehabilitation programs. They have enthusiastically encouraged people's self-help and promoted job creation activities through their participation in microfinance scheme. **Sakulsaeng (co-operate researcher) and others** investigated on the livelihood recovery program focusing on group activity, and found out the recovery of household economy based on the livelihood recovery program. Evaluation on people's response on participating and practicing in the recovery program was the final goal of their case studies. In Khao Thong sub-district under Krabi province, revolving fund programs provided loan and occupation training in order to help local people to lift out of the vulnerability. By relying on the revolving funds, they started with various economic activities including fisheries and tourisms. The authors concluded that strengthening capacity of local government and community-based organization (CBO) would be the most effective tool for poverty alleviation.

In the last part, **Yamashita** illustrated characteristics of food system of tuna by making a bird's-eye view of tuna trade and global distribution, based on case studies conducted in Thailand and other Southeast Asian countries. From a viewpoint of tuna food system, the author regarded the market structure of fresh tuna for sashimi consumption as monopsony. The frozen tuna would also be locked in the closed distribution channel. Despite such a monopsonistic structure, the export prices of tuna species were not so low compared with other marine products. The fishing methods and species predetermined the food system of the caught fish.

On behalf of the research team members, I must thank those Thai government officers of the Department of Fisheries, who extended their help to our surveys. I very much appreciate local people who kindly assisted to our interviews and gave their valuable data and opinions. Staff of Fish Marketing Organization (FMO) always helped our market survey at its fishing ports and arranged our interviews.

Members of our research teams are as follows:

Masahiro Yamao, Ph.D.	(Professor, Hiroshima University)
Haruko Yamashita, Ph.D.	(Professor, Meikai University)
Phattareeya Suanrathanachai	(ex JSPS research fellow. SEAFDEC research staff)
Wantana Chenkitkosol	(Graduate student, Hiroshima University)
Pornprapa Sakulsaeng	(Graduate student, Hiroshima University)
Mizuho Kuga, Ph.D.	(Research staff, Hiroshima University)

Lastly, I want to stress my great thank to all fisher folks and local people with whom we interviewed.

Yamao, Masahiro
Leader of Research Team,
Professor, Hiroshima University

March 15, 2007

CONTENTS

	Page
Part 1 The Development Process of CBRM Strategy	1
1. Coastal Resource Management and Local Fisheries In Southeast Asia	
- Over the Community-Based Resource Management -.....	2
2. The Recent Challenges toward Local Institutions on Coastal Resource Management.....	26
Part 2 The Recovery Process of Tsunami Affected Communities in the Phang -nga Bay.....	47
1. Coastal Fisheries Management towards the Rehabilitation of Small-scale Fisheries: the Case of Phang-nga Bay, Thailand.....	48
2. The Strategy for Recovery of Livelihood and People’s Response in Thai Fishing Community affected by the Tsunami.....	68
Part 3 Characteristics of Food System of Tuna Industry.....	91
1. Food-System of Tuna Industry: Market Distortions in Canning and Sashimi Markets.....	92

Part 1

The Development Process of CBRM Strategy

Coastal Resource Management and Local Fisheries in Southeast Asia
- Over the Community-Based Resource Management -

Masahiro Yamao,
Hiroshima University

1. Issues on Coastal Resource Management in Southeast Asia

1) Production Structure of Local Fisheries and Marine Resources

“Code of Conducts for Responsible Fisheries”, issued by Food and Agriculture Organization (FAO), proposes the government of each country to take precautionary approach to prevent decrease and depletion of resources by establishing and/or reinforcing the system to achieve sustainable use of coastal resources (Watanabe and Ono, 2000; Yamao, 2004). FAO suggests to control “illegal, unreported and unregulated (IUU) fisheries,” implement orderly fishing operation in the country and abroad, and establish the Code of Conducts to realize “responsible fisheries” in regional and national levels. Southeast Asian Fisheries Development Center (SEAFDEC) and ASEAN jointly issued the Code and Conducts for fishing operation, management, aquaculture and post-harvest. These are focused in the view point what fisheries should be like in this region, although these do not have the binding force as like as that of in EU.

In Southeast Asia, it is estimated that 70 percent of marine capture fisheries is produced in the coastal area. Although ninety (90) percent fishers are classified into the category of small-scale fisheries, their production accounts only for 10 to 20 percent of total production. This forms a typical dual structure of production: only 10 percent of commercial fisheries make up most of the production. As the result of this bias, the poverty ratio in fisheries is higher than that of agriculture. Accordingly, decrease and depletion of marine resources in coastal area obviously affect the lives of poor fishers who rely heavily on the fisheries. Not only maintaining the reproduction of the marine resources, but also sustainable resource utilization and appropriate distribution are required to realize stable local society. Network, local regulations, customs and territories are the necessary “social capital” for resource management (Krishna and Shrader. 1999). Any region, where these do not function well, goes into a vicious cycle of resource depletion by over-investment and over-fishing. Moreover, the local society itself may be destroyed if increased poverty is added on these.

In order to realize sustainable utilization of coastal resources, a decentralized and participatory resource management system involving local community, as represented by “community-based resource management” (CBRM), has being spread and firmly established in Southeast Asian nations. These are revised from the centralized coastal fishery management and resource control system. Overseas development agencies, government and NGOs had recommended the local communities to join the decision-making process of resources management in the past; nowadays, the local communities are willing to carry out spreading CBRM activities.

The participatory approach as represented by CBRM, is greatly influencing the fishery policies of the government in Southeast Asian countries. In the countries the decentralization is proceeding, the CBRM is firmly established as a formal system. Otherwise in other countries, some projects relating to CBRM have been implemented in various places. As the results, experience and technologies on CBRM have been accumulated, and various research and studies proceed not only in Southeast Asia, but also in Asia and Pacific regions in the view point how to spread the power distributed community-based management as the policy of the government.

2) Objectives

This paper purposes to show the recent trends of participatory coastal resource management as represented by CBRM in Southeast Asia, and to examine the future direction of this system should be like. To approach these purposes, this paper has three concrete objectives. The first is to examine the progress in the aspect of institution on the coastal resources management. During the period, de-concentration, delegation and devolution for fishery policies has been achieved in many countries (Pomeroy and Berkes, 1987), and CBRM system has been implemented. It will be clarified what aspects have been improved and what problems have been raised on the centrally.

The second objective is to present the guideline for modeling by means of trial classification of CBRM considering the previous studies on successful factors of CBRM projects. This is based on our understanding that it is a timing to go into a stage to create CBRM models considering the results of CBRM projects having been implemented during these two decades. The third objective is to study the system among CBRM. The idea is increasing that each local organization should fulfill the necessary conditions and the system leading CBRM to the success. To aim “community based resource management as the system”, external conditions especially responsibility and mechanism of concerned authorities as represented by co-management should be clearly defined.

The following sections approach the above objectives based on the survey results of fishing communities carried out during the period from 2000 to 2006 mainly in Thailand, the Philippines and other parts of the ASEAN region, referring the previous researches and secondary data published by the relevant authorities.

2. Trials on Sustainable Resources Utilization in Southeast Asia

1) Background of CBRM's Development

(1) Limits of Centralized Regime of Coastal Resource Management

Top-down approach to coastal marine resource management has widely been extended over Southeast Asia. However, due to lack of the budget and personnel of government, monitoring, controlling and surveillance (MCS) has not been well established (Jentof, et al. 1998; Nielsen et al. 2004). As a result, there are many fishing grounds and area the resource utilization fall into “de facto open access” (Dietz, Dolsak, Ostrom,

& Stern, 2002). Fishers' opinions are not easily reflected to the resource management. Know-how and technique accumulated during a lengthy period for resource utilization in particular fishing grounds have often been ignored. On the other hand, policies for fisheries industry has made enormous effort to promote highly commercialized and modernized fisheries production. A strong incentive for increasing the production has been raised, coming both from ever-increasing domestic demands for fisheries products and rapid expansion of fisheries trade. Over-capitalization in means of production becomes a widespread phenomenon in Southeast Asia. Decrease and deletion of coastal marine resource are serious problems deteriorating the quality of people's life in coastal communities. "Tragedy of Commons" in the Southeast Asia is regarded as the absence of Commons, or the tragedy of open access (Yanaka, 2002; Yamao, 2006).

(2) Effects of CBRM Introduction

Coastal marine resources in Southeast Asia are often emphasized they are in the state of "Tragedy of Commons". However, recently, coastal communities managing coastal resources even loosely, which used to utilize them under the open access, are increasing in number. Various CBRM projects have so far been implemented in many parts of the Southeast Asia, where resource users and local governments adopt simple methods to manage fishing grounds and undertake input control. Advanced management methods have been carried out partially.

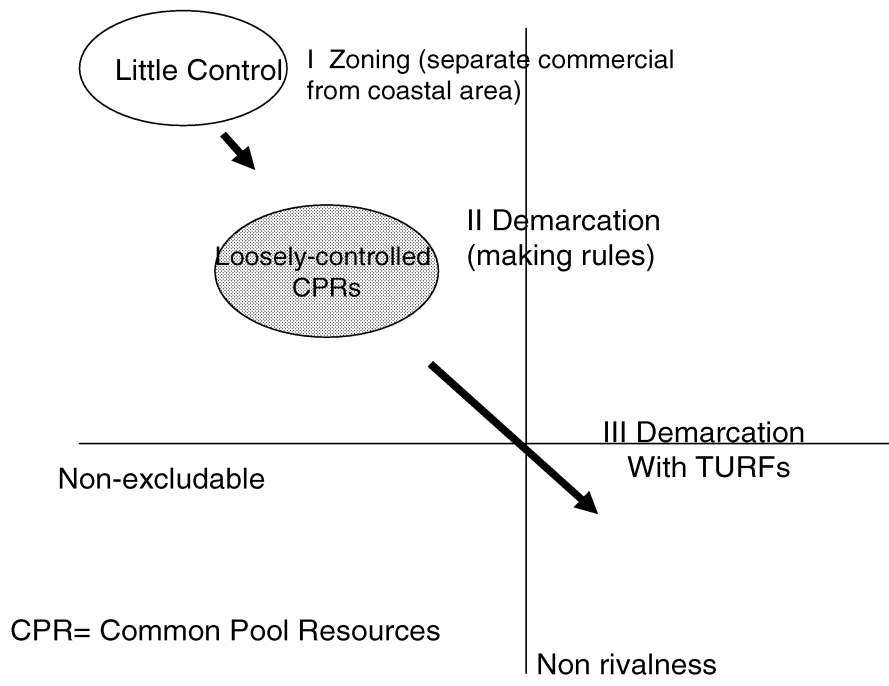
Capacity building of resource management at local level becomes active. Moreover, networks of CBRMs and coastal communities are established covering a far wider area than a narrow defined locality (Yamao and Suanratthanachai, 2002). A degree of local people's involvement in the decision making process of resources management is improved. They require and suggest various issues and matters to both central and local governments.

On the other hand, at national level, government and parliament prepare for revising the fishery laws and regulations currently existing. In the Philippines and Indonesia, a new fishery law has come into force and devolved the power for fisheries management to local authorities and resource users. Thailand, too, has completed preparation for revising the current fishery law. New rolls of national and local levels, with sharing responsibility between both parties, are clearly defined in the new laws.

Those countries having not adopted Integrated Coastal Zone Management (ICZM) tend to consider and manage overall ecological system including mangroves and land zones. Integrated resources management is not fully supported, since there are parties opposing to expand the covered area by resource management and conservation. However, attempts to integrate land, brackish water and coastal zones into one comprehensive management have been made in many parts of Southeast Asia.

Although there were many failures in CBRM projects, many successful experiences have been included (Yamao, 2005). Figure 1 illustrates succeeded CBRM projects along the study on Commons.

Resources had been utilized likely in the open access during the period when resources management system had not been well organized. However, led by the introduction of CBRM, various management measures, such as demarcation, zoning and input control, are designed and implemented. This is in a state of “loosely managed coastal resources.” There is much disagreement over whether or not a strict management system should introduce the territorial use rights in fisheries (TURFs). It may be logically possible, but in reality, the introduction of TURFs and whatever the type of exclusive use rights should be studied carefully, due to the local reality of coastal communities in Southeast Asia.



(Source) Modified Inoue & Miyauchi 2001

Figure 1. Characteristics of Common Pool Resources in Coastal Management

(3) Increasing Local Responsibility

It is certain that coastal resources management is going ahead during the period; however, government’s policy for achieving sustainability of coastal fisheries still has many obstacles. If once unrealistic and dreaming-like political targets are set up to introduce CBRM and CM, fishers and organizations would get into confusion at local level.¹ Therefore, evaluation of community-based resource management has always fluctuated between optimistic and pessimistic appraisal. The issue where to place CBRM in the governmental policies is remaining unsolved. There is no problem to implement the projects mainly enlightening the local communities to join. However, demarcation, zoning and input control require legal background and the workable framework of MCS. The failed projects often had the conflicts with surrounding communities, because the introduction of CBRM was not fully supported by the legal systems.² Otherwise, without any legal sustain, a project and any further activities cannot be continued still remain after their completion.

On the other hand, after the 1990s, the role of local communities on resources and environmental management is rapidly increasing as the results of decentralization. Local government and community determine the scope covered under their management, and they make local rules and regulations on fishing activities. They are trying to solve conflicts between resources users by their own coordination system without relying on the central government.

Thus, considerable progress has been made in the management of coastal resources in Southeast Asia. A wide variety of CBRM projects have been planned and implemented to develop decentralized and participatory management frameworks.

3. Classification of CBRM and Analysis of Successful Factors

1) Significance of CBRM Classification

It is often pointed out that classifying the CBRM projects having been implemented in Southeast Asia is necessary to generalize their experience and know-how and transform them into strategic policy for the development of coastal resource management. Forms of CBRM and their activities vary according to the conditions of resource and environment, the level of fishery development, the degree of fishers' awareness and the cultural background of society. It may be uncertain whether such a classification would be of a great use. Those countries which have still implemented CBRM projects as a trial may not be required to make any models.

Generally speaking, CBRM is recognized as an effective method in coastal resources management. Like the Philippines, there are several countries where CBRM has already been institutionalized to empower local stakeholders to join the decision making process of coastal resource management. Not regarding as an activity relies on self awareness of the fishers and stakeholders in "bottom up basis", the idea "CBRM as a system" has deeply penetrated into the society of coastal communities. The system composes social capital in the communities with the enactment of local formal rules, while enhancing normative consciousness of people³.

Pilot projects on CBRM have been implemented, even nowadays. Considering the past and present experiences, we should create appropriate models on management activities and their development patterns. Especially, policy for supporting the expansion of CBRM should be examined in depth. In this context, discussion about success or failure of the pilot projects has already phased out.

2) Analysis of Successful Factors CBRM

(1) Results of Studies on Common Pool Resources

Studies on the utilization and management of commonly owned resources, namely Commons Pool

Resources (CPRs), are becoming popular; however, they have tended to focus on the successful cases of CPR management. Studies began more specialized in quantitative analysis on factors and backgrounds of successful CPR cases to generalize experiences and know-how, in the 1980s (Dawes 1987; Taylor 1987; Runge, 1986) Agrawal develops “Critical Enabling Conditions (CECs)” as a typical quantitative method. It presents basic reasons after summarizing the discussion by Agrawal, Baland and Platteau, Ostrom and Wade, and classified the necessary conditions to enable CPR management. Agrawal states that CPR can be applied continuously in any area or under any environmental condition where CECs are realized (Agrawal 2000).

Agrawal classifies many factors for success into; 1) resource system characteristics, 2) stakeholders’ group characteristics, 3) institutional arrangements, 4) external environment. The relation of complicated and related factors is analyzed as regards each element. It may be unnecessary to identify many complicated factors after summarizing the results of case studies if their relations are cleared (Agrawal Ibid.).

(2) Analysis of Projects Applying CBRM or CM

There are many researches analyzing the reasons of success of CBRM and CM projects in Southeast Asia, and a typical one is the analysis conducted by Pomeroy and his colleagues (Pomeroy, Kton, and Harks 2001). They studied separating the factors into supra-community level which are relating to external environment, community level which are internal factors in community, individual and household levels. External environment is the factor systematic supports and roles of the government are important. Internal factors consist of several aspects such as the defined area, situation of group members (qualification of group members) and homogeneity of the members; decisively, the decisions and actions of deemed individual or family are conclusive.

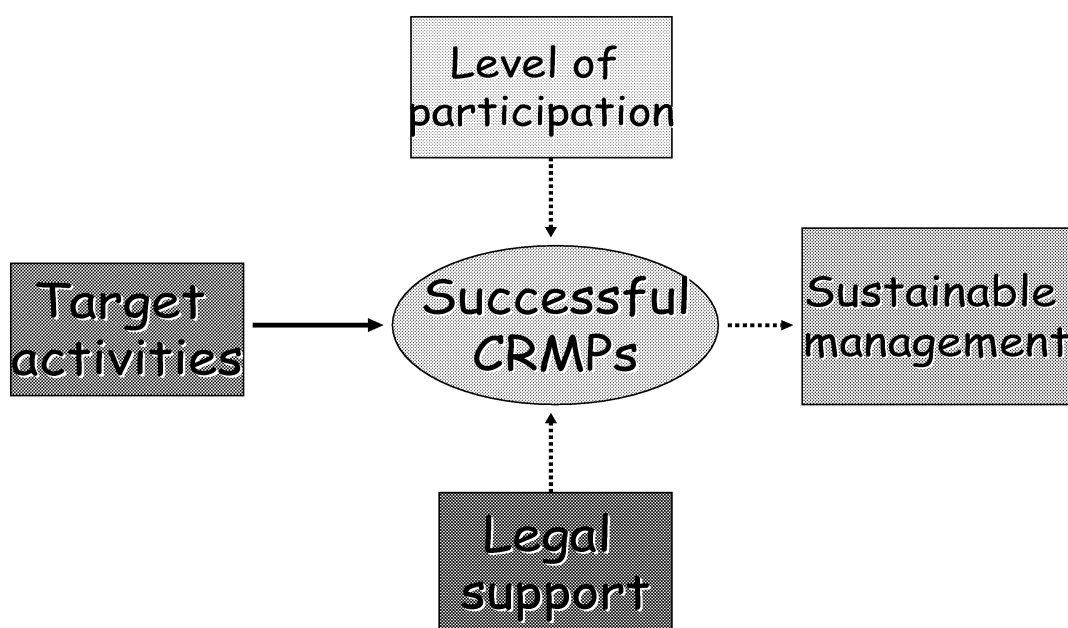
On the other hand, Pollnac has picked up 6 factors, after analyzing Marine Protected Area (MPA) in the Philippines, consisting of 1) scale of population is applied; 2) awareness of crisis by the residents for the decrease of fisheries resources before applying MPA; 3) alternative income project; 4) degree of involvement of community into decision-making process; 5) continuous advices by implementation sector; 6) implementation by the local government (Pollnac, Brian, and Gorospe, 2001). Their achievement led by Pollnac is valuable in the view point that they suggested a method to analyze many projects.

There are many literatures and studies that analyze the situation of resource use and the effectiveness of institutional framework including CBRM and CM. Some propose directions of any related projects and policy. However, any analysis may lose characteristics of individual cases if complicatedly related factors would be roughly grouped and abstracted. Nature and social environments surrounding the resources are not uniform, and activities for CBRM and CM cover many aspects. It should be noted that the classification into groups like the highest common factor is really meaningful or not.

3) Component of CBRM Projects

(1) Analysis of Success Factor of CBRM

In the recent, CBRM projects adopt various kinds of resource management techniques and set up a wide variety of regulations and rules. Livelihood improvement, in particular income generating activity, is often included into the projects. It is, therefore, not easy to clarify investigate what are the success factors of CBRM by adopting a specific criterion. However, at least two points should be examined that, firstly whether project activities match with the actual situation of local fisheries, and secondly people's greater participation and legal support are substantial as a system. (See Figure 2)



(source) Yamao 2003, Chenkitkosol & Yamao 2004.

Figure 2. Successful Factors of CBRM

Generally speaking, the targets of CBRM can be summarized into following 4 respects, besides sustainable use of coastal resources. Firstly, benefits gained by the reinforcement of resources management and restrictions on fishing activities are equally distributed to local fishers and inhabitants. Secondly, flexibility is needed since coastal aquatic resources tend to largely fluctuate. Thirdly, management methods and organization vary according to each coastal community, but it should reflect the characteristics of local fisheries, difference of living culture and social value. Fourthly, any institutional framework of CBRM should advance following to the situation of fishery area and improvement of awareness level of fishers.

(2) Supports to Encourage Community Participation as the System

In a field of community development in developing countries, people's participation has been argued for many years. Pretty and Hine (1999) characterized a project by dividing people's participation into six stages, based on their experience on farm community development.⁴ Their standard for analysis has the contents that can be applied to the observation on community development and resources management in Southeast Asia. In earlier stages "brought participation" was widespread over the development of the fishing community, which had a tendency leading to profit making rather than stimulating people's self-motivated participation. The level of participation is steadily increasing.

Projects in Thailand had used to focus on the provision of financial sources for purchasing productive materials such as fishing gears and boats, and the construction and management of fisheries-related infrastructure on a small-scale in fishing community. But major concerns are now social development such as fishing ground zoning and resource utilization (Chenkitkosol and Yamao, 2004). Supporting any institution to secure people's participation is steadily improving. Those projects which have been implemented till now are classified into four categories; 1) education and enlightening during earlier stage; 2) achieving consensus among resource users in a certain defined area; 3) establishment of local regulations and rules based on agreement ; 4) new definition of rolls between people (local) and fisheries administrative organization. 1) and 2) had been the major items before, however 3) and 4) are increasing now.

(3) Input Control and Fishing Ground Management

Various techniques are used for coastal fisheries resource management in Southeast Asia. Generally speaking, these are fishing ground management, input control, recruitment resources management, farming resources management, reproduction resources management and output control. Considering the development level of coastal resource management and the nature of tropical fisheries such as multi-gears and multi-species, it is not realistic for governments in Southeast Asia to adopt output control over coastal fisheries. A method to prevent excessive production is various methods of input control, such as restriction of destructive fishing gears, reducing the number of fishing boats, and the introduction of closed season. Thus, attempt has been made to reduce total catch effort so far. However, whatever the type of methods and techniques adopted, fisheries income absolutely decreases, and they may strongly reject it.

It is prosperous to adopt a simple input control and restrict any fisheries activities by employing specific types of fishing gears in the certain defined fishing grounds. During the period from the 1970s to 80s, governments of the Southeast Asia promulgated the bans on trawlers and large-scale purse seine near seashores. However, due to the lack of law enforcement, illegal fisheries had not been stopped. Therefore, a number of projects had been designed and implemented by local resource users, stakeholders, and organizations in order to control over illegal fisheries in certain demarcated project areas.

There are a wide variety of projects. To give concrete examples: local fishers are given exclusive territorial use right in fisheries in front of their community, and practice making a management plan and controlling over illegal fishing: in the Philippines, several municipalities join together to organize a management body that will undertake resource conservation activities in far wider areas. It is said that stewardship and ownership of coastal resources will be raised if fishers will be given the right to manage coastal resources in their immediate fishing grounds. They would try to eliminate illegal boats and gears damaging the sustainability of coastal resources, from their own territories. Such a participatory project is anticipated to provide a wide variety of opportunity whereby local resource users and stakeholders adopt suitable management methods and develop their own unique manners, fitting in with the local reality of fisheries development. In Southeast Asia, many of CBRM projects have implemented fishing grounds management while controlling and surveillance on illegal activities.

(4) Biological Resources Model

CBRM, started from fishing ground management and simple input control, is tried to apply recruitment resources management and farming resources management. To protect recruitment resources, juvenile fish should be protected, and the size of fish caught and mesh size regulations should strictly be regulated.

From a viewpoint of cultivation and increase of resources, classification of developed CBRM projects can be set up on recruitment resources management, cultivation resources management and reproduction resources management. However, as a technique, the authorities release artificially juvenile fish to increase the resources without relating to progress of the project (Zengyoren 1993). The purpose of reproduction resource management is to keep quantity of grown fish necessary for maintaining and increasing the resources. Conservation of spawning fish, ban of fishing during spawning period and release of incubation are practiced. Among those activities, “crab bank” project for keeping incubation crab in cage are widespread over Southeast Asia.⁵

Biological resources model requires a considerable period until achieving initial objectives. It is also difficult to confirm the results. “Free Riders” are likely to give negative effect on resource management. Without exclusive fishing ground management, local community would hardly avoid free rider problems.

(5) Models for Management Organization

We can assume that there are five types of organizations carrying out resources management activities. (See Table 1) Generally speaking, groups consisting of occupational resource users may be dominant. In Southeast Asia, however, various fishing gears and methods are used in a fishing ground, targeting many kinds of fish. Occupational resource users are less likely to establish a particular type of group with the membership being homogeneity than those in Japan and other Far Eastern Asian countries.

Table 1. Types of Coastal Resource Management

I	Resource users groups	Fishers engaged in particular types of fisheries join. Membership is professional nature rather than area-based one
II	Community-based type	Community-based organization consists of resource users and people. It is partly regarded as professional. Community that holds discussion and adjustment acts as management unit of resources.
III	Extended type of community-based	Basically community-based type, but plural communities join. This type covers a wider area and control many types of fisheries.
IV	Collaboration between Type III & local fisheries administration	1 Network of people and users 2 Local institutions for fisheries management. Network and institution join to be a management body.
V	Decentralized type (Local government type)	Authority of fisheries management is devolved to local governments by the central government.

Management group is often organized in “Community-based (CB)” type based on community, which functions as a unit of living and production. Traditional resource management organizations, such as Sasi in east Indonesia, had used to work in traditional community society. However, the recently established management organizations are likely to be based on the boundary of a local government.⁶ Barangay and municipality in the Philippines, Desa in Indonesia, Moobaan and Tambol in Thailand are these cases. Even in these cases, such traditional community’s functions as adjustment, mediation, practice and reciprocal watching are applied to the activities of resource management. This is the reason why many CBRM projects in early stage purposed to form a CB type.

Nowadays, a network of CB type organizations extends its organization and activity of resource management over a far wider area, with participation from a large number of resource users and stakeholders (Yamao, 2000). Memberships of those groups consist of specific types of fisheries. Thus, area-based organization and specialty-based organization are established in the immediate vicinity. Such a trend had been seen in many places of the Philippines in the 1990’s (Munoz, 2003). The similar projects have been started in Thailand, too. The reasons why network-types of CB organization are spread rapidly is that fishing area of small-scale fishers is extremely expanded, due to the motorization of fishing boats and the progress of fishing technology.

The fourth is a network type of organization gathering small groups for resources management. If this type is expanded widely, it will create new arrangement for sharing role and responsibility between resource users’ organization and government controlling fisheries management. In the Philippines, local government units (municipality and city) deeply involve in coastal resources management. Coordinating with conventional type of community-based organization or bringing them in, a new type resource management organization has been created.⁷ This is deemed one of co-management (CM) in which roles are shared by the government,

resource users and local communities.

On the other hand, central government tends to transfer its power to control over coastal resource management. In the process, a decentralized organization is led by the central government for “devolution”, but this is a little different in its character from community-based type of organization with people’s participation. Local government administrates the registration and licensing on behalf of national government branch.⁸ In general, roles and functions of fishery management are undertaken by local government units, and thus shifting from CBRM to CM has become a major stream. Of course, there is much disagreement over whether or not local government units will be able to undertake the resources management or not (Larroza, M. 2003).

(6) Organization Responsible for Decentralized Resources Management

In the field of resources management, a merit of people’s participation is less likely to be one-sidedly emphasized, a method of fisheries administration under a joint responsibility of government and local level is more likely to be stressed. CBRM is the system that easily reflects the intention of people and resource users based on the actual situation of local fisheries. On the other hand, a conventional type of CBRM often embraces limit and instability of sustaining management systems. This is deemed a problem. One of solutions is to establish a wider area resources management by networking, and the other solution is to increase the role of local government as the results of decentralization. Those organizations being responsible for coastal resources management are great variety like branch of national government, and local governments (prefecture, cities, towns, villages). A single organization would rarely take whole responsibilities. Some organizations jointly take responsibilities, and their combinations vary depending on the progress of decentralization, kind of fisheries and actual local situation for fisheries. Moreover, social and cultural environments around local fisheries are decisive factors to drastically change the framework and system of coastal resource management.

4. System Preparation for Coastal Resources Management

1) CBRM as a System

(1) Development Process of CBRM

Figure 3 shows the development process of CBRM projects. In earlier stages, CBRM had been introduced and implemented as a pilot project. Accumulated experiences with success and failure were transferred to neighboring areas, and thus networking of CBRM activities had proceeded. In the process of decentralization, localized and participatory resource management and community development as represented by CBRM has been taken into the formation of national policies. Of course, political attitudes toward the expansion of CBRM differ from country to country even in the Southeast Asia; however, even those countries persisting in top-down approach have begun to introduce CBRM projects as a model.⁹ Malaysia has so far adopted centralized resources management, but community-based and people-led projects are implemented to make good practices on fish aggregating devices (FADs) and fishing grounds management in the demarcated

zone (SEAFDEC/ TD, 2006).

As indicated by an arrow in the lower column of Figure 3, the level of participation in resources management from resource users has been improved. Accordingly, people and local community can afford to take initiative in the decision making and practice of resource management (Yamao, 2003).

