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

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No.1

New Movements of Locally Based Coastal Resource Management in Phang-nga Bay Area, South Thailand

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PREFACE

Sustainable utilization of marine coastal resources in Southeast Asia is our major concern. Since 2004, we have continuously conducted a series of field surveys in the Philippines, Thailand and Okinawa of Japan. The research title is "Multi-functionality of Fishing Community and Ecosystem Based Co-management."

Thailand has made much effort to encourage local people to plan and implement projects on coastal resource management with adopting participatory and decentralized approaches, since the 1990s. A number of government-supported pilot projects have succeeded to establish sustainable institutional frameworks of coastal resource management. They mostly provide a profound insight into a direction of amending the existing fisheries laws and regulations that are defined in nature as centralized resume. No definition about de-concentration, delegation, devolution, and de-officialisation are included. No article defines people's participation and local-level involvement in coastal resource management. Decentralization of fisheries management in Thailand has not yet developed as much as that in the Philippines. Nevertheless, central and local governments have enthusiastically promoted community-based resource management (CBRM) and co-management methods in collaboration with foreign donors and NGOs. As a result, an increasing number of pilot projects have created viable models on coastal resource management.

According to the initial research plan, in 2004 we started with conducting a series of survey in some selected sites in the Phang-nga Bay areas as regards development of coastal resource management and community development; the major sites were areas in Krabi and Phang-nga provinces. We found that people's organizations (POs) and local government units (of sub-districts) were attempting to develop their own participatory framework of sustainable coastal resources management and involved in many kinds of livelihood projects. Customary and local rules still worked. People and local governments respected such CBRM activities. Local governments formalized these rules and empowered POs. We were just about to continue our survey when the Tsunami of Great Sumatra Earthquake hit the southern part of Thailand, facing with Andaman Sea. This was on December 26th 2004.

The fishing villages in Phang-nga and Krabi provinces, where we conducted surveys were affected by the Tsunami disaster. People suffered from all kinds of damages and losses. We had to stop any research activities for a while. Moreover, our survey topics were compelled to adopt a new framework, even if we would like to sustain the initial research objectives. Our major concerns became the issues on how people and local governments would recover livelihood, social and cultural life as they had been; how difficult it was for them to control over fishing activities; how long it would take to recover their normal fishing and fisheries economy. We had a grave doubt whether the people and local governments would be able to reconstruct a sustainable institutional framework of coastal resource management.

Six months after the Tsunami disaster, our team started with surveys. In addition to the initial objectives of the research, special attention was paid on how people would keep their attitude towards sustainable resource utilization. The duration of this research project was three years. During the first year (2004), we conducted mainly base line surveys in selected communities (Krabi and Phang-nga provinces). During the second year (2005), members of the research team concentrated mainly on the issues of recovery process of fishing communities affected by the Tsunami.

This volume consists of five parts. The first part concerns the development of coastal resource management in Thailand, focusing mainly on the outcome of projects and problems of participatory and decentralized managements. The second part describes the real situation of fisheries household economy and fishing operation. This includes figures and statistical data collected before and after the Tsunami disaster.

In the third part, we analyze the losses and damages of two research sites affected by the Tsunami, and then refer to its impact to coastal resource management. In the fourth part, discussion will extend to national relief policy and action plan for zoning. Lastly, roles of community-based organizations for community development will be a focal point in the recovery process of the Tsunami disaster.

On behalf of the research team members, I wish to thank those Thai government officers of the Department of Fisheries, who extended their help to our surveys. They kindly supported our research and observation activities. My special thank is brought to leaders of local people in Krabi and Phang-nga provinces. While arranging our interviewing with fisher folks and local people on a daily basis, they always brought valuable information and statistical data.

Members of our research teams are as follows:

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Finally, I want to stress my great thank to all fisher folks and local people with whom we interviewed. With wishes of their happiness.

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Leader of Research Team,
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National Coastal Resource Management Policy

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The structure of marine fisheries sector

Thailand has 24 coastal provinces with 2,614 km long of coastal line. The fisheries sector is divided into two main sub-sectors, capture fisheries, and aquaculture sectors. The capture fisheries sector is composed of two different scales. One is small-scale fisheries which fishers use vessels of less than 5 gross tons operating in coastal areas. The other is large-scale fisheries or commercial scale fisheries. The commercial-scale fishers use vessels of more than 5 gross tons and operate outside coastal zone [1].

Thailand National Statistic Office (NSO), [2] conducted fisheries census in 1995 and a survey in 2000 to recognize a change of number of household in marine fisheries sectors. The survey found that total number of households established in marine fisheries sectors increased 15.9% (see table 1). Regarding this amount, total number of households was 80,704 in 1995 increased to 95,332 in 2000. Nevertheless, total number of labor fishing households decreased around 0.6%, from 29,302 in 1995 to 29,122 in 2000.

Table 1 Fishing household and labor household in fisheries in number and percentage by type of establishment in 1995 and 2000

Type of establishment	Census 1995		Survey 2000		% of change
	No. of households	%	No. of households	%	
Fishing household*	**80,704**	**100.0**	**93,512**	**100.0**	**15.9**
capture fisheries only	50,176	62.2	55,981	59.9	11.6
aquaculture only	27,592	34.2	35,711	38.2	29.4
both capture and aquaculture	2,936	3.6	1,820	1.9	-38.0
labor household in fisheries	**29,302**	**100.0**	**29,122**	**100.0**	**-0.6**
in capture fisheries only	22,894	78.1	23,703	81.4	3.5
in aquaculture only	6,223	21.3	5,162	17.7	-17.0
in both capture and aquaculture	185	0.6	257	0.9	38.9

*: data of fishing household included number of private company and limited company

Source: A survey of change in marine fisheries year 2000, NSO, Office of Prime Minister [2]

2. Problems of fisheries sector development and management

The open access regime of common fisheries resources is a radical and problematic issue to obstacle forwarded fisheries resource management in Thailand. Tokrisana and et.al., [3] cited that the old-fashionable fisheries act, 1939, proclaimed the act governing the rights to fish in Thai waters. The act officially declared that fisheries resources bound along the Andaman Sea and the Gulf of Thailand belong to the national property. The act allowed Thai people to fish in the Thai water bounded to twelve nautical miles. The Thai vessel act was issued in 1938 to manage and control numbers of fishing boat and fishing licenses. Though, a lack of fisheries officials led to inefficient enforcement of control and management in the number of fishing boats and license.

The Thai government implemented the National Economic and Social Development plan to develop fisheries sector. The government implemented the First plan (19961-1966) which promoted fishing technology development and investment. Trawls and purse seine fishing technologies were introduced and operated to target demersal and pelagic fish species. The increase of new fishing technology and fishing boats conveyed up to the Fifth plan (1982-1986). However, Thai fisheries sector faced the conflict of resource users after Thai government adopted the Exclusive Economic Zone (EEZ) proclamation in 1981.

The trawlers and purse seiners confronted the limitation of territorial waters with the limit of 200 nautical miles. These fishing fleets had to turn to fish in Thai territorial waters. The crowded number of commercial fishing fleets led to high competition of resource utilization among them. Therefore, the return of the commercial fishing fleets backed to Thai waters causing a conflict between the commercial fishing and small-scale fishing boats. This conflict often found when the commercial fishing boats encroached to operate fishing in 3 km. of coastal areas. The competition among resource users and excessive number of fishing boats results to heavy exploitation of marine resources.

The exacerbation of marine resources is also caused by the expansion of land-used development for shrimp farming establishment. The shrimp farm expansion increased mangrove deforestation. The deforestation of mangrove distorted a spawning and nursing grounds of fish juveniles [4]. Nowadays, Thailand is confronting the decline of aquatic resources. This is because of the open access of entry in fisheries. Regarding on an economic aspect, resource rent does not take into account of the cost of the fisheries resources [3]. Other cause originates from shrimp farm ignoring the external cost of mangrove deforestation ([5] and [4]).

At present, Thailand is facing the problems of marine fisheries resources decline and coastal environmental degradation. A catch per unit of effort (CPUE) is an indicator to recognize the abundance or a decline of marine resources. Considering on Thailand fisheries statistic data, CPUE of Thai fishing boat was 298, 20 and 12 kg per hour in years 1961, 1989 and 2005, respectively [4]. A root cause of marine source decline relies on an over capacity of fishing efforts. Nowadays, the number of fishing boats which is registered and non-registered is about 60,000 boats [6].

The Thai government recognized the outcome of inefficient fisheries development under the implementation of the First to the Fifth National Economic and Social Development plans. The Department of Fisheries (DOF), Thailand has taken a leading agency to formulate fisheries management program and measures to rehabilitate and enhance aquatic resources.

3. The importance of coastal resource management (CRM) strategy

The CRM strategy is broadly and practically implemented by many coastal countries for decades which is well-documented by many international organization. Coastal resource management is a credible and workable strategy to achieve sustainability of marine resources. In addition, CRM is applicable framework to enhance and rehabilitate decline of marine resources. To achieve sustainable coastal resources, Community-based fisheries management (CBFM) approach is required as key mechanism to fundamentally empower fishers' participation in the CRM. Both CRM strategy and CBFM approach are adopted by coastal countries in Southeast Asia such as Indonesia and Thailand to formulate a holistic policy and action plan for managing coastal marine resources. Sustainability of coastal resources is vital to secure small-scale fishers' livelihood. In addition, enhancement and abundance of marine resources are fruitful to promote supplying fish products to domestic and international market demands.

Expansion of fish trade in international market is heading to higher demand for fish and fish products. This may lead to over-exploitation of fishes. Considering on this cause, FAO proposed that trade in fisheries should be executed in proper way without destruction of food security to particular poor or low income fishers [7]. To forward fish oriented export, the CRM is prior and core strategy to attain multifunctionality of coastal zone. Similarly the WTO generally guided that multifunctionality of agriculture composed of many functions in addition to producing foods, such as environment, rural development and food security [8].

4. National fisheries management policy

The DOF, Thailand formulated fisheries management measures which were under the proclamation of the Thai fisheries act, 1947. The fisheries management measures are enforceable approaching to manage and control the commercial fishing boats. The DOF arranged a coastal fisheries development and management program to stabilize and sustain small-scale fisheries sector.

4.1 Fisheries management measures

The fisheries management measures were under the declaration of the Thai fisheries act, 1947 mandated to alleviate the conflict of commercial and small-scale fisheries. Therefore, the fisheries measures had the objective to promote a resource enhancement. The DOF designed the fisheries measures by adoption of an input control system. The input control system means a control of amount of effort and capacity which can be put into a fishery ([1], (*Ibid*)).

The series of fisheries management measures rely on the measures below:

a) Gear restriction has main objective to preserve demersal fish species from trawlers and push netters operations. The measures prohibit trawler and push netters to do fishing in 3 km from the shoreline. These gear operations in the coastal line affect to seabed deterioration. Then, this leads to the decline of fisheries resources.

b) Limited entry through license management mainly controls number of trawl and push net fishing boats. A new license has no longer been issued for establishing new trawl and push net fishing boats. However, the license can be transferred from father to children's generation only.

c) Closed areas and season essentially enhances the indo-pacific mackerel (*Rastrellinger brachysome*). The DOF regulated that trawl and purse seine fishing boats are not allowed to do fishing on the Upper Gulf of Thailand (territorial waters of Petchburi, Prachuabkirikhan and Suratthani provinces) from 15 February to 15 May annually.

Nevertheless, the mandated series of fisheries management measures are not effective mechanisms to alleviate the problem of common fisheries resource decline and the conflict of commercial and small-scale fishers particular in 3 km. of coastal line. The constraint of the measures is inefficient monitoring, control and surveillance (MCS) along 24 coastal provinces.

A limited MCS consists of the lack of fisheries official, patrol boats and the high cost of law enforcement. Therefore, there is the deficient coordination of government agencies concerned such as between the DOF and the Department of Harbor, as other constraint. The DOF desired to cease the construction of new fishing boat to entry in fisheries because of excessive fishing effort. But, the Department of Harbor has authority to control number of boat construction ([3], (*Ibid*)).

4.2 Coastal fisheries development and management

The DOF ratified that small-scale fishers were tolerated by the decline of fisheries resources, the loss of fishing gear and effort caused by the encroachment of commercial fishing boat, etc. These tolerated problems pushed small-scale fishers down to face poverty and threaten their livelihood stability Therefore, an inefficient fisheries management measures brought to severely exacerbate coastal resources. The DOF adopted the concept of sustainable coastal fisheries development and management to re-formulate fisheries development and management scheme.

The DOF initiatively drew the concept of sustainable coastal fisheries development and management into the Fifth (1982-1986) National Economic and Social Development plan. The agency fully implemented the concept into the Sixth (1987-1991) and the Seventh (1992-1996) National Economic and Social Development plans. Under these national plans, the DOF formulated the coastal fisheries development and management project for small-scale fisheries (see table 2). The project aimed to promote the poverty alleviation of small-scale fishers and strengthen their livelihood stabilities.

Table 2 The components of the coastal fisheries development and management for small-scale fisheries project implemented in the Sixth and the Seventh National Economic and Social Development plans.

Component	Activity	Objective
1. Coastal resource rehabilitation	1. an installation of artificial reefs	To provide fish habitat or sanctuaries to enhance fish stock and recruitment
	2. mangrove reforestation	To rehabilitate a spawning and nursing ground for fish juveniles
	3. fish releasing	To restore fish stocks
2.The provision of fundamental infrastructure for fisheries development	1. fish landing jetty or port, fresh water tank, wind and wave breakers	To construct basic infrastructure to promote catch distribution and village security from natural damage.
	2.fishing gear repairing shop and store	To provide a plant for storing and repairing fishing gear to fishing village.
3. Selective fishing gear technology transfer	1. Demonstration and promotion of selective fishing gear	To increase the number of selective fishing gear use to sustain aquatic resources.
4. The provision of additional source of income	1. coastal aquaculture development	- To provide the alternative source of income to small-scale fisheries - To decrease the number of fishing effort on aquatic resources
	2. post-harvest production	To preserve fish food for household consumption To create the additional source of income from producing value added production.

The DOF monitored the outcome of each activity implementation. This agency recognized that each activity did not facilitate to develop fishing communities in remote areas to stay with a better circumstance. The agency realized that fishers' participation in each activity were not active. The DOF listened to fishers why they did not participate in each activity arrangement. Fishers said that they preferred land catch on beach or at back door of their home. They could not afford to carry out fish cage culture because of the lack of capital and high price of fish bait. They accepted to preserve fish food for household consumption, but they had not money enough to invest in fish post-harvest business. They also clarified that the installation of artificial reefs could not alleviate the encroachment of commercial fishing in 3 km. coastal areas. The agency notified that problems in fisheries sectors were not solved.

There are many third parties like academic instructors and fisheries experts who gave their comments on the activity implementation. They recommended that the activity implementation should conduct together with fisheries extension program [3]. The fisheries extension program is a contributive mechanism to make fishers to understand the objectives of each activity. The program results to activate fishers' participation. The

DOF gained experiences and lessons from the implementation of coastal fisheries development and management project for small-scale fisheries. The agency realized that the success of the project implementation significantly required fishers' participation.

In 1997, Thailand faced the crisis of economics. The Thai government reformed the national policy and plan to solve the crisis. The government adopted the bottom-up approach which emphasized to empower community to be self-reliant. This approach was focal strategy of the Eighth National Economic and Social Development plan (1997-2001). The Thai government had officially promulgated the new Thai Constitution, 1997. Under this constitution, decentralization and de-officialization of authorities from central government to local management body or entity are implemented. These authorities reformed to promote and strengthen people's participation in community development and resource management.

The DOF adopted a community-based fisheries management (CBFM) and co-management (CM) approaches to encourage the practice of people's participation in coastal resource management for decades. CM approach is defined that the government agency shares responsibilities and/ or functions with certain authority to management coastal resources with local stakeholders and/or resource users enroll as counterparts. There are debates of CBFM introduction and practice to facilitate the coastal fisheries development and management to achieve a sustainable use of marine resources. Pomeroy [9] clarified that CBFM was the important means for government to manage resource allocation and protect access right. Therefore, CBFM empowered fishers to institutionalize fishers' organization to be leadership in resource management for sustainable food security.

On the viewpoint of resource allocation, CBFM approach alleviates the problems of common property access. A fishing community takes responsibility as resource manager. The community will try to maximize fishing profit. It exploits fishes where the marginal cost equal to marginal revenue. It carefully catches fishes under the optimum level of MEY. This leads to an abundance of fish stock and resource for the future ([3], (*Ibid*)).

5. Conclusion

Small-scale fishers' participation is assumed as mechanism vital to coastal resource management. CBFM approach is a strategy organizing small-scale fishers' participation and practicing in CRM action plan and activities arranged by government. This approach is apparatus to strengthen fishers' group to self-manage their community resources on such mangrove reforestation, use of selective fishing gear. The new Thai constitution, 1997 is legitimacy to empower small-scale fishers' participation to strengthen and sustain coastal resource management activities. Small-scale fishers are prior considered to acquire food security. Good and effective coastal resource management (CRM) is essential strategy and mechanism to primarily sustain food security to small-scale fishers. This is to secure protein source to stabilize household livelihood for self-sufficient. On the other hand, this approach is to ensure availability of job opportunity for earning income to strengthen household economy. The effective coastal resource management is approach to longer support Thailand to maintain as major seafood supplier in the international fish markets.