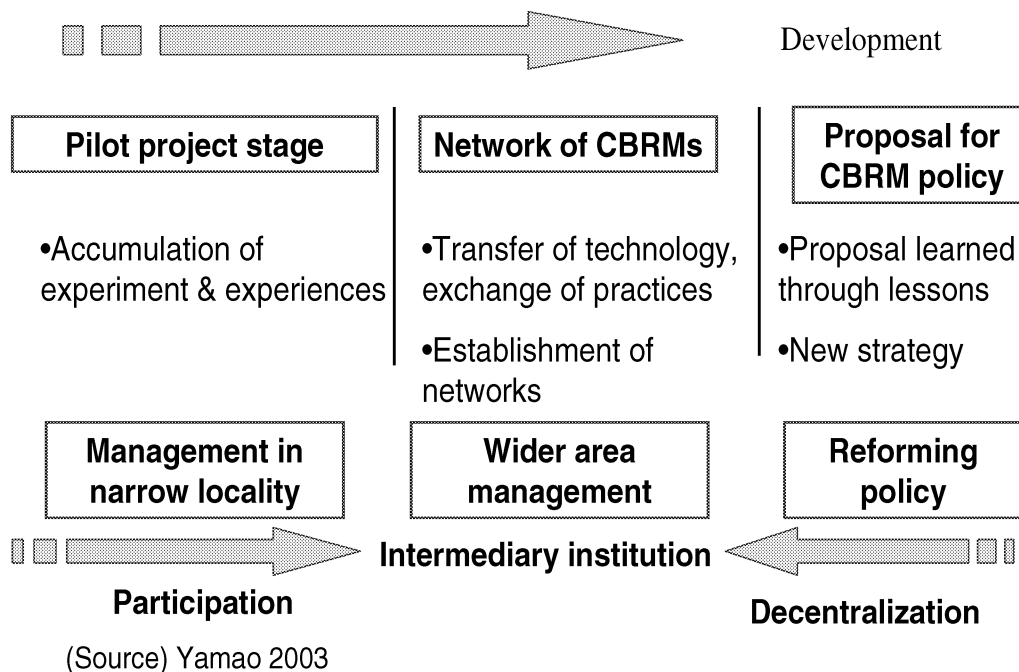


Figure 3. Development of CBRM

2) Reforms in Relation to CBRM

Many countries have enthusiastically prepared for reform and rearrangement of fisheries administration and management. The first pillar of reform is the revision of present fisheries laws and regulations. In Thailand, decentralization of fishery management proceeds, but it has not reached to the revising of whole Fisheries Law yet. The expansion of decentralized and participatory resource management through the country as a whole faces great obstacles, due to lack of legal support. Unless the authority and function for fisheries management is given to local government or fishers' organization legally, localized and participatory methods would hardly work effectively like the Philippines. There are some pilot projects that would aim to stimulate for self-management of demarcated fishing grounds. However, it is difficult to exclude the fishers coming from outsiders, and to restrict any fishing activities prohibited by local rules. It is chiefly because locally based resource management does not become a system the local resource users and organizations would regulate.

There are many cases the activities stop at the completion of the project during the stage CBRM is implemented as the pilot projects. Unless fisheries laws and regulations do not define devolving the power and responsibility to local level, any voluntary activities and agreements achieved by local organizations may finally disappear.

The second pillar of reform is to organize an intermediate organization which stands between national government policy and people, between central and local, and between local and local. How the intermediate organization coordinates and adjusts is a key issue. In the Philippines, they are in a stage how to establish highly systematic organizations capable for a wide area management. Such a trend can be seen in Thailand, Indonesia, and other countries. Local government plays a significant role in the process of an establishing intermediate organization.

The third pillar concerns whether or not a series of regulations and rules for resources management by local community and fishers can harmonize with the contents of local government codes and local administration.

Roles of local government in Southeast Asia has increased and directly concerns development, allocation of budget, education, social welfare and environmental management. Though not clearly defined in laws, responsibilities for local resources such as agriculture, forestry and fisheries, environment and ecology are referred complementarily. The Philippines defines the power of local government most clearly in Local Government Code 1991. Issues for decentralization scheme should not be an abstract, but should be detailed and specifically targeting local territory, public administration, specific resources and users.

(3) Mechanism of Decentralization

Development of decentralization should pass through several steps of process in fisheries resources management. Figure 4 simply illustrates the functions and roles of central government, regional and local governments, and community. National government defines the overall system by proclaiming national fisheries laws and regulations. At regional level, province or state manages fishing grounds in accordance with relevant laws, and adjust the benefits between the areas and fishers groups. Branch of national government agencies and local government organize a management body. In community level, the internal agreement between resources users and stakeholders should be achieved in management units or its network, and establishes autonomous management system that functions in certain defined locality. In this case, community-based management unit is a resources management primary unit that functions at the lowest level. Based on such a mechanized decentralization framework, various types of CM will develop. These 3 steps of the system never function immediately after the completion of decentralization, but they should evolve step-by-step. Capacity building of concerned persons and institutions is indispensable for letting the mechanism function effectively.

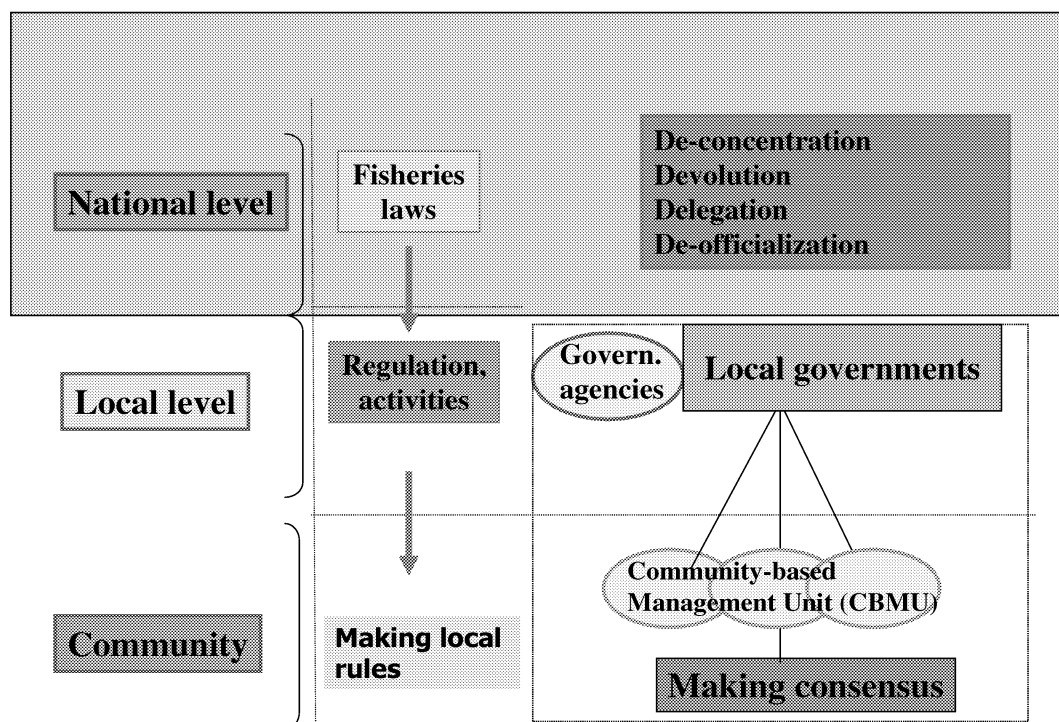


Figure 4. Mechanism of Decentralization

(4) Positioning of Community

In decentralized local participatory resources management, positioning of local community becomes an issue. Table 2 shows six functions expected to the community-based management unit (CBMU) or community. It is ideal that the CBMU becomes a primary unit at local level that functions in these six roles. CBMUs act in detecting problems and finding solutions on coastal resource management. They provide a wide variety of opportunities whereby the people obtain consensus on how to regulate fishing and aquaculture operation in the demarcated coastal zones. According to any agreement that the people reach, the CBMUs extend their own rules and enforce them. Adjusting and coordinating to reduce conflict in the demarcated zones are the responsibility of the CBMUs. They represent a formal and core organization of fisheries and resource users at local level. Although all of these functions may not be fulfilled by the community, at least the function to representative and achieving consensus is anticipated. Sharing the work with local institutions, occupational groups or its network will take part of resource management. Mutual help, reciprocal watching, equal distribution of resources and arbitration that local community has originally had.

Table 2. Roles of Community-Based Management Units

1	Representative	Act as representative and unity of resource users in the primary unit
2	Consensus	Organize a process of gaining consensus among resource users
3	Suggestion	Suggest directions of coastal resource management and community development
4	Implementation	Undertake conservation and management activities in line with consensus and agreement
5	Enforcement	Enforce laws, monitoring and controlling illegal production activities
6	Adjustment	Adjust interests between areas and reduce conflicts

Traditional CBRM such as Sasi and Punglima Laot in Indonesian, has social functions to establish local rules and customs, and let local people to follow them (Yamao, 2007). Any disputes and conflicts arose among resources users are normally arbitrated by community. It seems, however, that many coastal communities in Southeast Asia do not have such traditional functions. Or, those traditional resource managements having existed before might be collapsed as the results of rapid development of fishing industry with the commercialization of fisheries production. In costal communities which management of common-pool resources is loosely structured or under open-access resume, resource users and local governments should rebuild a new workable framework of CBRM or activate dormant management practices.

(5) Networking of Resources Management and Local Government

Recently, priority of coastal resource management projects has moved toward the wide areas covering the bay or semi-closed territorial waters. This suggests that target “area” or “community” varies significantly according to the development of coastal resource management. It is clear that the positioning of community, which is defined in socio-economic and political terms as a narrow locality, is lightened than before. In the Philippines, coastal resource management has shifted from Barangay-based system (within a narrow defined locality) to Municipality-based one (within a political and local administrative unit). At this moment, municipality’s boundary becomes the boundary for fishing ground management that adopts CBRM approach. In this context, CBRM in the Philippines is called as municipality-based coastal resource management. It often happens that CBRM units are networked, and a new system (area) has being formed. The currently existing communities for resources management are being restructured more functionally.

Figure 5 shows the relationship between local government units (LGU), community-based management unit (CBMU) and its network, which is based on a pilot project of coastal area resources management that has been implemented in Thailand. There is still much argument over whether or not local government should directly involve in coastal resources management. However management and monitoring of

fishing activities and demarcated fishing grounds are carried out by CBMUs and their network. LGU supports their activities legally and systematically. In case of Thailand, a LGU has no marine resource management functions yet, but a municipality in the Philippines has already been stuck to local resource management in depth.

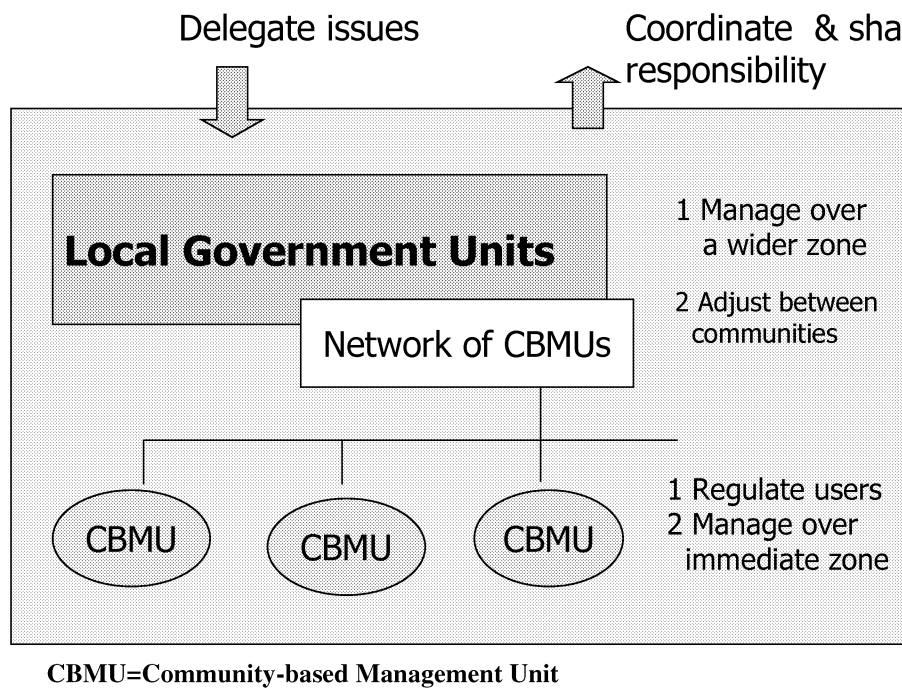


Figure 5. Roles of Local Governments (Case of Pilot Project in Thailand)

(6) Cooperation of People and Local Government

If LGU is devolved the authority to regulate fishing activities and undertake resource management in its immediate vicinity in decentralization, CBRM will succeed its initial objectives. A new relationship of sharing responsibility between people and LGU appears.

Shown in Figure 6, a project implemented in Krabi (south Thailand) starts from problem finding by people, and goes through consensus for solutions, suggestions to LGU, adjustment between resource users and LGC. Their consensus should be formalized as a local rule. This is of course notified to people. It seems like a simple process, but it actually takes considerable time and costs. Formalities and adjustment are required to pass through multiple stages. Therefore, we have to explore new methods how to reduce the stages and simplify the required procedures on the decision-making process of decentralized and participatory resources management.

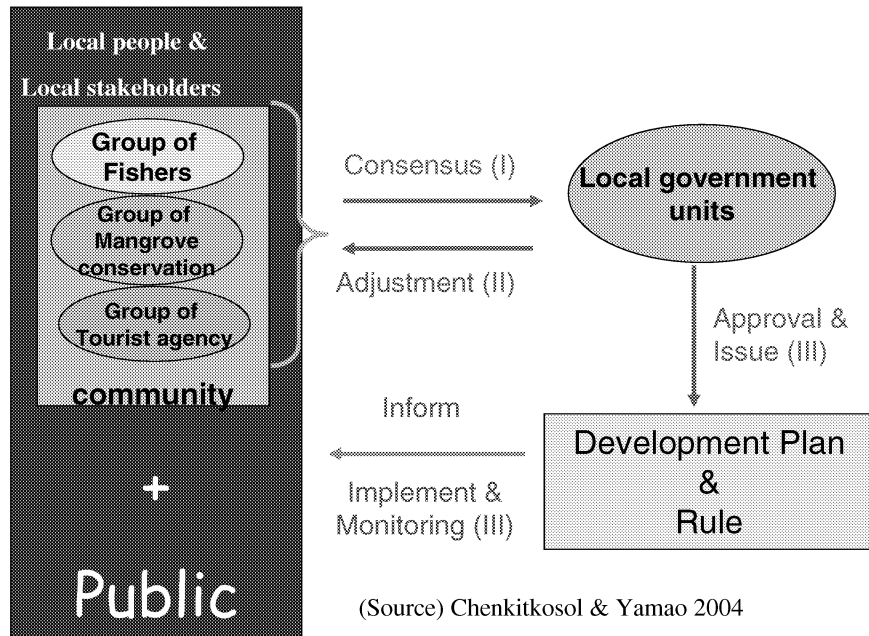


Figure 6. Processes of Decision-making and Implementation

Remarkable changes have been seen in locally based coastal resource management, as local government unit share part of responsibility for coastal resources management. Firstly, it encourages people to achieve consensus on fishing activities and utilization of coastal resources, and prepare for establishing local rules. Secondly, fisheries registration, licensing for fishing boats and fishing gears will be conducted at local level, and thus decentralization are accelerated. Thirdly, land boundary of administrative territory is often extended to the sea. By relying on the administrative power of local government, resource users and stakeholders can try to design the zoning of fishing grounds inside its territorial waters, and to set up marine protection area (MPA) and mangrove sanctuary. Lastly, inter-LGUs will become a management unit of coastal resource covering a far wider area, not like conventional type of CBRM.

(7) Coastal Fishery Ground Management and Zoning

There is a trend to establish exclusive-territorial-use-rights in fisheries (Agbayani, 1996),¹⁰ but it is normal that coastal resources in the designated area are loosely managed by adopting various methods. As has already been described, in the Philippines, management units were changed from the Barangay community to Municipality. Moreover, several municipalities join together to organize a cross-municipal resource management council to manage a far wider coastal zone (Larroza, 2003). It seems easy to settle exclusive territorial use right in a certain narrow area; in reality, however, it is very difficult to manage it as even small-scale fishers show high mobility as the results of motorization of fishing boats. Of course, any narrow defined CBRMs are not fitted in with the management of migratory species. Unless other surrounding communities apply exclusive territorial right in fisheries (TURFs), the management of common fishing grounds is very hard. Conflicts may eternally arise. This is why many fishing community hesitate to introduce territorial use rights in

fisheries. However, there had been many pilot experiences, where TURFs were at the core of project activities on coastal resource management in the beginning stage.

Since municipality increases its role in resources management, the areas for fishery ground management has been expanded. As a result, the nature of territorial use rights in fisheries (TURFs) is weakened. Fishing ground management is much easier than before, by adopting loosened management measures. In addition to fishing ground management such as zoning, demarcation of fishing grounds where specific types of fishing gears are allowed, restriction for fishing around artificial reef or fish aggregating devices (FAD), a number of input control measures such as fishing gears, fishing boat size, and closed seasons, are now enforced. Fishery management covering a wide area can be easily accepted by fishers than adopting exclusive territorial use rights, since they easily earn alternative income sources in the fisheries.

(8) CBRM as a Social System

With consensus and agreement among resource users, zonings of fishing ground would be introduced. As the next step, effective fisheries management would be objectives, with combining fisheries registration and licensing and fishing ground management.

Registration and licensing are really the most basic infrastructure to follow the trend of fisheries and control them. However, social friction might increase if tight registration and licensing would be introduced. There is still an argument whether or not fisheries management employs these measures in over populated coastal communities in Southeast Asia. Coastal marine resources are regarded as open access resources for local people, and often operated as the livelihood activities even not a secondary job, that is “minor subsystem”(Matsui, 1998). Therefore, it is necessary for local fisheries institutions to flexibly apply the systems of registration or permitted fisheries, avoiding increased social conflict.

In tropical Southeast Asia, fishing gears and methods are great variety in coastal area and at individual fisheries household. Therefore, it is not practical to require registration for all of these. It is preferable to register only the gears economically important or destructive to marine resources, linking with licensing system.

A strong inducement to introduce and improve CBRM as a system to develop decentralization and participation in coastal resource management has worked. Not only as a participatory organization or a unit to make an agreement in certain defined locality, it is but also regarded as an entirely imperative social institution for sustainable resource management. Of course, there are many countries and areas where decentralized and participatory resources management represented by CBRM is still in the stage of trial.

5. Coastal Resources Management and Community Development

1) Sustainable Use of Coastal Marine Resources together with Poverty Alleviation

(1) “Vicious Circle of Poverty” and “Vicious Circle of Resources Depletion”

In Southeast Asia as well as many parts of developing words, the most of problems as regards management and utilization of local food resources, such as agriculture, fisheries and forestry, would hardly be solved without any community development activities, in particular improvement of alternative livelihood (Saito, 2004). There is disagreement over the statement that poverty gives a rise to resource degradation, and vice versa. It is pointed out that not many evidences prove causality of resource and poverty. As far as coastal communities in many parts of Southeast Asia are concerned, vicious circle of poverty tends to occur along with resource degradation.

Fishing operations in tropical waters of Southeast Asia are specialized as “multi-fishing gears” and “multi species”. However, poor fishers and their family often take fishing methods, not being appropriate to the resource situation and ecological system of coastal waters. Neither diversifying target species nor employing various types of fishing gears, they are more likely to specialize in one or a few kinds of fisheries all over the year (Yamao, 2006). For poor fishers and their family, the diversification of income sources is an essential strategy to sustain household economy, but they are in difficult situation to distribute family members to different job or start with diversification of fishing operations. Due to poverty in coastal community, excessive pressure to catch particular certain valuable species rises, which finally speed up decrease or depletion of the coastal resources. The market prices rise along with the scarcity of resources; however, the income level of poor fishers is lowered in proportion to the decreasing speed of production.

2) Integrated Approach for Development of Fishing Community

As indicated in Figure 7, the creation of job opportunities and income sources both inside and outside fisheries is a substantial factor to maintain the sustainable use of coastal resources and its appropriate management. It is very hard for the coastal community occupied by poor fishers to spread resources and environmental-friendly fishing gears and techniques. Fishers and local people should enhance their own awareness about the necessity for the sustainable use of coastal resources; at first, however, preparation for social conditions that enables it must be considered.

Encouraging fishers to engage in other business outside fisheries is not an easy task. Making alternative job opportunities and income sources inside fisheries or fisheries-related industries may be a practical choice. Aquaculture development, processing of underutilized resources, and improvement of trading conditions are a few examples. However, there is much argument over positive or negative impacts of creating job opportunities inside fisheries, since these activities often accelerate a speed of increasing catch effort.

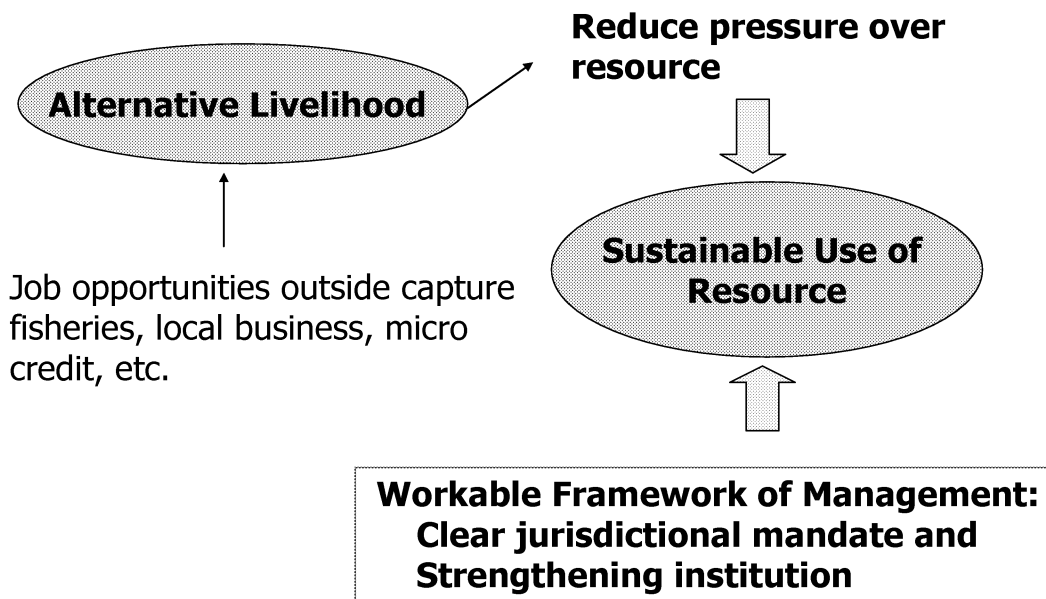


Figure 7. Integrated Approach to Coastal Resource Management

(2) Possibility of Marine Tourism

In coastal communities of Southeast Asia, various kinds of projects have been planned and implemented to improve the level of livelihood. Integrating resources management projects with livelihood approach, the local economy of coastal communities will reduce its heavy dependence on the utilization of marine resources. Marine tourism is a major concern.

Recent development of marine tourism effects on the structural change of coastal communities in Southeast Asia. In the communities near resorts and sightseeing spots, local people and fishers engage in such business activities as diving, canoe, sport fishing, sightseeing boats, and souvenir shops. Of course, those fishers who can carry on tourism business are not so many since it requires a large amount of capital. On the other hand, eco-tourism is becoming a boom, which includes the experiences of fishing, daily life, tradition and culture. The opportunity for income generating activity has increased (Yamao, 2000). Eco-tourism utilizes communities' local natural, social and cultural environments as tourism resources, not only regarding the fishing community as the society specialized for fisheries production. Along with the rapid expansion of marine tourism, community-based tourism is attracting those who are not satisfied enough with mass tourism.

There are opposite opinions in both of agree and disagree for the introduction of marine tourism in fishing community. Some may fear that marine tourism damages to resources and environment. Enclosure and destruction of seashore and coral reef by tourism facilities are widespread throughout coastlines. Coral reef conservation and strict zoning led by tourism industry may often cause conflicts between this and fisheries. On

the other hand, natural environment might be maintained if fishers and resources users are engaged in tourism industries in sustainable ways. Social and cultural value of host society (fishing community) may be re-evaluated through the eyes of tourists as guests. In this context, participatory marine eco-tourism has become a substantial component of integrated coastal zone management.

3) Multifunctionality of Fishing Community and Regional Improvement

Government, NGOs, local people and their organizations have searched effective measures for development of fishing community, by utilizing local resources and environment. This is deemed the utilization of multiple functions of fishing community, which may be regarded as a kind of multifunctionality of fisheries and fishing communities, but not as Non Trade Concern (NTC) defined by World Trading Organization (WTO), (Yamao, 2004). Vitalizing local economy generates such a participatory and strategic approach.

Multifunctionality of fishing community has two aspects. One is a movement to minimize economical damage caused by sluggish fishery production, through utilizing in a sustainable manner as much local resource as possible. The other aspect concerns those who implement community development. Empowerment of fishing community brings people's greater participation in its implementation. Not only fisheries resources but also other valuable local ones would avail for the community development.

Many coastal resources management projects having implemented in Southeast Asia are integrated to certain activities of community development. Community-based and participatory organizations are in charge of achieving two different objectives at one and the same time; one is to build a workable framework of coastal resource management, while the other is to implement multifarious activities for improving people's livelihood. It was often pointed out people's participation in the membership of whatever the type of organization a great difficulty had. But recently, they have enthusiastically established groups according to their own will. Their organization and activity are really diversified. It is obvious that the newly established groups have much potential to evolve into a new stage of business development, although they may be instable in some aspects.

6. Conclusions

Commercialization of coastal fisheries production has proceeded rapidly since the 1960s. Renovation of production technologies has been spread in all over Southeast Asia. Naturally, fishers have tried to maximize economical benefit in a short term. In overpopulated coastal communities, increase of fisheries production has so far been at the center of fisheries development. This often leads to excessive catch effort, and finally to overfishing. Due to lack of law enforcement on illegal fisheries, "tragedy of commons" has occurred anywhere in Southeast Asia. Along with rapid development of commercial fisheries, dual structure of fishery production has firmly built, as a result of which conflicts on resources utilization have often caused especially in coastal zones. Decentralized and participatory resource management is expected to take the place of the centralized management resume that neither function effectively nor fit into with local reality.

“Responsible Fishery” becomes a key issue in fisheries development. Strategic approach to social development, with changing a viewpoint from raise of productivity to sustainable consumption, cultural and social background, is more attuned to the importance of responsible fisheries. While CBRM and CM are widely expanded as a social system throughout Southeast Asia, their characters as the social movement have reduced. In this respect, highly mechanized and modeled systems of CBRM may not fit into with the local reality of resource utilization. The institutional development of CBRM and CM tends to face a negative appraisal. In long-sighted eyes, however, fisheries and coastal resource management resume has steadily advanced in many aspects since the development of fisheries industry had fully started in the 1960s.

It can be said that many of issues coastal resources management face are regarded as transitional toward a future solution. It will become clear what direction government’s policy should be geared.

7. References

- Agbayani, R.F. 1996. Community Fishery Resource Management Project in the Philippines: Research and Development Framework, SEAFDEC Regional Workshop on Coastal Fisheries Management, Bangkok.
- Agrawal, A. 2000. Common Resources and Institutional Sustainability, The Dramas of Commons, National Academy Press.
- Chenkitkosol, W. and Yamao, M. 2004. Recent Trends and Challenges of Coastal Resource Management Projects in Thailand, IIFET Proceeding Report 2004.
- Dawes, R.M., 1987. Social Dilemmas, Annual Review of Psychology No.31
- Dietz, T., Dolsak, N., Ostrom, E., and Stern, P.C. 2002. The Drama of the Commons, National Academy Press, Washington, DC.
- Inoue, M. and Miyauchi, Y. 2001. Sociology of Commons, Shinyo.
- Krishna, A. and Shrader, E. 1999. Social Capital Assessment Tool, Washington D.C, The World Bank.
- Larroza, M.L.B., 2003. The Role of Government Network for Local-wide Resource Management in The Philippines, Proceeding of the Toward Further Development of Coastal Resource Management, SEAFDEC, Bangkok.
- Munoz, J.C. 2003. Comprehensive Coastal Community Development Program: the Philippines, Proceeding of the Toward Further Development of Coastal Resource Management, SEAFDEC, Bangkok.
- Matsui, K. 1998. The World of Minor Subsistence, edited by Shinohara, T. Technique of the Race, Asakura book shop.
- Saito, H. 2004. Poverty and ‘Resources Curse’, edited by Imura et al, Environment and Development, Nippon Hyoron.

- Petty, J. and Hine, R. 1999. Participatory Appraisal for Community Assessment: Principles and Methods, <http://www2.essex.ac.uk/ces/CommParticipation/ComPartPrinciplesmethods.htm>
- Pollnac, R.B., Pomeroy, R.S., Kton, B.M., and Harks, I. 2001. Conditions affecting the success of fisheries co-management: lessons from Asia, *Marin Policy* Vol.25.
- Pollnac, R.B., Brian, R.C., and Gorospe, M.L.G. 2001. Discovering factors the influence the success of community-based marine protected areas in the Visayas, *Ocean and Coastal Management* Vol.44.
- Runge, C.F.,1986. Common Property and Collective Action in Economic Development, National Research Council, Proceedings of the Conference on Common Property Resource Management. National Academy Press, Washington, DC.
- Taylor, M. 1987. *The Possibility of Cooperation*, Cambridge University Press, New York.
- Watanabe, H. and Ono, S. 2000. A study on 'Responsible Fisheries', Paper Collection No.35, Tokyo University of Fisheries.
- Yamao, M. 2000. Local Resources Management and Inhabitant Participation, Asian Food Stuff, Agricultural Product Market and Japan, Otsuki Shoten.
- Yamao, M. and Suanrathanachai, P. 2002. Backgrounds and Purposes of Locally Based Coastal Resource Management, Pathew District, Chumporn Province, SEAFDEC, Bangkok.
- Yamao, M. 2003. Greater People's Participation and the Increasing Role of Local Government in Coastal Fisheries Management, Proceeding of the Toward Further Development of Coastal Resource Management, SEAFDEC, Bangkok.
- Yamao, M. 2004. Revitalization of Fishing Community under Globalization, *Journal of Regional Fisheries*, Vol.44 No.2.
- Yamao, M. 2005. Preparation of General Action Plan for 'Responsible Fisheries' : from the experience of Southeast Asia, *International Fishery Research* Vol.1, No.2.
- Yanaka, S. 2002. Growing Commons – Development on Environmental Sociology, edited by Matsui, K. *Cultural Study on Development and Environment*, Jushorin.
- Zengyoren, 1993. *Instruction for Fishery Resources Management*, Economy Edition, Zengyoren.

Notes

-
- ¹ Stiff regulation of illegal fishes or fisheries, or settlement of an exclusive fishery rights in a small area.
- ² A project implemented in Baan Sapan, Purachuap Khiri Khan Province, Thailand is typical one.
- ³ Inhabitants participated resources management like CBRM is said that transaction costs are lower than centralized management. However, if it is operated as a pilot project cost deduction cannot be expected. Training, appealing and decision making costs will be higher.
- ⁴ Six steps means following. (1)Passive participation, (2)participation by consultation, (3)bought participation, (4)functional participation, (5)interactive participation, (6)self-mobilization and connectedness.
- ⁵ The person who caught the incubation clubs puts in the preserve of the community or a group to guard. Treatment is various but the revenue will be paid the person caught the clum.
- ⁶ Barangay and municipality in the Philippines, Desa in Indonesia, Moobaan and Tambol in Thailand are these cases.
- ⁷ In Panay Island in the Philippines, resource management council cooperating with municipal government and inhabitants bears wide area resources management.
- ⁸ Municipal government in the Philippines and Tambon in Thailand are carrying out. In Thailand, it is planned to transfer to local government called Tambon.
- ⁹ Centralized resources management is adopted in Malaysia. However CBRM like projects are implemented establishing FAD or starting the business by housewives of fishery family.
- ¹⁰ In Malalison near Panay Island in the Philippines, community-based exclusive territorial rights in fisheries had been introduced.

The Recent Challenges toward Local Institutions on Coastal Resource Management

Wantana Chenkitkosol and Masahiro Yamao

Graduate School of Biosphere Science, Hiroshima University

1. Introduction

Decentralization of governance over fisheries and coastal resources is worldwide interesting (Christie and White, 1997; Pomeroy and Berkes, 1997; Nickerson-Tietze, 2000), since this approach may overcome the obstacle of centralized management. The definition of decentralization differs from country to country; normally, decentralization is any act in which a central government formally transfers powers to actors and institutions at lower levels in a political-administrative and territorial hierarchy. Decentralization is also justified as a means for increasing the efficiency and equity of development activities and services delivery, and also for promoting local participation and democracy (Ribot, 2002).

Thus decentralization refers to the systematic and rational dispersal of power, authority and responsibility from central government to local level; it needs an institutional arrangement to support in each process (Pomeroy and Berkes, 1997; Noble, 2000; Jentoft, 2004). Several literatures show that most environmental problems can be seen as institutional failure to control access to the resource, and to enforce internal decisions for collective use (Ostrom et al., 1999).

Institutional arrangement has been described as ‘the composite of laws, customs, organizations and management strategies established by society to allocate scarce resources and competing values for a social purpose, such as to manage a nation’s coastal resources and environments’ (Sorensen et al., 1984). Institution arrangements for coastal management require coordination or networking between differentiated institutions (Kay et al., 2003).

The basic challenge to arrange the coastal management is to establish and maintain institutions–norms and rules guiding decisions including a formal framework for decision-making—which enable the communities to address this complex and fragile situation (Nielsen et al., 2004). Institutions for coastal resource management must be crafted so that they allow for interactive learning and are able to draw on resources and capacities that the government, private sector and community can deliver together.

In Thailand, decentralization has become the most important approach for community development. The central government gradually delegates some functions and authority to the local level by establishing a Sub-District Administrative Organization (Ao.Bo.To.) in every sub-district of the country (Yaowapak, 2003). Ao.Bo.To., the local governmental organization plays an important role on self-management. Its formal authority can support the management process. However, the constraints and weaknesses of Ao.Bo.To. seem to obstruct the smoothly functioning of the whole procedure of coastal resource management. In the stage of transferring authority, the government should raise the capacity of the local government and local people, and rebuild local institutions that have the function of resource management. The local level will take part of the responsibility, identify the problems facing them, make action plans, set up regulations for sustainable utilization of coastal resources, and monitor the measures that they adopt. KhaoThong Sub-district in Krabi Province is a case study to analyze the collaboration between Ao.Bo.To. and local people groups on coastal resource management.

2. Existing Local Organizations and their Authorities

1) Sub-district Administrative Organization

The Sub-district Administrative Organization or Ao.Bo.To. was initially established in 1995. The total numbers of Ao.Bo.To. was 6,624 in the whole country (Department of Local Administration, 2005). This organization is the primary local government unit that has responsibility for community development and people's welfare within a sub-district area (Puang-Ngam, 2003).

The members of Ao.Bo.To. Council are elected as the representatives of local people in their community. Therefore, Ao.Bo.To.'s members understand the details of the community's problem through discussion with local people in both formal and informal ways, which is followed by further discussion in a formal meeting.

Ao.Bo.To. is an autonomous organization for the allocation of budget and realizing the community's development plan. The Ao.Bo.To. has four main sources of revenue: (1) sources collected by the Ao.Bo.To. itself, including land and building taxes, fees from licenses, fines, and those generated from the management of public utilities and commerce of the Ao.Bo.To., (2) sources collected by other bodies of which a certain percentage is passed on to the Ao.Bo.To., such as valued added tax, specific business tax, liquor tax, excise tax, and fees from motor vehicles, (3) grants in aid from the central government, and (4) supported budget from involving Ministry implementing project.

The function and authority assigned to Ao.Bo.To. are as follows: (Yaowapak, 2003)

- Making a community development plan and its implementation
- Allocating budget to community development and welfare
- Levying taxes from the community
- Regulating rules to control activities (not conflict with national laws)
- Managing own local resources within the sub-district boundary

Ao.Bo.To. has the authority to formulate its regulations that gives a legal status for enforcement within its jurisdiction. It can perform these duties only within its own territory, though they may be undertaken outside its territory with the agreement and consent of other local government units if they are necessary and related to the tasks undertaken within the sub-district area itself.

Besides the responsibilities and authorities specified by the 1994 Sub-district Administrative Organization Act, there are also duties specified by other laws such as the Building Control Act of 1979, the Public Health Act of 1992, the Land Maintenance Tax of 1965, the Land and Property Tax Act of 1932, and the Signboard Act of 1967.

2) Village Committee

Besides leader of village, the village committee is the group of people who is selected as the representative of all people in village. They are mostly the respective, educated, experienced people who will organize the village activities. Committee members are selected from many field of knowledge includes school teacher, leader of religion, head of primary health service of village, and leader of each occupational group. The village committee will be accepted and approved by the district officer.

They traditionally have duty in village governance. They have occasional meetings when village has specific issues such as development plan and any communal activities. Outsiders, both from government agencies and non-government agencies, usually contact to the village committee when they want to introduce any program to village. The committee organizes public meeting to inform village people of those programs.

Nowadays, setting up a village's public meeting is the necessary process to inform, discuss and debate the benefits and limitations of any plan. A village development plan must be the outcome of the public meeting. The village committee consists of core person to propose and facilitate discussion of development plan.

In controlling an offense, a leader of village and his/her assistants have the police function by law to protect the village society peacefully. They can arrest any persons who violate laws and regulations. In Fishery Act, they can proceed the penal process to whom made illegal fishing.

3) Fishers' Organizations

There are many types of fishers' organizations such as fishers group, fishers associations or fishers cooperatives. Fishers group is the most popular type that has been established in fishing village, while the fishers association and cooperative may be established mainly at big communities. Normally, fishers group has been promoted by outside agencies, including both government and non-government organizations. The purposes of establishment are to deal in production and marketing problems through joint purchasing, accessing to loan funds, increasing knowledge of fishing industry and promoting coastal resource conservation. Most of the fishers groups have been formed without passing through any registration process of Ministry of Agriculture and Cooperatives (MOAC). They prefer to manage their groups free from bureaucratic system. As a result, outside agencies lack awareness on the organization and activities of the groups existing. Some groups actively implement businesses and then support their members. Some may be inactive in operation; while the groups still exist in village but no activities can be traced.

3. The Organizational Structure of Sub-district Administrative Organization on Development Planning

1) KhaoThong Sub-district Administrative Organization (Ao.Bo.To. KhaoThong)

The Ao.Bo.To. KhaoThong was established in 1995. It was the initial group of sub-districts in Krabi Province that had the capacity to establish an Ao.Bo.To. for local administration. The Ao.Bo.To. at KhaoThong was grouped into the small size of Ao.Bo.To., which was according to the total amount of levied tax inside the sub-district. The Ao.Bo.To. KhaoThong council comprised of 12 representatives from 6 villages and one elected president (Figure 1). Besides these elected members, Ao.Bo.To. council invited the leaders of villages, the teachers of villages' school and leader of religion to be the associated members. All members were among the local people. Ao.Bo.To. staffs transferred from the local government office to support the administrative works as the secretariats of the Ao.Bo.To.council. The Ao.Bo.To. KhaoThong had the authority to provide the basic needs for sub-district's development and people's welfare, in the same way as do other Ao.Bo.To.s. Moreover, the Ao.Bo.To. KhaoThong concerned itself with the activities that utilized the coastal areas of the sub-district boundary.

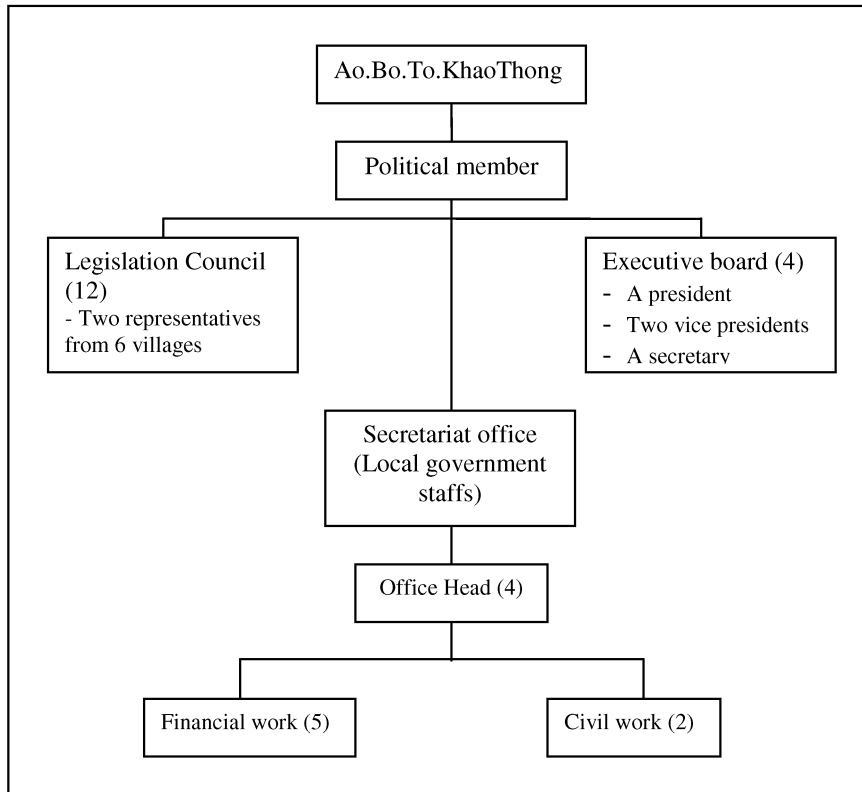


Figure 1. The Organization Structure of Ao.Bo.To. Khaothong

2) Important characteristics of Ao.Bo.To. to support community development

Some characteristics of Ao.Bo.To. have the advantageous points for self-management.

(1) People-participated governmental organization

The Ao.Bo.To. is the government organization that promotes people's participation in the decision making process of local policy. The members of Ao.Bo.To. Council are elected as the representatives of local people in their villages. They are concerned with the villages' needs through discussion with the people in both formal and informal ways. In the informal way, Ao.Bo.To. members meet other people anytime, and have the chance to talk during the morning coffee time at markets. They can freely talk about the situations around the villages and any events. Hence the council members can understand the details of any local problems, and then discuss again in a formal meeting of the sub-district. They get the real problems and right solution for developing their sub-district's community.

(2) More flexible governmental organization

Ao.Bo.To. is an autonomous organization in the allocation of budget and realizing the sub-district's development plan. It arranges a three-year plan for the development project, and a one-year plan is also arranged for solving the problems of the villages in sub-district. Ao.Bo.To. works more flexibly than the

bureaucracy of the District office (Amphur – in Thai), since it has its own authority to allocate budget in the case of emergency.

(3) The functions and authority of Ao.Bo.To.

The authority and responsibility that are devolved from central and provincial governments to Ao.Bo.To. are in many aspects. At this moment, these depend on the capacity of each Ao.Bo.To. Some can respond to all the functions with sufficient manpower and budget. But some still lack the capacity to respond to all functions: therefore, the related government agency will assist Ao.Bo.To. to work efficiently.

4. Present Performance of Local Institutions on Community Development

1) The Performance of Village Committee

Apart from participation in the development process, people in KhaoThong had perception on the good performance of village committee on economic and social development process. From the research findings, all people had highly and moderately favorable on community development planning (Table 1). They were appreciative on the role and performance of village leaders and committees. The village had been developed so far with the recently people’s participation of planning.

Table 1. The Level of People’s Opinion on Performance of Village Committee on Community Development in Khaothong Sub-District

Level of people’s opinion	Frequency	Percent	Min	Max	Mean	SD
Less favorable (1-14)	0	0	18	40	29.32	5.43
Moderate favorable (15-28)	24	48				
High favorable (29-40)	26	52				
Total	50	100				

Remark: Number in the parentheses is the ranged score of those degrees of perception

Sixty-four percent of the respondents perceived that they got information about_village frequently (Table 2). The village’s speakers that had been installed throughout the village were the important method for giving information to people. The leader of village called people to join a meeting by using this speaker whenever he was contacted by any agencies. Although village formal meeting was held at least once a year to make a development plan, they occasionally joined the village meeting, depending on any special event that occurred in the village. Especially men in village have met together in a religious gathering to pray at a mosque every Friday afternoon, which was also the meeting place to receive information and to discuss about situation

in the village. The leader of village always disseminated the information that he got from Ao.Bo.To. or district office in the Friday meeting.

Table 2. People’s Opinion on Performance of Village Committee on Community Development

Issue	People’s opinion (%)				
	Strongly agree	Agree	Moderate	Disagree	Strongly disagree
Village leader and committee give information to all group of people	22	42	28	8	0
People have been invited to join the village meeting	34	28	30	8	0
People have chance to propose opinion at village meeting	6	16	12	46	20
People understand village committee's work	14	36	42	8	0
Village leader and committee have good responsibility	24	44	30	2	0
Village leader play important role on community’s development	24	46	28	2	0
Village is increasingly developed	32	48	20	0	0
People can trust village leader and committee of their leadership	22	32	44	2	0

People joined the meeting with invitation of the leader. They wanted to know what would happen in their village. Most of villagers opined that village meeting was inadequate to provide them with chances to propose their opinion in the meeting (46% of disagree and 20% of strongly disagree). One reason was that they hesitated to show their own opinion; they expected someone else would have a good idea to propose in the meeting, and they would support the idea that would match to their opinion and interest.

In KhaoThong Sub-district, the leaders of villages played an important role in community’s development even though the Ao.Bo.To.’s members became person in charge of development activities according to the responsibility and authority of Ao.Bo.To. The most important role of village committee that was different from those of Ao.Bo.To.’s member was to exercise the police authority to control illegal activities

within the village boundary. The role of village leaders has been focused on the governance of village for securing peacefulness and tranquility. They had authority to arrest the criminal and send to court as a police.

The people agreed that leaders of villages had a good responsibility on community development. They mostly understood the works of village’s committee members. Since they lived in the same village, they could easily inform villagers about their activities. They could propose their idea about village’s problems and solutions to the committee members. The development of the village seemed constant during this decade by contribution of village leader and committee.

Generally speaking, peoples were more or less satisfied with the village leader’s activities and committee performance regarding community development. Thus, the village leader and committee were still useful. They were the representative of villages, acting as coordinators between outside agencies and local people. Especially, Thai tradition like respecting to the leader was kept. The local people mostly gave cooperation to the leader on his suggestion. It was convenient and useful to contact village leader whenever an outsider planned to do any activities in the village.

2) The Performance of Ao.Bo.To. on Community Development

According to the constitution, Ao.Bo.To. is responsible for community development. Ao.Bo.To.KhaoThong took responsibility throughout the sub-district area, which included six villages (Moobanns-in Thai). Ao.Bo.To. planned development activities as a whole figure of sub-district and for all villages within their own boundary. The people in KhaoThong Sub-district were satisfied with the performance of Ao.Bo.To. regarding community development. An evaluation of its performance was measured through the respondents’ opinion. Fifty-eight (58) percent of the respondents put into highly favorable and 40% had moderately favorable opinion towards the performance of Ao.Bo.To. (Table 3).

Table 3. The Level of People’s Opinion on Ao.Bo.To.'s Performance

Level of people’s opinion	Frequency	Percent	Descriptive Statistics			
			Min.	Max.	Mean	SD
Less favorable (1-20)	1	2	19	60	43.56	7.822
Moderate favorable (21-40)	20	40				
High favorable (41-60)	29	58				
Total	50	100				

Remark: Number in the parentheses is the ranged score of people’s opinion

The table 4 indicated the performance of Ao.Bo.To. on community development. The people agreed that Ao.Bo.To. was an important organization to take responsibility on village development (22% agree and 32% strongly agree). Two-thirds of the respondents agreed that the establishment of Ao.Bo.To. made village development faster than before its existence. Since Ao.Bo.To. had its own budget for community development, they could prioritize which projects should be urgently done. Consequently, the autonomous on allocation budget made the villages had been developed faster and more suitable to the urgent problem. Besides its own budget, Ao.Bo.To. could propose a high-budget project to develop communities to get allocation from higher level of government such as provincial government or central government.

The members of Ao.Bo.To. council were representatives of local people. They brought the real problem in the development plan for the village. This system was rationally associated with the local politics. It showed a figure of small competition among several groups of people. Some groups were satisfied with their representatives but others may not. The good point of election the representatives was that they should propose the good project and activity to develop their village. There should be the output of their work, so that they would not be inert as routine representatives.

The president and executive board of Ao.Bo.To. were the key person in the development planning of sub-district. Every project was designed to solve the exact problems of villages. Each village in sub-district had different priority of solving their own problems but prioritization depended on many factors such as urgency, available budget, number of affected people on this problem, etc. The president and executive board had high authority to finalize the proposed projects. The Ao.Bo.To.'s secretariat supported the works of executive board and council following bureaucratic procedure. In case of KhaoThong, secretariat played an important role in the planning of community development. They gave comments on the possibility to implement any development project in terms of budget and related law. They also suggested the council and executive board to look through the problems in several aspects, not only construction of infrastructure.

The system of planning has been quite suitable and trustful. However, it needed a further improvement regarding people's participation. How Ao.Bo.To. gave a priority to the proposed projects was a big question from people. Ao.Bo.To. must clarify what was the factor and reason for finalizing all development projects of Sub-district. Moreover, they should operate the approved projects in a manner so that they were to be completed in time.

Table 4. People's Opinion on Ao.Bo.To.'s Performance

Items	People's opinion (%)				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Village development is the responsibility of Ao.Bo.To.	0	4	42	22	32
Village has been developed faster after establishment of Ao.Bo.To	0	4	34	34	28
Ao.Bo.To.'s members are the good representatives of village	0	2	50	30	18
President and Ao.Bo.To. council play an important role on sub-district's development	0	2	36	34	28
Ao.Bo.To.'s secretariat play an important role in development	0	4	48	38	10
Ao.Bo.To. has active performance to develop villages	4	2	34	34	26
Ao.Bo.To.'s members have ability to find out fund to develop villages	2	2	42	30	24
Ao.Bo.To.'s budget is enough for developing all villages	2	4	34	46	14
Development plan comes from exactly problem of villages	2	0	42	46	10
System of development planning is suitable and trustful	0	2	50	42	6
You have been participated in the process of development planning	2	24	38	26	10
Most of development plans can process on time	4	0	56	36	4

5. Management Capacity of Ao.Bo.To. on Coastal Resource

There is still argument over whether or not Ao.Bo.To. will be able to have a direct or indirect involvement in coastal resource management. But it is widely accepted that Ao.Bo.To. can support local people to establish a workable framework of coastal management, to some extent. This is because Ao.Bo.To. is the primary government unit that has jurisdiction over land and land-based resources.

1) Administration Capacity

It is clear that Ao.Bo.To. is a bureaucratic body of local administration. Its method of working is in principle the same as that of a small-size autonomous government office. Ao.Bo.To. has to operate and execute work under the authority of stipulated activities. It is also required to follow the plans and directives of higher authorities. Its place is principally under the supervision of the Department of Local Administration (DLA), Ministry of Interior (MOI).

Even if the law mentions that Ao.Bo.To. should have a role to manage and conserve the natural resource within its boundary, it is difficult for such a small local administrative organization to undertake a new role without any guidance. In the case of the study areas, staffs of Ao.Bo.To. KhaoThong did not clearly understand in depth what duty they had for local resource management. It lacked clarification about the scope of authority on natural resource management. They considered the implementation of management measure or activities of natural resource were the authority of central government.

There were a large number of government agencies working in Ao.Bo.To.'s jurisdiction. Generally speaking, these agencies' working process was entirely independent from Ao.Bo.To. They might just inform Ao.Bo.To. about their works and projects that they planned and implemented. They might ask for cooperation, but they were not responsible for joining any cooperative activities. Ao.Bo.To. was not an adequate institution that enforced outside agencies to coordinate before implementing projects.

The interagency process and authority were not defined clearly. As a result, the scope of Ao.Bo.To.'s functions was further obscured with overlapped authorities between that of local government, provincial administration and agencies of central government. Many functions of Ao.Bo.To. were conducted by the central government whose departments extended their operations into the provinces. This not only led to confusion but also impeded the development and growth of Ao.Bo.To. as a whole figure.

2) Planning Capacity

The Ao.Bo.To.KhaoThong had 11 members of secretariat office. Its financial section had more staffs than other section. Even the number of staffs was enough to cover all work, there was only one policy and plan analyst. Most of staffs involved in the bureaucratic work that in line with provincial and district offices. The section which was in charge of policy and planning was the head of office. They had to prepare the report concerning feasibility of all projects in terms of budget, law and policy; and these were to be submitted to the executive board and Ao.Bo.To. council for approval.

The head of secretariat and the policy and plan analyst were mostly educated in the field of political philosophy. They may not pay much attention on the sustainability of natural resources. The conservation and management were a new area of their concern. It was assigned to include in an agenda of Ao.Bo.To.'s development plan, consequently every Ao.Bo.To. tried to implement activities about natural resources conservation and management.

Projects for coastal resource management were kind of project in planning for the future. Their outcome could not show in the short term. This issue needed a new and long-term vision, while politician had typically been in position with a short period. Political commitment was one factor relating to the success of implementation. If the executive gave his commitment, the projects of coastal resource management would be driven and moved forward.

By the guidance of Department of Local Administration, it suggested Ao.Bo.To. to arrange the three-year plan of development, which concerned the participation from local people. In implementation, Ao.Bo.To. staffs cooperated with the leaders of villages (Phuyai Baan) to arrange a village meeting. They identified village's problems and proposed solving activities. Ao.Bo.To KhaoThong encouraged people to concern their right to participate in planning process.

3) Implementation Capacity

The capacity to implement development projects on their own initiative was severely restricted by inadequate revenues. More than 90% of national public expenditure was in hands of ministries and departments of the central government. Therefore, it has still undertaken most development projects even in local communities. All local governments were dependent on the central government for grants in order to implement larger development projects. Most local governments had not grown up enough to self-finance to provide any meaningful services and meet the needs of local people.

The revenues of Ao.Bo.To. were derived from four main sources: tax collection, grants by central government, properties and enterprises, and loans. Their revenues were inadequate to meet the needs of local communities. It was a serious constraint for local governments. It restricted the capacity of Ao.Bo.To. to deliver basic service to the fast growing communities.

In KhaoThong Sub-district, Ao.Bo.To. had the annual revenue approximately twelve million Baht, which included self-collecting tax roughly 540,000 Baht or only 4.5% of the total revenue. Most revenue came from the budgets allocated by the central government with a specific mean of calculation, based on a set of variables, including population, geographical size, village numbers and Ao.Bo.To.'s own income (Table 5).

Table 5. Annual Revenue of Ao.Bo.To. KhaoThong in 2004

Sources of Revenue	Amount (Baht)	Percentage
1. Self-collecting tax	542,628	4.5
2. Properties or enterprise which collected by central government	939,011	7.7
3. Sharing tax by central government	5,862,286	48.2
4. Supported budget from involving Ministries	4,808,260	39.6
Total	12,152,185	100.0

Source: Ao.Bo.To.KhaoThong annual development plans year 2004

When we look at overall spending projects or investments, natural resources tend to be a low priority on Ao.Bo.To. agenda (Table 6). KhaoThong sub-district was not fully developed in the basic infrastructure for people's welfare. The majority of budget put a high priority into the improving infrastructure in sub-district area such as construction of connecting roads between villages, electrifying all households, and so on. The budget on natural resource conservation was allocated 4.7% of an available budget, with including activities of monitoring coastal areas. Ao.Bo.To. supported budget for fuel of monitoring speed boat. The sub-district could implement the surveillance task within their coastal boundary. However, the budget in coastal resource management has still been very limited, which was not enough to initiate a plan for any bigger project. To develop coastal resource management, KhaoThong needed to search for budget from outside organizations such as central government and NGOs. Leaders of villages and Ao.Bo.To. started with putting emphasis on awareness building on coastal resources by providing local people with training programs regarding natural resources.

Table 6. The Planning Budget of Ao.Bo.To.Khaothong in Fiscal Year 2004

Plan Issues	Amount (Baht)	Percentage
1.Development of sub-district economic	1,340,000.00	4.0
2.Social welfare	780,000.00	2.3
3.Infrastructure	6,835,975.00	20.4
4.Natural resource conservation	1,590,000.00	4.7
5.Tourism promotion	22,230,000.00*	66.2
6.Administrative work	780,000.00	2.3
Total	33,555,975.00	100.0

Source: Ao.Bo.To.KhaoThong annual development plans year 2004

*20,000,000 Baht is allocated from Provincial Administrative Organization to construct tourist pier.

4) Monitoring and Enforcement Capacity

Ao.Bo.To.KhaoThong had the authority to formulate the regulation for coastal resource utilization and conservation within its boundary. However, this sub-district regulation should refer to the related law such as Fisheries Act, Wild Life Conservation Act, and National Marine Park Act etc. It, sometimes, did not need to formulate new regulation, and just strictly controls the activities by using the main related laws.

Surveillance was the special task that needed authority to arrest the fishers who were breaking rules. In the coastal activities, the important matter was clarification of sea boundary. Normally, the land boundary was well defined by some landmarks that indicated the borders between neighboring sub-districts. However, a sea boundary was very difficult to identify exact borders between sub-districts. KhaoThong Sub-district used the regulation of the Ministry of Interior (MOI) to proclaim their sea boundary. It was the regulation about the concession of collecting edible bird's nest of swallow bird. The taxation system of the concession for collecting edible bird's nest was pooled within a province. The sub-district, which had the place of edible bird's nest, got the high percentage sharing of tax. However, other sub-districts, which had no concession, would be allocated tax in the few percentage sharing.

Fortunately, around KhaoThong coastal area, there were many islands with the concession of edible bird's nest. Therefore, the sea boundary of sub-district had already been proclaimed by the laws and regulations on the concession edible bird's nest. Village leaders took this advantage to monitor and enforce any illegal coastal activities in cooperation with Ao.Bo.To. KhaoThong followed the Fisheries Act to monitor the illegal fishing. Push net and trawl fisheries were prohibited to operate within the coastal area of 3 km from shoreline. Law enforcement was done by local people and Ao.Bo.To. Consequently, it strengthened the law enforcement

regarding illegal activities within KhaoThong boundary. The local people did not wait for the patrol boat from central government to protect their boundary, since it was not sufficient for whole coastal sub-districts.

6. Collaboration among Local Institutions on Coastal Resource Management

At local level, no organizations were assigned to take responsibility for coastal resource management, besides provincial and district office of fisheries. Of course, there have been a lot of pilot projects, in which various types of organizations were established to participate in coastal resource management. Many areas have tried to decide and implement coastal resource issues by forming their own groups. In Thailand, therefore, there is still much argument over what type of local institutions would be in accordance with the current situation of local coastal fisheries.

1) Experience of Coastal Resource Management Project with Encouraging Participation from Local Institutions

One of the implementing coastal resource management projects is CHARM, Coastal Habitats and Resources Management (2002-2007), which aims at promoting a co-management approach at the national, provincial and local levels. The project component comprises of five themes: 1) Improvement of policy and legal/institutional framework; 2) Participatory management among the different stakeholders; 3) Enhancement of human capacity; 4) Improvement of information and communication; and 5) Project Management and Monitoring and Evaluation (This last component subsequently has been incorporated into the fourth component).