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Recent Trends and Challenges of Coastal Resource Management Projects in Thailand

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ABSTRACT

As the stock of marine resources are showing declining trends, the marine fisheries development policy in Thailand has focused on the conservation and sustainable utilization of resources. Many projects for coastal resource management have been planned and implemented during the recent decades. The purpose of this study is to define the groups of coastal resource management projects (CRMPs) in Thailand that has been implemented by Department of Fisheries. The level of participation from fishers and their communities is the first of the criteria used to group CRMPs. There is a wide variation of participation in CRMPs. The second criterion used for defining projects is their target activities. There are various types of activities implemented for CRMP, including the provision of fisheries-related infrastructures for communities, to encourage fishers to form groups, to rehabilitate and enhance coastal resources, to raise capacity building of human resources and promote self-regulatory fishing activities. Some activities have been successful, but some have failed. The critical third criteria is the level of legal support to CRMPs, that may be classified as participation in the decision-making process, self-rule making, protecting their voluntary-based activities, and devolving authority for management at local level. By using these criteria to group CRMPs, the study will illustrate models on CRMP and forecast a future direction of policy for coastal resource management. To achieve the effectiveness of coastal resource management, government should not only implement projects with clear understanding and full participation from fishers and their communities, but also support a legal framework for their activities.

Keywords: Coastal resource management project; Trends and challenges; Defining criteria,
Participatory approach; Target activities; Legal support for local management

1. Introduction

Thai National Fisheries Development Policy has been aligned with the National Economic and Social Development Plan since the latter came into existence in 1961. Particularly, the marine fisheries development policy was emphasized to increase the marine production at an early stage of the plan. There were the developments in fishing technologies to achieve more efficiency in catching fish. The numbers of fishing boats and fishers were increased both in the commercial and small-scale sectors. As a result, the heavy exploitation of marine resources caused a severe decline in the target resources. Conflict among the fishers often occurred in the congested fishing grounds. Therefore, fisheries policy started to place emphasis on a reduction of catch effort and the conservation of marine resources. The Thai government issued various measurements to solve over-investment and over-exploitation, but these measurements were not always effective. There was ineffectiveness in law enforcement and a lack of fisher participation. Meanwhile, during the last two decades many projects on coastal resource management were designed and implemented to alleviate such problems. The objectives and approaches differed from project to project, according to the development level of resource management. Some projects achieved successful cooperation with people in implementing activities. However, some could not reach their target goals, because of little participation by the targeted people.

At present, Thailand has emphasized the participation by the people in every development project. The present constitution, proclaimed in 1997, declares that the people have right and duty to conserve and manage their local resources. The people should participate in the decision making process of community development and welfare. In the case of coastal resource management projects (CRMPs), the target activities will be input to achieve the goals of project. If we include the concept of participation by fishers and stakeholders and also support the measures by a legal framework, the project will have more potential to succeed and it will continue to achieve the sustainability in management. (Fig. 1)

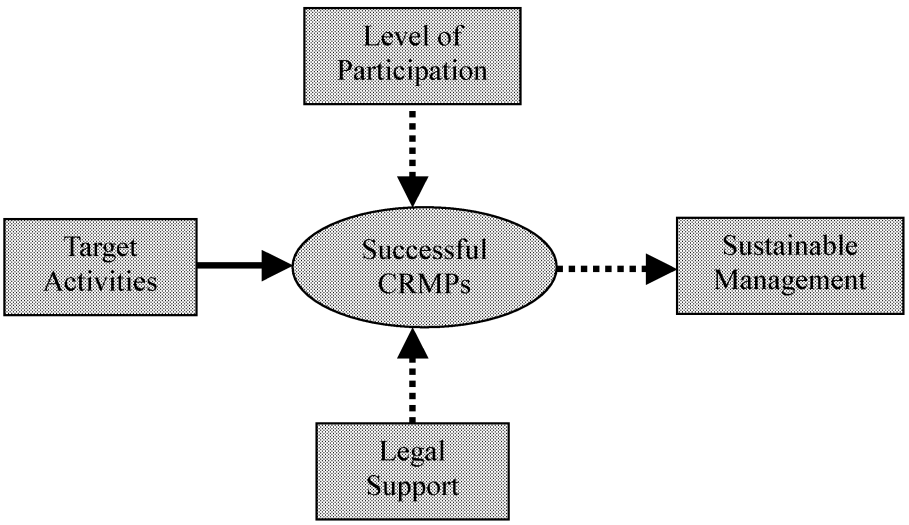

Fig. 1 Study framework

2. Objectives of this study

This paper describes the projects that have been implemented in coastal resource management, especially the projects that have been initiated by the Department of Fisheries (DOF), Ministry of Agriculture and Cooperatives. The approach and methods adopted for the projects during these two decades are studied. The purpose of this study is to define the groups of coastal resource management projects. Lessons learned through the earlier projects can give profound insight into the appropriate direction for future projects. The direction of challenge to coastal resource management projects will be proposed according to the trends.

3. Materials and Methods

This study relies upon the secondary data analysis of selected projects that were or are already implemented and show some result from the people's participation. The background and reports of projects are used for analysis. Interviews and discussions with the project staff and people at the project site also provide valuable information in the analysis. Data analysis on the level of participation from the fishers and their community is based upon the concepts of Pretty and Hine (1999). [1] They classify the type of participation into 6 types. (Table 1) The first three types of participation are Passive Participation, Participation by Consultation and Bought Participation that is like participation without action. People participate by being told, or by answering questions. The fourth type is Functional Participation, in which the people must form groups before implementing a project. The fifth type is Interactive Participation by joint analysis their problems and solutions. The last is Self-mobilisation; people take the initiatives to change the system by themselves.

Table 1 Typology of Participation

Type	Characteristics of Each Type
1.Passive Participation	People participate by being told what has been decided or happened
2.Participation by Consultation	People participate by being consulted or by answering questions
3.Bought Participation	People participate in return for food, cash or other material incentives
4.Functional Participation	People participate by forming groups to achieve predetermined objectives.
5.Interactive Participation	People participate in joint analysis, development of plans of action and formation or strengthening of local groups
6.Self-Mobilisation and Connectedness	People participate by taking initiatives independently to change systems.

From Pretty and Hine (1999)

4. Results and discussions

4.1 Development of coastal resource management project

During the past two decades, the projects in coastal fisheries or coastal resource management had been implemented with various objectives and approaches. The important projects, which have been implemented by the DOF and the collaborative projects with other organizations also have an effect on the management aspects

of Thai coastal resources and will be discussed as follows. (Table 2)

(1) The Small-scale Fisheries Development Project (SSFDP) was implemented under the 6th and 7th National Social and Economic Development Plans (1987-1991 and 1992-1996). To improve the living standard of fishers and their communities, the fisheries-related infrastructure like small fishing piers, the place for keeping and repairing fishing gear and a water supply tank was built. The project had activities to promote alternative sources of income for the fishers' families, which included fish cage culture, shell culture and fishery product processing extension. Moreover, artificial reef (AR) installation was provided to be fish shelters and spawning and nursing grounds for the fish stocks. [2] The activities in this project were implemented in communities along the coastlines of both the Gulf of Thailand and Andaman Sea. They were designed to cover the general problems of coastal communities. It seemed like a package of activities that had already been designed for implementation in suitable areas. In practice, some activities were suitable in a certain situation, but some were not. Officers or the project staff obtained community information to make a plan for activities by survey and interviews with the people. The people did not have much opportunity to participate in the decision making process or in the selection activities that would suit their community. They paid less attention to the project, because they did not understand the overall goals and purposes of government-sponsored projects. The project often ceased activities soon after the project staff were transferred and no official took care of them.

(2) The Bay of Bengal Program in PhangNga Bay (BOBP) is a collaborative project between the DOF and the BOBP under the FAO. It was initiated in 1995 with the aim of building sufficient resource management skills within the bay communities to eventually transfer a majority of fisheries management responsibilities to the villages. [3,4] The activities of this project were designed to address the identified problems like mangrove reforestation, which would solve the degradation in coastal habitats. Fishers gained new sources of income by introducing eco-tourism around the mangrove areas and they operated passenger boats. Besides such tourism business activity, the fishers started to manage the central markets in their communities. They can sell their catches, mainly shrimp, at much higher prices than before. [5]

The projects successfully enhanced the fishers' awareness of the need for the sustainable use of coastal resources. One example of this attempt was to ban trawlers and push nets, which often caused conflict with other types of small-scale fishing operation. They were very destructive, overharvesting marine resources and degrading sea-grass beds. The ban was agreed for implementation by the government and the communities in the bay. The combination of activities that supported this attempt was public education by convincing the push net fishers to change their fishing practices, increasing enforcement and economic incentives. [3]

The people participated in this project, to increase their incomes. The illegal fishing operations like push net operations were very serious, so that they willingly joined in the activity to solve their problem.

(3) The Fishing Right Pilot Project in Bang Sa Phan Bay, Prachuap Kiri Khan Province (FRPP), was developed from the Small-Scale Fisheries Development Project (SSFDP), to establish a fishers group in each village. At the beginning of the FRPP, the fisher groups were engaged in the operation of a revolving fund for members' fishing or aquaculture activities. In 1999, this project was given a demarcated coastal area that comprised about 150,000 *rai*[2] or 240 km^2 (one *rai* = 1600 m^2)of Bang Sa Phan Bay in the Gulf of Thailand.[6] Nine fishers groups in the project site have functioned as a management body for the demarcated area. The project has regulations that inside the demarcated area the operation of trawls and luring light purse seines

using less than 2.5 cm mesh size are prohibited. Monitoring of the prohibited fisheries inside the demarcated area has been conducted by using a patrol boat and fisher volunteers. They have needed to put great effort both in manpower and budget for monitoring. The local fishers and stakeholders have been encouraged to become involved in the management of the project area by holding public hearings and exchanging necessary information for management procedures. Day by day the fishers and local people gained an understanding about why they must protect their coastal resources and area.

(4) The Locally Based Coastal Resource Management Project (LBCRM-PD) in Pathew District, Chumporn Province is a collaborative pilot project on coastal resource management between the DOF and the Training Department of the Southeast Asian Fisheries Development Center (SEAFDEC/TD). The project has purpose being to establish a practical framework for sustainable coastal resource management at local level through the encouragement of fishers' participation. This encourages the people to join in a decision making process on coastal fisheries management at community level by providing the opportunity for training and education programs [5]. The project has activities that include a base line survey to obtain the necessary information and data for the establishment of sustainable coastal resource management, extend and encourage locally based coastal resource management with the participation of stakeholders in achieving a consensus on a demarcated zone for fishing and aquaculture, and encourage local businesses by improving techniques and marketing of processed fishery products to the ladies group. From these activities, the local people have learned how to achieve a consensus for their management measures. Also the local organization has increased its role in supporting the peoples' consensus. However, LBCRM-PD is still a new concept for the people, they still need guidance from officers or researchers to discuss their problems and solutions.

Table 2: Characterization of CRMPs

Project	Main objectives	Target activities	Outcome
SSFDP	to develop fishers' living standards	(1)infrastructure for fishing communities (2)extending of alternative income (3)fishers group formation (4)training in coastal resource conservation (5)artificial reef installation (6)release fish fingerings	-people participated by giving information. -at some sites, people are not clear on the project's objectives. -many places could not maintain the activities.
BOBP	to enhance of awareness building for responsible fishing and to improve fishers' income	(1) educating people for natural utilisation (2)push net ban (3)community central market (4)mangrove reforestation	-success activities concerned about fishers' income. -conservation activities of coastal resource allowed fishers more benefit.
FRPP	to develop the demarcated areas to be the tools for coastal management	(1)made the demarcated area for community protection (2)volunteer for monitoring demarcated area from prohibited fishing gear (3)training in coastal resource conservation	-put great effort both in manpower and budget for monitoring. -people came to understand why they must protect their coastal resources.
LBCRM-PD	to establish a practical framework for sustainable coastal resource management at local level through the encouragement of fishers' participation	(1)base line survey (2)getting a consensus on the demarcated zones and cage culture areas (3)improve technology of processing fishery products (4)participatory training course (5)rehabilitate and enhance coastal resources	-people learned how to get the consensus. -local organization increases its role in supporting the people's consensus. -still need guidance from staff to discuss about problems and solutions.

4.2 Lessons from past experiences

From the details of 4 projects described above, they may be grouped into two categories. The first group is the Small-Scale Fisheries Development Project that has the objectives of improving living standards of the fishers. The second group is concerned more about coastal resource management for sustainable use with projects like BOBP, FRPP and LBCRM. Target activities also re-align from providing infrastructure for fisheries communities to promoting people to make self-rules for management. (Fig. 2)

Lessons learned from many cases of implemented projects should put more emphasis on improving the next project.

- Lack of clarity in the objectives of implementation
- Lack of suitable innovation at different project site
- Unbalanced role of management and development in the project
- Provide more material input than that of information

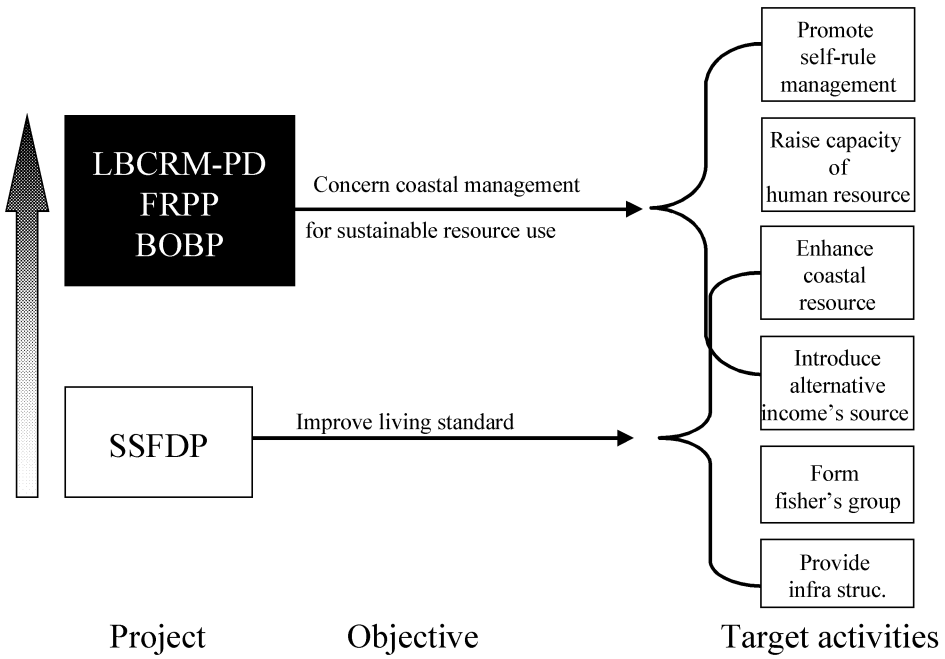

Fig. 2 Patterns of CRMPs' activities

4.3 Trends in Coastal Resource Management Projects in Thailand

We analyse the activities of the CRMPs in respect of the participation level from fishers and their communities. In the SSFDP, local people joined the project with passive participation or participation by consultation. They did not participate in any action in the activities, only being informed about the project by researchers or project staff. Such activities as promoting fishers' group formation, introducing alternative sources of income to the fishers' families and enhancing coastal resources had the participation type as functional participation and bought participation. For instance, the project had an activity to introduce fish cage culture technology for increasing income of the fishers' families. The fishers had to form a group before they got the material or technology support from the project. The people had more opportunity to participate in the activities concerning management measures in the recent projects. They were promoted to interactive participate in making a consensus and self–regulations for management. The fishers and local people had to discuss about facing their problems and trying to adjust their opinion in solving that problem. They could achieve a final solution appropriate to their community. These types of activities needed support from legal frameworks to make their rules and authority to be more efficient. (Fig. 3) Trends of the coastal resource management project could be separated into 3 criteria as target activity, people's participation and legal framework support.

Trends of target activity

- Reduction of subsidized activity like infrastructure.
- The education or training activity based upon the needs of the community.
- Promotion of alternative jobs to fishers to increase their income.
- The activities, which encourage fishers to make self-rule management, are increasing for solving the problem of inadequate enforcement.
- Raising people's capacity by devolving authority for management to local organizations such as Sub-District Administrative Organization or Village council.

Trends of participation from people

- Use of local knowledge to input to management.
- Participation in data collection and analysis. To avoid people going against the proposed activities, they should believe in the essential data for making decisions by participating in data collection and analysis.
- More interactive participation in the project management process, not only involvement in the implementing stage.

The Legal framework trends

The legal framework will support any management measures at local level to make their activity continue effectively. For example

- Support people's authority when they protect their coastal areas from illegal fishing operations

- Devolving authority for management to a local authority such as the Sub-District Administrative Organisation, so they can issue their management measures after getting a consensus from the stakeholders

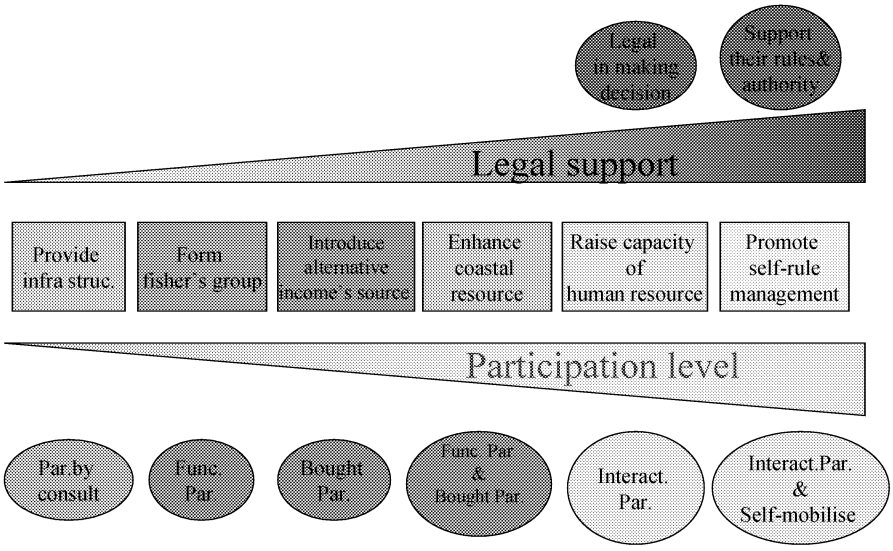

Fig. 3 Trend of activities by participation level and legal support

4.4 Decentralization: A new challenge to CRMPs

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 in every sub-district throughout the country. [7] Since the trends of coastal resource management realize that the effective approach is people's participation. A management unit that has authority and responsibility should be close to the people within a defined area like the territory where the Sub-District Administrative Organization is in charge in community development and improve people's welfare. [8] The devolution of authority from central government to local level should not only be the responsibilities for coastal resource management, but should also support their work by legal frameworks. 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. People and local institutions will gradually grow up to manage coastal resource effectively. (Fig. 4)

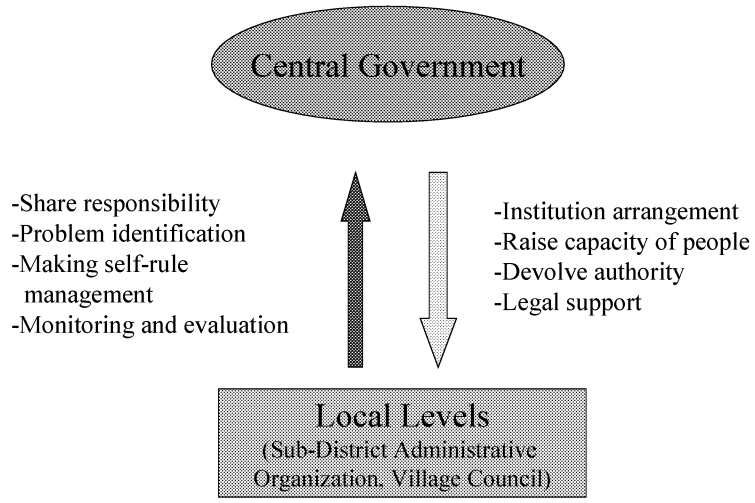

Fig. 4 Decentralization's mechanism for coastal resource management

5. Conclusion

Coastal resource management projects in Thailand are finding the direction of decentralization. Many aspects should be considered prior to the implementation of projects. This study would suggest the following implications:

- To obtain the effectiveness of coastal resource management, government should implement projects after giving a clear understanding by the fishers and their communities.
- To make decisions in management measures that will have effect to the people, stakeholders should participate more interactively.
- Because of the characteristics of coastal resources, only one community or one management unit cannot manage effectively alone. There should be a network of communities or units to support any management measures.
- Legal frameworks should support the management rule that is achieved according to the stakeholder's consensus.
- Government should work step-by-step for decentralization and gradually transfer the authority to the Sub-District Administrative Organization.
- Clear-cut function and authority at the local level to avoid repeating the task by each organization should be identified.

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Locally Based Coastal Fisheries Management: People's Participation and Local Management Body to sustainability of Coastal Resources in Case of Thailand

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ABSTRACT

Southeast Asian Fisheries Development Center/Training Department (SEAFDEC/TD) and the Department of Fisheries (DOF), Thailand adopted the ASEAN-SEAFDEC Fisheries Consultative Group (FCG) scheme to implement a coastal resource management program. SEAFDEC/TD and DOF incorporate to formulate the collaborative project entitled 'Locally Based Coastal Fisheries Management in Pathew District (LBCFM-PD), Chumphon Province, Thailand'. Objectives of the project are to broadly achieve sustainable use of coastal resources and to alleviate poverty of fishing communities, in particular for small-scale fisheries. Community-based fisheries management (CBFM) approach and co-management (CM) are the main concepts of the LBCFM-PD project framework. Under the Thai Constitution 1997, decentralization of authority has supported local government and people's organization to share part of responsibility for coastal resource management. People's participation driven through whatever type of local management body is key mechanism to manipulate two core activities of the LBCFM-PD project: the establishment of LBCFM framework and local business development. Local people's participation practicing in decision-making process accomplishes outcomes of the project of phase I (2001-2003). The Chumphon Province proclaims the demarcated areas where trawls and push net are prohibited. Both local communities and local governments have achieved consensus on the establishment of aquaculture zone management for avoiding conflict between fish-farmers and fishers using the same fishing grounds. A number of women joins and establishes a group that operates fish processing business. They have gained advantage of fish technology transferred and created additional income sources. The Pakklong Sub-district Administrative Organization (Ao.Bo.To.) has promoted the group's business to apply 'One-Tambol, One-Product' OTOP scheme.

Keywords: CBFM. LBCFM-PD, decentralization of authority, people's participation, local management body

1. Background of the LBCFM project

Southeast Asian Fisheries Development Center (SEAFDEC) and Association of Southeast Asian Nation (ASEAN) has agreed to adopt coastal resource management (CRM) program which is a component of Fisheries Consultative Group (FCG) scheme to aim sustainability of coastal resources. SEAFDEC/ Training Department (TD) incorporates the Department of Fisheries (DOF). Thailand to formulate the collaborative project entitled 'Locally Based Coastal Fisheries Management in Pathew District (LBCFM-PD) project, Chumphon Province, Thailand' to contribute the CRM program (see Fig. 1).

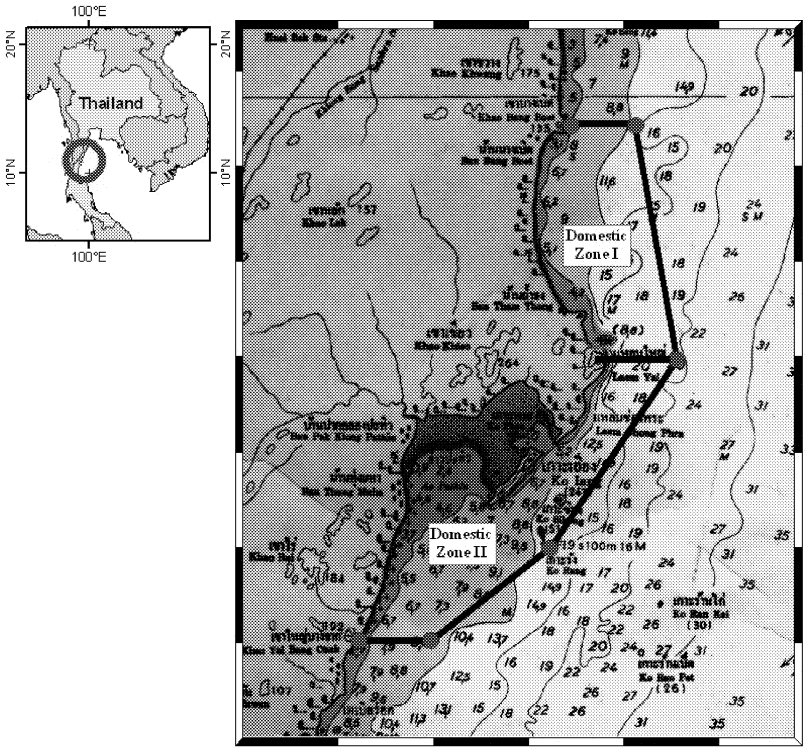

Fig. 1 Site map of the LBCRM-PD project at Pakklong Sub-district, Pathew District, Chumphon Province, Thailand

The LBCFM-PD project is financially supported by the Japanese government arranged the Japanese Trust Funds to SEAFDEC/TD, meanwhile, the DOF and the Thai Royal project provide budgets are as the operating funds to implement the project. Objectives of the project are fundamentally composed of 1) the establishment of sustainable use of coastal resource management at local level; 2) the rehabilitation of coastal resources; 3) the alleviation of poverty in coastal fishing communities [1].

2. The LBCFM-PD project time frame

The project timeframe composes of two phases (see Fig.2). The phase I of the project implemented in the first two years (year 2001-2003) and phase II is the next three years (year 2004-2006) of the project. The phase I of the project placed an emphasis on stimulating local people participate in the project and also provides information related to advance technology in fisheries management and community development through

training course arrangement to them. The DOF would take leading party to implement the project at local level; meanwhile. SEAFDEC/TD begins to transfer gained experiences through the project to other ASEAN member countries in the beginnings of the phase II of the project.

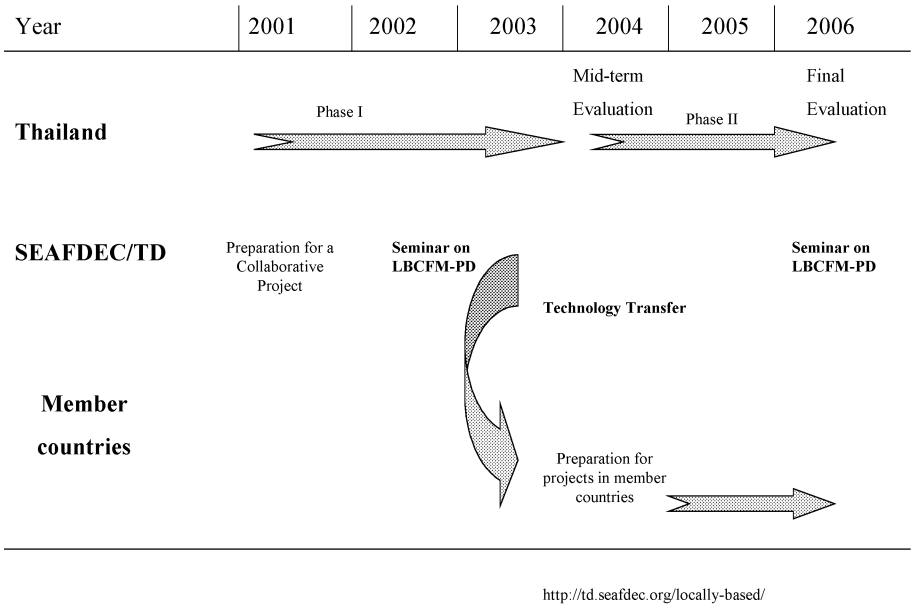

Fig. 2 LBCRM-PD project timeframe

3. Conceptual framework and workable components

3.1 Core approaches to locally based coastal management

Conceptual framework of the LBCFM-PD project broadly bases on two core concepts are community-based fisheries management (CBFM) and co-management (CM) approaches. CBFM approach is mechanism to enhance people's awareness building, establish and organize fishers' group to make practical progress in the sustainability of coastal resources. CM approach is given definition that government agency shares responsibility and/or function with certain authority to manage coastal resources with local stakeholders and/ or resource users enroll as counterparts [2]. People participatory approach is fundamentally driven the two core concepts to contribute decentralization and de-officiallization of authorities from central government to local management body and/or entity. The new Thai Constitution, 1997 has officially promulgated to strongly encourage local people's participation driven local management body in CRM implementation.

3.2 Comprehensive structure of decentralization to strengthen coastal resource management

The LBCFM-PD project is a pilot project to illustrate a lesson of local management body functioning in decentralization of authority. Central government devolves authority moved toward to 10calization, which consisted of Province, District and Sub-district (see Fig. 3). Recently, Sub-district Administrative Organization (Ao.Bo.To.) is as official local management body (LMB), which legally established in 1994, takes function in devolution of authority.

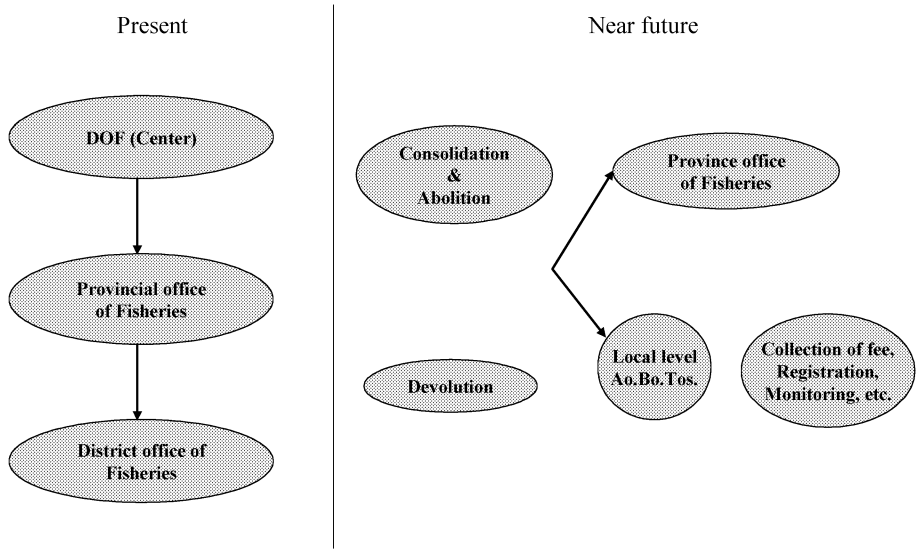

Fig. 3 Devolution of District function

Members of Ao.Bo.To. are elected from the people in the village and take responsibilities for community development and the people's welfare and resource-based management. Ao.Bo.To. would have following three elementary functions [1]:

a) Administrative unit of fisheries management Ao.Bo.To. can initially practice in a development of registration of fishing gear, fishing gear, fishing boats, aquaculture in cages and in ponds and so on.

b) Support resource users' activities on coastal resource management Ao.Bo.To. encourages community people to join in establishing and managing users' group and involve in resource management.

c) Legitimate resource users' decisions and agreements, Ao.Bo.To. should enable legitimate resource users' decisions and their agreements. It is an autonomous administrative organ in politic and budgetary terms. The Ao.Bo.To. approves and enforces rules and regulations with consensus of the people.

3.3 Workable project components

The LBCFM-PD project has six main activities (see Fig. 4). Two core activities are Activity II and Activity IJI which is practical mechanism to approach the project aims related to sustainable use of coastal resources and alleviation of poverty of community. Other four activities are supportive activities to contribute implementation of Activities II and III through data collection, training course arrangement and extension program to stimulate and encourage people's participation in the project.

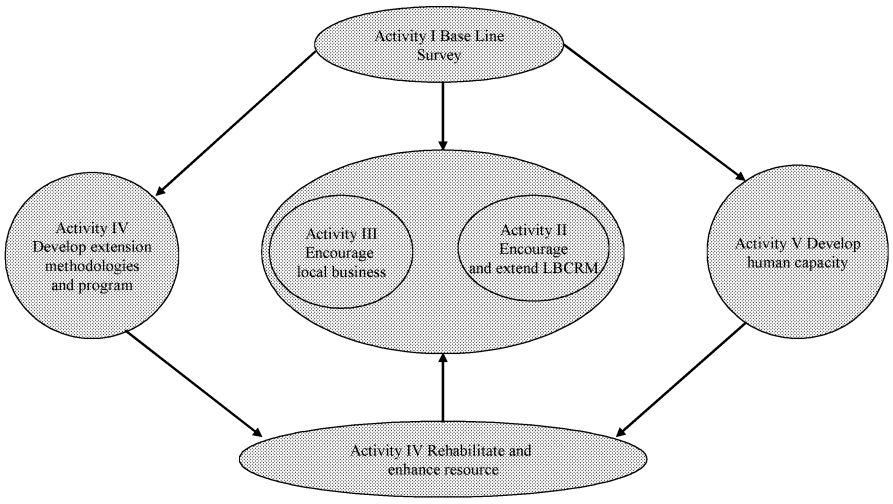

Fig.4 Workable project components

4. Active people's participation to the project implication

4.1 Applicable structure of decentralization oriented practice in Thailand

People's participation, which is active under political framework of authority decentralization, gives positive impact to tangible outcome of the LBCFM-PD project implementation. Comprehensive structure of decentralization oriented practice extensively illustrates how Ao.Bo.To. and local people participate in series of sub-activities of Activity II and Activity III (see Fig. 5).

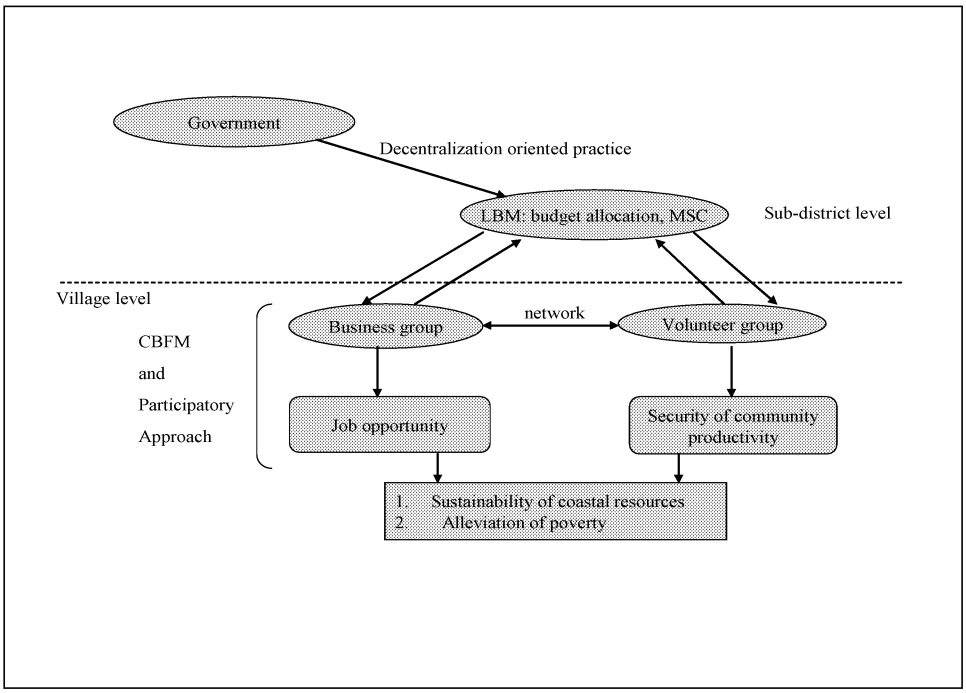

Fig.5 Decentralization oriented practice to strengthen coastal resource management

Central government devolves authority and responsibility to Ao.Bo.To. to take functions in making budget allocation to local people's group for community development and social welfare management. Ao.Bo.To. may take duty to conduct monitoring, surveillance and control particularly on local resource base to initially enforce an offender encroaching in its owned authorized coastal areas.