One proposed activity of policy and legal framework component is promoting the good governance at both the community level and within the government institution. At the local level, the CHARM emphasizes the Ao.Bo.To. by strengthening their capacity to negotiate a coastal development and conservation agenda at the community level. The target outcome is to obtain Ao.Bo.To. in the project areas to engage in sustainable process of co-management of coastal resources. At provincial level, the emphasis has been put on promoting cross-sectoral planning and decision-making among the main departments concerns coastal resource management.

Up to the third year of the CHARM, some achievements presented the interesting points. The local levels have been participated in the co-management process through the institutional process for linking occupational groups with Ao.Bo.To. planning activities. Meanwhile, a partner's network has been set up to exchange experiences and has coordinated their activities when working in the same Sub-district. The human

capacity building is done by many training programs which dealt with a number of issues such as community organization and strengthening, monitoring, control and surveillance, and community-based tourism.

2) People’s View on Weaknesses of Ao.Bo.To. on Coastal Resource Management

According to the opinions from respondents, they did not fully believe in Ao.Bo.To.’s capacity to manage the natural and coastal resources. The total opinion concluded from six statements of issue. It showed the majority of the respondents (48%) had an opinion that Ao.Bo.To. still has less capacity on coastal resource management (Table 7).

Table 7. The Level of People’s Opinion on the Capacity of Ao.Bo.To. on Coastal Resources Management

Level of People’s Opinion	Frequency	Percent	Descriptive Statistics			
			Min.	Max.	Mean	SD
Less capacity (0-6)	24	48	0	18	6.98	5.86
Moderate capacity (7-12)	17	34				
High capacity(13-18)	9	18				
Total	50	100				

Remark: Number in the parentheses is the ranged score of those levels of people’s opinion

The highest rank concerned regarding insufficient capacity of Ao.Bo.To. by people’s opinion was the number of Ao.Bo.To. staffs (Table 8). The total number of staffs was quite enough, but the number of personnel who took responsibility on fisheries administration and coastal resource management was limited. The chance to improve their capacity was less, since total budget of Ao.Bo.To. was inadequate. It could not allocate more budgets to hire staff in charge of coastal resource management.

Table 8. People’s Opinion on the Capacity of Ao.Bo.To. on Coastal Resources Management

Items	Opinion on capacity (%)		Opinion on its chance to improve capacity (%)			
	no	have	no	less	medium	high
Ao.Bo.To.’s staffs are enough to handle all assigned functions	64	36	0	58	22	20
Ao.Bo.To.’s staffs have enough knowledge on coastal resource management	54	46	2	48	26	24
Ao.Bo.To. has enough budget to do activities on coastal resource management	54	46	8	32	32	28
Ao.Bo.To. has enough tools and equipments to monitor coastal activities	46	54	10	42	22	26
Ao.Bo.To. has enough authority and law to enforce coastal activities	58	42	12	32	26	30
Ao.Bo.To.’s member understand and concern on coastal resource management	36	64	0	36	30	34

3) Strengthen the Locally Management Body by Collaboration

In case of KhaoThong sub-district, people preferred to manage the coastal resource utilization in the village level (Figure 2). Sixty-four (64) percent of the respondents wanted to manage the activities in coastal area by making agreement among them. Fisher group which directly involved in the coastal activities had incentive to manage the resources. Village leaders and village committee coordinated and arranged the consensus on coastal resource management. The Ao.Bo.To. KhaoThong were trusted by 18% of the respondents. The higher level of organizations such as district level and provincial level were less trusted to manage coastal resource. The complicated bureaucratic procedures discredited trust from people.

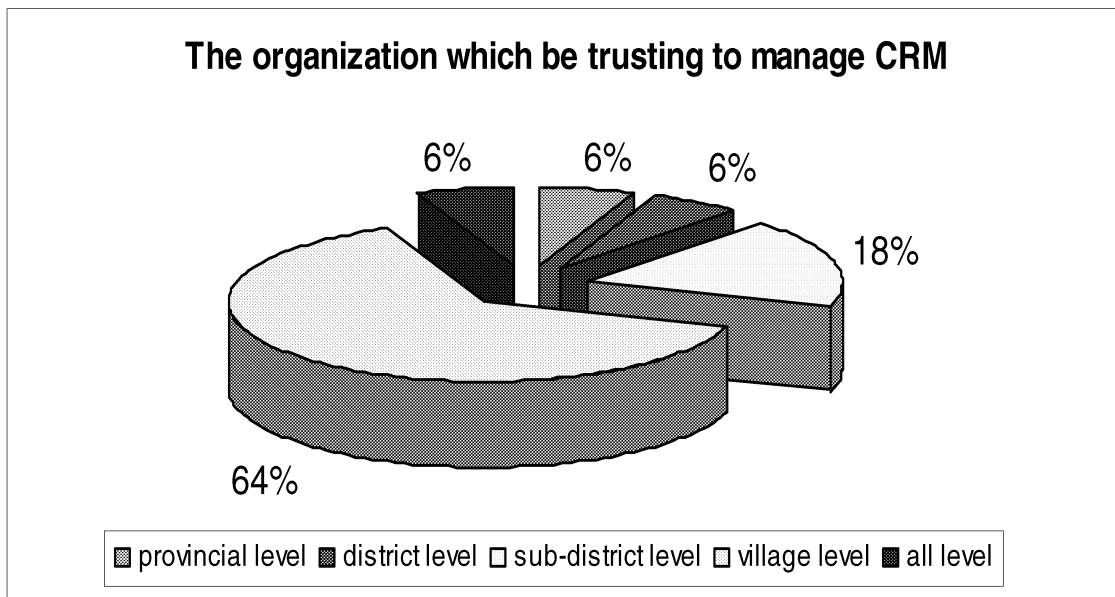


Figure 2. The trusted organization on coastal resource management

In general, Ao.Bo.To has still been in the starting phase of establishing self-governance. It is in learning and trial period. Ao.Bo.To.s in the whole country are categorized into three levels; large, medium and small level according to the amount of budget that an Ao.Bo.To. could spend for development projects. Most of them belong to the small level. This means they are allocated small budget and they do not have own source of income. The majority of budget is received from the central government.

Ao.Bo.To. have obstacles and insufficiency to hold responsibility in variety of tasks. It alone may not be able to control all the processes of coastal resource management, which need both scientific and local knowledge. It needs participation from the related groups to organize and plan for sustainable management.

The collaboration among fisher groups, village committee and Ao.Bo.To. may reduce or compensate the weaknesses of each institution. Fisher groups are representatives of the direct stakeholders in coastal resource management. They quickly understand the real situation and changing problems of coastal resources in their immediate fishing grounds. The dynamic of coastal activities' situation needs the up-to-date details of change for managing the resources.

The village committee and leaders form a powerful group to command management activities within their village. They are the representative of village people. They traditionally respect the village leaders and follow their suggestions. The group consisting of local leaders can guide and aware the villagers to cooperate

with management projects. Furthermore, village leaders and committee have an authority as police function to enforce the management measures.

Ao.Bo.To. is the formal government organization that can support the management of coastal resource by many methods depending on their capacity, such as the legitimating of people's consensus by Ao.Bo.To.'s authority. The development plan of Ao.Bo.To. puts one agenda concerning the coastal resource management. The coastal resource management project is earmarked for a small portion of total budget if compared with other development projects, but it will be continuously realized in the making of an annual development plan.

7. Conclusions

From the past decades of coastal resource management, it found that the decentralized process has not worked well yet. Local level organizations have not been assigned to take any duty on coastal resource management. Each local institution had some weaknesses on coastal resource management. The capacity building of local people and local government organization was considered to strengthen the mechanism of decentralization.

KhaoThong Sub-district was an interesting case study on coastal area self-management. KhaoThong did not use the newly announced laws or regulations to support their measures but they tried to manage multiples of utilization in coastal areas by using the existing laws. The weaknesses of each local institution were reduced by the collaboration among people and Ao.Bo.To. It was the practical method of KhaoThong Sub-district to share responsibility on coastal management. However, it needed to improve capacity of collaborative management body (CMB) to hold function on coastal resource management

The advantageous aspects of Ao.Bo.To. on self-management were an autonomous in the allocation of budget and realizing the community's development plan. Flexible administrative work helped the Ao.Bo.To. to solve local problems effectively and quickly. However, the capacity of Ao.Bo.To. was still limited due to a number of constraints. Ao.Bo.To.'s revenue was inadequate to meet the needs of local communities. Moreover, natural resources management was a new area of concern to Ao.Bo.To. member. The staff of Ao.Bo.To. who was in charge of policy formulation and planning did not pay much attention on the sustainability of natural resource. The Ao.Bo.To.'s capacity in coastal resource management can be enhanced by providing training to its staff on related laws. Political commitment was a vital factor relating to the success of implementation. If the executive board gives its commitment, the projects of coastal resource management will be driven and moved forward.

The CMB should be the formal institution of coastal resource management at sub-district level. The representative of fishers from every village and the leaders of villages in sub-district can discuss and purpose their management project in the CMB meeting. Especially, Ao.Bo.To. will take the sharing part of supporting budget and legitimatizing regulation on a self-management plan to properly and sustainably utilize local resources.

8. References

- Christie, P. and White, A. 1997. Trends in development of coastal area management in tropical countries: from central to community orientation. *Coastal management* 25: 155-81.
- Department of Local Administration. 2005. Number of Sub-district Administrative Organization until June 2005. Available online at: <http://www.thailocaladmin.go.th>.
- Jentoft, S. 2004. Institutions in fisheries: what they are, what they do, and how they change. *Marine Policy* 28: 137-149.
- Kay, R. C., Alder, J., Brown, D., and Houghton, P. 2003. Management Cybernetics: A new Institutional Framework for Coastal Management. *Coastal Management* 31: 213-227.
- KhaoThong Sub-district Administrative Organization. 2004. Sub-district's Development Plan Year 2004. KhaoThong Sub-district, Krabi Province, Thailand, pp.1-13. (in Thai).
- KhaoThong Sub-district Administrative Organization. 2006. Three-Year Master Development Plan Year 2006-2008. KhaoThong Sub-district, Krabi Province, Thailand, pp.1-94. (in Thai).
- Nickerson-Tietze, D.J. 2000. Community-Based Management for Sustainable Fisheries Resources in Phang-nga Bay, Thailand. *Coastal Management* 28, pp. 65-74.
- Nielsen, J.R., Degnbol, P., Viswanathan, K.K, Ahmed, M., Hara, M. and Abdullah, N.M. 2004. Fisheries co-management – an institutional innovation? Lessons from South East Asia and Southern Africa. *Marine Policy* 28: 151-160.
- Noble, B.F. 2000. Institutional criteria for co-management. *Marine Policy* 24: 69-77.
- Ostrom, E. 1999. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press, New York.
- Pomeroy, R.S. and Berkes, F. 1997. Two to tango: the role of government in fisheries co-management. *Marine Policy* 21(5): 465-80.
- Puang-Ngam, K. 2003. *Ao.Bo.To.: development, network building and empowerment*. Bangkok, Thailand: Winyuchon Publication House, 164 pp. (in Thai).
- Ribot, J.C. 2002. *Democratic decentralization of natural resources: institutionalization popular participation*. Washington, DC: World Resources Institute.

Sorensen, J.C., McCaery, S.T. and Hershman, M.J. 1984. Institutional arrangements for coastal resource management. Columbia, SC: Prepared by Research Planning Institute for National Park Service, U.S. Dept. of the Interior.

Yaowapak, W. 2003. New role of Sub-district Administrative Organization to Local Community Development in Thailand, Proceedings of the Toward Further Development of Coastal Resource Management: Lesson Gained Through Locally Based Coastal Resource Management in Pathew District, Chumporn Province, Thailand, pp. 163-167.

Part 2

The Recovery Process of Tsunami Affected Communities in the Phang-nga Bay

Coastal Fisheries Management towards the Rehabilitation of Small-scale Fisheries: the Case of Phang-nga Bay, Thailand

Phattareeya SUANRATTANACHAI

Masahiro YAMAOKA and Wantana CHENKITKOSOL

Graduate School of Biosphere Science,

Hiroshima University

1. Introduction

The implementation of coastal resource management is a priority basis. The implication of well-managed coastal resources is to secure small-scale fishers an employment opportunity. Similarly, the small-scale fishers are important resource users to functionally manage coastal resources. In short-run, this is to sustain the fishers both way of lives and livelihoods. In long-run, this is to obtain resilience of the coastal resource [1].

In Thailand, the practice of coastal resource management was handled with top-down approach from 1961 to 1994. In 1995, the central government adopted the bottom-up approach to promote policy and program of political and administrative decentralization in nationwide [2]. The government devolves its authority which concerns administrative work, social welfare and environmental management responsibility [2] and [3]. This decentralization of authority is transferred to local government level which lines down from provincial, district to sub-district. Particular sub-district administrative organization is a key management body at local level.

Practiced bottom-up approach in fisheries sectors, the Department of Fisheries (DOF) adopted community-based fisheries management (CBFM) approach for coastal resource management. This approach fundamentally requires particular small-scale fishers' participation. The 1997 Constitution and Public Administrative Decentralization Act is legal framework to contribute a practice of fishers' participation in community development and resource management.

The Department of Fisheries (DOF) implemented the national small-scale fisheries development policy and program. This policy and program was under the framework of the Seventh (1992-1996) and the Eighth (1997-2001) National Economic and Social Development plans. These two national plans targeted small-scale fishers in the whole country. Small-scale fishers mean fishers used vessels of less than 5 gross tons and operate fishing in coastal areas (zone 1) [4].

Number of small-scale fishers in the Phang-Nga Bay amounted to 90% of small-scale fishers in Thailand [5]. In addition, these small-scale fishers were defined poor. Their average monthly income was not sufficient to meet household basic needs [6]. The DOF implemented the national small-scale fisheries

development program into the bay. This program composed of two approaches. One was fisher participatory approach to progressively manage coastal resources. Livelihood approach was secondly to mainly improve fishers' household economy and standard of living. The DOF was together with the FAO/ Bay of Bengal Program's technical support provided several preparatory activities to train small-scale fishers participated in coastal resource management.

Thousand of small-scale fishers live along the Phang-nga exacerbated by the tsunami devastation in December, 2004. The tsunami damage caused people and fishers lost their lives which were reported by domestic government agencies and international development organizations. Hundred of fishers lost their fishing gears and fishing boats. Some lost fish cages. These caused to unstable fishers' livelihood and reduction of capacity in fishing. Non-stability of fishers' livelihood is major cause to probably bring slowdown in fishers' participation in coastal resource management.

To alleviate a slowdown of fishers' participation in coastal resource management, the DOF formulated the nation relief policy and program with the concept of responsible fisheries and sustainable development. Certainly, it puts the rebuilding capacity of fishers as major priority. This is to rapidly resume fishers' capacity in fishing as one hand. On the other hand, this is to reduce unstable fishers' livelihood.

The content of this paper consists of the background of the small-scale fisheries development program implemented in particular Klongkian Sub-district in Phang-nga Bay, Phang-nga province. This program was significant to contribute the development of fishing community and coastal resource management at pre-tsunami. The implication of the program affirms that small-scale fishers have long experience participated in coastal resource management. A basic governance structure of fishing community, which is simply explained, is crucial mechanism to support fishers' participation. Fishers' group and its institution are placed high priority. The group is village-based body to implement the small-scale fisheries development program. This group is playing a key role to practice in coastal resource management.

At post-tsunami, fishing households lost capacities in fishing operation is described towards socio-economic data of those fishing household. The rehabilitation of fishing household is clarified with relief activity implementation. Financial assistance are important to encourage fishers earlier rebuilt their capacity in fishing. Several sources of financial assistance provide fishers an activity to facilitate those fishers for working in group. Then, fishers' group and organization function well to ahead carry on sustainable coastal resource management.

2. The Scope of the Study

The objective of the study is to identify the loss and damage of fishers by tsunami devastation. The second objective is to classify relief programs and stakeholders contributed to the rehabilitation of fishing community. The last objective is to view the implication of the relief programs facilitated to develop fishers' participation and to increase the opportunity of local government body development. This implication is viewed towards fishers as well as local government body practicing in coastal resource management.

Klongkian Sub-district, Thakautung District, Phang-nga Province composes of eight villages (see fig.1). More than fifty percent of eight villages are small-scale fishing villages. These amounts of fishing village have long experience participated in both national and international collaborative projects for the resilience of coastal resource and management. These fishing villages have dealt with the concept of responsible fishing before 1995. After then, the villagers have been put to practice in the concept of responsible fishing combining with community-based fisheries management approach for achieving sustainable coastal resources.

The small-scale fishers of two sampled villages of this sub-district are as remunerators. They are the representatives of fishers damaged by tsunami and lost only physical fishing assets, not lost their lives. Data collection was done through surveys with interviewing the remunerators. The questionnaire was designed to collect data on how fishers rehabilitate the fishing asset and capacity, what source of financial assistance and purpose of financial assistance use. These findings of the surveys affirm fishers resumed their way of life and livelihoods. The analysis of the data collection is done by descriptive analysis with figuring out mean value of the data.

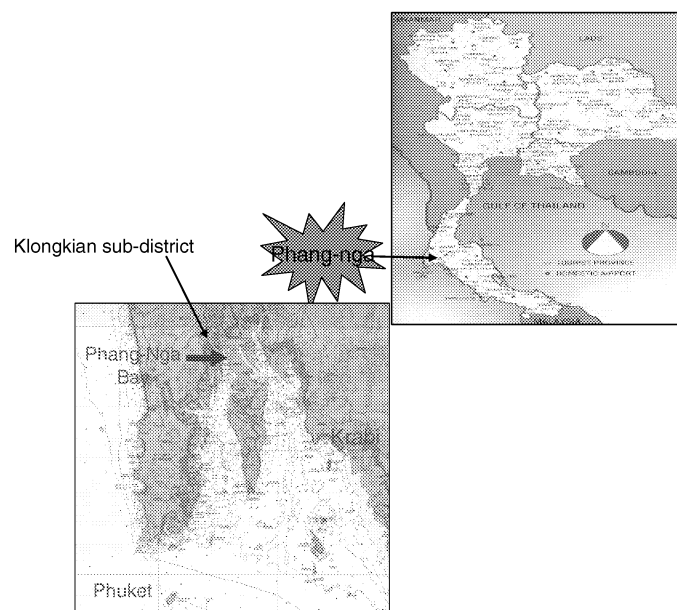


Figure 1. Map of Klongkian Sub-district locates in Phang-Nga Bay

3. Background of the Study Site

1) The Foundation of the Klongkian Sub-district

The Phang-Nga Bay has boundary area of about 3,000 km². The mangrove forest areas cover 1,900 km² of the Bay [7]. The Klongkian Sub-district locates along the abundance of mangrove forest areas (see fig.2). The jurisdiction of this sub-district has 131 km² shown in table 1 [8]. Total population is 4,646 in July, 2005. This number of population composes of 4,539 (97.7 percent) who are Muslim habitants. Number of working population is 2,426 with age of 15-59 year olds. Top-three occupations are farmer in agriculture (1,097 persons, 45.22 percent), fishers (349 persons, 14.39 percent) and labor (594 persons, 24.48 percent).

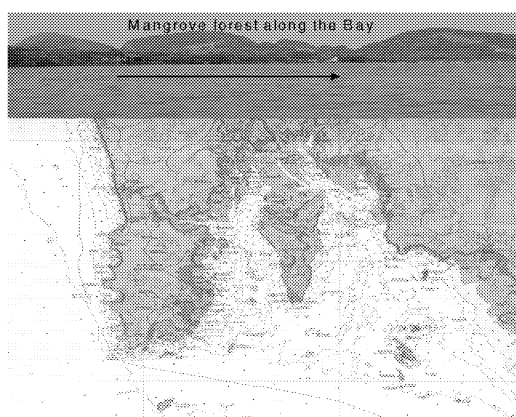


Figure 2. A Surrounding of Mangrove Forests along Klongkian Sub-District in Phang-nga Bay

Table 1. The Profile of Population and Geographic of Klongkian Sub-District

Items	number	%
1. Territorial area (km ²)*	131	
2.Total population (persons)**	4,646	100
3. Religion: Muslim**	4,539	97.7
4. Occupation**		
- farmer in agriculture	1,097	45.22
- fisher	349	14.39
- labor	594	24.48

Remark: * <http://www.dopa.go.th/local/phangnga44.htm>

** Klongkian Sub-district Administrative Organization Office, July 2000

In fisheries sector, fishers are small-scale fishers and fish-farmers. Small-scale fishers use long-tailed boat (outboard powered boat) and traditional fishing gear. Small-scale fish-farmers engage in both capture fisheries and coastal aquaculture. Generally, a fisher uses multi-type of traditional fishing gear. Type of the fishing gear use is shrimp trammel net, crab gill net, fish gill net, fish traps, etc. Shallow water set net is a main type of traditional fishing gear. This fishing gear chiefly targets shrimps. Fish caught by shallow water set net is used as bait fed for fish cage cultures. Fishing gear operational changes depend upon fishing season. A change of fishing season is mainly affected by the southwest and northeast monsoons.

2) Governance Structure and Administrative Function

The Klongkian Sub-district Administrative Organization (Ongkarnborihan-suantambol, Ao.Bo.To. in *Thai*) was established in 1996 [8]. This Ao.Bo.To. was established after the 1994 Sub-district Administrative Organization Act. The Act had been effective since 1995 [9]. Generally, the Ao.Bo.To. Council has to make across-sector communication among village, district office and higher-ranking office. The Ao.Bo.To. Council is a task force to implement both top-down and bottom-up approaches. Implementing top-down approach, it has to follow and practice a policy and assignment coming from district office and central government. Practicing in bottom-up approach, the Ao.Bo.To. Council has main function to take responsibilities on providing basic need and welfare of the community, self-management on budget and finance. In addition, the Ao.Bo.To. Council has a duty to manage local resource base on its owned jurisdictions. Its duty dealt with resource management has to adopt people participatory approach. This follows the legitimate of the 1997 Constitution.

The Klongkian Sub-district Administrative Organization (Ao.Bo.To.) has an annual income of less than three million bahts [8]. The Klongkian Ao.Bo.To. is ranked on Class V. The Ao.Bo.To. Council composes of sixteen representatives. These representatives are elected from eight villages. Each village has two representatives. This Council has to formulate a five-year community development plan according to the Ao.Bo.To. Act, 1994. The plan is placing an emphasis on the community infrastructure construction such road construction in each village. The Klongkian Ao.Bo.To. Council has put the activities of local resource base management low on the community development plan.

3) Fishers' Participation in Coastal Resource Management

Recently, the Klongkian Ao.Bo.To. has low experience in coastal resource management. Fishers' group has long experience in community development and resource management before the establishment of the Klongkian Ao.Bo.To.. The Department of Fisheries (DOF) implemented the national small-scale fisheries development program to fishing communities in Klongkian Sub-district. This program was under the Seventh National Social and Economic Development plan (1992-1996). The small-scale fisheries development program consisted of two objectives. One was to increase fishers' participation in responsible fisheries. Other one was to develop fishers practicing in community-based fisheries management.

The implication of fishers' participation in responsible fisheries was the stop of using push net fishing gear in coastal areas of the Phang-nga Bay [10]. The DOF adopted livelihood approach with an increase of responsible fishing gear and aquaculture. The livelihood approach was to secure fishers earning income. This approach is conducive to forward fishers' participation in responsible fisheries. The DOF gave a set of gill net fishing gear to push net fishers. The DOF also introduced push net fishers and other fishers to engage in coastal aquacultures. The DOF provided technical assistance, fish cage and fish fingerlings to push net fishers and other fishers.

To increase fishers participated in coastal resource management, the DOF implemented several coastal resource management activities. These activities were such mangrove reforestation, fish fingerling releasing, stocking cage for gravid crab. Fishers practiced in these activities explicitly enhancing an abundance of coastal resource. Meanwhile, fishers had been personally aware of important resource management.

The DOF suggested fishers to establish a fishers' group. The outstanding activity of this fishers' group is managing an auction particular shrimp products. This fishers' group initially handles the auction on shrimp product with the suggestion of the Andaman Sea Fisheries Development official, the Department of Fisheries. After a few year passed, the shrimp auction activity is well-known and well-operated by both inside and outside fish traders and collectors. The auction is regularly operated every two days, nowadays. Shrimp trammel net, crab gill net and shallow water set net fishers receive a benefit come from the auction. They themselves are acknowledgeable the value of marketable sized shrimps. The auction activity is marketing strategic driven responsible fisheries. The fishers' group is a key working unit at village level. It leads its member and other stakeholders to practice in responsible fisheries for sustainable coastal resources and management.

4) The Link of Sub-District and Village Management Bodies

Two key local management bodies are Sub-district Administrative Organization and fishers' group at local level. They are assumed to share working to achieve a well-managed resources and a well-developed community. Table 2 illustrates the three-year community development plan with specific strategy and objective. This plan was formulated by the Klongkian Sub-district Administrative Organization (Ao.Bo.To.) Council. The plan has annual tentative schedule to conduct mangrove reforestation.

Table 2. A Three-Year Community Development Plan (2006-2008) for the Klongkian Sub-District Administrative Organization

Strategy 4: Resource management and environmental development

Objective: To increase people's awareness on resource management and environmental development

Project	2006	2007	2008
Mangrove reforestation in four villages	1-time	1-time	1-time
Buoy installation for marking fishing ground areas	1-place	-	-
Training arrangement on a using of responsible fishing gear	1-time	1-time	-
Mangrove forest conservation	1-time	1-time	1-time
An annually increase of mangrove reforestation area	1-time	1-time	1-time
Community reforestation for every village	1-time	1-time	1-time

Source: Klongkian Sub-district Administrative Organization Office, July 2005

Shown by the three-year plan, the link of between fishers' group and the Klongkian Ao.Bo.To. Council has placed the concern low on the working in coastal resource management. The linkage of between the Klongkian Ao.Bo.To. Council and the fishers' group occasionally depends upon a conduct of mangrove reforestation activity. This link is not numerous because of two major limitations. One hand, there is no fisher elected to be member of the Ao.Bo.To. Council. The Council members are engaging outside fisheries sector. These members put high priority on infrastructure construction, community welfare management. But, they put low priority on coastal resource management. On the other hand, capacity of fishers' group and fishers' participation in coastal resource management is marginalized.

The practice of the Klongkian Ao.Bo.To. Council and the fishers' group are especially shared working in coastal resource management according to the three-year plan. This practice is the implication of a gap between decentralization of authority policy and implementation. This means that the decentralization of authority towards the Sub-district Administrative Organization is not fully functional yet to contribute fishers holistically managed their local resources on its owned boundary areas. The Klongkian Ao.Bo.To. Council does not yet use its legislative power to safeguard and encourage traditional coastal resource management activities.

Fishers' group and fishers self-manage their fishing ground with their customary use particular in the settlement of shallow water set net and fish cage culture. This fishers' self-management on fishing ground is active without the Ao.Bo.To. Council's legislative approval. This management is conventionally based on kinship, friendship and mutual help since previous days.

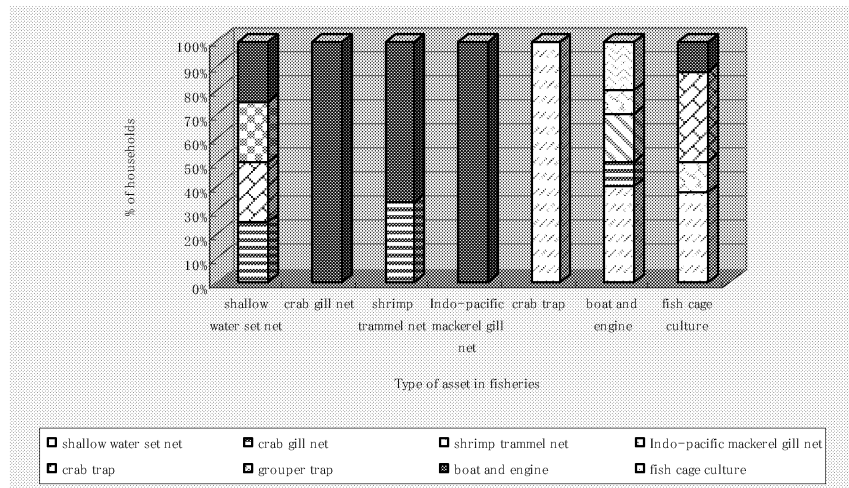
Fishers' group is still taking a key and leading role to keep fishers' participation in coastal resource management. The group makes connection and network with fishers' group at adjacent fishing villages. The fishers' group is core unit connected with the DOF and non-governmental organizations to chiefly handle resource management activities.

4. Tsunami devastation to fisheries sector

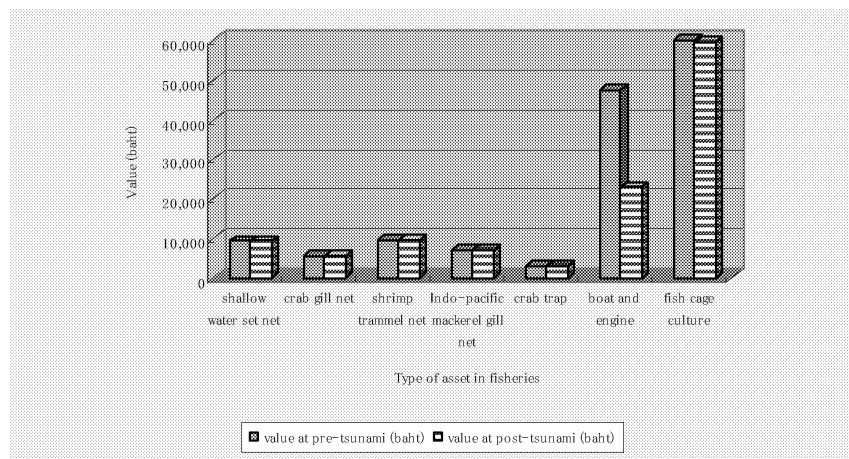
In December, 2004, Tsunami severely affected Phang-nga province. This devastation destroyed 308 villages in 79 sub-districts of 24 districts in the province [11]. Eight fishing villages of the Klongkian Sub-district were also exacerbated by the gigantic wave. Fishers and other villagers did not lose their lives. These local people cited that mangrove forest was as natural wave breaker. The forests helped reducing a severe destruction of the wave. However, this wave wrecked fishing assets such stationary fishing gears, fish cages and boats.