CBFM and people participatory approaches are apparatuses to strengthen local people's group working on volunteer basis and business basis. Each group is community-based management unit (CBMU) as primary task force unit at village (Moobaan in Thai) level composes of members who are resource users and stakeholders [1]. CBMU with business basis has purpose to create job opportunity to its member to improve community economic development, while CBMU with volunteer basis has main purpose to make security of community productivity through resource enhancement and rehabilitation activities.

Far-reaching network of CBMU, which bases on sharing of each unit/group's interests, may initially establish self-management activities at Sub-district level to protect, enhance and improve community owned interests. Appropriate and active institution of CBMU network progressively endures community reaching sustainability of coastal resources and including alleviation of poverty.

4.2 Implicative outcomes of the LBCFM-PD project

Series of locally based coastal fisheries management

The LBCFM-PD project in phase I placed an emphasis on Activity II encouraging locally based coastal fisheries management. This activity formulated two main specific topics of sub-activities that one is demarcation of the project site management and other is aquaculture zone allocation and management. The two sub-activities give tangible outcome of people's participation in decision-making process to develop community and manage resource base with promulgation of the new Thai constitution. 1997.

4.3 Demarcation of the project site management

Objectives of the site demarcation

Demarcation of the project site is eligible to execute for achieving three elementary objectives which are 1) to alleviate conflict between small-scale fishers and commercial fishing boats encroaching into 3 km of coastal areas; 2) to protect and conserve nursery grounds for fish larvae and other aquatic resources; and 3) to prohibit illegal fishing such trawls, push net and cockle dredge net operating in the demarcated areas.

4.4 Procedure of the site demarcation and official approval

The process of the site demarcation composes of three basic steps. The first step is at local community where local people made consensus. The Chumphon Provincial Office of Fisheries led arranged public hearing meeting on the coastal community area demarcation. Local people and other stakeholders joined the meeting and discussed the appropriateness and feasibility of the area demarcation which based on their common interests [3]. Local people and stakeholders participate to debate opinions and present community consensus through Ao.Bo.To. for getting submission.

At the second step, the Chumphon Provincial office of Fisheries officer submits the local people's consensus to the committee of the provincial office. They considered people's consensus on site demarcation based on the Fisheries Laws, 1947 (B.E. 2490). The Chumphon Provincial Office of Fisheries officer proposed the consensus to the committee of the DOF, headquarter after the committee of provincial office approved. Then, the committee of the head quarter proposed to the cabinet for approval. The Chumphon Provincial Office officially declared the demarcated area proclamation, which effected on 4th November 2002 (see Fig. 1).

4.5 Progressive plan to strengthen the site demarcation

Implication of the area demarcation reflects through local people's impressive experience that number of illegal fishing such trawl and push net decreased. They explained that patrolling boats of the DOF often monitored surrounding the area demarcation, so this led to a few number of illegal fishing operation in 3 km coastal areas. Ao.Bo.To. and local fishers plan to establish locally monitoring unit to strengthen the management of the area demarcation. This unit will be organized in year 2004 by recommendation and consultation of the DOF.

4.6 Aquaculture zone allocation and management

Eligibility and objectives of aquaculture zone management

Conflict between fishers and fish-farmers is due to they employ at the same fishing grounds. Fishers criticized fish-farmers expanded number of fish cage culture areas. Fishers get limitation of fishing areas where are conventionally used to fish and anchor fishing boat when monsoon season comes. The Chumphon Provincial Office of Fisheries proposes two solutions to alleviate these problems. One is areas should be demarcated for employing in aquaculture. Other is local people and stakeholders have to propose to the provincial office to change objective of aquaculture areas that are only for shellfish culture areas to be for aquaculture without specifying aquatic species. Local people and stakeholders have to participate in sharing their common interests and making self-consensus in the community.

4.7 People's making consensus on aquaculture zone management

Process of aquaculture zone management consists of two steps. First is at Moobaan based step. Local people and stakeholders have to elect representative of them to be committee members to take action in site/area selection. These committee members coordinate with local government officers to select and mark the site/area. Local people and stakeholders participate in debating appropriateness of location and size of the marked site/ areas including defined objectives of area utilization. After they reached an agreement at the Moobaan based step, the community agreement is considered at Tambol (sub-district) based step. The Provincial officials, Ao.Bo.To. and the community committee makes agreement on the area demarcation with specific objectives. The agreement outcomes at this step, the provincial office of fisheries officer takes responsibility to propose the agreement to DOF headquarter and then submits the agreement to cabinet for official approval.

4.8 Preliminary outcome of the aquaculture zone management

Fig. 6 illustrates the community agreement on the demarcated area for fish cage culture and shellfish culture. Fish cage culture allowable areas are 518,965 sq.m. (Area no. 5). Shellfish culture allowable areas are 829,841 sq.m. (Area covered points I to 4). Avoiding monsoon season areas are 227,600 sq.m. (Area no.3 and no.4). This map has reached all villagers' agreement. The Provincial Office of Fisheries officer proposes this to the DOF headquarter and waits for the cabinet give official approval.

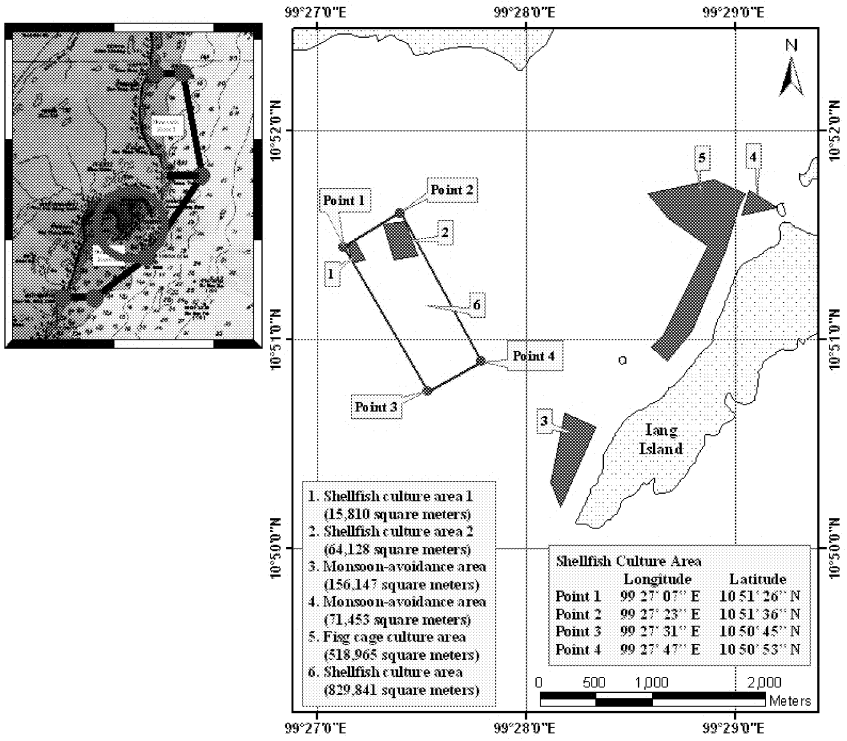

Fig.6 Marked areas for the aquaculture zone management at Pakklong Sub-district, Pathew District, Chumphon Province, Thailand

The aquaculture zone management returns positive outcome to the community. Fishers and fish-farmers are aware of purpose of fishing ground utilization. Therefore, they feel that they get equity of chance to entry in fisheries. The demarcated areas are used for controlling and managing conflict between fishers and fish-farmers when each of them breaks the community agreement on the areas.

4.9 Functional local business to community development

Activity III entitled encouraging local business which main objective is to create job opportunities to local people particular for women in community to empower in community economic development. The LBCFM-PD project staffs places an emphasis on strengthen local people's group whatever type of the group exists in the community to create group' s activity on practical business basis. This type of activity is creative source of income and/ or additional source of income to improve economic status of the group's members and other villagers.

4.10 New challenge of women's group in self-development

The Department of Community Development established the women's group with contribution of provision of community development program. This program mainly promoted savings activity with purpose of accumulating savings, pooling revolving funds and create locally internal money circulation [4]. The LBCFM-PD project staffs appreciate the women's group for savings has capacity building and readiness to progress initial self-development of its group. The project staffs introduced women's group for savings should start creative activity on business practice with combination of local resource utilization to strengthen member's

participation in community economic development.

4.11 Basic needs to local business execution

The women's group for savings agreed to execute creative activity on business practice by using local resource base which major products are marine fisheries products. The group's members are very interesting in value added product of fish processing activity. The LBCFM-PD project staffs arranged a series of on-site training course on fish processing including study trip for the group's members. Main objectives of the training course arrangement are to improve skill of member in fish processing and educate their knowledge to be more far vision and sophisticate. The women's group also get subsidy from the DOF, Thailand provided a set of eligible equipment for executing fish processing. The group progress group's product development with many items of fish products such are fish crispy, fish streamed bar, seasoning dried anchovy, fish chilly paste, etc.

4.12 Strengthen of local business entity development

The women's group actively and continually progress producing and developing the group's product both taste and package. The group often outlets the group's products to local market and urban market to search new market channels and remain executed market channels. The group made proposal plan of the group's product development to Ao.Bo.To. to get village fund allocation. Ao.Bo.To. allocated budgets to the group for two years (in year 2002 and 2003) to headway the group's product development. Ao.Bo.To. submitted the group's products to be promoted for applying in 'One-Tambol (Sub-district), One-Product' OTOP scheme.

Ao.Bo.To. further contributed the group by provided amount of granted funds coming from 'the Poverty alleviation in community Project' which was under the Village Funds Program' allocated by the Ministry of Interior. The group got the granted funds after Ao.Bo.To. considered the group's proposal plan that requested subsidy from Ao.Bo.To. to construct the group's building using for the group's activities. Some amount of these funds spent for equipment procurement such freezer, smoked gas strove.

The group's committee members are learning and studying on how to manage group's business activity through book keeping and accounting recording management. This activity is a working record to explain to the group's member how the group administrates group activities and manages business.

5. Ao.Bo.To.'s function challenges to sustainability of coastal resource management

Ao.Bo.To. plays an important role to contribute drawing up implicative outcomes of the LBCFM-PD project which are proclamation of the project site demarcation and management marked areas of aquaculture zone demarcation and establishment of local business entity. Ao.Bo.To. is on official duty with authorizing their elementary functions to strengthen the outcomes of the project to sustain long-term use of coastal resource management and community development.

Institution of Ao.Bo.To.'s elementary function is eligible to officially progress the development of the outcome and legally legitimate community regulations and/or ordinances. Institution of Ao.Bo.To.'s elementary function mainly priors to the active outcome activities. Table I illustrates challenge and competence of Ao.Bo.To.'s elementary function to reinforce coastal resource management. This Ao.Bo.To.'s elementary function, which is

actively taking into account of multi-disciplinary coastal resource management provides applicable experiences and lessons to let other Ao.Bo.To. learns and applies appropriate essence to its own logistic community.

Table 1 Challenge and Competence of Ao.Bo.To.'s Elementary Function

Activity	Challenge	Competence
1) Demarcation of project site	Co-management with certain function among Ao.Bo.To. fisher's group and provincial officials for strengthening monitoring, surveillance and control in community site	- Reduce numbers of illegal fishing damage to coastal resource. - Sustain job opportunity and fisheries productivity
2) Aquaculture zone demarcation	Ao.Bo.To. takes leading role to empower people to conduct self-regulatory activities in fishing ground management and aquaculture zone management	- Alleviate conflict between fishers and fish-farmers utilized coastal areas - Convey prerequisite management of aquaculture and environment
3) Local business entity	Ao.Bo.To. provides contribution to strengthen women's capacity building to develop and practice in local business management	- Strengthen women's empowerment to participate in community development

6. Conclusion and what to do next

The LBCFM-PD project is ongoing implemented the project phase II at recent. Justification of the project basically rationalizes that the direction of the project should place a great emphasis on strengthen capacity building of local people and their participation through CBMUs to sustain the project. Strengths of CBMUs facilitate institution of Ao.Bo.To.' s elementary function which would empower an organization of Ao.Bo.To. taken as core and leading local management body for managing coastal resources and development community. A plan to strengthen local people's capacity building and participation relies on three competences. First is to contribute people's participation through organization-driven strategy to empower CBMUs to regularly work in-group. Second is to motivate people's capacity building employing in creative group business activities through reasonable profit distribution to promote local business and end with increase of household incomes. Third is to strengthen people's participation on volunteer basis by arranging milestones of people's awareness building to often encourage in coastal resource management.

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Part II

Present Situation of Fisheries Households and Their Fishing Operation in Krabi and Phang-nga Provinces

Coastal Resource Management by Local Organizations: How people participate in community development in Thailand

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1. Introduction

Thai government has a policy for delegating and devolving its authority to local level. The new constitution was enacted in 1997, and included the provisions of decentralization (Jumpa, 2002). The major concern started with the governance of authority. According to the new constitution, the parliament enacted the Act Prescriptive Plan and Process of Decentralization to Local Government Organization in 1999. This Act has the principle of promoting greater participation from all stakeholders, which should be flexible and adjustable to fit in with local reality (Office of the Decentralization to Local Government Organization Committee, 2005; Puang-Ngam, 2003a).

The management and conservation of natural resources are a major concern of devolving authority to local level. Local administrative organizations and local people are more encouraged to involve in management of local natural resources like agriculture, forest and fisheries resources (Nielsen et. al., 2004). In Thailand, the central government by the Ministry of Agriculture and Cooperatives still holds authority to determine main measures on coastal resource management (CRM). The management measures on CRM need law enforcement to control it, but the central government cannot afford to allocate sufficient manpower and budget for surveillance and control. It often happens that the central government-based regime of CRM accelerates the overuse of coastal resources, which is like under an open-access regime (Suraswadi, 1998; Menasaveta, 1997). Therefore, one possible approach to reduce this constraint is the decentralization of authority on CRM by promoting more participatory measures from all stakeholders (Pomeroy, 1995; Pomeroy and Berkes, 1997).

2. Process of Decentralization

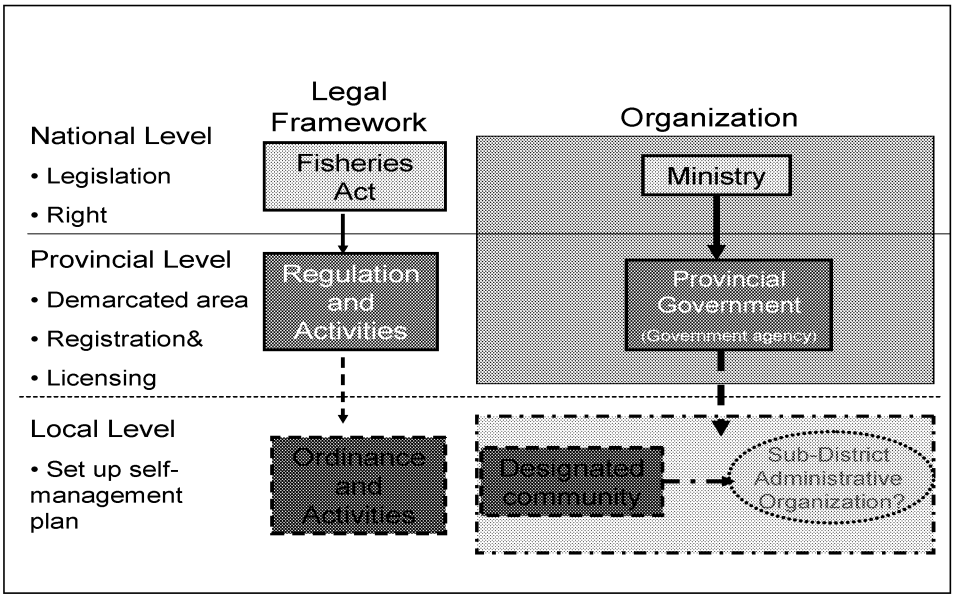
Thus decentralization refers to the systematic and rational dispersal of power, authority and responsibility from central government to local level, it needs an institutional arrangement to support in each process (Pomeroy and Berkes, 1997; Noble, 2000; Jentoft, 2004). In Thailand, the decentralization process has started with improving the administration system of local, regional and central organization for transferring tasks, staff and budget. The revision of related laws and regulation will be done to support local organization to achieve an effective administrative system. The mission that will transfer from central and provincial government to local government has 6 main themes; 1) constructing basic infrastructure, 2) improving the standard of living of people, 3) arranging social welfare and security, 4) promoting commercial investment and tourism, 5) managing and conserving natural resources, and 6) promoting local traditional art and knowledge. The local government organization has been established to receive these devolved authorities to the Sub-district level (Office of the Decentralization to Local Government Organization Committee, 2005; Puang-Ngam, 2003a).

2.1 Mechanism of Decentralization on Coastal Resource Management

The scheme of decentralization in Thailand is divided into three levels. At the national level, the Department of Fisheries (DOF), the Ministry of Agriculture and Cooperatives (MOAC) has the responsibility and authority to design legislation or rights for fishing activity in the whole country or in regions that consists of several provinces. For example, the legislation to closed areas and closed seasons for Indo-Pacific Mackerel during the spawning period is regulated by MOAC (Ministerial Regulation, November 1984, September 1999 and February 2000). This measure covers three provinces in the Gulf of Thailand to prohibit operating some particular types of fishing gear during the period from February 15th to May 15th for the conservation of Indo-Pacific Mackerel (Department of Fisheries, 2004).

Nowadays the decentralized mechanism is already adopted at provincial level. The provincial government can prioritize the problems to be solved and the activities to be planned. The Chief Executive Officer (CEO) style is used for the provincial governor. This means the CEO provincial governor will be positioned at the center of all administrative work and development issues in the province. The governor determines management measures like demarcated areas for fishing, and also has the function of registration of fishing boats and fishing gear. (Fig. 1)

At local level, which organization will be responsible for coastal resource management is not yet clearly defined. The Fisheries Act recently proposed describes that a designated community will take responsibility for CRM at local level, but it does not define what the "Designated community" is. One possible organization that will share part of this responsibility is the Sub-district Administrative Organization (Ao.Bo.To.- in Thai). In the existing law, the Ao.Bo.To. is allowed to make a self-management plan to utilize local resource properly and sustainably (Yamao, 2003; Boramanant and Kraisornpong, 2001).



Source: Modified from [12]

Fig. 1 Mechanism of Decentralization on Resource Management

2.2 Sub-district Administrative Organization *(Ao.Bo.To. – in Thai)*

The Sub-district Administrative Organization or Ao.Bo.To. was initially established in 1995. The total numbers of Ao.Bo.To. is 6,624 organizations 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, 2003b). Some characteristics of Ao.Bo.To. have the advantageous point 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 community. They are concerned with the community's needs through discussion with local people in both a formal and informal ways. In the informal way, Ao.BoTo. members meet other people in daily life, and have the chance to talk during the morning coffee time at markets. They can talk freely about the situation happening around the community. Hence Ao.Bo.To. members can understand the details of the community's problem, and then discuss again in a formal meeting of the community. They will get the real problem and right solution for developing their community.

(2) More flexible governmental organizations

Ao.Bo.To. is the autonomous organization in the allocation of budget and realizing the community'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 community. 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 situation.

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

The authority and responsibilities that are devolved from central government to Ao.Bo.To. are many. These depend on the capacity of each Ao.Bo.To. Some Ao.Bo.To.s can respond to all the functions with sufficient manpower and budget. But some are still lacking capacity to respond to all functions: therefore, the related government agency will assist Ao.Bo.To. to work. The function and authority that Ao.Bo.To. will take 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

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

3. Objectives of study

The study was conducted with the hypothesis of whether the Sub-district Administrative Organization (Ao.Bo.To.) would become an effective management body for coastal resource management. How do people participate in making management measures on coastal resources through the Ao.Bo.To. mechanism?

1) To investigate the institutional arrangement on coastal resource management through a case study of the Sub-district Administrative Organization

2) To analyze the functions and procedures of coastal resource management that Sub-district Administrative Organization and local people adopt

3) To investigate the relationship between people's participation in the process of development planning and their social position

4. Methodology

This research used qualitative and quantitative methods. Primary data collection was done by interviewing the leader and staff of Ao.Bo.To. about the development plan and policy within the sub-district. A group discussion method was adopted to get the general idea and situation in community development. A questionnaire was also prepared to interview the local people about their participation in community activities. The sample size of the study was the people in KhaoThong Sub-district. We made sampling by a cluster randomized system in each village, this is approximately 10% of the fishers' households. Secondary data, including coastal development policy, related laws and regulations, implemented projects, were collected to analyze in a wider perspective.

4.1 The Study area is located in the southern part of Thailand, namely KhaoThong Sub-district in Krabi Province. KhaoThong Sub-district Administrative Organization (or Ao.Bo.To. KhaoThong) has made great effort to achieve sustainability of coastal resource through unique activities on coastal area management. (Fig. 2)

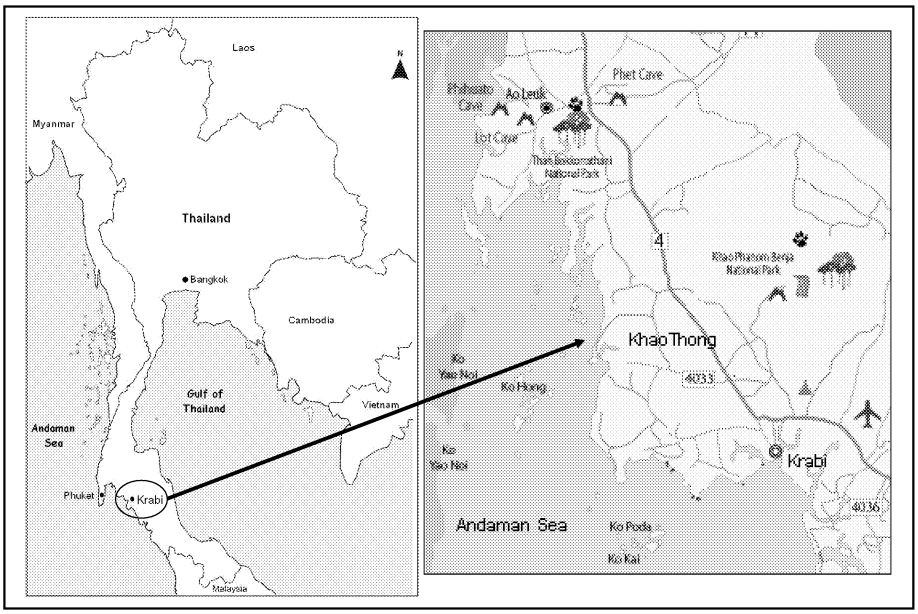


Fig. 2 Location of study area in Krabi Province, Southern Thailand

4.2 Study assumption

In community development planning, people's participation is needed in discussing the issues which are given a higher priority. Some communities try to promote people's participation in the planning process, but it has many types of participation. As Pretty and Hine refer to the types of participation in community development at many levels (Pretty and Hine, 1999). For example, the people will be informed about the project that will be implemented in the community, but they don't have any action. Some projects will be discussed with local people about suitable methods in the development process. The people's participation type is different depending on the situation of those communities.

The activities in coastal resource management (CRM) also need participation from local people. It is co-management that needs the sharing of responsibility and authority between the government and the community to manage the resources (Pomeroy and Williams, 1994). As Berkes proposed a hierarchy of co-management arrangements from those in which fishers are merely consulted by the government before management measures are introduced, to those in which fishers make self management with assistance from the government (Berkes, 1994). Thus there are many types of participation in the process of CRM projects, which lead local people to participate in different ways. This study divides the type of participation in 5 categories as follows;

(1) Receiving information; People get information about the CRM project which will be implemented in community.

(2) Giving comments; People have the chance to discuss and give comment to set up and adjust a CRM project for more suitable activities to their community.

(3) Involving in activities; People participate in implementing activities of CRM project.

(4) Making decisions; People participate in the joint analysis and make decisions on measures of CRM project.

(5) Monitoring and Improving projects; People share responsibility to monitor the activities of the CRM project and improve them to be more suitable and efficient.

Though there is more participation from people in a CRM project, it is not clear what type of activities are involved or what stage of the process they participate in. Generally speaking, most of the projects start with contacting the leader of the community. The people who are invited to be informed or to discuss about project are the committee of the community or groups. One factor that limits greater participation from people is their social position in the community and groups, which refers to their responsibility to society that needs effort and time for the public.

The position of people in their community is based on economical and non-economical qualities like honor, prestige or religion. In this study the positions of people are the leader of the village, members of the Ao.Bo.To. Council, head of an occupational group, and leaders of religion. We assume that it has a relationship with the chance to participate in development project planning.

The collected questionnaire will be analyzed by using descriptive statistics and testing the hypothesis by using the Chi-square test.

- Null hypothesis is that peoples' position in the community is independent of the chance to

participate on community development.

- Alternative hypothesis is that peoples' position in the community is dependent of the chance to participate on community development.

5. Results and Discussions

5.1 Area background

KhaoThong Sub-district is composed of 6 villages. Four villages are located along the coastline or along the canals that connect to the sea. The main careers in this sub-district are agriculture and fisheries. Rubber and palm are major products from the agriculture section (KhaoThong Sub-district Administrative Organization, 2005). (Table 1)

Table 1 Demographic information of KhaoThong Sub-district

Village	No. of household	Population	Main occupation	Connected coastal area
Ban NaiSra Moo 1	341	1,403	Agriculture, Trader	No
Ban KhaoThong Moo 2	73	339	Fisheries	Yes
Ban ThaLane Moo 3	78	363	Fisheries	Yes
Ban NamKrome Moo 4	124	481	Agriculture	No
Ban ThaPhru Moo 5	196	800	Agriculture, Fisheries	Yes
Ban ThaThongLang Moo 6	101	529	Fisheries	Yes

Source: KhaoThong Sub-district's development plan year 2004

Capture fisheries in this sub-district are divided into two groups. The first employs stationary fishing gear, namely a shallow water set net. This gear is common in Ban KhaoThong and Ban ThaThongLang, which are located along the beach that is convenient for people to install shallow water set nets. In KhaoThong Sub-district, there are more than 150 shallow water set nets. The second group employs some fishing gear like the squid trap, collapsible crab trap, fish gill net, hook and lines, which have to move fishing grounds depending on the schools of fish. Most fishers in Ban ThaLane and Ban ThaPhru are using these movable types of gear.

Mangrove forest covers the coastal area of KhaoThong Sub-district about 3.2 km^2. People proclaim that 0.9 km^2 of mangrove forest is 'Community forest' to be managed by them. Because this area has nice scenery, they promote it be a tourist place. Many tourists, both Thai and foreign, enjoy canoeing and snorkeling. Local people set up special rules for utilizing the 'Community forest' for the purpose of sustainable resource use.

5.2 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 a local organization to develop their own sub-district. The Ao.Bo.To. at KhaoThong is grouped into the small size of Ao.Bo.To., which is categorized by the amount of collected tax

within the sub-district. The member of Ao.Bo.To. KhaoThong's council comprises of 12 representatives from 6 villages and an elected president. Besides these elected members, Ao.Bo.To. council invites the leader of villages, the teacher of villages' school and leader of religion to be the associated members. All of member is the local people. The local government officers are the secretariat of the council and support in administrative works. The Ao.Bo.To. KhaoThong has been given the authority to provide the basic needs for sub-district's development and people's welfare in the same way as other Ao.Bo.To.s. Moreover, the Ao.Bo.To. KhaoThong concerns itself with the activities that utilize the coastal areas of the sub-district boundary.

5.3 Functions and Processes of the Ao.Bo.To. KhaoThong and people in Community Development Planning

The Leaders of villages create their method to understand the real problem and real need for developing their villages, together with the local people. The Ao.Bo.To. is one of the facilitators to help the local people to self manage through discussions among group of people.

They encourage people to form occupational groups, including fishers, tourist services and a mangrove conservation group etc. People join whatever the type of group, depending upon their careers and interests. When the Ao.Bo.To. wants to plan a development project for the sub-district, they will inform the people to participate in the planning process. Firstly, each occupational group identifies problems and finds solutions. Secondly, the Ao.Bo.To. holds a meeting to find a solution. People and stakeholders have the opportunity to participate in the planning process at village level and at sub-district level. The next step is that the Ao.Bo.To.Council will approve the agreement to make the development plan and set up the regulations of the Sub-district. Then Ao.Bo.To. proclaims the regulation to the local people and public. (Fig. 3)

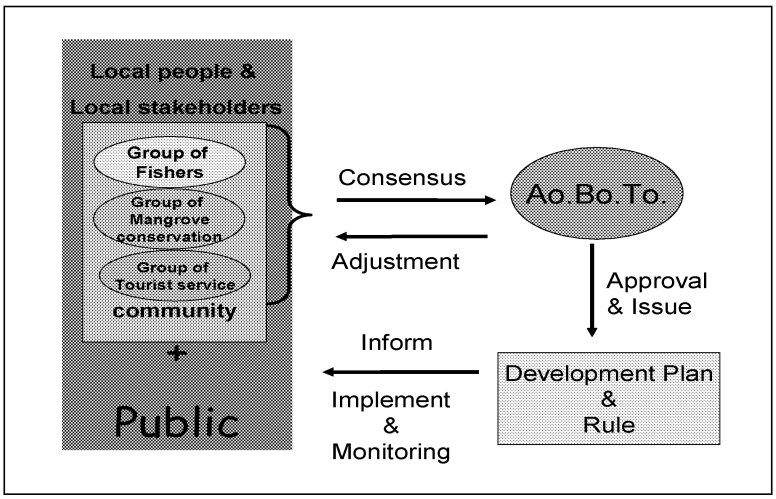


Fig. 3 Process of community development planning

One example of the self management on a coastal area is the zoning of KhaoThong Sub-district's boundary. The people, leaders of villages and the Ao.Bo.To manage their boundary by setting up rules for utilizing the coastal areas. The related groups discuss problems in coastal area utilization, the fishing in mangrove area, set net installation near the estuary and tourist scenery in coastal areas. The Ao.Bo.To. holds meetings to adjust any conflict between stakeholders. After reaching agreement among local people, the

Ao.Bo.To. will support the people's agreement by its authority, accessible budget and manpower capacity.

As regards the sub-district's boundary, leaders of villages in the sub-district and people set up a monitoring team to control the activities in their coastal area. The Ao.Bo.To. proposes the development plan and allocates budget to operate a speed boat for monitoring. Illegal fishing trawlers and push nets are not allowed to enter their within boundary. This task can work efficiently because the Ao.Bo.To. has two main authorities. Firstly, the Sub-district's boundary is proclaimed by announcement of the Ministry of Interior, which gives the authority to the Ao.Bo.To. to manage their own resources. Secondly, the coastal area of KhaoThong Sub-district has a distance from the shoreline covers the conservation zone according to the Fisheries Act. Any small-scale fisheries from outside the sub-district can enter to KhaoThong boundary, but they must follow the sub-district's rule. For example, they may not operate fishing near the set net areas and also near the island with the concession for edible nests.

Another example is that KhaoThong tries to self-manage to conserve their mangrove resource. Generally, the utilization of mangrove forest is controlled by the Forestry Act of the Royal Forestry Department. The central or provincial government control cannot be sufficient in very vast areas like the mangrove forest. KhaoThong Sub-district applied for permission to look after and manage the mangrove area from Royal Forestry Department in 1998. A 'Community forest' with an area of 0.9 km^2 is conserved as a nursery ground for aquatic animals. They set up special regulations. For example, a motorized boat is not allowed to pass into the community forest, as they want to prevent push net operation. The committee prohibits it to cut any trees or wild flowers in the community forest for any purpose with the exception for re-arrangement of the mangrove area. The community forest committee has authority to arrest any person who breaks the rules.

By these self-management measures, KhaoThong Sub-district can restrain illegal fishing and illegal utilization of mangrove trees. They control the measures by the existing authority that cooperates with the usual surveillance from the government. It is more effective than merely controlling by central or provincial government.

The transfer of ideas and processes of development planning to new generations is done by inviting young people to join the meeting of the sub-district. Building capacity program, An English language course and natural resource conservation camp is planned for young people in the sub-district.

5.4 People's participation in the process of development planning

In the process of community development planning, it is divided into 5 types of participation; (1) Receiving information, (2) Giving comments, (3) Involving in activities, (4) Making decisions and (5) Monitoring and improving the plan.

Data analysis found that most of the people (99.02%) are of the first type of participation (receiving information). Before implementing project activities, the local people will receive the information on what is the purpose and what is the expected outcome of project. Then 85.29% of people can give their comments on adjusting the project to be more suitable to their needs. The third type is involving in the project's activities and has 79.04% of the people that have the chance to participate in the activities, like training on alternative jobs, planting of mangrove trees, etc. Two-thirds of the people (70.59%) have the chance to participate in the decision making process. But in the last type of participation, more than 50% of people do not participate in

monitoring and improving the development plan. (Table 2)

Table 2 Percentage of people's participation in community development planning

N = 102

Type of participation	Percentage of people	
	No participation	participation
(I) Receiving information	0.98	99.02
(II) Giving comments	14.71	85.29
(III) Involving in activities	20.59	79.41
(IV) Making decision	29.41	70.59
(V) Monitoring & Improving plan	57.84	42.16

The sample size is divided into two groups by their position in the community. First group is the 71 respondents who do not have any social position in their community. Another group is the 31 respondents who have a position, like the leader of the village, assistant to the leader, committee member of any group and so on.