Fig.3 presents a fishing household lost fishing asset by tsunami devastation. This chart visually displays categories of fishing asset belonging to fishing households. Basically, each bar indicates fishing households possessed type of asset in fisheries. Taking a look at shallow water set net bar, this bar composes of four types of fishing household lost their assets. They are fishing households certainly lost shallow water set net coupled with crab gill net (21%) or crab trap (25%) or grouper trap (25%) or boat and engine (24%). On categories of fish cage culture bar, fishing household lost fish cage culture only (33%), with indo-pacific mackerel gill net (14%), crab trap (35%) and boat and engine (18%). Other bars are crab gill net and indo-pacific mackerel gill net fishing households. Both of these types are destroyed boat and engine (100%) for each. Similarly, the bar of crab trap fishing household lost with fish cage culture (100%).

Categories of the fig.3 are elementary types to assume a lost value of fishing asset in fishing households. Fig.4 shows fishing households lost fishing asset in value by tsunami destruction. Similar categories of fishing asset are as the categories of fig.3. Each category is a comparison between values at pre- and post-tsunami. This chart illustrates that traditional fishing gears are completely destructive by the wave. Each category lost amounted to 9,350 baht of shallow water net, 5,500 baht of crab gill net, 9,463 baht of shrimp trammel net, 7,250 baht of indo-pacific mackerel gill net, 3,150 baht of crab trap. Category of boat and engine is visually indicated a part damage of boat and engine. The value of partly damaged boat and engine is costly amounted to 22,940 baht at post-tsunami. Fish cage culture bar is also completely lost which is amounted to 59,363 from 59,818 baht of pre-tsunami.



Source: Data collection and village survey conducted in Klongkian Sub-district, June, 2005
Figure 3. A Fishing Household Lost Assets in Fisheries Sector by Tsunami Devastation



Source: Data collection and village survey conducted in Klongkian Sub-district, June, 2005
Figure 4. A Value of Asset in Fisheries Sector on Average at Pre- and Post-Tsunami

Traditional fishing gear is completely lost and boat and engine is partly damaged. These become a serious cause to fishers and fish-farmers. They have no capacity engaged in capture and coastal aquaculture. There is no fishing operation, and then fishers' group cannot handle an auction of shrimp price. This cause fishers and fish-farmers faced to underemployment and unemployment in fishing operations. Moreover, they have ended with a deficient income and hazard of livelihoods. Fishers and Fish-farmers were busy for two-three months long after tsunami left. They had to inform the head of village and the Klongkian Ao.Bo.To. Council the concerns of their asset in fisheries lost. Meanwhile, they had to wait for a relief both in kind and cash to rebuild their capacity in fishing operation. This threat puts fishers and fish-farmer placed coastal resource management activity on low priority.

5. Relief scheme and stakeholders to the rehabilitation of fishing community

1) The Department of Fisheries as Major and Leading Relief Agency

The Thai Royal government has authorized ministries concerned to put a relief and assistance policy and program formulation on high priority. Rehabilitated fisheries sector, the DOF is major government agency in charge to implement the national relief policy and program for fisheries sector restoration. This government agency formulated an immediate relief action plan for small-scale fisheries. The framework of this relief action plan was placed the putting people first as top priority of relief work. A responsible fisheries and sustainable coastal resource management is key approach to recovery fishing community and fisheries sector. These approaches are as precaution to provide fishers assistances in fisheries not exceeding those fishers' capacity in fishing in the previous days.

The DOF eagerly formulated an immediate relief action plan for small-scale fisheries as seen in table 3. The DOF categorized damaged fishers in two priorities. First priority is damaged fishers who have registered card of fishing boat and fishing gear license. This card is issued by the DOF [12]. Second priority is damaged fishers who have no either registered card of fishing boat or fishing gear license. These categories of priority are similarly used with fish-farmers engaged in coastal aquaculture.

Table 3. An Immediate Relief Action Plan for Small-Scale Fisheries

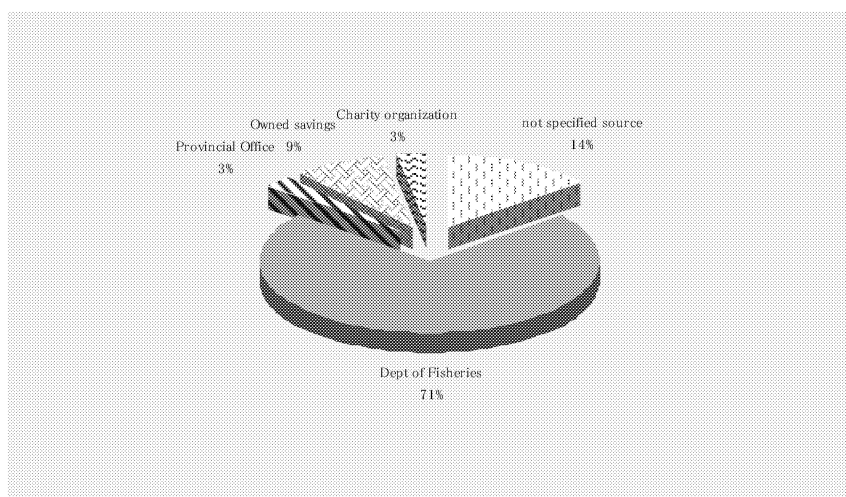
Type of Fisher	Priority	Fishing Boat		Fishing Gear	Fish Cage
		Boat body	Engine		
Registered card holder*	1	Not more than 20,000 baht	Not more than 10,000 baht	Not more than 10,000 baht	Not more than 20,000 baht
Non-registered card holder	2	_____ 70% of the amounts formulated _____			
Eco-tourism boat	3	On-going consideration on damage assessment			

Remark: * registered card holder means fishers or fish-farmers made recording on type of their engagement and capacity such type of fishing gear, fishing boat length, number of fish cage and stocking aquatic species. The DOF handled a conduct of this record whole nation in November, 2003.

Shown by table 3, non-registered card holder will receive a financial assistance only 70% of amount provided to those registered card holders. The DOF was considering the provision of a financial aid to damaged villagers carried out eco-tourism boat. The DOF also implemented this relief action plan based on legitimacy of fisheries laws on controlling fishing gear operation. On practice of the laws, this government agency puts high demand on an increase of responsible fishing practice and effective economic incentives [13]. It induced especially shallow water set net fishers, who have no registered card permitted to operate the fishing gears, to

engage in other type of fishing gear such gill nets. Implemented the relief action plan, the DOF carefully checked both registered card and fishing gear permitted card to shallow water set net fishers before delivered financial aid.

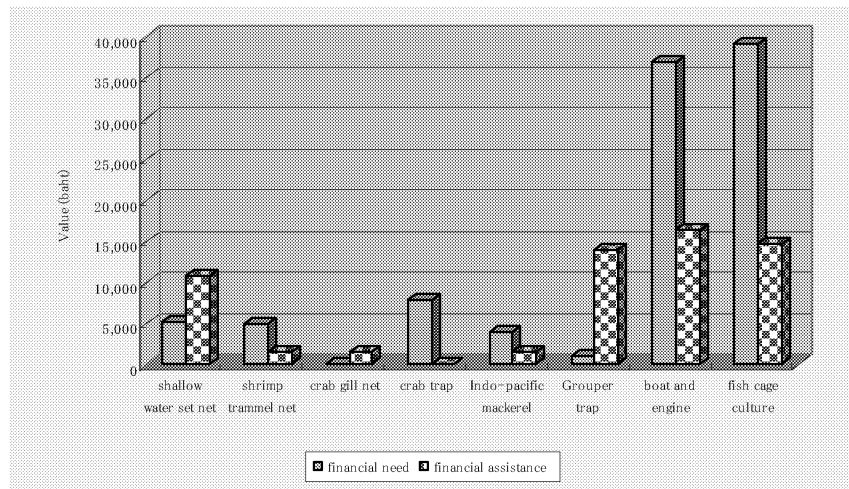
Finding of the community survey conducted in June, 2005, was supportive information to give a visual practice of the relief action plan. Fig.5 indicates that the DOF is major governmental agency to assist fishers in recovery. Remunerators are amounted to 71% of total sampled remunerators received financial assistance from the DOF. Other respondents, which are 14% of the total, do not remember well from whom they get the aid. Many of respondents are 9% of the total spent their owned savings for their capacity rehabilitation in fishing. Provincial office and charity organization supports the respondents, which are similarly amounted to 3% of the total.



Source: Data collection and village survey conducted in June, 2005

Figure 5. Source of Financial Assistance appeared in Klongkian Sub-District

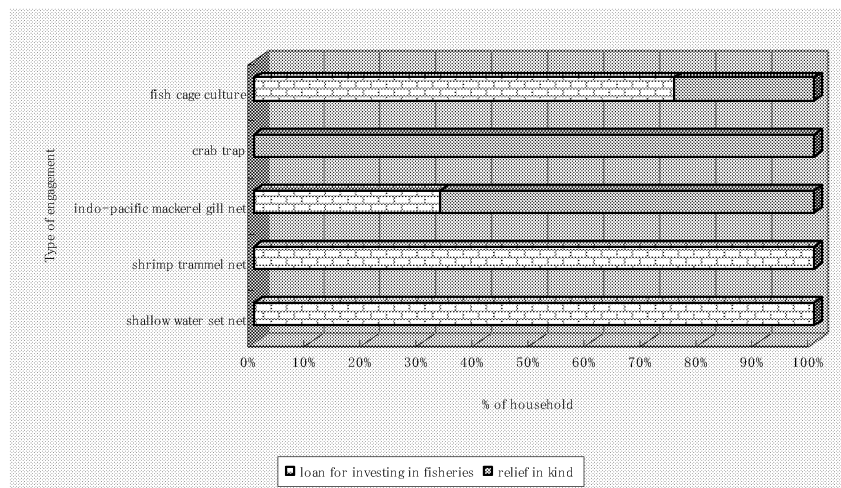
The implication of the DOF delivered financial aids to the rehabilitation of fishing village can be seen in fig.6. This chart is the DOF passed financial assistance to damaged fishers in Klongkian Sub-district before June 2005. The chart basically consists of the bars of financial need and financial assistance on average, respectively. Fishers, who lost shallow water set net and grouper trap, received financial assistance amounted to 10,750 baht and 13,960 baht, respectively. Fishers are paid 16,500 baht for repairing boat and engine. Similarly, fish-farmers obtain only 14,625 baht. To construct new fish cage and repair boat and engine, fishers and fish-farmers need amount of financial aid to 36,000 and 39,250 baht, respectively. However, some fisher likes crab trap fisher is not handed financial assistance as other damaged fisher.



Source: Data collection and village survey conducted in June, 2005

Figure 6. The Department of Fisheries delivered Financial Assistance to Fishers in Klongkian Sub-District before June, 2005

The Department of Fisheries implements a delivery of financial assistance to damaged fishers into two primary activities as seen fig.7. Firstly, the DOF suggests the damaged fishers to establish fishers' group. This group manages the financial assistance as a revolving loan activity for investing in fisheries. Secondly, the DOF brings relief in kind such fishing gear, net, etc, to the damaged fishers. Each type of damaged fishers adopts a relief. Shallow water set net, shrimp trammel net and indo-pacific mackerel gill net fishers, which are numbered of 100%, 100% and 30%, respectively, run financial assistance as a revolving loan activity. Fish-farmers are suggested to manage financial aid as revolving loan. These are amounted to 73% of the aggregate fish-farmers bar. Other fish-farmers left 27% of the aggregate are handed a relief in kind. Crab trap and indo-pacific mackerel gill net fishers, which are 100% and 70% respectively, receive a relief in kind.



Source: Data collection and village survey conducted in November, 2005

Figure 7. An Activity of Financial Assistance delivered to Fishers with Suggestion of the Department of Fisheries, Klongkian Sub-District

The DOF is major and leading government agency to immediately transfer a relief to damaged fishers at first half of year 2005. This government agency applies fishers' participation into a relief program. This approach is implemented in Thailand longer than two decades. This approach is driving fishers to work in group. A transfer of financial assistance is supportive tool to gather fishers to practice a working in group on a revolving loan and allocation.

2) Substitute of Assistance and Management

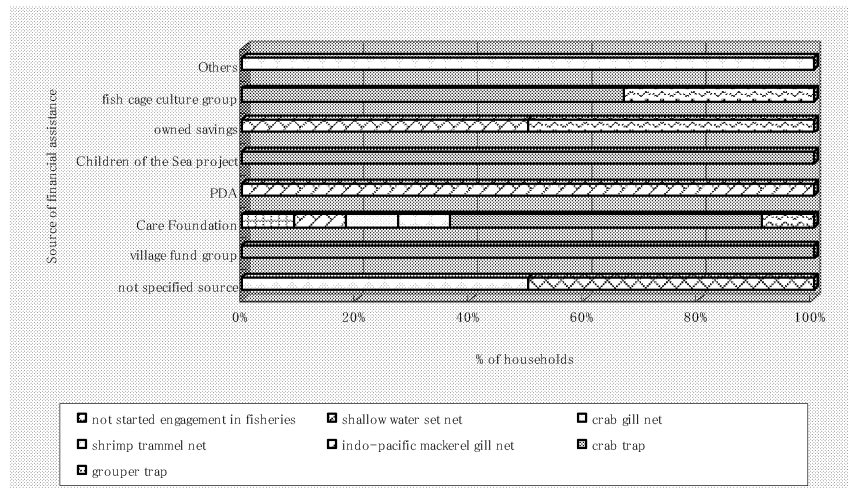
The Department of Fisheries has a limitation to hand a relief down to damaged fishers. Its limitation means a deficiency of official in charge and budget. Both domestic and international non-governmental organizations eagerly help in relief. In Klongkian Sub-district, damaged fishers receive a relief from village fund group which originally found in the village (see fig.8). They are assisted by domestic non-governmental organization such the Care (Raksthai) Foundation¹ and the Population and Community Development Association (PDA²). In addition, the DOF brings helps to fishers through the Collaborative project named "the Children of the Sea Project" funded by European Union. However, many of damaged fishers do not reach the relief. They have to spend their owned savings to buy new unit of fishing asset in capture and aquaculture.

The village fund group was established in 2001 with policy and action plan of the Ministry of Interior. Basic function of this group is to arrange revolving loan to villagers. The group was lent by the Ministry amounted to one million baht. This amount of loan must be gradually repaid back to the Ministry within five years. This village group cannot provide much financial assistance to all fishers. It helps only crab trap fishers.

¹ See more information at www.raksthai.org

² See more information at www.sli.unimelb.edu.au/pda/drmechai.htm

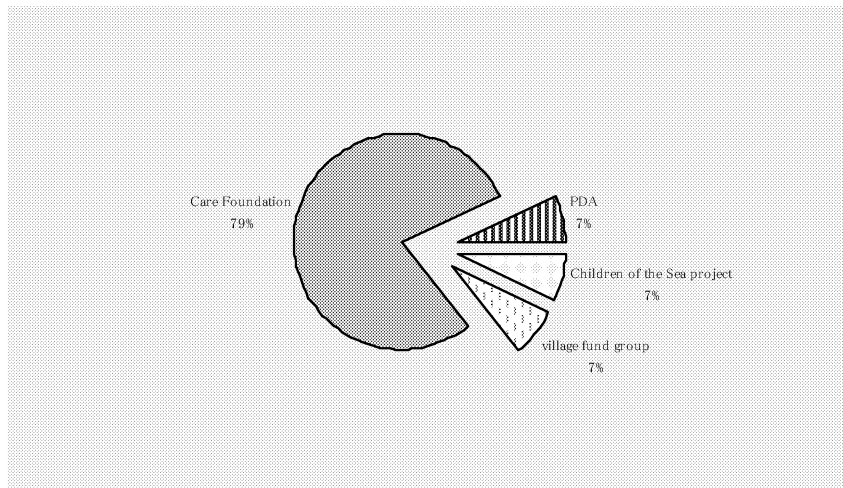
The Care (Raksthai) Foundation is important substitute of assistance. This foundation largely helps all kinds of fishers such shallow water set net, crab gill net, shrimp trammel net, crab trap and grouper trap. The PDA mainly supports indo-pacific mackerel gill net. The help of “the Children of the Sea project” is strongly encouraged crab trap fishers. The objective of this project is to promote responsible fisheries by using big mesh size of crab trap’s bottom-side net.



Source: Data collection and village survey in November, 2005

Figure 8. Substitute Source of Assistance in Klongkian Sub-District

The management of financial assistance is commonly formed a revolving loan activity. The Village fund group and the active non-governmental organization recommended damaged fishers to establish fishers’ group. Both former and newly established fishers’ groups similarly run financial aid as revolving loan management. The Care (Raksthai) Foundation support 79% of the aggregate fishers to newly form fishers’ group with a revolving loan management activity (see fig.9). The PDA, the Children of the Sea project and the village fund group are alike. They contribute the fishers numbered of 7% of the aggregate to handle a revolving loan activity.



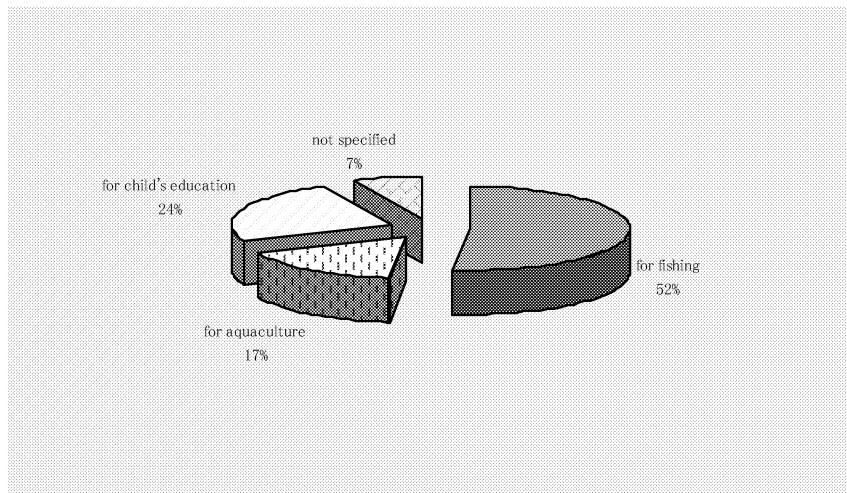
Source: Data collection and village survey in November, 2005

Figure 9. A Number of Fishers Runs a Revolving Loan for Fisheries according to the Substitute Source of Assistance, Klongkian Sub-District

Various government agencies and non-governmental organizations deliver a ton of aids to damaged fishers after tsunami. The findings are illustrated in the charts affirmed a poor coordination between government agencies and non-governmental organizations [12]. Each agency and organization implements a relief on its own plan. It is focusing to work with people' group in community. This is to strongly develop the group's ability supporting sustainable management of coastal resources [14]. The government agency and non-governmental organization concerned similarly executes activity with the same pattern and practice. A damaged fisher may be least a member of two fishers' group. Many of newly established fishers' groups are found without link. This implication may need a facilitator of sub-group management. This is to make link of sub-group. The empowerment of the link is strengthening to community development and resource management.

3) A Revivable Fishing Community

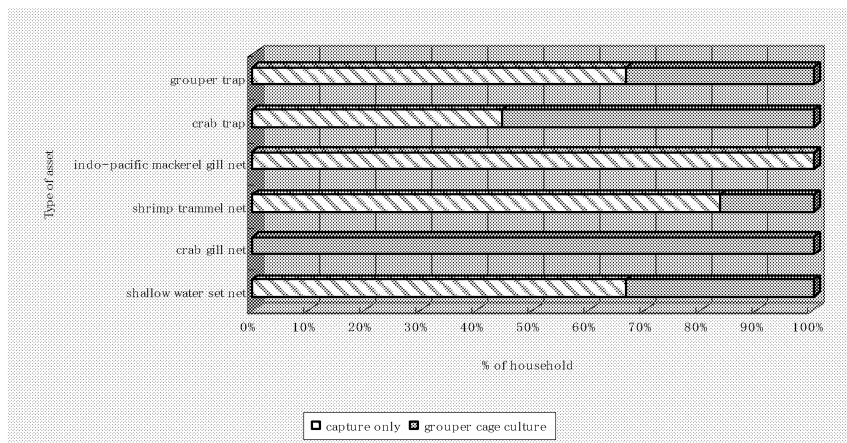
Fishers damaged in Tsunami have done self-help on recovery of their households. They sought for ruined fishing gear, fish cage culture compartments and materials. They helped each others to lift up fishing boat sunk down in the sea, etc. These fishers also quickly rebuild their capacity in fishing and aquaculture. This is to restart their way of lives and livelihoods in fisheries. They spent a financial assistance for three basic purposes. These purposes are for fishing operation, for carrying out aquaculture and for encouraging child's education. Fig.10 shows number of fisher paid financial aid for specific purpose. This chart indicates that 52% of total fishers expended a financial aid for restarting fishing. Second proportion of fishers are numbered of 24% of the total spent a financial assistance for their child's education. In addition, 17% of the total invested a financial aid for re-carrying out aquaculture.



Source: Data collection and village survey in November, 2005

Figure 10. A Purpose of Financial Assistance Expense, Klongkian Sub-district

Two fundamental types of fishers restart their livelihoods in fisheries. One is fishers engage in fishing only. The other is fishers employ in both fishing and aquaculture. This result implicates they engaged in the same employment as they are used. Fig.11 shows type of asset in fisheries primarily found at fishing household. This chart clarifies a combination of capture and aquaculture fisheries and capture only. Looking at shallow water set net bar, it consists of 65% of fishers used only the fishing gear, and 35% of fishers employed both the fishing gear and grouper cage culture. The bars of shrimp trammel net, crab trap, grouper trap have a similar result as the shallow water set net fishers. Crab gill net fishers operate this gear coupled with grouper cage culture.



Source: Data collection and village survey in November, 2005

Figure 11. Type of Asset in Capture and Aquaculture Fisheries, Klongkian Sub-District

Table 4 is a value of asset in fisheries on average. This table clearly expresses the scale of fishing household economy which considers based type and value of the asset. First is considering on value of fishing

asset in capture fisheries only (second sub-column). Fishers possess shallow water set amounted to 8,937 baht, and 7,230 baht of shrimp trammel net, 1,500 baht of indo-pacific mackerel, 7,163 baht of crab trap, and 5,873 baht of grouper trap. Looking at a combination of capture and aquaculture, value of the asset is categorized in two parts which are of fishing gear and aquaculture, respectively. A combination of shallow water set net and grouper cage culture has possessed 10,160 baht of the fishing gear and 6,000 baht of the fish cage culture. Fishers engage both shrimp trammel net and grouper cage culture possessed the fishing gear and fish cage amounted to 400 and 4,000 bahts, respectively.

Table 4. The Average Value of Asset in Capture and Aquaculture Fisheries, Klongkian Sub-District

Type of Asset	Value (baht)		
	capture only	grouper cage culture	
	for fishing gear	for fishing gear	for aquaculture
shallow water set net	8,937	10,160	6,000
crab gill net	0	1,300	2,000
shrimp trammel net	7,230	400	4,000
indo-pacific mackerel gill net	1,500	0	0
crab trap	7,163	6,716	11,080
grouper trap	5,873	8,450	15,000

Source: Data collection and village survey in November, 2005

The revival of fishers and fish-farmers is conventionally practiced in capture and aquaculture fisheries as previous days. Type of asset in fisheries, which is possessed by fishers at recent, is affirmative information. The revealing of the asset value is ensured that the scale of fishing household economy smaller than it was. Particular fish cage culture is both capacity and value become small. The asset value is also expressed that the delivery of financial assistance for rebuilding capacity in fisheries is not enough. This reduces a worrying of excessive number of fishing gear and fishing capacity.

6. Conclusion and Discussion

1) A Relief Policy and Sustainable Coastal Resource Management

The Department of Fisheries (DOF) has main objective to place responsible fisheries towards the relief policy. It plans to control number of shallow water set net fishers and the fishing gear unit. It emphasizes particular fishers who have no fishing license to operate shallow water set net. A poor coordination between the DOF and non-governmental organization is a sensible cause to the rebuilding of a new unit of shallow water set net belonged to non-license and license fishers. The DOF inspects carefully on the license. But the non-

governmental organization offers both types of the fishing gear license holders.

In practicing an increase of responsible fishing gear, the DOF is major government agency to hand gill net fishing gear to fishers. Meantime, non-governmental organizations also support gill nets to fishers. Fishers conventionally restart their way of life in fishing to secure their livelihoods. They employ in the same type of fishing gear that they expertise. This implicates re-operation of traditional fishing gear such shrimp trammel net, crab gill net, grouper trap, crab trap and shallow water set net. The way of practicing these types of fishing gear is explicitly meant to fishers participated in responsible fisheries. This means of fishing operation is strongly supported to draw a sustainable coastal resource and management.

Seemingly, a fisher received a large number of gill nets. Actually, each type of gill net is such shrimp trammel net and crab gill net longer used only one to three months. In Klongkian Sub-district, shrimp trammel net fishers cite that they have to change new net of the fishing gear every forty-five days. The use of crab gill net fishing gear is alike as the shrimp trammel net. Grouper trap is easy to contribute a reconstruction. Grouper fishes, which are caught from wild in local coastal areas, are high demand to encourage re-carried out fish cage culture. However, grouper trap fishing operation is freely to catch target fishes without fish sized control.

Financial assistance granted by government agency and non-governmental organization is incentive strategy. This strategy is used to gather fishers to work in group. Fishers' group had oriented practice the strategy since previous time. The group and its members mainly exercise in financial management as village-based revolving loan. A little longer remaining of loan allocation activity is primarily supported to fishers to access a loan with low interest. Then, they continuously buy a set of traditional fishing gear.

2) An Opportunity to Strengthen Sub-District Administrative Organization

Generally, the Klongkian Sub-district administrative organization (Ao.Bo.To.) has legal status of being a juristic person [9]. The Ao.Bo.To. Council has legislative responsibility to coordinate and lead rehabilitation activities. It has also been able to coordinate with local grass root organizations. In practice of recovery, the Council does not coordinate either the DOF or non-governmental organization to work in a relief program. The Council members are representative of each village initially helped in official recording number of fishers damaged. The DOF mainly checked damaged fishers from this official record. The Ao.Bo.To. Council can freely manage its owned budget for community development and welfare management. However, it has no extra amount of budget to support damaged fishers in rehabilitation.

Two causes are impediments to reduce an opportunity to develop the Ao.Bo.To.. One cause is as the World Bank mentioned that a relief program placed an emphasis on working with community groups. Other cause is the Council members work only a part-time basis. It generally meets only once a month. Full-time staffs of the Ao.Bo.To. are in charge to run office work. They have no authority in making decision. The Ao.Bo.To. is ignored its function and responsibility. In addition, it losses chance to develop its skill in particular

financial management and allocation. The gap between the sub-district administrative organization and local people's group probably become wider.

Fishers' groups are as village-based management body. The group has capacity to manage the group's activity. The Sub-district Administrative Organization has officially function and responsibility to manage community resources on its territorial boundary. The linkage of across-sector, which is between fishers' group and the Sub-district Administrative Organization, is strongly requisite. The sub-district administrative organization should do legislative approval to safeguard its local resources from illegal and irresponsible fisheries. These types of fisheries may operate by local fishers or non-local fishers.

In addition, the Sub-district Administrative Organization should authorize its function and responsibility on resource manager basis. It is better to practice functioning in a reduction of mangrove deforestation and an increase of mangrove reforestation. Fishers' group and its member have made an agreement on using and managing mangrove forest management. The Sub-district Administrative Organization should adopt and approve the agreement as regulation. This is main legislative function of the Ao.Bo.To. contributed to coastal resource and environmental management. The effective legislative approval on the agreement is affirmed a well-practice of decentralization authority in coastal resource management.

7. References

- [1] Berkes, F,2003. Alternatives to Conventional Management: Lessons from Small-Scale Fisheries. *Environments*,31(2) at www.umanitoba.ca/institutes/natural_resources/canadaresearchchair/Alternatives
- [2] Vorratnchaiphan, C.V., and Villeneuve, D.P. Capacity Building for Strategy Management in Local Government Administration: A new model for Natural Resource and Environmental Management at www.tei.or.th/gap/pdf/Capacity%20Building%20for%20SM_alexandria.pdf
- [3] Yamao, M. and Suanrattanachai,P,2002. Background and Project Proposal of Locally Based Coastal Resource Management in Pathew District, Chumphon Province (LBCRM-PD). Collaborative Project Between Southeast Asian Fisheries Development Center and the Department of Fisheries, Thailand. LBCRM-PD No.2, July 2002, 50pp.
- [4] SEAFDEC/MFRDMD,2003. Regional guidelines for responsible fisheries in Southeast Asia: Fisheries management, MFRDMD/SP/3, April,2003.
- [5] Chong, Kee-Chai and et.al,1998."Stimulating Community Bonding" in Phang-Nga Bay, Thailand. *Bay of Bengal News* Mar 1998. at www.onefish.org/cds_upload/1051372694775_BBN9803.pdf
- [6] Pimoljinda, J. and Boonraksa, V.Community-based fisheries co-management case study: Phang-Nga

- Bay, Thailand at www.worldfishcenter.org/Pubs/
- [7] Seilert, H. and Sangchan, S, 2001. Small-scale fisheries in Southeast Asia: a case study in Southern, FAO/RAP publication 2001/19 at www.fao.org/docrep/004/ab384e/ab384e04.htm
- [8] <http://www.dopa.go.th/local/phangnga44.htm>
- [9] Rajchagool, C. Tambon Administration Organization: Are the People in the Dramatis Personae or in the Audience? at www.unescap.org/ttdw/Publications/TPTS_pubs/TxBullentin_69/bulletin69_b.pdf.
- [10] Chong, Kee-Chai, 1998. The Code Of Conduct for Responsible Fisheries Taking it to the People at www.onefish.org/cds_upload/1051372694775_BBN9803.pdf
- [11] UNDP, Tsunami: Overview of Situation at <http://www.undp.or.th/tsunami/tsunami.htm>
- [12] SAMUDRA Report, 2005. Thailand: Platform for collaboration, Report No.40 at www.icsf.net/jsp/publication/samudra/pdf/english/issu_40/art03.pdf.
- [13] UNEP, After the Tsunami Rapid Environmental Assessment at http://www.unep.org/tsunami/reports/TSUNAMI_report_complete.pdf
- [14] Worldbank, 2005. Tsunami recovery in Thailand: Helping communities cope with longer-term needs at www.worldbank.or.th/WBSITE/EXTERNAL/COUNTRIES/EASTASIAPACIFICEXT/THAILAND_EXTN/

The Strategy for Recovery of Livelihood and People's Response in Thai Fishing Community affected by the Tsunami

Pornprapa Sakulsaeng and Masahiro Yamao

Graduate School of Biosphere Science, Hiroshima University

1. Introduction

On December 26, 2004, a massive earthquake measuring 9.0 on the Richter scale occurred off the west coast of Northern Sumatra. Countries around the Indian Ocean were severely damaged by Great Tsunami, which struck the southern Thailand's west coast with great force, especially the provinces of Phuket, Krabi, Phang-nga, Trang, Satun and Ranong. Obviously, the Tsunami damaged the life and production of people in all affected coastal communities; they have still suffered from unexpected and enormous scale of damage and loss both in social and in economic terms. People lost the means of production and assets, such as fishing boats, fishing equipment and any business facilities (hotels, shops, rental equipment). The sharp decline in the market demand takes time and huge efforts to recover previous levels. Fishing, tourism and all related business activities in the coastal communities have been on the process of recovery.

The government and international agencies took quick steps to respond to people's great suffer, damage and losses in a short-term; however, one had to expect long-term effects as well. It is obvious that there should be a crucial need for long-term mitigation measures in the management and planning for more resilient livelihoods. Seeking to ensure communities to regain and maintain long-term control over their own futures, livelihood recovery projects focus heavily upon local people participation which methods are depending on a community's overall goals, need and resources (FAO, 2005). The best community members working together will engage entire communities to create a positive vision for their future (Kinzelma; et al., 2006). The restoring livelihood involves in the group discussions within affected communities and the strengthening of reliance upon people's organizations in determining needs and future directions (LWR, 2006). A key element of the livelihood recovery projects is the preparation of simple action plans determined by individuals and families.

2. Impact of the Tsunami in Fishing Community

Over 400 fishing communities along the Andaman coast and islands had been seriously affected¹; they had been suffering throughout the recovering period as they lost the means of production. They got affects in many aspects from the tsunami disaster. Beside economic aspect, others severe impacts were concerned about resource management and community development.

The tsunami caused heavy damage to fishing boats and gears as well as to the aquaculture facilities located in the Andaman Sea. It consequently affected the livelihood of 30,000 fishing households in the coastal areas of the tsunami affected provinces. The assessment of the damage to the fisheries sector is shown in Table 1.

Table 1. Damage to the Fisheries Sector

Province	Hatcheries (persons)	Fishing Boats (boats)	Fishing Gear (unit per person)	Estimated Total Loss (USD)
Krabi	892	1,044	1,390	4,667,556
Phang-nga	1,807	1,876	991	22,235,658
Phuket	740	1,441	721	8,398,129
Ranong	1,229	776	845	4,157,243
Satun	1,127	31	1,438	2,907,079
Trang	480	817	1,283	1,678,451

Source: Department of Disaster Prevention and Mitigation (DDPM) report, July 2005

The projected losses of catch in the fisheries sector and production losses in aquaculture were assessed at USD 94.5 million². Thus, on adding the projected losses to the damage, the total estimated impact of the tsunami in the fishery and aquaculture sector was estimated to be USD 138.6 million.

Those whose livelihoods depended entirely on the fisheries sector were suddenly jobless and under-employment. The tsunami disaster impacted the finances of poor households in a number of ways. Firstly, the household ability to earn income was destroyed. Before the tsunami, tourism and fishery industries were the

¹ Community Organizations Development Institute estimates

² Asian Disaster Preparedness Center (ADPC) report, August 2005

major income sources for the coastal areas along the Andaman Sea. These two sectors were almost completely destroyed. As a result, affected-people found a great difficulty in earning income in the residential areas. Secondly, poor households faced the rapid increase of all kinds of expenditure. Prices of essential commodities such as food and fuel increased dramatically due to high demand and/or short supply. Thirdly, the disaster damaged the income generating assets such as agriculture, livestock, fisheries and any other equipment. Loss of productive assets has had a long term impact on the ability of the household to generate income. Finally, they suffered from an immediate decline in cash inflow and increase in cash outflow. They had to withdraw saving accumulated and might have to request emergency loans to whatever the type of financial sources, including both formal and informal financial institutions.

3. Guiding Principles of Recovery Strategy

1) Development Strategy Initiation

The Royal Thai government (RTG) led an effective emergency response to help fishers who had lost their jobs and livelihoods (Richburg, 2005). Rebuilding and recovery process have been carried out with help from both national and international agencies. Immediately assistance was put in compensation schemes for fishing households who had lost fishing boats and equipments. However, the most serious problem was that thousand of the boats lost were not registered. The RTG finally announced to pay compensation being equivalent 70% of the actual damage to fishers who lost unregistered fishing boats and equipments. The RTG had provided assistance of USD 11 million by November 2005 (see Table 2).

Table 2. Government Support to Fisheries (unit: USD)

Province	Small Fishing Boats	Large Fishing Boats	Fishing Equipments	Hatcheries	others	Total
Krabi	1,327,365	188,436	289,574	392,402	6,580	2,204,357
Phang Nga	2,078,615	359,848	91,173	907,897	174,997	3,612,529
Phuket	667,571	344,623	3,786	4,870	484,725	1,505,574
Ranong	152,262	420,199	58,021	410,720	126,617	1,167,819
Satun	226,592	64,628	378,854	960,732	1,315	1,632,560
Trang	245,364	7,012	79,717	262,152	38,736	632,982
Total	4,697,769	1,384,746	901,126	2,938,772	832,970	10,755,822

Source: Department of Disaster Prevention and Mitigation (DDPM), November 2005

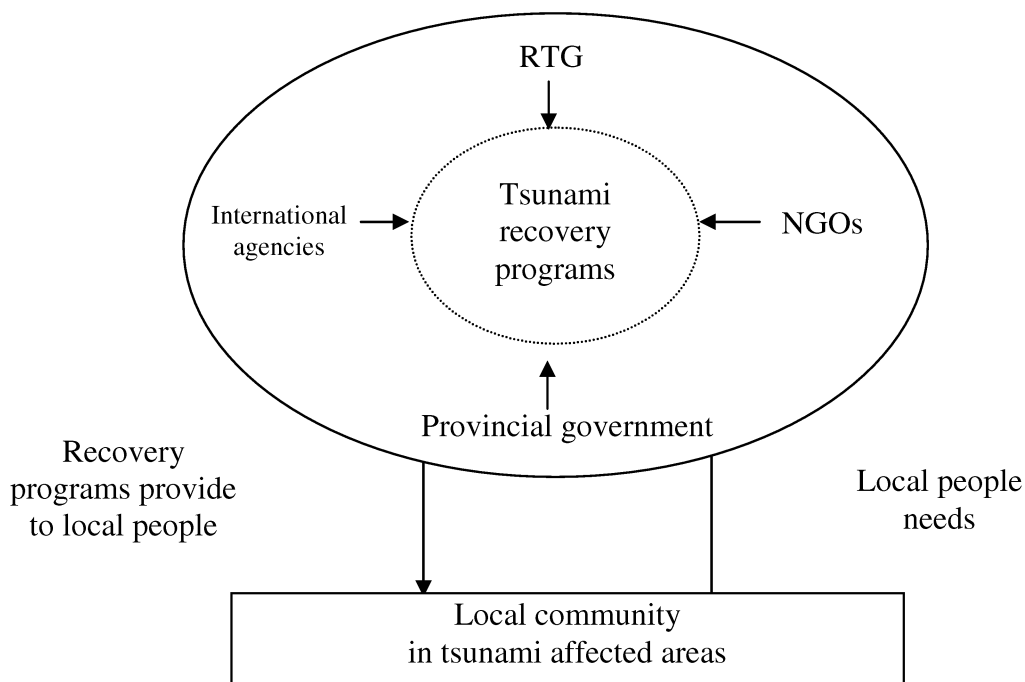
As regards unregistered boats, the compensation from the RTG could not afford to cover the costs of repairing and rebuilding fishing boats. Fishers who had lost fishing gears were unable to go out to sea and earn a living again. A number of organizations, consisting of both government and foreign agencies, came together to support fishing communities in constructing boatyards, building and repairing boats, and providing boat engines and fishing gear to support the livelihood recovery.

Almost two years have passed after the tsunami disaster; Thailand now faces with a number of longer-term challenges to ensure the sustainable recovery of the affected communities. Key elements of recovering coastal society include the need for reconstructing poorer and vulnerable communities, long-term social protection, and improved local governance and community participation (United Nations Thailand, 2005).

2) Coordination Mechanisms

Relief and rescue operations at this unprecedented scale called for strong and effective coordination mechanisms with RTG, international assistance agencies, NGOs and local people's organizations. Given this clear line of control, no ad hoc structures were created; the Royal Thai Armed Forces (RTAF) and other Ministries brought the response framework by supported resources available from the national budget. Provincial governments collaborated with national policy to support affected areas in their provinces. The provincial governments, by themselves, have already engaged in relief activities, although most relief activities were conducted by the national government and donor agencies. The establishment of people's organization is one focusing issue of the recovery strategy. Without people's greater participation, the recovery program can not achieve its initial objectives. Self-help groups (SHGs) have been formed for the socio-economic empowerment of affected-people (USAID, 2006).

Figure 1 shows coordination mechanisms in tsunami recovery operation. Several aid organizations provided many recovery programs to affected people and areas. Over the way support by assistance agencies, local people need such as subsidiary, community empowerment, job creation, hazard risk management and coordination between stakeholders are the importance to consider the benefits of people (ADB, 2005).



Source: Modify from ADB, 2005

Figure 1. Coordination Mechanisms in Tsunami Recovery Operation

3) The Strategy for Livelihood Recovery Program of this Study

Emergency aid in 2005, a number of organizations came to support fishing communities in building and repair boats, providing boat engines and fishing gears to support the livelihood recovery of the affected communities. At this moment most of the reconstruction and rehabilitation programs have been completed, and the longer-term recovery of the local economy and communities is now the major focus of the national response.

A number of livelihood recovery programs are assisting in the recovery of livelihood in fisheries, tourism and business sector. The program mission is to build on the strengths of communities with emphasis on local-led economic reconstruction and development. The planning of longer term programs is offering work opportunities to help families generate income and inject money into the local economy. For these reasons, the recovery's programs have enthusiastically encouraged people to form saving/career groups that would target those families to recover from the economic impact of the tsunami.

Four groups were representative cases in this study. The first group was established under a community-based revolving fund program, which was carried out by the CARE foundation sponsoring loan sources to tsunami affected-people in order to re-construction of fishing equipments and re-invest in their occupations. Secondly, a canoe tourism group was formed to rehabilitate tourism in the affected-area. Thirdly, a women batik group was formed to assist women to take control of their own lives, increasing income and contribution to their empowerment. Finally, a community based-store was set up to help villagers when they would have problems about cash inflow and outflow in their daily life. They can buy goods in credit transaction. Establishing people's groups and community-based organizations may be considered as the most effective way to recover and sustain livelihood. Gathering among people themselves who are facing similar experiences are sharing their feeling, ideas, information to solve the problems. The role of group formation is mutual support and people know they are not alone (Daniel and Carl E., 1995).

4. Objectives of Study

Objectives of this study are as follows:

- 1) To investigate on the livelihood recovery program focusing on group activity
- 2) To find out the recovery of household economy based on the livelihood recovery program
- 3) To evaluate people's response on participating and practicing in the recovery program.

5. Methodology

1) Study Area and Focusing Groups

The survey of this study was conducted in Khao Thong sub-district (*tambon in Thai*) and Ao Luk Noi sub-district of Krabi province during October, 2006 (Figure 2).The province is encompassing an area of 4,708 square kilometers. It is located on the inner Andaman Coast of South Thailand, with about 130 islands belonging to the province. It is approximately 814 kilometers from Bangkok. Krabi consists of 8 districts (*Amphoe*), which are further divided into 53 sub-districts (*tambon*) and 374 villages (*mubaan*). The main occupations of people in the locality were agriculture and fisheries.

In Khao Thong sub-district, the case study focused on three fishing villages (*mubaan or baan*) along the Andaman seacoast, namely Baan Khao Thong, Bann Tha Thong Lang, and Baan Tha Lane. Fisheries and their related activities were the major livelihoods of people in this area. Beside fisheries, tourism became one of the most attractive businesses. There were averages on 100 households in each village. A total of 69 households in Khao Thong sub-district were randomly selected and interviewed by structured questionnaire.

Fifty-seven (57) respondents in two villages, Baan Khao Thong (33) and Ban Tha Thong Lang (24) were selected to present the village-based revolving fund program and twelve (12) respondents in Baan Tha Lane were selected for canoe tourism activity.

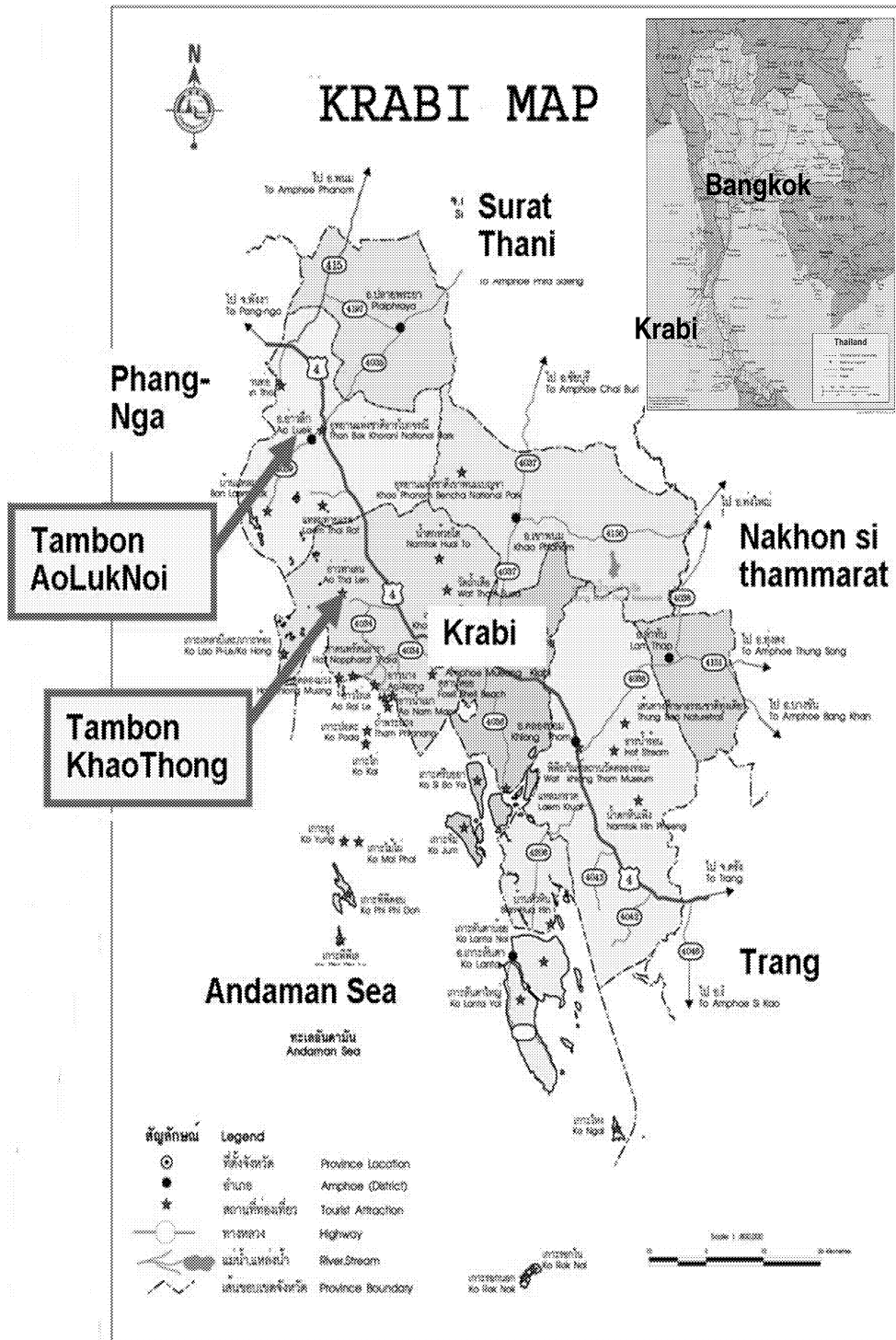


Figure 2. Map of Krabi Province

In Ao Luk Noi sub-district, we interviewed affected-women in Bakan village. It is a large village consisting of about 400 households with 1,900 persons. Most of houses are located nearby the canal. Main sources of income were fisheries and their related activities, including both capture fisheries and aquaculture. The recovery program in Bakan village focused on income generating activity by women’s groups. Nine respondents of a women batik making group and ten respondents of a community-based store were represented in Bakan village. Total of household interviewed and recovery programs implemented in the selected villages are summarized on Table 3.

Table 3. Number of households interviewed and recovery programs

Sub-district (tambon)	Village (moobaan or baan)	Number of Households Interviewed	Type of Recovery Program
Khao Thong	Khao Thong	33	Revolving fund program
	Tha Thong Lang	24	Revolving fund program
	Tha Lane	12	Canoe tourism activity
Ao Luk Noi	Bakan	9	Women batik making
	Bakan	10	Community-based store
Total		88	

Source: Field survey, October 2006

2) Data Collection and Analysis

Primary data was obtained through structured questionnaire. Measurement consisted of age, education, occupation, family size, monthly income, participation and evaluation towards the livelihood recovery program. Group discussion and observing on program were also used for data collection. Secondary data such as articles and statistics documents indicating the loss and damage of people affected by the tsunami were also collected through government agencies, international development agencies, and NGOs. Data analysis was done by descriptive and statistical, such as percentage distributing, range and mean that were calculated, and described the results. Respondents were asked for participation and evaluation by the series of questions, which ranged from “high” to “not at all”. These options were assigned as follows to aid data ranking in analysis.

<u>Range</u>	<u>Weight</u>
High	4
Medium	3
Low	2
Not at all	1

6. Characteristics and Basic Households Information

1) Family Size, Age and Educational Status

The family size was on average 5 persons, consisting of husband, wife and 2 or 3 children. Family sizes of respondents in 4 villages were 5 in Khao Thong, 4 in Tha Thong Lang, 5 in Tha Lane, 5 persons in Bakan, respectively. Ages of many respondents in these four villages ranged between 41-50 years old, accounted for 37.50% (Table 4).

A large part of them were educated at primary level (Table 5). The level of education is not differing except respondents in Bakan village. The size of interviewed in Bakan village is the younger age. Percentage of education in secondary and high school are higher than those three villages. It can be shown that new generations have higher education than their parent.

Table 4. Age Structure

Unit: %

Age range	Khao Thong	Tha Thong Lang	Tha Lane	Bakan	Total
< 20	0.00	0.00	0.00	9.09	9.09
21-30	3.41	9.09	2.27	2.27	17.05
31-40	10.23	7.95	1.14	2.27	21.59
41-50	15.91	6.82	9.09	5.68	37.50
> 50	7.95	2.27	1.14	3.41	14.77
	37.50	26.14	13.64	22.73	100.00

Source: Field survey, October 2006

Table 5. Educational level

Unit: %

Education Level	Khao Thong	Tha Thong Lang	Tha Lane	Bakan
Primary school	81.8	73.9	75.0	45.0
Secondary school	3.0	8.7	16.7	20.0
High school	3.0	8.7	8.3	30.0
Bachelor	-	4.3	-	-
Non degree	12.1	4.3	-	5.0
	100.0	100.0	100.0	100.0

Source: Field survey, October 2006

2) People Occupation in Pre and Post Tsunami

Changes in occupations are shown in Table 6. People in four villages depended on fisheries. Tourism was one of dominance occupations in Tha Lane village. Income diversification dominated by increasing petty trade and shop in all villages after the disaster. Table 7 shows changes in occupation after the tsunami disaster. Fisheries decreased its percentage from 79.5% to 61.4%. It is not only because of sharp decline fisheries resources but also increasing cost for fishing operation. The numbers of those were engaged in other occupations such as agriculture, petty trade and shop, and hireling/employed job, sharply increased.

Table 6. Main Occupation of People Before and After Tsunami

Unit: %

Occupation	Khao Thong		Tha Thong Lang		Tha Lane		Bakan	
	Before tsunami	Present	Before tsunami	Present	Before tsunami	Present	Before tsunami	Present
1. Fishery	78.8	57.5	87.0	87.0	66.7	25.0	80.0	60.0
2. Agriculture	9.1	12.1	4.3	4.3	-	8.3	-	-
3. Tourism	-	-	-	-	25.0	25.0	-	-
4. petty trade, shop	9.1	15.2	8.7	8.7	8.3	16.7	20	35
5.hireling/ employed job	3.0	15.2	-	-	-	25.0	-	5
Total	100	100	100	100	100	100	100	100

Source: Field survey, October 2006

Table 7. Occupation Changing Before Tsunami and Present

Unit: %

Occupation	Total %		% Change	Direction
	Before Tsunami	Present		
1. Fishery	79.5	61.4	18.1	Decreased
2. Agriculture	4.5	6.8	2.3	Increased
3. Tourism	3.4	3.4	0	-
4. Petty trade, shop	11.4	18.2	6.8	Increased
5. hireling/employed job	1.2	10.2	9	Increased
Total	100	100		

Source: Field survey, October 2006

3) Level of monthly income

Gross household's monthly income during the survey is shown on Table 8. Those earning monthly income between 5,001-10,000 baht accounted for 44.3% of the total respondents. Tha Lane village had the highest income among all villages because they diversified economic activities to cover their household expenditure.

Table 8. Level of Monthly Income after the Tsunami Disaster

Unit: %

Income range (Baht)	Khao Thong	Tha Thong Lang	Tha Lane	Bakan	Total
< 5,000	57.6	43.5	0	25.0	38.6
5,000-10,000	33.3	52.2	58.3	45.0	44.3
10,001-20,001	6.1	4.3	16.7	30.0	12.5
>20,001	0	0	25.0	0	4.5
	100	100	100	100	100
Average	5,881.82	6,173.91	14,208.33	8,575	7,705

Source: Field survey, October 2006

Note: 1 US dollar equivalent 37 Thai baht at October, 2006

A figure 3 shows a comparison of household's income before and after the tsunami disaster. After the tsunami struck, income of people in four villages decreased almost 50% compared with their income before the

tsunami. The respondents took time about 3 months to restart earning income, and income has continuously increased till the present.

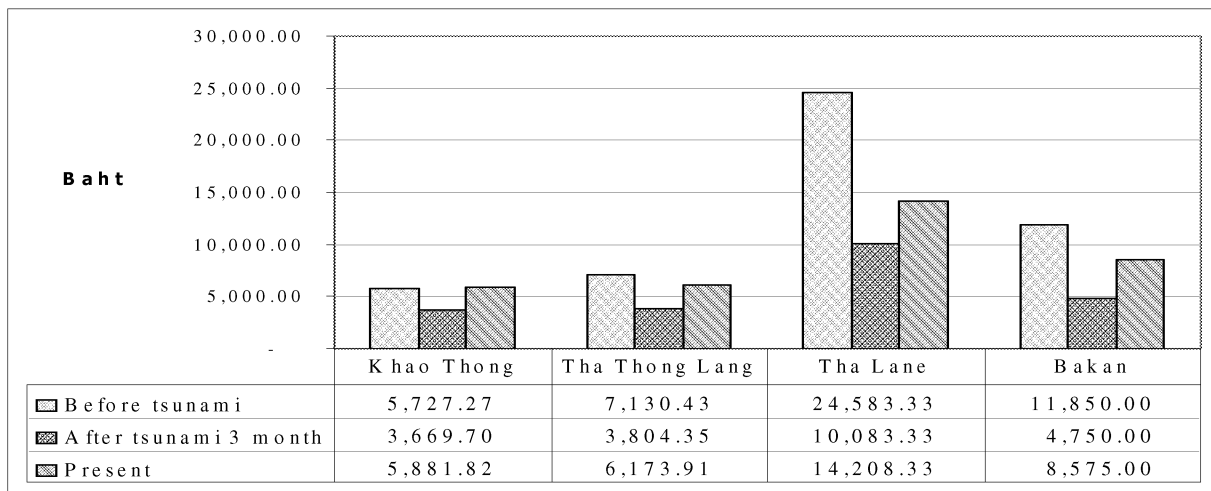


Figure 3. Comparison of Monthly Income Before and After Tsunami

7. Case Studies of Livelihood Recovery Program

As the immediate relief efforts abating, attention is shifting to redressing the medium to long-term need of recovery. Redressing the socio-economic needs of the affected communities is of utmost priority, as that will facilitate an early return to normalcy (American Red Cross, 2005). The economic sector most affected in Khao Thong and Ao Luk Noi sub-districts is fisheries. Besides, tourism sector and small-business such as small-scale wholesale and retail trading were severely damaged by the tsunami. It took times for people to restore their main occupation and they tried to earn supplement income during the recovery period. Several agencies play a significant role of rebuilding livelihoods. They provide revolving funds and create income generation opportunities. The main aim of post-tsunami recovery efforts is to strengthen people’s capabilities and empower local communities to take control over their recovery and longer term development (UNDP, 2005). The target beneficiaries of this project will therefore include:

- a. Fisher folk that are directly affected by the tsunami and suffered damages or losses of fishing assets and property.
- b. Affected-people who are in need of alternative livelihoods and are looking for opportunities to start a supplement income
- c. Owner business or people’s organization that are economically dependant on the townships and trading centers in the tsunami affected areas.

The recovery program aims to operate through a needs-based approach that indicates to revitalizing local economies by providing the need of communities themselves such as occupational funds and tanning for

business skills. (Hugh, et al., 2006). This survey has four case studies of the recovery programs, by following Table 9.

Table 9. Livelihood Recovery Programs and Provider Organizations

Recovery program		Provider and mission
1. Revolving fund program	1. CARE foundation	CARE is one of the world's largest independent international humanitarian organizations, committed to helping families in poor communities improve their lives and achieve lasting victories over poverty. CARE has had a country office in Thailand, namely the Raks Thai Foundation. Since January 2005, the Raks Thai Foundation has been involved in tsunami disaster relief and rehabilitation.
2. Canoe tourism activity	1. World vision foundation of Thailand (WVFT)	WVFT is helping thousands of children and families whose lives were destroyed by the tsunami. With food, household goods, temporary housing and plans for long-term recovery; WVFT is turning despair into hope for many thousands of tsunami survivors.
3. Women batik making	2. CARE foundation	-
	2. Local people	Local people create income generating activity through participation in decision making.
4. Community-based store	1. CHARM (Coastal Habitats and Resources Management) project supported by the EU.	CHARM project is a 5-years (2002-2007) control by Royal Thai Government (RTG). In case of the tsunami aftermath, CHARM project expands its activities to the affect-communities for setting up of a master plan for the Southwest coastal zone. Rehabilitation.

1) Village-Based Revolving Fund Program

To help tsunami affected villagers who would hardly gain access to any institutional banking, this program started by providing micro loan to effected-people for repairing productive assets such as fishing gears and boats. Revolving fund enables them to start and diversify their livelihood; repaid money will again become a source of revolving funds to finance other borrowers.

CARE foundation supports a program training villagers about how to start and manage a community revolving fund activity. CARE's emergency program came to all tsunami affected provinces in Thailand (Merck Ltd. and Raks Thai Foundation, 2005). Its activities have been implemented in Krabi province, too. The main activity at the beginning was to provide loans through the system of "revolving fund" in order to rebuild people's lives, focusing on repairing their boat and gears that were damage by the tsunami. The revolving fund activity started in Khao Thong village in January 2005, followed by Tha Thong Lang village in March 2005. Khao Thong village received funds at amount of 1,700,000 baht One hundred thirty (130) person in Khao Thong village participated at the beginning and there and member now 140-150 persons. Tha Thong Lang village received approximately one million baht and seventy (70) persons are being in membership at the present. The management committee is come form voting by members. At the village level, the committee provides information regarding policy, as well as receiving deposits, loan repayment and loan requests. Villager in two villages received initial maximum loans of 20,000 baht for the purpose of restarting their livelihoods, under the conditions where borrowers should repay within 24 months. The repayments will continuously be a source of revolving funds for further lending without returning to the CARE foundation.

One year after the tsunami disaster, the revolving fund programs were still working well in two villages of Khao Thong sub-district. A client who made repayment on time could receive new loans amounting to 30,000 baht. The operations of revolving fund activities in two villages are shown in Table 10.