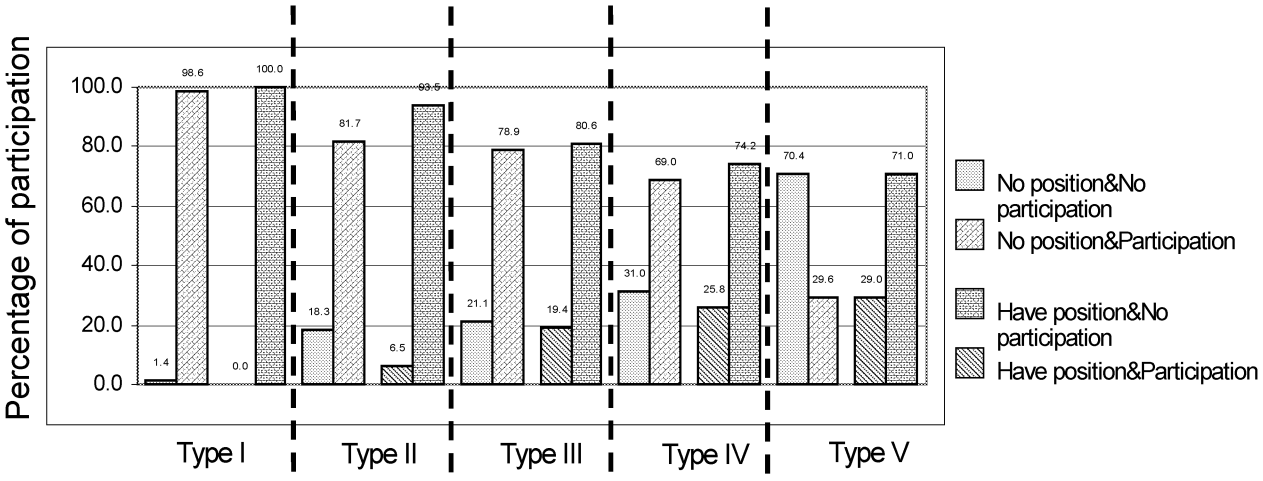


Fig. 4 Percentage of people's participation by the group of position in community

Fig. 4 shows the percentage of people's participation by type of participation. They have an equal chance to participate in the first four types on development planning. They have the same percentage on each type of participation whether or not they have a position in community. The group leader or normal people have the chance to receive information when there is a new project or new activities. They can give comment to adjust the activities or development plan to suit their real needs. The last step about monitoring and improving the development plans, only people who have a position show the highest percentage on participation.

Hypothesis test is done by the non-parametric method. We use chi-square statistics to test the relationship between type of participation and people's position. The first four types are accepted in the null

hypothesis. The value of the test may lead to rejecting the null hypothesis of the last type of participation with a significant probability at 0.05 level (Table 3). This means the position of people in community has a relationship with participation in monitoring and improving the development plan.

Table 3 Correlation between people's position in the community and type of participation

Type of participation	Chi-square value	Degree of Freedom	Asymp. Sig
(I) Receiving information	0.000	1	1.000
(II) Giving comments	1.566	1	0.211
(III) Involving in activities	0.000	1	1.000
(IV) Making decision	0.085	1	0.770
(V) Monitoring and Improving plan	13.510	1	0.000*

* Significant at 0.05 level

This analysis shows that people still have some constraints to participate in monitoring and improving the development plan. The monitoring control is one of the risky task that needs a police function. Ordinary people do not have any police function when participating in the monitoring task. Only the leaders of villages and assistants, who have authority as the police, can govern their area for which they are responsible. The ordinary people can participate in the monitoring task as bay-watching volunteers and give information to the leaders of villages or responsible officers to proceed with the next step of surveillance control.

6. Conclusions

KhaoThong Sub-district is a distinguished case study on coastal area self-management. KhaoThong has not used the new law or regulation to support their measures but they try to manage multiples of utilization in coastal areas by using the existing laws. The Ao.Bo.To. and leader of the sub-district have successfully systematized the process of development planning by achieving agreement from the local people before setting up any internal regulations.

Another unique factor that affects the success of the KhaoThong Sub-district is leadership. The leader of the Sub-district has a deep knowledge about the laws that are related to his responsibility. He can develop the KhaoThong Sub-district with the existing authority. Regular discussions among the Ao.Bo.To. Council members and local people support each other to develop the community.

Both the people who have a position and those who do not in their community get an equal opportunity to participate in the decision making process. The position of people in community has a relationship with participation in the monitoring and surveillance task because they still need clearly-defined authority to participate as volunteers on monitoring.

To sustain people's participation in the process of development planning, the Ao.Bo.To. and the leader of the sub-district have an education plan for the people and the new generations to continue participating in the decision making process to manage their own resources.

7. Lessons for the future

We can learn from this successful case of the KhaoThong Sub-district. In general, local people can manage their own resources more effectively through getting legal support from local government as the Ao.Bo.To. For instance, Ao.Bo.To. has the authority to issue rules and regulations for controlling fishing activities within the Sub-district coastal boundary. Flexible administrative work helps the Ao.Bo.To. to solve local problems effectively and quickly.

People's awareness is an important factor to achieve successful management. A consensus and agreement among people is more effective in management than control by law. However, the regulations of the Sub-district on punishment are not effective for outside people. Local networks extending over neighboring Sub-districts are needed to make more effective regulations for a wider coastal area.

The reduction of these constraints will help the Ao.Bo.To. become an efficient management body on coastal resource management. We expect that, in new the Fisheries Act, the Ao.Bo.To. will share part of the responsibility on coastal resource management and establish a more sustainable multiple utilization of coastal resource.

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Coastal Resource Utilization and Management in Khaothong Sub-District and Its Impact after Tsunami Disaster

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1. Introduction

Local fishers in Phang-Nga Bay area had so far made much effort to establish a sustainable resource management framework with participatory and decentralized approaches. Unfortunately, the natural disaster was happened and interrupted the management measure. The Asian Tsunami attacked Thai coastal area on 26 December 2004. Fishers got effects in many aspects from the Tsunami disaster. Beside economic aspect, another severe effect was concerned resource management and community development. Hence the fishers faced the problem to maintain their livelihoods and income opportunities after the disaster, somewhat this might reduce their awareness on coastal resource utilization. They were suffering during this recovering period as they lost the means of production.

KhaoThong Sub-district of Krabi Province located in Phang-Nga bay, Andaman seacoast, Southern of Thailand (Fig. 1). It was one of coastal community which was outstanding in boundary self-management. Local people and local organizations cooperated in terms of development for their community. They enforced measures against any illegal activities to protect their coastal area. As others communities in Phang-Nga Bay, KhaoThong was affected by the Tsunami. The study was conducted at KhaoThong Sub-district to investigate the self-management activities of coastal area in March and August, 2004. So far the study was expanded to explore the impact of the Tsunami to KhaoThong people. To achieve these objectives, we conducted survey during June, 2005 by interviewing the persons who had the responsibility in relief work and coastal resource management project. The structured questionnaire was used to interview 69 sampled fishers who were hit by the Tsunami. The contents of the questionnaire composed of fishers' household economic, fisheries activities and opinion toward the effect of change after the disaster in four aspects; namely economic, social, environment and institution.

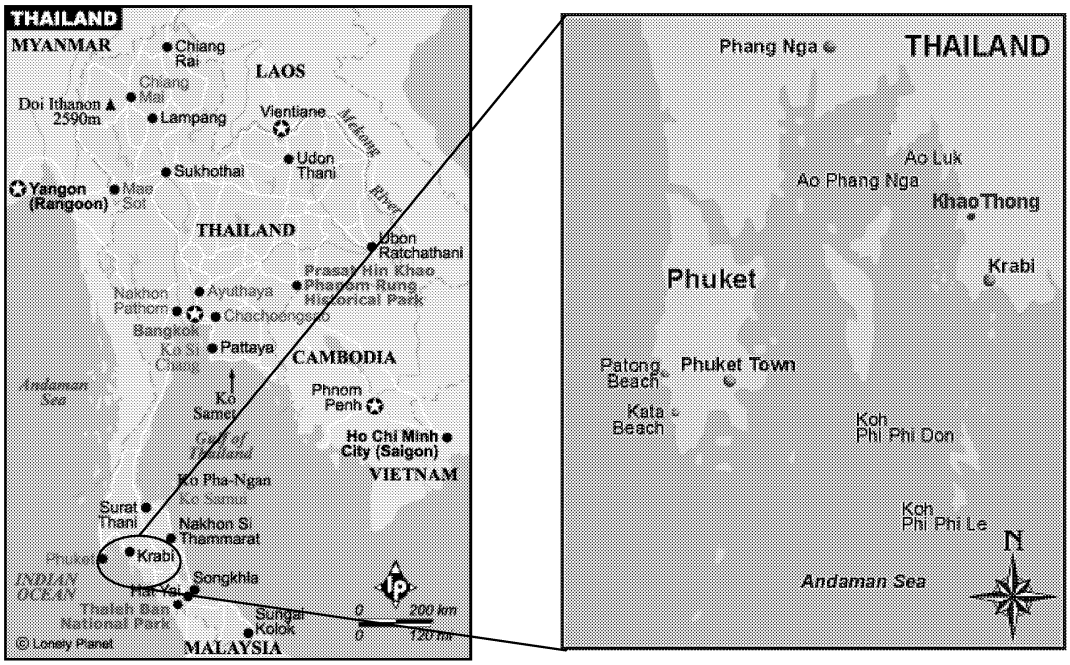


Fig. 1 Map of the study areas in KhaoThong Sub-district, Krabi Province

2. Background of KhaoThong Sub-district, Muang District

2.1 General information

KhaoThong Sub-district located in the northern part of Krabi Province, being 24 kilometers far from Krabi city. It is composed of six villages. Four villages were located along the coastline or along the canals connecting to the sea. The main livelihoods of people in the locality were agriculture and fisheries. Rubber and palm were major products from the agriculture sector (Table 1).

Table 1 Demographic information of KhaoThong Sub-district

Village	No. of household	Population	Main occupation	Connected coastal area
NaiSra Moo 1	341	1,403	Agriculture, Trader	No
KhaoThong Moo 2	73	339	Fisheries	Yes
ThaLane Moo 3	78	363	Fisheries	Yes
NamKrome Moo 4	124	481	Agriculture	No
ThaPhru Moo 5	196	800	Agriculture, Fisheries	Yes
ThaThongLang Moo 6	101	529	Fisheries	Yes

Source: KhaoThong Sub-district's development plan (2004)

Beside this, tourism became one of the most attractive businesses. Because of a numerous number of islets and limestone mountains, the locality was an attractive tourist site. Both Thai and foreigners came to ThaLane village to enjoy snorkeling and canoeing. The landing place in ThaLane village was a terminal pier where tourists get on boat to visit KoYao district of Phang-Nga Province.

2.2 Organization and groups in KhaoThong

There are many types of people groups in KhaoThong Sub-district. The level of people's participation in village level activities was reported by the Community Development Department, Ministry of Interior. People in KhaoThong Sub-district actively joined whatever the types of village's activities. 96.1% households were members of any group in village. Moreover, 99.3% households joined the meetings of villages and gave opinions and comments on village activities (Table 2).

Table 2 Percentage of household in participating village activities by some indicators

Indicator	Sample number	Number	Percentage
Number of household which have member attended any group in village	916	880	96.1
Number of household which have member join the meeting and give comment on activities of village	916	910	99.3
Number of household which have member join the public work for developing village	916	911	99.5

Source: Community Development Department, 2005 (Rural development information center http://www.cdd.go.th/BMN/)

2.2.1 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 a local organization to develop their own sub-district. According to official classification, which is categorized by the amount of collected tax within the sub-district, Ao.Bo.To. KhaoThong was grouped into the small size of Ao.Bo.To.. The member of Ao.Bo.To. KhaoThong's council comprises of 12 representatives from 6 villages and one elected president. Besides these elected members, Ao.Bo.To. council included the leaders of villages, villages school teachers and religious leaders as the associated members. All members were from the local people. The local government officers were the secretariat of the council and support in administrative works. The Ao.Bo.To. KhaoThong was given the authority to provide the basic needs for sub-district's development and people's welfare. Moreover, the Ao.Bo.To. KhaoThong

concerned itself with the activities that utilize the coastal areas of the sub-district boundary.

2.2.2 Financial groups

There were many groups that provide financial service to village people. The common objective was to provide financial support for local people to invest in their occupations. These groups were established within a village. To be more concrete theme, Village fund program that was provided one-million baht by Thai government had 6 groups in the Sub-district. Most of them had savings and loan activities to serve the members.

2.3.3 Occupational groups

Occupational groups were set up to solve any economic problems, such as marketing, technical and financial aspects. For instant, a rubber plantation group was formed in ThaThongLang village to assemble the rubber sheet from its members. Fishers organized fishing groups in KhaoThong village, ThaLane village and ThaThongLang village. They initially were formed to have unity to access to loan fund. The extended purposes were to deal with a marketing problem through joint purchasing and alleviate fishers' dependence on the middleman. Moreover, fishing groups were trained by the Department of Fisheries about fishing technology and coastal resource conservation.

2.3.4 Women groups

Most of the women groups in KhaoThong Sub-district were formed by government agencies such as the Community Development Department, Ministry on Interior. They were trained to improve skill and technique for making product. A women group in KhaoThong village selected to produce chilli paste since they can easily find the raw material within their area. Meanwhile, a women group in ThaThongLang village selected to do cloth sewing and shrimp paste processing. These groups generated alternative income source to support the family members.

3. Fisheries activity of KhaoThong Sub-district

Capture fisheries in this sub-district are mostly found in 3 villages, KhaoThong village, ThaLane village and ThaThongLang village. The fishing boats commonly used were the outboard engine type with 10-14 meter long. There are only 4-5 boats with inboard engine and more than 14 meter in length. Fishers employed many types of fishing gears, including both stationary and movable gears.

3.1 Shallow water set net: This gear was one kind of stationary fishing gear. Shallow water set nets was widely used in KhaoThong village and ThaThongLang village, which are located in front of beach. In KhaoThong Sub-district, there are more than 150 units of shallow water set nets. Their operation may not need any boat, if they were installed near shore. Fishers just walked down

to the net in low tide, they collected fishes from the net chamber. They could operate on average 22 days per month. The time of collecting was changed everyday according to tidal level. In the period of full moon which affect to the high tide, they would not collect fishes from the net chamber.

Shallow water set net was the fishing gear that needed controlling in number and setting place. Fisher who wanted to install set net had to apply for the license of operating shallow water set net. The permission mentioned details of set net such as owner's name, length of lead line and installed position. Fishers extended the validity of license every year. The number of shallow water set net in KhaoThong area might be regarded excessive. Nowadays, the provincial fisheries office do not issue license for set net anymore. Only the fishers who had held license can extend the validity year by year.

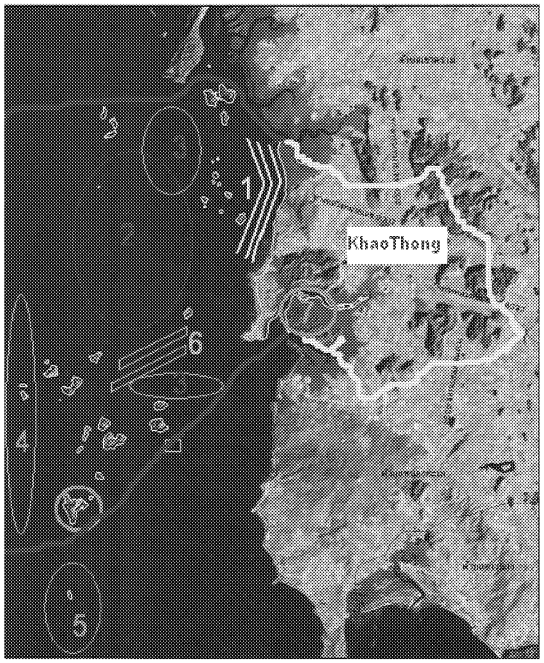
3.2 Gill net: There were many types of gill nets such as crab gill net, shrimp trammel net, sand whiting fish gill net and Indo-pacific mackerel gill net (Table 3). Most of the fishers employed two or three types of gill net. They changed fishing gears depending on the amount of catch in that period. The fishing grounds of gill net fisheries were in the area of KhaoThong Sub-district and adjacent areas. Fishers operate one-day fishing.

Table 3 Details of operating gill net

Type of fishing gear	No. of day/month	Amount of gear (unit)		Average value of gear (Baht)
		Minimum	Maximum	
Crab gill net	15	15	25	10,625.0
Shrimp trammel net	20	4	8	8,400.0
Sand whiting fish gill net	15	2	5	22,500.0
Indo-pacific mackerel	25	1	1	10,000.0

3.3 Trap: This group consisted of squid trap and collapsible crab trap. We found these fishing gears in ThaLane village, on both small and large scale operations. Small-scale fishers employed 20-100 units of crab trap, operating in fishing grounds that were not far from the village. Meanwhile, large-scale fishers used 400-1000 units of crab trap and operated outside Sub-district boundary.

Those fishers operating squid trap amounted 4-5 in number. They used the medium-sized boats with over 14 meter in length. Their main fishing grounds were outside Sub-district waters, such as around Phi Phi Island, south of KhaoThong, where it took 10 hours to reach there. Normally, the duration of a fishing trip was 5-7 days. Expenditures for fuel and laborer accounted for a larger portion of the total. During the lean season of squid, fishers changed to operate other types of gear like crab trap.