Table 10. Revolving Fund Activities in 2005-2006

Khao Thong		Tha Thong Lang	
2005	2006	2005	2006
1. Loan for repairing boats and fishing gears	1. Loan for invest in main/supplement occupation 2. Saving 3. Fund for funeral 4. Asset installment plan 5. Crab bank project 6. Growing mushroom	1. Loan for repairing boats and fishing gears	1. Loan for invest in main/supplement occupation 2. Saving 3. Rising catfish in cage

Source: Field survey, October 2006

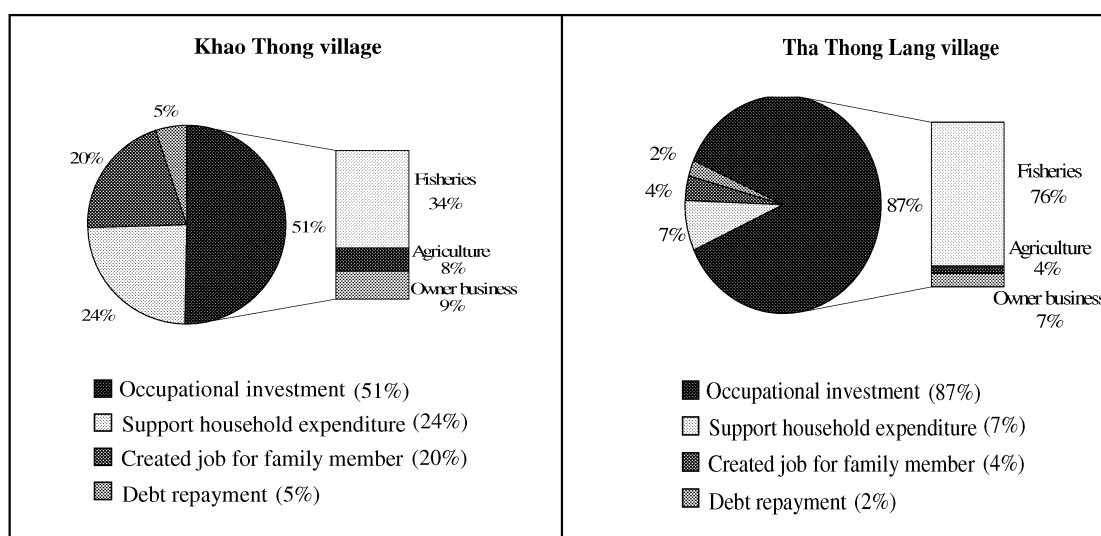
In Khao Thong village, the majority of affected people have recovered step by step from serious damages of livelihood and occupation. Revolving fund program successfully provided a wide variety of opportunities whereby members joining this program could afford to diversify their livelihood activities. It is noteworthy that they started with saving activity in 2006. The members have to deposit 50 baht per month in their account. Every family member can deal in the saving activity conducted by the revolving fund program (group may be appropriate). Moreover, this program began to accumulate funeral funds in order to help a family of died member. If a member who passed away has debts, this welfare activity will cover all debts and discharge his/ her from payment. The member's family will not have any responsibility for taking over his/ her debts. The committee of revolving fund has also planned to buy asset for member as they need. Member will get asset in advance and pay by installment at a low interest rate.

In addition, CARE foundation has formed new group with small members, 10-15 persons, for income generating activities. Khao thong village has received training in small business such as growing mushroom and crab bank project³.

In Tha Thong Lang village, loan for multiple purposes and saving activity are similar to Khao Thong village. CARE foundation staffs have started new activity to encourage villagers to raise catfish cage culture. The group is comprised of 10 members in September 2006. This provides an alternative opportunity with them to rebuild their livelihood in the post-tsunami

³ The principle of the crab bank project is to allow mother crabs that were caught by fishers to lay their eggs in the provided cages before harvesting.

After they participated in revolving fund program, loan would be used to provide access to financial service and provide skill training to people lift themselves out of the vicious circle of poverty. Figure 4 shows the livelihood improvement through revolving fund program. Most of affected-villagers invested their loan in their occupations. In both villages, major investment spent for fisheries. Some spent loans to support household expenditure such as consumption, transportation and sundry expenses. Besides, revolving fund program extended project to establish new groups for long term rehabilitation.



Source: Field survey, October 2006

Figure 4. Livelihood Improvements through Revolving Fund Program

2) Canoe Tourism Activity

Through consulting the needs of community, World Vision Foundation of Thailand (WVFT) provided fifteen canoes and canoe equipments. Fifteen villagers in Tha Lane village formed a group. They participated in a training course arranged by the WVFT, with such subjects as English for tourism and financial management. They were satisfied with the group’s activities, and they intended to try to improve activity as the same as other famous tourist sites in Krabi province. A group leader and NGO staff have promoted canoe tourism activity by distributing pamphlets in other tourist places. Tourists may get information about Tha Lane canoe activity. At the present, the activity has other kinds of support from the CARE foundation. CARE is constructing toilet, relaxing place and souvenir shop for tourists.

Starting with canoe activity, they were satisfied with new livelihood. They earned a 3,000 – 4,000 baht of monthly income during the high season. In addition, the dividend of one year performance was paid to members, being 3,000 baht/person. Table 11 shows the people’s purposes of spending income obtained from

canoe activity. Fifty percent (50%) of respondent spent income for supporting their household consumption, while 43.48% spent for investment in main or supplement occupations. The income was used in minor thing such as repairing fishing gears or purchasing some equipment. Only 6% of respondents saved money. One third of respondents said they would need to continue canoe activity as a main occupation in the future. However, others were participating in canoe activity as a part time job.

Table 11. The People’s Purpose of Spending Income from Canoe Activity

The purpose of spending income	%
1. Support household consumption	50.00
2. Invest in main or supplement occupation	43.48
3. Saving	6.52
Total	100

Source: Field survey, October 2006

3) Women’s Batik Making Group

Organizing rural women into groups is one of specific needs to increase in economic activities (J.P. Singh, 2005). The Ministry of Labor (MOL) has been working to assist those affected-people by providing the tools and equipment they need. Before involved in income generating activities, the MOL arranged a wide variety of training menus for skill development. Batik making was one of the menus among which women in Ao Luk Noi choose.

A training course included the skill development of batik making and enterprise development that engaged in starting up small business, expanding or implementing other activities to lead the economic development of communities (FAO, 2006). After they completed the basic training course, sixteen women in Bakan village, started a new batik-making group in March 2005. Half the members were junior and high school students. Up to the present, the number of members increases to 29 persons. They come to work at group after school in the evening or at the weekend.

In additional, Krabi provincial office supports a women’s batik making group by providing operation funds and materials. Establishing the group aimed to enable members to restore self-sufficient lifestyle and support their families. The women are able to earn income and develop business skills. They are enjoying an increasing demand for colorfully designed batik clothes. Orders are pouring in from nearby communities and other provinces. The women group also set up display stalls at market in tourist area in Krabi province. Those women who work for the group earned monthly income on average 2,650 baht. The figures of Table 12 show

the reasons of participation in the batik-making group. Half of them (51%) expected to earn money for supporting family expenses. They have responsibility for children and preparing food for family. With the success of batik making activity, the women have own decision-making for planning and investment of their own money. Skill development and saving are the second and third reasons, respectively.

Table 12. The Reason of Participation in Batik-Making Group

Reasons	%
1. Earned income to support family expenses	51.16
2. To develop skill and knowledge on batik-making	34.88
3. To save money for future use	13.95
Total	100

Source: Field survey, October 2006

Women’s access to batik-making activity brings them a greater economic role after the tsunami. Besides, all interviewed women agreed that their income generating activities would lead to social empowerment. Empowering women will increase their resilience, solidarity among women and respect in their village. The sustainable management of the group will lead them to long-term recovery of the individuals and communities.

4) Community - Based Store

After physical reconstruction in Bakan village, the rehabilitation of coastal livelihood should be focused for strengthening and revitalizing coastal community through training skills for self-recovery. A number of recovery processes are planned by involving consultation and collaboration with the community.

In Bakan village, aquaculture got the most serious damage in terms of value among all affected economic sectors. The entire stocked fish in cages that had grown into mature as marketable size disappeared from all swept cages. Fish farmers had already spent 8-12 months to feed fish. During the first year of recovery period, the villager faced a growing degree of insecurity as a sharp decline of fish resource, increasing the cost of fishing operation, livelihoods expenditure and fear of the sea. These reasons cause poverty. People continuously have to repay debt and loan although their ability to earn income is limited. Due to lack of financial liquidity, they can not afford to purchase necessities goods by cash. Among several retail stores in Bakan village met the problem of exceed inventory.

The recovery effort has taken place by CHARM (Coastal Habitats and Resources Management). CHARM has recognized this problem. The CHARM's staff executed the simplest concept by establishing a community-based store by using a cooperative method. CHARM provided 200,000 baht to construct a community-based store and made a women's group of Bakan village manage it. The community-based store was opened by 60 members in February 2006. They can buy goods in credit transaction and pay back later within two weeks or one month. The dividend will be paid to members at the end of year in proportion to the amount of their dealing. Such cooperative manners are very useful when members have problem in cash-flow. Furthermore, retail shops in Bakan village have adopted such a credit transaction for their selling strategy. The shops sometime allow customers to buy goods in credit in the same way as does the community-based store. Credit transaction can help members increase purchasing power, thereby making them spend cash in other necessary ways such as a period of school opening or going to hospital. At present, ordinary retail shops and the community-based store are sharing the transportation costs when they go to stock inventory in a town. This can save costs than it would deal in on individual base. They can sell product a little bit cheaper because of reduced transportation costs. The community-based store are going to create useful mechanism of credit and saving activity for improving members' livelihood. The process of recovery with capability building of community improves social, economic and environment in the affected community. Depending on the process of decision-making, effective consultation and communication may be a key to its success, acceptance and ultimate sustainability.

8. Investigation of Involving in Livelihood Recovery Program

The findings of this investigation can be applied to the designing of livelihood rehabilitation projects that might increase for other affected areas. The data gathered from four villages in Khao Thong and Ao Luk Noi sub-district revealed a work with group was a good practice in capacity and resilience building to raise employment and livelihood improvement.

The responses regarding to involvement in livelihood recovery program are summarized in Table 13. The respondents often join in the meeting/ voting of their group, shown at the highest rank. They thought that meeting and voting were the first step to access need and to develop their own understanding about decision-making of next process. Majority of the villagers were able to participate in training programs and work shops and have brain storming by them to find solution when the problems occurred. Practicing and learning in the activity continuously explored their livelihood development. Back to the initiative period, agency staffs came to villages every week to explain and set up a recovery program. At this time, the staffs come once within 2-3 months to evaluate ongoing activity and gather people's opinion to decide future plans of sustainable livelihood

project. This is a good sign showing that the organization and activity of local groups can be controlled and managed by people themselves.

Local people have now strengthened their community. Village committee always announces all news about recovery program by megaphone that is set up in several points in all villages. People invited their neighbors to join the programs again after hearing an announcement. It was a reaction of people to show how they alert to participate in the recovery programs. Finally, the investigation found that those recovery program provided activities to people for practice inside their community. People have not much joined training or observation activity outside their community. Only a group of committee has experience to make a trip of inspection.

Table 13. The statement of Involvement in Livelihood Recovery Program

Involvement in Livelihood Recovery Program	Rank	%
1. Meeting/voting	1	91.19
2. Participation in training course/work shop	2	87.22
3. Solving the problem	3	83.24
4. Recommend for group development	4	82.10
5. Communication with staff of agency who provided recovery program	5	73.01
6. Invited neighbors come to involve in recovery program	6	69.89
7. Outdoor visit for training/observing	7	37.78

Source: Field survey, October 2006

9. Evaluation on Livelihood Recovery Program by Participant

The evaluation of the response to the livelihood recovery program by participants is shown on Table 14. All series of questions received more than 80 percent. All case studies in four villages are good practicing to aid those affected by the tsunami. The good performance consists of several components as stated below (Rank order 1-7). The affected-people have been earning income and/ or producing food for their families since involving in livelihood recovery program. In addition, participants learn new skill needed to practice this livelihood. Both technical and business skills (e.g. accounting, marketing) were provided to participants through training for many proposed rehabilitation programs. Many of these skills are transferable to other occupations. In the event that the formal project will not continue, individuals can use the skills toward income generation via other avenues.

Table 14. The Evaluation of the Response to the Livelihood Recovery Program by Participants

The Series of Evaluation	Rank	%
1. Trust among member, committee and staffs	1	95.08
2. Communication with participants	2	94.32
3. Benefit to member	3	93.56
4. Goal and objective of recovery program explained clearly	4	92.80
5. Care/eyes contact with individual participants	5	87.88
6. Level of participants understanding in recovery program	5	87.88
7. Timeliness	6	84.85

Source: Field survey, October 2006

10. Concluding summary and recommendation

The government and aid agencies responses to the tsunami were speedy by implementing the recovery projects. After short-term reconstruction, longer term challenges are the need to ensure the sustainable recovery in tsunami affected communities. Recovery program are also designed to enable people to articulate their concerns and activity participate in decision making. The long term reconstruction will take years, and member-owned businesses will be a key element to the recovery. This will provide a broader economic base and means that local communities will have improved capacity to withstand future economic shocks.

The greater amount of capital held by economic and social development through group activity was able to purchase more efficient technology, invest in staff training and make other improvement to the running of the business. In Khao Thong sub-district, revolving fund programs provided loan and occupation training, in order for local people to lift out of the vulnerability. Canoe activity is an appropriate mechanism to promote the beautiful and attracting location in Tha Lane village and to assist people re-establish their live through tourist activity. Women's batik making and community-based store in Ao Luk Noi sub-district are also outstanding activity to enable women increasing in economic and contribution to woman's empowerment. As the reconstruction program proceeds, the finding found that people have willingness to participate and practice in the recovery programs. Group activities were able to rebuild their livelihood and strengthen local community faster than starting individual business.

The recovery programs have supported for the post-tsunami period in wildly appreciated for various activities. It is recommended that livelihood recovery must be continued to achieve pro-poor growth. At the local level, economic recovery plans must be implemented by poor household together with local government

and NGOs. Strengthening capacity of local government and community-based organization (CBO) will be the most effective tool for poverty alleviation.

11. References

American Red Cross, August 2005, *Plan of Action Tsunami Recovery Program*, Available online at <http://www.redcross.org/>

Asian Disaster Preparedness Center (ADPC) report, 2005, *Tsunami Damage and Loss Assessment Report in Thailand August 2005*, Available online at <http://www.adpc.net/>

Asian Development Bank, Japan Bank for International Cooperation and World Bank, 2005, Sri Lanka 2005 post- tsunami recovery program: Preliminary damage and needs assessment, Colombo, Sri Lanka.

Daniel Taylor-Ide and Carl E. Taylor, 1995, *Community Based Sustainable Human Development, Future Generations* and Johns Hopkins University, USA.

Department of Disaster Prevention and Mitigation (DDPM), 2005, *The report from the Ministry of Interior of Thailand for the rehabilitation of Tsunami affected area (as of October, 2005)*, Department of Disaster Prevention and Mitigation, Ministry of Interior, Bangkok, Thailand.

FAO, Emergency Operation and Rehabilitation division, 2005, *Tsunami communities Reborn: Rebuilding livelihoods better than before*, Available online at http://www.fao.org/docs/eims/upload//198077/Tsunami_en.pdf

FAO, 2006, *Microfinance helps poverty and fisheries management – Policies to support microfinance, livelihoods and resources management. New Directions in Fisheries- A series of Policy Briefs on Development Issues, No. 04, Rome. 8 pp.*

Hugh Goyder, with Cowan Coventry, Jerry Adams, Tania Kaiser, Suzanne Williams, & Ian Smillie, 2006, *Linking Relief, Recovery, and Development (LRRD) – Policy Study*, International NGO training and Research Centre.

J.P. Singh, 2005, *From self-help, groups to commodity-based farmer associations: The Indian approach to mobilizing rural women*, Directorate of Extension Ministry of Agriculture, India

Kinzelman Kline Gossman; Clair Bennett & Associates; and Langworthy Strader LeBlanc Planning, 2006, *Comprehensive plan: Building a sustainable city*, City of Richmond, Indiana.

Lutheran World Relief (LWR) Non Government Organization, 2006, *Tsunami recovery manager*, Available online at <http://www.lwr.org/>

Merck Ltd., and Raks Thai Foundation, 2005, *Merck Relief and Rehabilitation Program for Tsunami Victims*, Available online at <http://www.merck.co.th/en/home/Tsunami2.htm>

Richburg, Keith B., 2005, “Thai Leader Applauded for Tsunami Response”, *Washington Post*, 9January, [http://www.washingtonpost.com/wp-dyn/articles/A59687-2005Jan8.html], (accessed 13/6/05)

United Nations Thailand, 2005, *Tsunami Thailand, One Year Later – National Response and the Contribution of International*, Available online at <http://www.un.or.th/tsunamiinthailand/index.html>

U.S. Agency for International Development (USAID), 2006, Tsunami reconstruction: December 26, 2006 – update, Available online at http://www.usaid.gov/in/Pdfs/tuDec26_6.pdf

Part 3

Characteristics of Food System of Tuna Industry

Food-System of Tuna Industry: Market Distortions in Canning and Sashimi Markets

Haruko Yamashita, Faculty of Economics,
Meikai University, yamaharu@meikai.ac.jp

Abstract

In this paper, we illustrate characteristics of food system of tuna by making a bird's-eye view of tuna trade and global distribution. Tuna resources are primarily consumed as canned tuna or Sashimi (=raw fish). The fishing methods and species predetermine the food system of the caught fish. Among seven tuna species that FAO Fishstat identifies, Bluefin, Southern Bluefin and Bigeye tunas are solely consumed as Sashimi, and therefore mostly exported to Japan. These tuna species are not worth fishing commercial resources unless they are purchased by Japanese. If we view Japanese consumers as a unique buyer, the market structure is characterized as a monopsony. Moreover, if the tuna is frozen, the product will be rocked in the closed distribution channel where the temperature of the cold-chain is not a standard one, minus 20 degree, but rather an extreme cold, minus 60 degree: such storage does not exist anywhere else. Despite such monopsonistic structure, the export prices of these species are not low compared with other marine products. We will further examine market structure and degree of concentration of world sashimi market. Other two species, Yellowfin and Albacore, are consumed both as canned product and Sashimi. Export price of Sashimi tuna is more than twice as high as that for canned material. Nevertheless, the supply of tuna to canning sector has not been ended off nor had the resource been depleted yet as a result of competitive catch. It is expected that the difference of fishing/ distribution costs, demanded size, and the risk-return composition influenced the behavior of world tuna fishers and allowed some diversity in fishing methods and distribution. In fact, some fishing enterprises in Taiwan and the Philippines supply to both Sashimi and canning markets. While in Japan, there is no such example. We will examine the rational and sustainability of such co-existence of different distribution channels that share the same tuna resource.

Keywords: tuna, canned tuna, sashimi, monopsony, Japan, marketing

1. Introduction: Catch and Usage by Species

Tuna fish is a popular material caught and utilized worldwide. Despite the popularity and availability of the fish, however, attentions paid to the nature of the market have been limited¹. In this paper, we will identify two types of the market; sashimi and canned tuna market, and examine the market conditions as well as the responsibilities of the stakeholders in the market. To start with, let us make an overview of the usage of tuna.

Seven tuna species are identified by FAO. As we see in Table 1, three species, bluefin tuna, bigeye and southern bluefin tuna, are supplied for sashimi and two species, yellowfin and albacore, are supplied for both sashimi and canning.

Table 1. Tuna Species and Attributes (鮪類の種類と用途)

English name Japanese name (Scientific name)	Length, Weight	Habitat	Usage	Attributes
Bluefin tuna Kuromaguro (<i>Thunnus thynnus</i>)	2.5m 300kg	Mainly in Northern Pacific and Atlantic	Middle fatty and very fatty area (Toro) around abdomen Back meat blackish red Premium sashimi material	Habitat in the highest latitude
Bigeye tuna Mebachi (<i>Thunnus obesus</i>)	2m 150kg	Widespread in tropical and temperate zone Major catch in Pacific	Color of meat is dark crimson Contain some fatty meat Semi-premium sashimi material	Thick body with big head and eyes
Yellowfin tuna Kihada (<i>Thunnus albacores</i>)	1-2m 100kg	Widespread in tropical and temperate zone Major catch in Western Pacific tropical equatorial zone	Color of meat is vivid crimson No fatty meat Sashimi material for home use Light meat for canning	Vivid yellow fins
Albacore Bin'naga (<i>Thunnus alalunga</i>)	1m 15-30kg	Temperate water all over the world	Color of meat is pale peach Soft meat not suitable for sashimi White meat or Sea Chicken for canning	Spindle-shape body is scaly
Southern bluefin tuna Minamimaguro (<i>Thunnus maccoyii</i>)	2m 150kg	Only in Southern Hemisphere	Premium sashimi material equivalent to Bluefin tuna	Eyes are bigger than Bluefin tuna

Table 1. Tuna Species and Attributes (鮪類の種類と用途) (cont.)

English name Japanese name (Scientific name)	Length, Weight	Habitat	Usage	Attributes
Blackfin tuna Taiseiyo maguro (Thunnus atlanticus)	80-90cm	Tropical zone of Western Atlantic	—	Smallest among tuna
Longtail tuna Koshinaga (Thunnus tonggol)	80-100cm	From Indian ocean to coastal area of Australia	—	Figure resembles Yellowfin tuna but longer tail

Source: Chapters 1,3,7,9 of Ono et. al., (1998)

We will focus on these five species thereafter. The trends of catch of these five species are shown in Figure 1. Yellowfin comprises the largest catch, 1.5 mil. MT in 2002, and also it is the main source of the increase in catch in the last two decades.

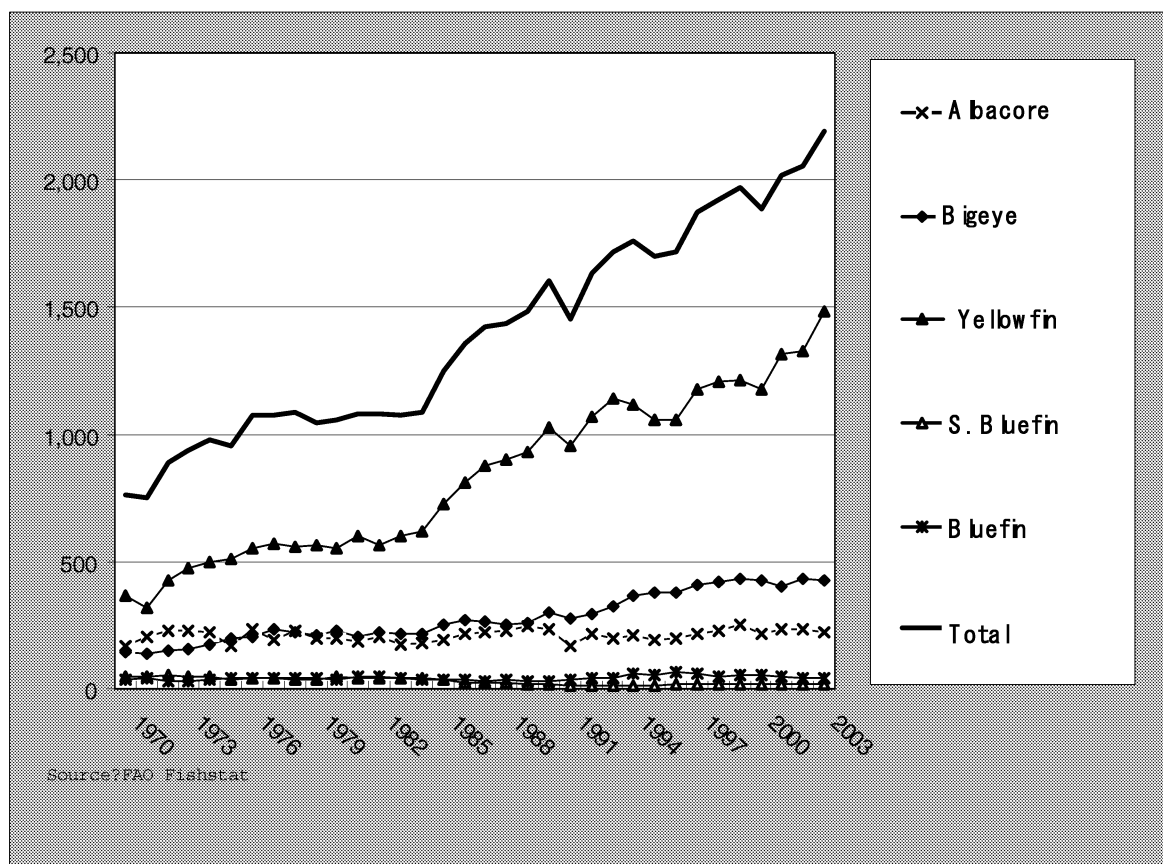


Figure 1. Trend of Global Catch of Tuna By Species (unit: 1000 mt)

Table 2 describes the distribution and marketing of tuna by species and usages, sashimi and canning. The fishing methods and market prices differ according to the usage. On the volume of tuna consumption, as we see in Table 3, 30% of catch is consumed in EU, namely as canned tuna, another 30% is in Japan, namely as sashimi, 20% is in North America and 15% is left for the rest of the world.

Table 2. Distribution and Marketing of Tuna by Species and Usage

	Canning		Sashimi
Species	(Skipjack)	Yellowfin, Albacore	Bluefin, Southern bluefin, Bigeye
Major fishing methods	Purse-seine fishing		Long line, Hook & line
Post-harvest processing	Block frozen, either in the vessel or after unloading, at the temperature - 20°C and thaw out at the time of production. Heated and sealed until the time of consumption		Individual quick frozen at the temperature - 50°C, thaw out at retail store and consumed raw. Alternatively, kept chilled from the time of harvest to consumption.
Prices of frozen yellowfin (2002 average, Yen/kg)	At Yaizu:167 Export:142		Unloading site: 442 Wholesale: 511 Retail: 741
Supplying countries	Canning material supplied and traded in the world market by various producers all over the world.		Tuna caught in the sea all over the world. Frozen tuna suppliers are from Japan, Taiwan, Korea and Indonesia. Fresh/chilled tuna suppliers come from all over the world.
Demanding countries	EU consumed 40%, North America 30%, Japan 10%, and Rest of the World 20%		Majority consumed in Japan. Some consumed in sushi bars all over the world including North America.

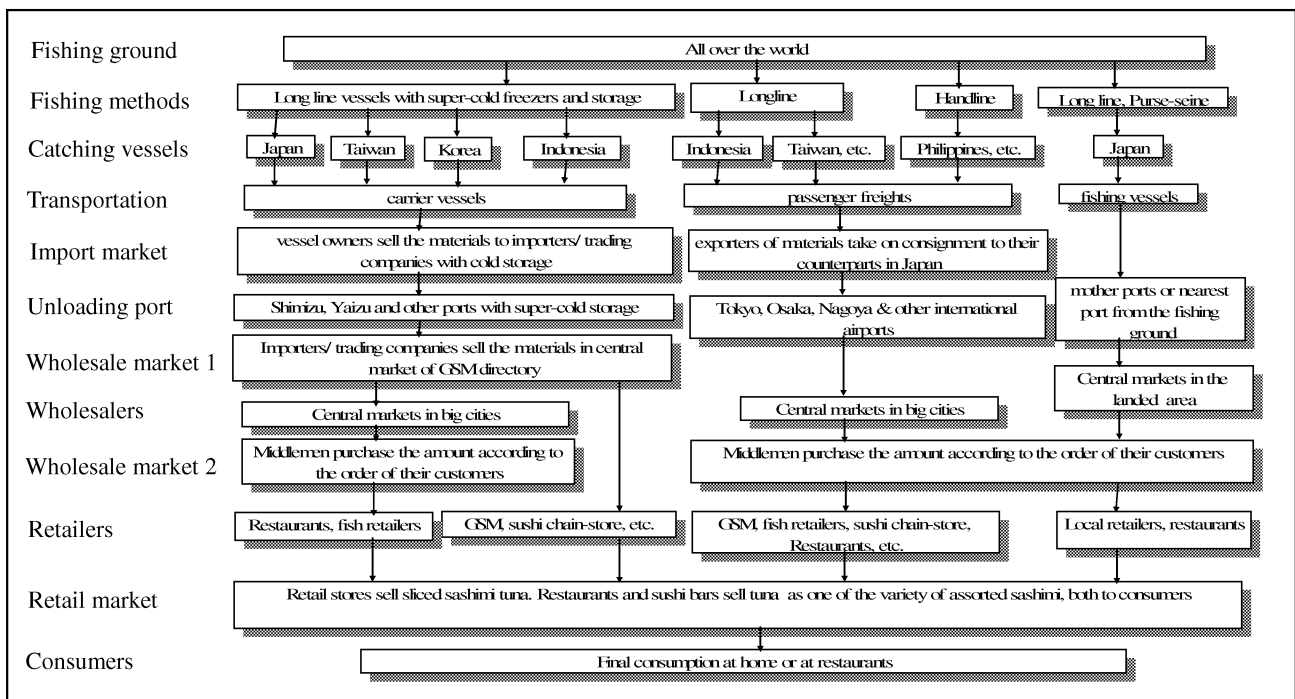
Source: Yamashita (2005)

Table 3. The Volume of Tuna Consumption Worldwide and Japan (2001 estimates)

Country	Type of consumption	Volume (t)	Proportion to World Consumption
EU	Canned tuna	634	31.4%
N. America	Canned tuna	475	23.6%
Japan	All types	591	29.3%
	Sashimi	520	21.5%
	Canned tuna	158	7.9%
Rest of the world		317	15.7%
World total	All types	2,017	100.0%

Source: Volume of sashimi consumption is based on estimates by Tuna Supply & Demand Estimating Committee, total volume refers to the total of five species from FAO Fishstat, canned tuna consumption is estimated from various sources.

Figure 2 and Figure 3 illustrates food systems of tuna industry from the catch in the fishing ground to the final consumption. Figure 2 is that for sashimi. It is a premium market for tuna in the sense that it is caught by long line or hand line fishing methods, harvests are handled individually with care, the fish sometimes stay alive and kept in cage for fattening, and delivered in the form of fresh or frozen. The final consumption mostly occurs in Japan. As long as the three species dedicated to sashimi concerned, the food system described in the figure represent most of the cases. On the other hand, the food system of two species for both sashimi and canning, there are some varieties.



Source: Yamashita from various sources

Figure 2. A Food System of Tuna for Sashimi

Figure 3 describes the example of yellowfin tuna caught in the Celebes sea, a Southern part of the Philippines where the fisher use Payao, a floating FADs, to catch yellowfin tuna for both sashimi and canning purpose harmoniously.

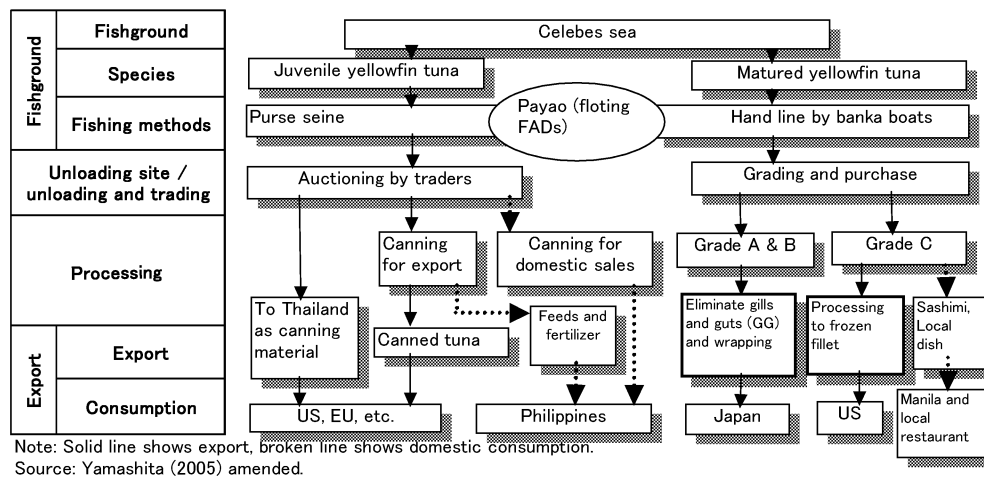


Figure 3. A food system of tuna utilized for both sashimi and canning: A case of the Philippines

2. Examination of The Market Distortion of Tuna Solely Used For Sashimi: Bluefin Tuna, Southern Bluefin Tuna and Bigeye

The nature of these three kinds of tunas is unique in the sense that they are not utilized as commercial resources except for Japanⁱⁱ. The reasons are in the color of meat, fat and the size of fish (see Table I) where the Japanese tastes are ironically opposite to that of the others. Bluefin and Southern bluefin tuna is highly appreciated product as delicacy and a necessary menu in a feast.

Since Japanese are the only buyer of the three kinds of tunas, can we say that Japan is a monopsony? And if so, is it dampening of the price of the product while limiting the volume of supply? Before preceding the discussion, let us illustrate the characteristics of monopsony in contrast to monopoly. Figure 4 shows the monopoly and monopsony equilibrium. In the monopoly market, a single supplier will supply only Q_m amount, instead of Q_c , so that it can charge a unit price of P_m , which is higher than the price at the competitive market equilibrium, P_c . As a result, the supplier will obtain the monopoly profit of $P_m - C_m$ per unit of sales. In the monopsony market where a single demander will try to maximize the demander's surplus by limiting the purchase of the quantity at Q_m and only pay the price of P_m to the supplier provided that there are many suppliers competing each other. As a result, the demander can enjoy the demander's surplus of $U_m - P_m$ per unit of purchase. Although such gain does not prevail at the time of purchase, it does at the time of reselling the product to a purchaser in the following market. The price that suppliers can charge is even lower and the amount they supply is less than that of competitive equilibrium.

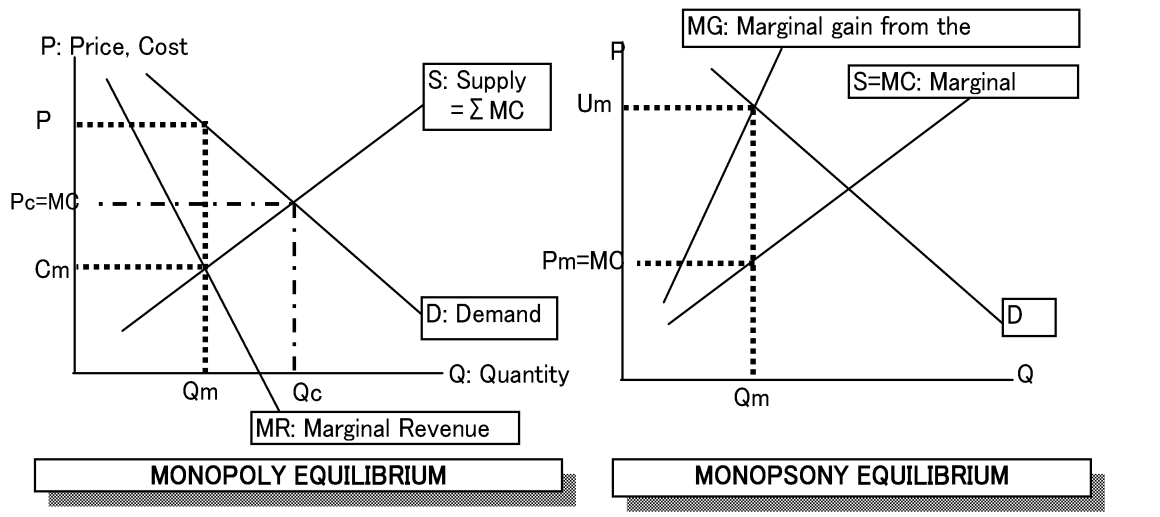


Figure 4. Equilibrium in Monopsony in contrast to that in Monopoly

There are, at least, the following reasons why we observe a monopsony power of Japan over the purchase of tuna. First, Japan can impose voluntary quota on the volume of exports of Taiwan to Japan. It has been done to date since 1994. Second, all the regional management bodies of tuna fishery allow Japan to participate despite the fact that Japan is not located within the territorial waters of the these countries (e.g. Mediterranean) (see Table 4). Third, the wholesale price of imported tuna is generally lower than the domestically produced tuna although the fishing ground and species are the same, which suggests that there is some kind of price discrimination. Table 5 shows both production and import prices of fresh and frozen tunas. Domestic prices are higher than imported price for fresh and frozen bigeye and frozen yellowfinⁱⁱⁱ.

Table 4. Outline and Participants of Regional Management Bodies

Abbreviated name, Formal name, Japanese Name	Managed Area	Managed Species	Effective as of	Participants
ICCAT	All Atlantic (including Mediterranean)	Highly migratory species (Skipjack, Tuna and Albacore) and related species	1969	34 countries and EU (Japan, US, Canada, Korea, etc)
International Commission for the Conservation of Atlantic Tunas				
大西洋まぐろ類保存国際委員会				
IOTC	Indian Ocean	Highly migratory species (Skipjack, Tuna and Albacore)	1996	20 countries and EU (Japan, India, Korea Australia) (a FAO's branch)
Indian Ocean Tuna Commission				
インド洋マグロ類委員会				

Table 4. Outline and Participants of Regional Management Bodies (cont.)

Abbreviated name, Formal name, Japanese Name	Managed area	Managed species	Effective as of	Participants
IATTC	Eastern Pacific	Highly migratory species (Skipjack, Tuna and Albacore) and other species caught as by-catch	1950	13 countries (Japan, US, Latin American courtiers)
Inter-American Tropical Tuna Commission				
全米熱帯マグロ類委員会				
WCPFC	Western and Central Pacific	Highly migratory species (Except saury) Skipjack, Tuna and Albacore	2004	19 countries and regions *
Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific				
中西部太平洋マグロ類条約				
CCSBT	All waters where Southern bluefin migrates (area of high latitudes in Southern Hemisphere)	Southern bluefin tuna	1994	4 countries (Japan, Australia, NZ, Korea)
Commission for the Conservation of Southern Bluefin Tuna				
みなみまぐろ保存委員会				
GFCM	Mediterranean, Black sea	Marine resources	1952	23 countries and EU (Japan, Morocco, Turkey) (a FAO's branch)
General Fisheries Commission for the Mediterranean				
地中海漁業一般委員会				

According to the website of WCPFC (<http://www.wcpfc.org/>) , 19 countries and regions participated as of March 2005; including Australia, China, EU, Korea, NZ, PNG, Taiwan. Japan was an observer until July 2005.

Source: Yamashita (2005). Original data from various sources

Table 5 Prices of Tuna Imported/Domestic Production (2002, Unit ¥/kg)

	Domestic	Imported	Domestic	Imported	Domestic	Imported
	Fresh Bluefin		Fresh Bigeye		Fresh Yellowfin	
Production/import price	1,640	2,548	1,085	854	661	803
Auctioned price (Tsukiji)	3,308	3,487	2,236	1,509	1,878	1,339
	Frozen Bluefin		Frozen Bigeye		Frozen Yellowfin	
Production/import price	1,776	2,409	649	575	442	263

Source: Suisan Shincho Sha (2005). Original source of domestic production price from Fishery Product Distribution Statistics, Fisherys Agency and imported price from Japan Trade Statistics, Ministry of Finance. Auctioned price from unpublished market statistics.

On the other hand, there are three reasons that deny the existence of monopsony power. First, the buyers do not / cannot manipulate total volume of import to Japan even though it does for Taiwanese vessels. As we see in Table 6, the volume of import is constantly increasing from 187k MT in 1988 to 282k MT in 2002. Second, the prices of three kinds of tuna for sashimi are significantly higher than the other two tunas utilized for both sashimi and canning (see Table 2). If the country had a monopsony power, the price of the three species should rather be suppressed, at least at the importing stage. Third, at the retailing stage, the prices of the three kinds of tunas are higher than other delicacy fish. Table 7 shows the volume and the price of purchase of fish by Japanese consumers. The retail price of tuna, JPY2, 271/kg is the highest among fresh marine products.

Table 6. Total Supply of Tuna and Albacore for Sashimi in Japan (unit:1000MT, %)

Year	Domestic Production			Imported			Total supply	Import ratio 1	Fresh ratio 2	Frozen import ratio 3	Frozen import ratio 4
	Frozen	Fresh	Subtotal	Frozen	Fresh	Subtotal					
1988	222	68	290	155	32	187	477	39.2	21.0	41.1	32.0
1989	223	74	297	144	39	183	480	38.1	23.5	39.2	34.5
1990	224	66	290	176	43	219	509	43.0	21.4	44.0	39.4
1991	212	64	276	176	48	224	500	44.8	22.4	45.4	42.9
1992	196	69	265	170	57	227	492	46.1	25.6	46.4	45.2
1993	208	67	275	190	63	253	528	47.9	24.6	47.7	48.5
1994	214	65	279	166	72	238	517	46.0	26.5	43.7	52.6
1995	206	64	270	176	73	249	519	48.0	26.4	46.1	53.3
1996	170	56	226	172	71	243	469	51.8	27.1	50.3	55.9
1997	179	61	240	154	69	223	463	48.2	28.1	46.2	53.1
1998	177	61	235	198	71	268	503	53.3	26.2	52.8	53.8
1999	133	74	207	174	70	244	451	54.1	31.9	56.7	48.6
2000	149	66	215	180	71	251	466	53.9	29.4	54.7	51.8
2001	136	58	194	198	72	270	464	58.2	28.0	59.3	55.4
2002	122	60	182	217	65	282	464	60.8	26.9	64.0	52.0

Note1: Import ratio=volume of import/total supply

2: Fresh ratio=volume of domestic fresh + Imported fresh/ total supply

3:Frozen import ratio= frozen import/total frozen supply

4: Fresh import ratio= volume of fresh import/ fresh supply

Source: Yamashita (2005), original source is Tuna Supply & Demand Estimation Committee, data taken from Suisan Shincho-sha (various years)

Table 7. Japanese Household Consumption of Major Fish Products (2003)

Item	Expenditure(¥)	Volume(g)	Price/kg(¥)
Tuna	2,387	1,051	2,271
Salmon	1,241	967	1,283
Yellowtail	1,079	601	1,795
Squid	1,027	1,104	930
Shrimp/Prawn	1,306	650	2,009
Total fresh fish	18,766	11,660	1,609
Salted Salmon	722	586	1,232
Cod's roe	1,054	259	4,069
Total salted fish	5,596	3,281	1,706

Source: Yamashita (2005). Original data from the Survey of Household Expenditures

So far, we discussed whether or not sashimi tuna market has a symptom of monopsony. Although further study is needed in order to measure the degree of market distortions, we will tentatively conclude the section with the following statements. Japanese tuna producers hold and use market power when they act as if they are a large(est) supplier of tuna, particularly in the frozen tuna market as it influenced the volume of supply of Taiwan as we discussed above^{iv}. Otherwise, the number of actors, both sellers and buyers, in the market is enough to generate competition among them. Both competition and cooperation between Japanese and foreign suppliers exist in several stages of the markets. For instance, wholesale and retail. Regarding the domestic price differentials that do not only exist in tuna but also in many fish products can be explained by the theory of asymmetric information. The more detailed explanation is found in Yamashita (2003).

The reasons for the market distortion in frozen tuna market can be explained by the so-called 'lock-in' effect in the context of industrial organization where the product stream is vertically integrated into one and cannot escape from a distribution channel once it is incorporated. Unlike a standard 'cold-chain' that maintains freezer temperature at minus 20 °c throughout the distribution, frozen tuna's distribution channel is operated at the temperature under minus 50 °c from the catching vessel up to the delivery to the retail store. Once a tuna is frozen, it is being 'lock -in' in the 'super-cold chain' that does not exist elsewhere but Japan. It calls for a certain amount of fixed investment, too, which is 'sunk' if it is not used for tuna marketing and distribution. As a result, barriers to entry and exit exist. The effect of such barrier to the market price is indeterminate.

3. Examination of The Market Distortion of Tuna Used for both Sashimi and Canning: Yellowfin and Albacore in the Worldwide Market

There are at least two different sources of demand for tuna, sashimi and canning material, as we have seen in the first section. It was also discussed in the first section that it was notable to observe the co-existence of the supply for both usages despite the large price differentials, more than twice, according to the Table 2. The question arises as to why suppliers do not concentrate on supplying for sashimi that commands higher price? Although no empirical evidence yet to support my hypothesis, there are candidates for answers as follows.

One hypothesis is that further decreases in prices will not increase the quantity of demand beyond the point that it reaches at the level of saturation. It is an application of ‘Kinked Demand Curve’. Figure 6 describes the situation where the supply curve will shift out ($S1 \Rightarrow S2$) as the number of suppliers increases. However, when the supplier increases beyond S2 level ($S2 \Rightarrow S3$), it will not increase in the volume of supply if there is a level of saturation exists. Excessive suppliers will then rather shift to the supply of canning material.

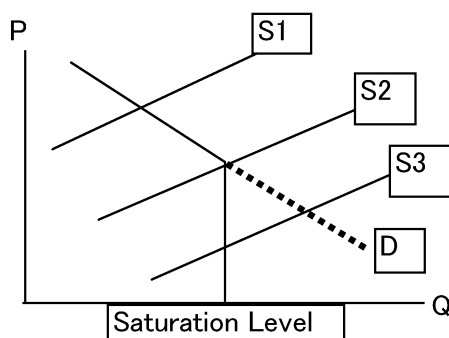
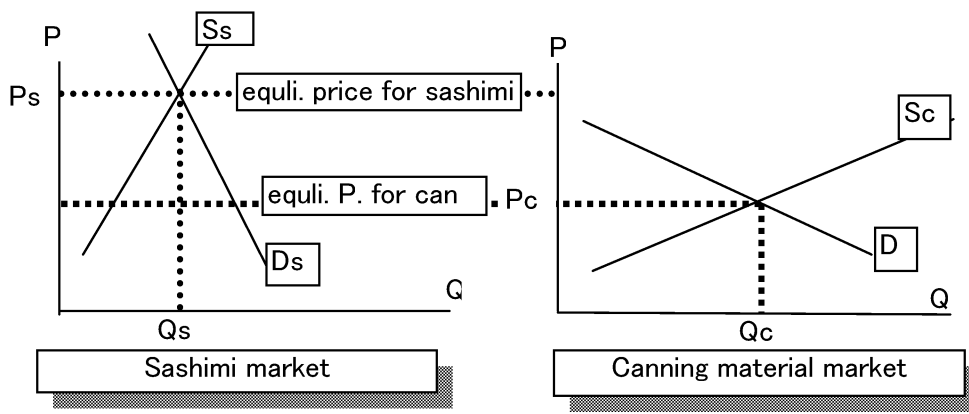


Figure 6. A saturation of the Demand for Sashimi: A Hypothesis

An alternative hypothesis is that sashimi and the canning markets for tuna are regarded as two different markets where the costs of supply and the prices for demand differ. It is the equilibrium prices that prevail in the market where the price of sashimi market is higher than that of canning. It is described in Figure 7. In the case of A of the figure, the market equilibrium of both sashimi and canning are shown in separate figures. In sashimi market, since the tuna caught in the sea are the same ‘product’ in nature, homogeneous in other word, we might be able to draw two equilibriums in one figure instead of drawing two figures separately as we tried in Case A. Case B of Figure 7 would explain well the coexistence of the two market equilibriums. In Sashimi market, consumers demand less amount at a higher price, compare to that of canning materials. Similarly, the supply of Sashimi is more costly than that of canning due to the fact that it requires less effective fishing method, individual wrapping and handling, and fast transportation. As a result, at the ‘competitive’ equilibriums, the price of Sashimi is higher and the volume is lesser than that of the canning material.



Case B Two separate equilibrium in one figure

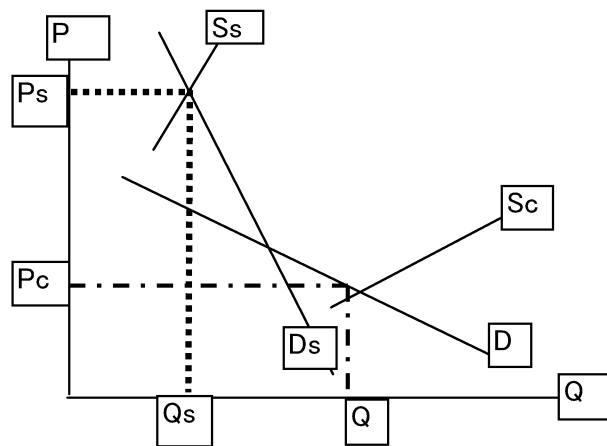


Figure 7. Equilibriums in both Sashimi and Canning Market: A Hypothesis

Although Figure 7 does not implicitly define whether or not tuna fishing operators for sashimi and canning are the same or not, there are actually exist such enterprises that engage in horizontal integration where they operate fisheries for both sashimi and canning. In the Philippines, for example, we observe a variety in fishing and processing operation, as it is shown in Table 8. DTFI is a typical example of horizontal integration in the sense that it operates fishing for both canning and sashimi. SAFRII is an example of vertical integration in addition to horizontal integration in the sense that it does not only go fishing but also does processing and exporting. Figure 8 shows a conceptual equilibrium of an individual company that operates fishing for both sashimi and canning. A company that supplies tuna in the competitive market will take the prevailing market price as given. They are P_s and P_c . The company then decides the amount of supply by consulting with its marginal costs, S_1 and S_2 .

Table 8. Countries and Companies that undertake both Canning and Sashimi Operations

Company		DTFI ¹	Pescarich ²	MGTR ³	RFM-SWIFT ⁴	SAFRII ⁵	Seatrade	SMFI ⁶
Canning	Fishing	○		○		○		○
	Market at landing site			○	○	○		
	Processing				○	○	○	
	Exporting			○		○		
Sashimi	Fishing	○		○		○		○
	Market at landing site			○		○		
	Processing		○		○	○		○
	Exporting		○	○	○	○		○

Note As of September 1999. ○ shows the operating business

- 1: Domingo Teng Fishing Industry. Fishing companies are two: DTSI and TSP. Headquarter is a local department store.
- 2: Japanese invested company that process frozen sashimi fillet from Grade C yellowfin to export.
- 3: Mommy Gina Tuna Resources
- 4: Rivera Fishing Management. In 1999, it is incorporated into SWIFT. Carries domestic canning supply.
- 5: San Andrew Fishing Resources and Industries. Headquarter is a local bank.
- 6: St. Mary Fishing Industry

出所: Yamashita (2005). Case A are taken from various sources; Case B include Aprieto (1995, p.86), Gladysingco-Evans (1995, p.13), Thomas (1999, pp. 167-169), and personal interviews (Mr.S, Manila Branch, C. Ito (1999. 9.6), Teng (1997.9.2), Mr. A, a manager of MGTR.

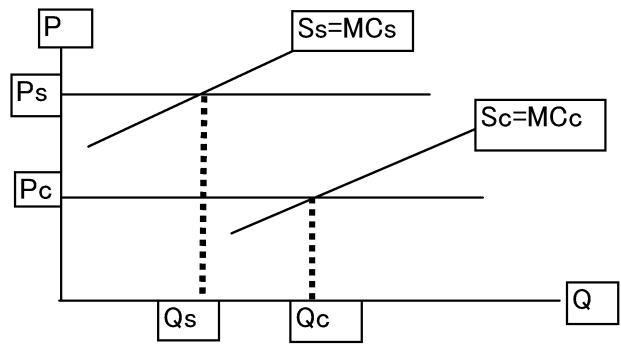
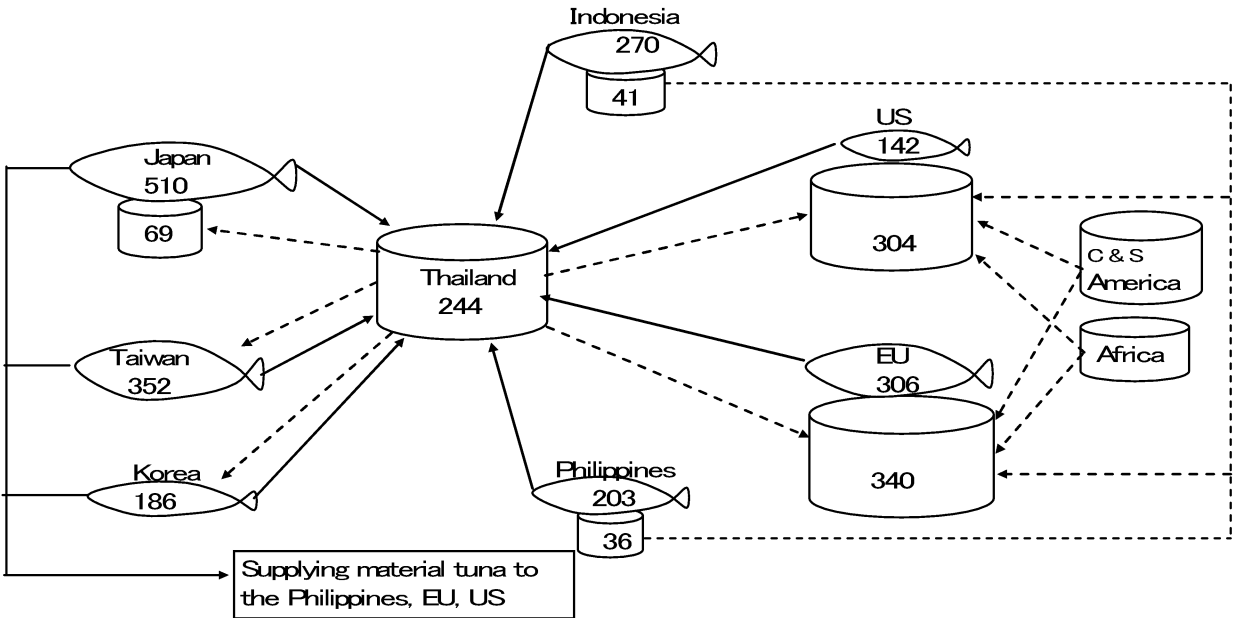


Figure 8. An Equilibrium of an Individual Company that Operates Both Canning and Sashimi Production: A Hypothesis

Figure 8 does not reflect the true status of the market in the sense that canned tuna market as well as sashimi tuna market will not be able to achieve competitive equilibrium. The nature of the canned tuna market is really oligopolistic where the numbers of countries that demand raw materials as well as that of canned products are concentrated. Figure 9 visualizes the flow of material tuna and canned tuna. As we see in the figure, Thailand collects canning material from all over the world, and redistribute, i.e. export, its product toward the world. EU and US are the big canned tuna producers as well as importers of the can. In that sense, two markets sharing one resource are both oligopolistic. Further study needs to be done to explain exact nature of the market.



Note: Numbers inside the fish shape are the amount of catch of skipjack, albacore and yellowfin. Not all of them are processed as can (Unit: 1000MT). Numbers inside the can are the amount of domestic tuna can production (Unit: 1000MT). Solid array denotes the import of raw material, and the broken array denotes tuna can export.

Source: Yamashita (2005). Original source is FAO Fishstat

Figure 9. Trade flow of Material Tuna and Canned Tuna (2000, Unit: 1000MT)

The last hypothesis is that tuna for canning and sashimi may be different products. It is because market demands mature tuna (40kg and up) while canning market requests juvenile tuna. How would the interaction of the two markets affect the availability of future resources? If there is the over-harvesting of juvenile tuna, it will lead to the scarcity of mature tuna, or vice versa. Whose responsibility is it to safeguard the future fish-stocks?

4. Policy Consideration of Tuna Market from the Viewpoint of Responsible Fishery

Among questions arises from the previous section, we will discuss the last question, the responsibility, while leaving other question as the subjects for the future. Reference to the Code of Conduct for Responsible Fishery by FAO (hereafter, we call it as COC) will be the most plausible way to start with. However, there is a limitation in appreciation of COC to the tuna market. This is because the COC emphasizes the role of the government and fishers of resource holding/catching country (e.g., the Philippines). It assumes that fishers are under the jurisdiction of the government that owns the resource. However, in the case of tuna, the fish stock is a common property of the region and the third countries (e.g., Taiwan or Japan) catch them with and/or without the permission of regional management bodies. Moreover, it does not have oversight on the distribution or marketing and does not mention about the responsibility of consumer. However, in the case of tuna, majority of catch is exported. The volume of catch is influenced by demand of importing countries (e.g., U. S. and EU) where the government of the resource holding country cannot control.

Therefore, the coverage of COC needs to be expanded so as to include the rights and duties of parties in the global food system of such industry as tuna. For example, the government and consumers of consuming country (e.g. Japan) should be incorporated into the resource management system, particularly if the government of the sustainable and the development of resource owning country (e.g. the Philippines) set low priority in the management and development of tuna resource^v.

When we pay attention to the importing side, Japanese government as well as Japanese consumers should pay particular attention to the world stock of tuna resources, especially that of the three species, bluefin, southern bluefin, and albacore, because of the monopsonistic nature of the market for sashimi. With the cooperation of the Japanese consumers, sustainable resource management is easier to enforce. In the case of the other two species, yellowfin and albacore, the degree of responsibilities of consumers and the governments of consuming countries (e.g., U.S., EU and Japan), though equally important, may appear less important than the case we discussed in ii) due to the lack of a monitoring mechanism, considering the number of countries and consumers involved throughout the world.

5. References

- [1] Aprieto, Virginia. L. (1995) *Philippine Tuna Fisheries*, University of the Philippine Press.
- [2] Gladyschingco-Evans, Therese (1995) 'A Case Study on Tuna Commercial Fishing Operations: The Tuna Commercial Fisheries of General Santos City', *Lundayan Journal*, Tanbuyog Development Center, pp.662.
- [3] Ono, Seiichiro(ed.) (1998)"From Production to Consumption of Tuna", Seizando (in Japanese).
- [4] Suisan Shincho Sha (various years) "Yearbook of Tuna and Skipjack" (in Japanese).
- [5] Thomas, F. Cedula (1995) *The Commercial Fishery Sector of the Philippines*, LDC Printers.
- [6] Yamashita, Haruko (2003) "Fish Safety and Consumers Behaviour", *Journal of Japanese Fisheries Economic Society* Vol.48, No.2, pp.13-32 (in Japanese).
- [7] Yamashita, Haruko (2005) "Export Oriented Tuna Industry in South East Asia and Importing Market" Doctoral Thesis submitted to Hiroshima University (in Japanese).

ⁱ Yamashita (2005) states that a limited number of research have been made on the production and marketing of canned tuna. As to the study of marketing of tuna delivered to Japanese market rather concentrated on catch by Japanese vessels while the import had been taken as residuals.

ⁱⁱ We can observe the parallel situations for other fish, too, where the nation of a country appreciates a particular fish that the rest of the world does not at all. Whales (Japan), sharks (fin) and sea cucumbers (China) are the examples.

ⁱⁱⁱ In the case of bluefin, however, imported price is higher than domestic price as a result of the culture fattening process made to add value after the harvest to shipment.

^{iv} Market distortions in the frozen tuna market are discussed in the end of the section.

^v The reason for those countries to set lower priorities on tuna fishery is not because it is unimportant sector. Rather, the government has to pay more attention to the other social issues, poverty, overpopulation and depletion of coastal resources, associated with fisheries. Tuna fishery, the self-supporting and developing industry without government support, is naturally being regarded as less keen agenda.