Note:

1. The settle place of Shallow water set net
2. Fishing ground of Shrimp trammel net
3. Fishing ground of Crab gill net
4. Fishing ground of Crab trap
5. Fishing ground of Squid trap
6. The settle place of Artificial reef
7. Community mangrove area

Fig. 2 Map of fishing ground in KhaoThong coastal area

4. Coastal resources management activities

Coastal area in KhaoThong Sub-district was used in many activities with multi-purposes. They used the same area for both fishing and non-fishing activities. Shallow water set net was one of fishing activity that widely on the coastal area. Meanwhile tourism was a growing sector in the utilization of coastal area, especially around mangrove forest. Thus, multiple activities were found in the same area. People in KhaoThong Sub-district discussed and adjusted the utilization of each activity to avoid conflict among them.

- Set net management by community's agreement

KhaoThong coastal area had high density of shallow water set net. The Department of Fisheries had policy to control the number of set net. The officer did not issue new license for set nets. The installation of fishing gears set up in the tidal zone might affect to other resource users. It needed a good management on area utilization. Set net fishers and fishers who employ other types of fishing gear discussed and adjusted to achieve agreement of installing place. Fishers helped each others to install set net, so they must install in the right place where was accepted by the agreement. This was the traditional way to control coastal utilization's agreement.

- Self-monitoring for illegal fishing

Before 1992, fishers in KhaoThong used to operate push net fishing. Push net was a fishing gear which tied the net at front side of boat. The net was lowered down in the water above the seabed and was pushed forward by boat's engine. Naturally this fishing gear was very destructive, especially when it was operated near shore or in the mangrove zone. It was the active fishing gear that caught every size of fishes. Conflicts occurred between push net and other types of fishing gear, the push

net often broke other gears such as gill net or crab trap, although the laws prohibited operating push net within 3 km far from shoreline. Meanwhile social sanction to push net was increased, KhaoThong fishers gradually phased out push net fishing and changed to employ other type of gears like squid trap and crab trap.

A leader of Sub-district, together with committee of each village, set up a monitoring team to protect their own coastal area from illegal fishing. Their monitoring and controlling were supported by local organization, namely 'Sub-district Administrative Organization' (Ao.Bo.To.). They provided a speed boat for surveillance mission within its sea boundaries. With the effective monitoring, the push net fishing by outsiders decreased, and eventually disappeared from KhaoThong coastal area.

- Community's mangrove forest

Mangrove forest covered the 3.2 km^2 coastal area of KhaoThong Sub-district, which was used to be under the charcoal production. When the concession was expired in 1999, government stopped allowing charcoal concession in mangrove area. Local people realized the importance of mangrove forest as the hatchery and nursery ground for aquatic resources. They started to replant mangrove trees in the deteriorated forest, requesting the Royal Forestry Department to manage and conserve mangrove forest by themselves. They got 0.9 square kilometer of mangrove forest to proclaim as 'Community's mangrove forest' (CMF). Committee of villages (especially the village which have mangrove area) formed a mangrove conservation group to monitor and look after CMF. They set up rules for utilization mangrove area for the purpose of sustainable resource use, for instance; the motorized boat did not allow passing through CMF area, cutting any tree for any purpose was prohibited. The local people and village got an award from a Thai conservation organization namely 'Green Globe Award' since they were an outstanding in managing and conserving community's forest.

Table 4 Time series of coastal area management in KhaoThong Sub-district

Year	Situation
1973-1979	-Using dynamite was common for catching fishes.
1979-1993	-Push net fishing operated in vast area.
1994	-Starting of strong enforcement for Push net
1997	-Royal forestry Department trained people for forest conservation
1998	-Formation of forest conservation group -Ao.Bo.To. bought speed boat to support enforcement mission -Proclamation of Community Mangrove Forest 521 rai (0.9 sq.km)
1999	-Charcoal concession in mangrove area was stopped in KhaoThong

5. Damage of fishery activities after Tsunami

KhaoThong Sub-district was attacked by the Tsunami. Most of the fishers in this sub-district got affected from the disaster. The fishing boats were normally anchored near shore or near a fishing pier. They were hit and crashed to fishing pier or crashed with other boats. The total value of damage was estimated 5,716,050 baht, including fishing boat, fishing gear and aquaculture (Table 5).

Table 5 Number of fishers and estimated damaged value in KhaoThong Sub-district

	Type of damage					
	Fishing boat		Fishing gear		Aquaculture	
Village	No. of fisher	Damage value (Baht)	No. of fisher	Damage value (Baht)	No. of fisher	Damage value (Baht)
NaiSra	1	10,000	2	13,000	4	670,600
KhaoThong	11	237,000	57	1,380,600	1	20,000
ThaLane	30	405,600	15	211,250	3	83,000
ThaPhru	1	60,000	1	10,000	1	20,000
ThaThongLang	9	78,500	63	1,928,400	17	588,100
Total	52	791,100	138	3,543,250	26	1,381,700

Source: Department of Fisheries, August 2005

The sample of affected fishers in KhaoThong Sub-district was 69 households, most of whom (89.9%) were capture fishers. The major type of fishing gears were shallow water set net and crab trap (38.5% and 24.2%, respectively) as presented in Table 6.

Table 6 Category of sample in KhaoThong Sub-district by type of fishery activity

Category of sample	Percentage	Type of fishing gear	Percentage
Only capture	89.9	Shallow water set net	38.5
Capture & culture	7.2	Crab trap	24.2
Fishing labour	2.9	Squid trap	17.6
Total	100.0	Crab gill net	13.2
		Sand whiting fish gillnet	2.2
		Mackerel gillnet	1.1
		Shrimp trammel net	1.1
		Push net	1.1
		Hook and line	1.1
		Total	100.0

Source: Field survey in June 2005

The damaged value of main fishing gears and fishing boats were estimated by affected fishers. Fig. 3 illustrates that most types of the fishing gears were almost fully damaged.

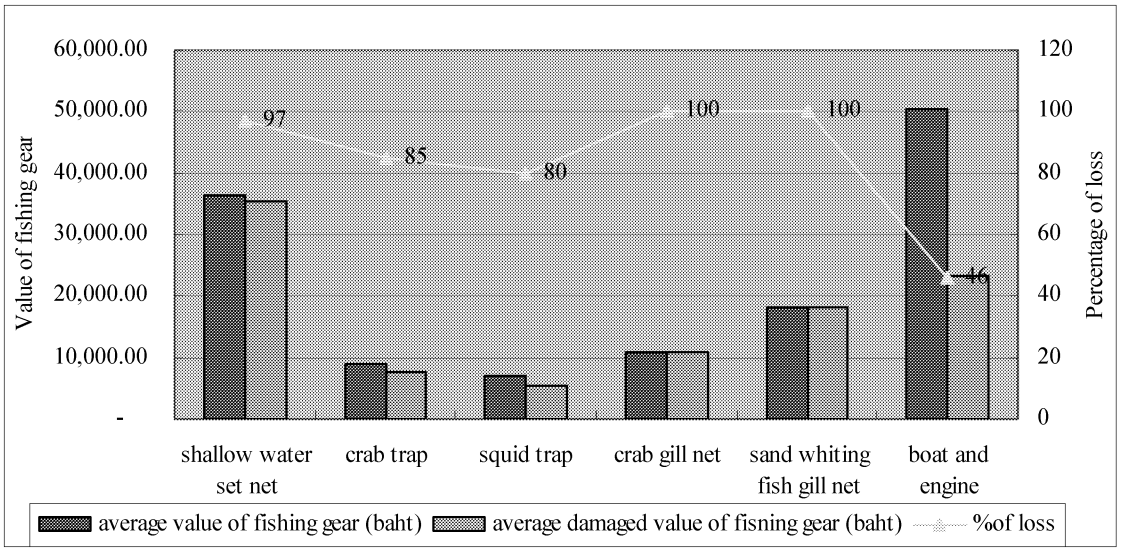


Fig. 3 The average damaged value and percentage of lost of main fishing gears

The fishing gear that got the most serious effect from the disaster was shallow water set net. It was the stationary fishing gear set up in the tidal zone of near shore. This passive fishing gear caught fish by using the tidal change. All set nets were swept by giant waves in that day of Tsunami. These were collapsed after two or three hitting of strong waves. The nets were torn and lost in the sea. Most of the sticks which made a collecting chamber and lead line of set net were broken. The fishers collected some remaining of set net to repair and re-construct later on.

Collapsible crab trap was another fishing gear severely damaged. The average number of crap trap per fisher was 100 units. These traps were sunk in the fishing ground. When the wave attacked, they were swept and lost from the fixing place. The buoys which marked for indicating place of traps were lost, so fishers could not find the remaining traps.

In tourism sector, travel companies in KhaoThong area provided cottage and restaurant for tourists. Canoeing trip was one of the most attractive activities for tourists. The route of canoe was around the 'community forest,' which was preserved and protected by the community. Even though mangrove forest was not much destroyed by the Tsunami, the number of tourist was less and less. The people still feel afraid that the disaster might occur again. They also did not know the real situation of tourist place.

One staff of a travel company said that the period should be the pick season for tourists. The number of tourists per day was almost 100 persons. They got group tour from Krabi city or

other province everyday. After the Tsunami, they had guests only two or three groups a month visited in the community. Some of their staff such as tour leaders, housekeepers and workers had laid off until the number of tourist is increasing. As a result, local people lost job as an alternative income outside fisheries.

6. Effects of disaster from fishers' viewpoint

In KhaoThong fishing communities, drastic changes after the Tsunami caused in several aspects (Table 7). Most of the fishers pointed out that the economic changes were remarkable. Income derived from fishing activities decreased in most (80.6%) of the fishers' households. Shallow water set net that were a major device had yet reinstalled. Fishers just started to buy new equipments to reconstruct the set nets, thereby making them increasingly spending money. Meanwhile household expenditure increased due to a rapid rise of gasoline price.

Table 7 Rank of the major effects by fishers' opinion in KhaoThong Sub-district

Aspect of effects	Direction of change	Percentage of sample
Economic Aspects		
Income of fishing activities	Decreased	80.6
Expenditure for fishing	Increased	70.6
Household expenditure	Increased	60.8
Social Aspects		
Nervous to next disaster	Increased	84.9
Mutual help among people	Increased	34.8
Time spend for community meeting	Increased	32.3
Environmental Aspects		
Fishery production compare with the same period of last year	Decreased	69.5
Size of fish was caught found around your Sub-district	Decreased	43.4
Aquatic animals in mangrove area (include fish larvae)	Decreased	39.1
Institutional Aspect		
Supported facilities from Sub-district level	Increased	35.3
Utilization of small-size fish	Increased	23.2
Enhancement of fish larvae	Increased	20.3

Source: Field survey in June 2005

People in KhaoThong were still nervous to next possible disaster. The social activities such as traditional ceremony celebrated in the village's mosque and the friendship sport competition were not changed. People contained their activities with relatives, friends and community as before.

One-third of the respondents (32.3%) said they increasingly communicated with others to exchange information on relief help from outsiders, and the way to recover their occupations. Especially among the shallow water set net fishers, they had mutual help to reinstall new sets of fishing gear, because this fishing gear need lot of manpower to settle it at once. With this crisis, people gave much more help to friends and relatives to restart their fishing activities again.

Fishers employing fish gill nets had already started to operate fishing. They pointed out that catch decreased after the Tsunami disaster. They mentioned the Tsunami waves destroyed the fishing habitat. They could not find the fish or larvae in mangrove area even though it was the nursery ground for many species of aquatic living resources.

The effects were relieved by many sources. The Sub-district Administrative Organization (Ao.Bo.To.) helped local people with their limited capacity, but it was the important organization to facilitate the relief help to affected people. More than one-third of the respondents (35.3%) mentioned that Ao.Bo.To. tried to find out the source of relief help and bring to village. The representative of Ao.Bo.To.'s council contacted to outside organization and proposed the livelihood recovery projects, for example the alternative income generating project was brought to the women's group. This group got the equipments to make the chilly paste and sell it at the city market. This work could generate income during the restarting period of fishing activities.

The utilization of fishery resource became worse in a viewpoint of conservation after affected by the Tsunami. The fishers caught small-sized fish, by using fine mesh size of net. They said the amount of catch would be less if they avoided small-sized fish, they could not get enough money to spend for daily expenses. However, to enhance the stock of resources, fishers and Ao.Bo.To. provided a program to release the small larvae of aquatic living resource.

Even mangrove forest was not destroyed in vast area by the Tsunami, mangrove trees at river mouth were fallen down by strong waves. A conservation group and local people replanted mangrove trees at the damaged area. They considered that mangrove forest was the naturally important protection from disaster.

7. Re-building capacity of fishers

People initially received aids by government through the Provincial office. The first aid was for daily expense, being 2,000 baht per head. Those who were affected by Tsunami reported their losses to the leader of village. The leader and committee of village investigated and estimated the real losses and damages of household. Fishers could request compensation or help from related organization with the village's certificate of devastation. Both government sources and non-government sources provided various kinds of relief help to KhaoThong people (Table 8).

Table 8 Summary of relief help in KhaoThong Sub-district

Source	Organization	Type of help
Government	1. Krabi Provincial Office	• Initially aid for daily expense, 2,000 baht per head
	2. Department of Fisheries	• Compensation that not more than 20,000 baht per damaged boat • Compensation that not more than 10,000 baht for losing fishing gear • Compensation that not more than 20,000 baht per farmer for damaging fish cage culture
	3. Ministry of Interior	• Hiring 30 jobless people per village to do public work
	4. Others	• Collaborative project between DOF and Italy government provide new set of fishing gear for fishers in project's area
NGO	1. Red Cross Association, Thailand	• Construct new fishing boat for 50 fishers who lost his boat
	2. CARE foundation	• Providing rotation fund to village and forming youth group in community to be volunteer in natural resource conservation
	3. Honda company	• Repairing boat's engine for all fishers

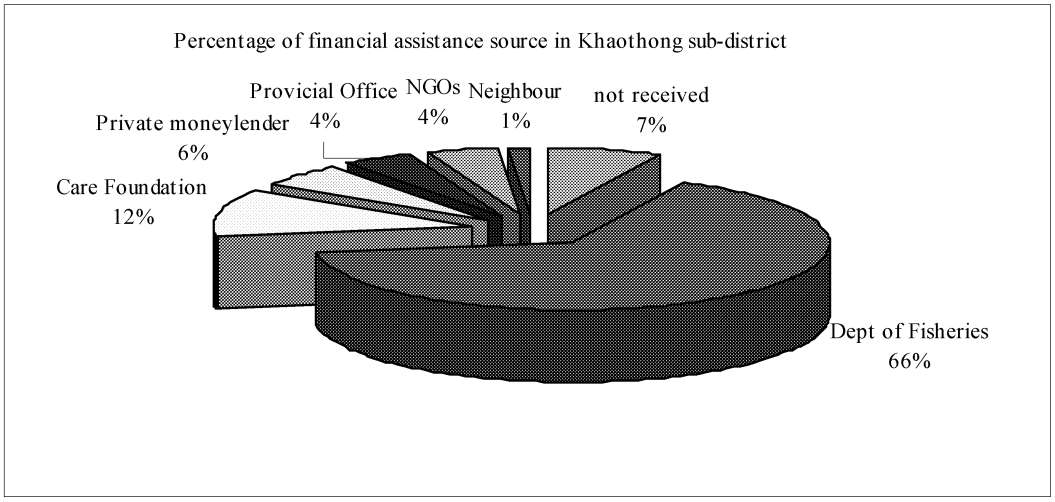
Source: Field survey in June 2005

In case of fisheries sector, the Department of Fisheries (DOF) took the responsibility to compensate the loss of fishing boat and fishing gear. Most fishers (66%) in KhaoThong Sub-district obtained financial assistance from the DOF (Fig. 4). Fishers sent the village's certificate of devastation to Krabi Provincial Fisheries Office. The officer assessed the damage of each fisher at village. A damaged fishing boat was to be compensated up to 20,000 baht. If they lost fishing gears, they got compensation of not more than 10,000 baht.

Beside the DOF, non-government organizations (NGOs) played an important role in supporting fishers. The CARE foundation offered funds to inhabitants in KhaoThong Sub-district (12%). Fishers could borrow money from the funds that the CARE donated to buy materials to make fishing gears. The funds would be rotated to other people who would also need source of investment. Meanwhile, the CARE foundation formed a youth group to undertake natural resource conservation activities.

From the survey conducted in June 2005, we found that 7% fishers did not get any assistance. As their damage was not substantial, they did not request for any compensation. However, some of them were not able to submit a request for compensation within the deadline. Moreover, some fishers were financially supported by those middlemen, with whom they dealt on a regular basis. It was reported that instead of fishers the boat owners submitted the request for compensation, which caused the relief help unsystematic to some extend. Some received relief from many sources,

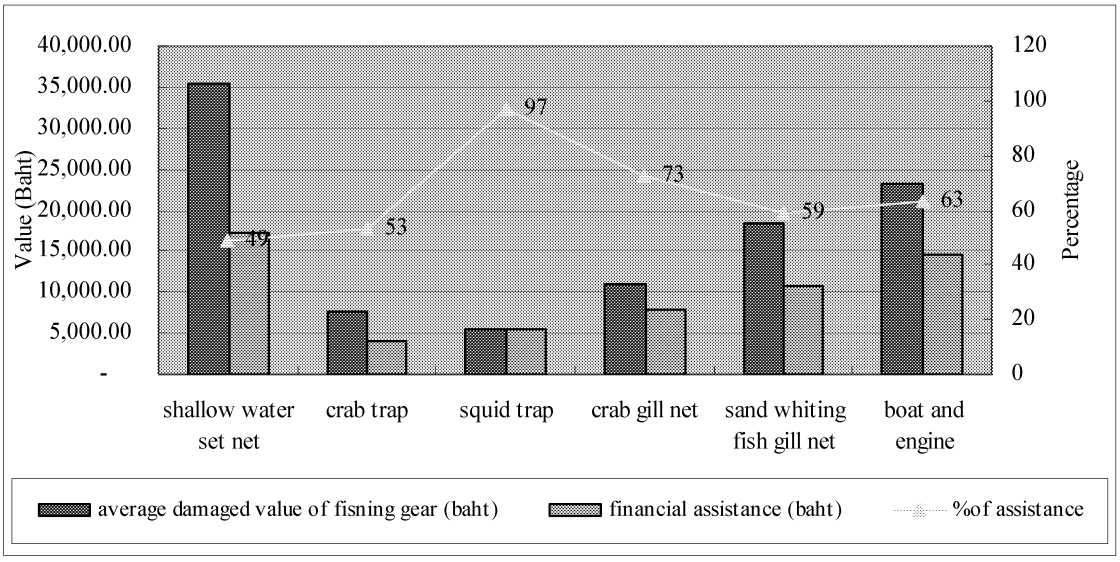
while others could not access to any source of relief help.



Source: Field survey in June 2005

Fig. 4 Source of financial assistance in KhaoThong Sub-district

Shallow water set net fisher got compensation at the rate of 10,000 baht per person. The cost of one set was about 9,000-12,000 baht. But the fishers, who had more than one set or had other types of fishing gears, reported that the compensation could not cover all of their losses. The survey data showed that shallow water set net fishers got 49% of assistance relative to their loss (Fig. 5). There were about 15% of set net fishers re-installed new set during three months after the Tsunami. Others could not start to rebuild their fishing gears and needed other source of investment.



Source: Field survey in June 2005

Fig. 5 The damaged value and assistant value by type of fishing gear

8. Building fishing communities' capacity for dealing with effects of natural disaster

Even if the fishery resources were not much damaged, an increasing pressure of fishing caused both positive and negative impacts on the resources during the recovery process. The effects from one aspect e.g. economic, social, environmental or institutional aspect affected the others. For example, the effect economic aspect, in which fishers got low income and incurred high expenditure in fishing activities, affected on environmental aspect whereby they had less concern for environmental sustainability (e.g. catching small-sized fishes). The fishers tried to earn money as much and fast as they could do. They caught every size of fish, including small-sized or juvenile fishes. Meanwhile, in a positive way, people realized the importance of mangrove which would protect village from the strong wave, so they replanted mangrove trees to maintain the natural wall and enhance the fish-habitat. Their awareness on the importance of sustainable use was needed for coastal resource management.

Rebuilding fishers' household income was given a higher priority in the recovery process. Compare with capture fisheries, aquaculture faced heavier damage in value. The investment cost of aquaculture was high, so it took long time to get benefit. The combination of all relief helps and self-help would quickly recover their activities. Therefore, cage farmers joined together to organize a group, in order to reduce operation's expenditure and to manage the supply to market.

The capacity of fishing communities to recover their activities relied on relief help from outside and mutual help among themselves. The social network was the important link among local people to solve confronting problems. Strengthening the social network in community achieved sustainable of self-management. The relief help supported not only their fishing activities, but also the alternative job for generating income. The family's members could earn money to maintain their livelihood. The efficient and systematic processes of relief help were the important factor to recover the capacity of fishing community. It needed the center of relief help at local level to distribute assistance throughout and equally among affected people. The local government organization was one of efficient facilitator to help people released from critical situation both in economic and coastal resource management.

Strategy and Dilemma for Re-building Coastal Community to Restore Sustainable Resource in Two Fishing Villages, Phang-nga Bay

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1. General information of the studies sites

Klongkian and Haadsai-pleakhoi villages locate in Klongkian Sub-district, Thakuatung District, Phanga-nga Province (see fig. 1). These two villages were studies sites.

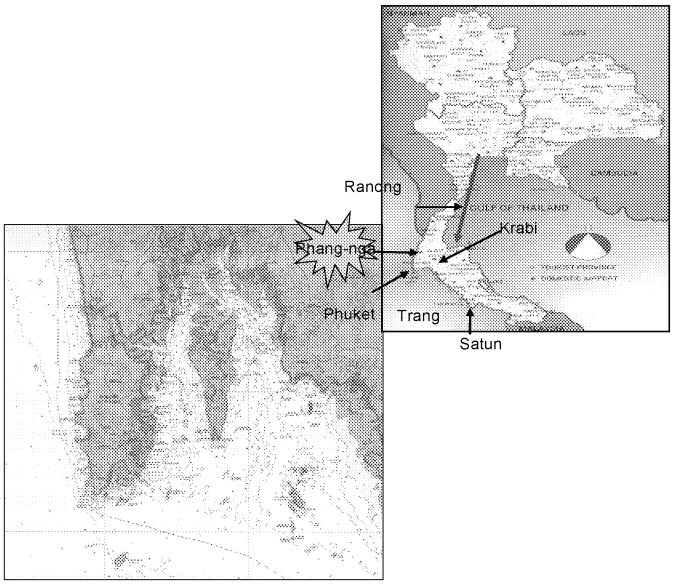


Fig. 1 Map of the studied sites located along Phang-nga Bay, Phang-nga Province

These two villages settle down on the apart of 1,960 km^2 of the Phang-nga Bay. This Bay boundary is covered by the mangrove forest areas which were 250 km^2. Local fishers engaged in fisheries and non-fisheries sectors. Main occupation was categorized into four sectors which were small-scale capture fisheries, fish cage culture and shellfish cultures, agriculture and marine tourism (see table 1). These occupations almost found at Klongkian and Haadsai-pleakhoi villages. In capture fisheries, local fishers have used shrimp trammel net, crab gill net, shallow water set, gill net, grouper trap, crab trap and hand line. These types of fishing gears commonly found at both villages. Local fishers also engaged in coastal aquaculture which was grouper fish cage culture and shellfish

culture.

In Klongkian village, a jetty was mainly used for promoting marine tourism. This jetty was secondly used as fish landing port. In Haadsai-pleakhoi village, the village jetty was useful as fish landing jetty combining with fish yield distribution and auction places.

People's groups were existing in these two villages. Fishers' group for managing shrimp yield distribution and marketing management was active in both villages. Actually, this group was the group's network. The group was function in making and arranging shrimp price auction for bidding high shrimp price. In addition, One-million fund for village groups were found. These groups provided soft loan to local villagers with low rate of interests. Village savings group had main purpose to support villagers to save money accumulatively for daily and monthly. The savings amount was depended mainly on villager's household income.

Table 1 General information of the two villages

Items	Ban Klongkian (Moo1)	Ban Haadsai-pleakhoi (Moo 7)
Occupation	-Small-scale capture fisheries -Fish cage cultures and shellfish cultures -Agriculture: Para rubber plantation -Marine tourism	-Small-scale capture fisheries -Fish cage culture -Agriculture: Para rubber plantation
Fishing gears	1. shrimp trammel net 2. crab gill net 3. shallow water set net 4. fish gill net (mullet fish, sand whiting fish, indo-pacific mackerel) 5. grouper fish trap 6. collapsible crab trap 7. crab trap 8. hand line	
Coastal aquaculture	1. grouper fish 2. green mussel culture	
Provision of infrastructure	-jetty for promoting tourism -Auction building for shrimp and other catch yields distribution	-fish landing jetty combining with shrimp and other catch yield distribution and auction place
Active people' s group	-Fishers' group for managing shrimp yield distribution and marketing management -One-million fund for village group -Village savings group	-Fishers' group for managing shrimp yield distribution and marketing management -One-million fund for village group -Village savings group

Newly established local government body, namely sub-district administrative organization (Ao.Bo.To. in Thai) would play the decisive role in the decentralization process in Thailand. Ao.Bo.To. becomes a local administrative unit with personals and budgets that will allocate for welfare, education, public work, community development, environmental conservation and so on. Council of the Ao.Bo.To. is responsible for making local ordinance and rules. Representative is elected as council members among people, and takes the leadership in making a practical plan of community development and solving local matter people have suffered from. Empowering local people and organizing them into any conceivable types of organization are Ao.Bo.To.'s great tasks. Through such people' s group, not only the central government but also local government provides a great incentives to develop livelihood activities and achieves sustainability of local environment and resources. Agriculture, forestry and fisheries resource managements are partly included into the Ao.Bo.To.'s mechanism.

2. Small-scale fisheries development and program in Phang-nga Bay

The DOF collaborated with the FAO/BOBP to implement the small-scale fisheries development program that adopted the concept of community-based fisheries management (CBFM) (see table 2). Participatory and livelihood approaches are substantial tools to develop CBFM. Fishers' participatory approach concretely practiced in a series of coastal resource management activities were such in mangrove reforestation, enhancement of aquatic resources. This approach mainly achieved a sustainable use of coastal resources. The drill of livelihood approach was necessary for encouraging fishers to stop using destructive fishing gear such as push net and to employ responsible fishing gears. Meanwhile, fish cage culture business was a selective choice. This was to provide alternative job opportunities and income source to capture fishers. Livelihood project were to alleviate poverty in coastal communities.

The implication of the small-scale fisheries development program considers based on fishers' participatory approach. Fishers' group was established. It was the core body to lead its member, non-member and stakeholders to greatly participate in mangrove reforestation activity. Fishers' groups are in Klongkian village and Haadsai-pleakhoi village have established a partnership with other two fishers' group in Hinrom village and Yansaba village. These groups' networks play key role to arrange coastal resource management activities. They also set up a business linkage of the central village fish market. They collectively implement shrimp auction on a regular basis to gain more bargaining power.

Table 2 Trails of the small-scale fisheries development program at two studied sites, Phang-nga Bay, Phang-nga Province

Year 1995	1997	2000 - Present
DOF and FAO/BOBP-the small-scale fisheries development program		
The program adopted concept of community-based fisheries management (CBFM) that would contribute to fishers' participation in resource management and livelihood development.	Fishers' active participation in decision-making process led to the effective management of coastal resources, including mangrove reforestation. Fishers established "the central-village fish market" at village level to sell shrimp at far better price thereby improving household economy.	
The livelihood component: stopped and banned push net, promote responsible fishing gear and fish cage culture.	The DOF contributed fishers to operate responsibly by using gill net fishing gear such shrimp trammel net, fish gill net and blue swimming crab gill net. This agency provided both technical assistance and material to fishers to engage in fish cage culture.	
The coastal resource management component	Fishers regularly participated in mangrove reforestation activities and enhanced coastal resources by stopped both catching gravid fishes and using destructive fishing gears.	
Fishing ground allocation based on local resource users' perception		
An installation of shallow water set net	Fishers followed the first-come, first-served practice when they set up fishing gear assets and fish cages.	
A settlement of fish cage for culture	Newcomers have to fix their fishing gears without making any bothers to the formers.	
	All villagers have mutual understanding about unwritten consensus and customary local rules in certain defined areas.	

Remark: FAO/BOBP= Foods and Agriculture Organization/ Bay of Bengal Program

Fishers do not only participate in the national development program, but also have their self-management of particular fishing ground on their owned way of life and culture. The fishers have so far engaged in shallow water set net fisheries. The installation of shallow water set net started in grand father, or father generations. This installation was implemented under open-access regime. However, to avoid conflict with fishers who installed already, the newcomers have to fix their set nets without making any bothers to the formers. They should follow local customary rules about the distance between installed gears, water current, and fishing boat cruising tracks and so on.

All users and stakeholders have a mutual perception on non-documentary and customary use of certain designated areas for setting up shallow water set nets and fish cages. These users have also applied the perception to manage and set-up fish cage cultures. However, resource users have not controlled the scale of fish cage culture and the size of set net installation. The perception on non-documentary and customary use of designated areas can assume as the traditional practiced

agreement of the community. This was originally based on fishers' shared common culture and religious belief. Therefore, this sense has been strong and prevalent since in the previous days ([1], *Ibid* and [3]). The DOF was used to plan to set up the exclusive user right based on experiences and means of designated areas for stationary fishing gear and coastal aquaculture [4]. However, this right is hanging on to wait for revising new fisheries laws that will displaced the old-fashionable fisheries law promulgated, 1947.

3. Active coastal resource management activities

3.1 Mangrove reforestation activity

A large area of mangrove forests is an available resource founded along the coasts of the four fishing villages. Products of the mangrove forests are useful to local residents both for fishing and non-fishing operations. Fishers engage in shallow water set net fisheries are samples. They use branches and stems of mangrove trees as main materials to construct a unit of shallow water set net. Fishers are well aware of the importance of mangrove forests which is as nursery ground of fish fingerlings.

Fishers and other stakeholders live at Ban Haadsai-pleakhoi are a core group of local people. They take a leading role to assembly other fishers' and stakeholders' participation in mangrove reforestation and conservation activities. These fishers and stakeholders have set a common understanding of using mangrove forests. The common understanding of using mangrove forests is relevant to how many of mangrove trees are cut. In the meantime, a number of new seeds should be re-planted in the same numbers or more.

3.2 Using selective fishing gear: a mesh sized enlargement of collapsible crab trap

Fishers, which engaged in a collapsible crab trap, participated in a mesh size enlargement of collapsible crab trap activity. The DOF provided a number of 2 inches mesh sized collapsible crab trap. The DOF gave a 2 inches mesh sized crab trap to fishers. In the meantime, the fishers handed a using number of a 1 inch mesh sized crab trap to the DOF official. A mesh sized enlargement of collapsible crab trap was a supportive campaign to promote a responsible fishing to contribute sustainable coastal resources.

3.3 Crab juvenile enhancement

Fishers self-managed a matured and fertilized mangrove crabs and blue swimming crabs. They had an agreement among crab trap fishers to sustain a crab resource. They agreed to release a matured and fertilized mangrove crab into a stocking cage. The stocking cage for crab was provided by the DOF to contribute the activity. Fishers so far agreed to prohibit caught a small-sized mangrove crab. They set up this campaign that learnt from an adjacent fishing village named Koh

Ma-prao island. A few of fertilized and matured crabs was sent to the DOF agencies for breeding and/or hatching. Krill push net was stopped to contribute the campaign.

3.4 Damage assessment of physical assets

Fishers live at two surveyed villages are defined as small-scale fishers or fish-farmers. The fishers employ multi-types of fishing gear such as shallow water set net; shrimp trammel net crab gill net crab trap, etc. Figs. 2 and 3 portray fishing gear and fish cage culture asset in value on average. Fishers of both villages engaged in the same type of fishing gear, but there was much different in value of assets that they owned. Fish cage assets amounted to 43,000 baht in Klongkian village and 66,125 baht in Haadsai-pleakhoi village, respectively.

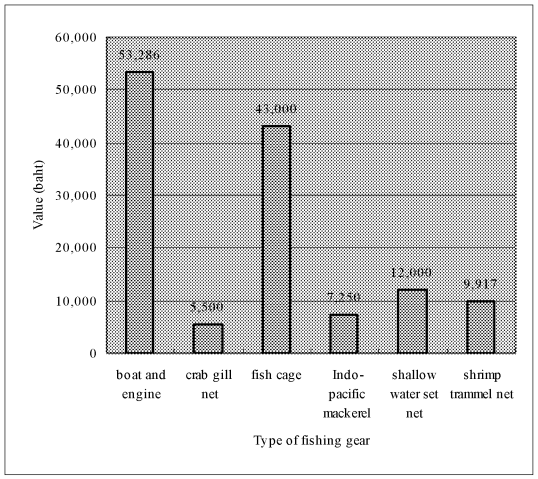


Fig.2 Physical asset in value on average at Klongkian village at pre-Tsunami

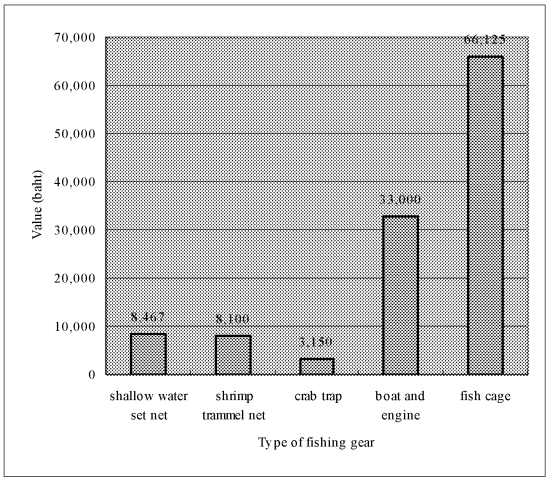
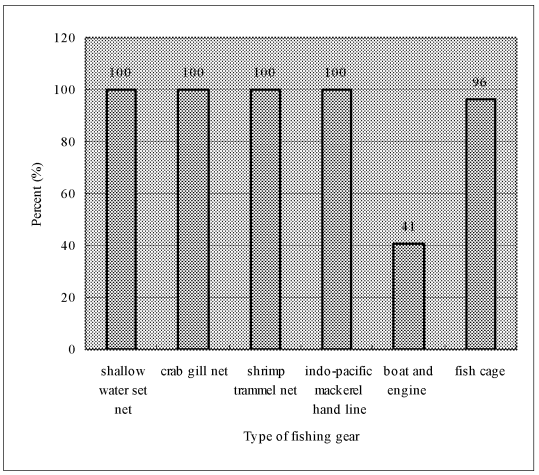


Fig.3 Physical asset in value on average at Haadsai-pleakhoi village at pre-Tsunami

After tsunami exacerbated, fishers of these villages faced lost and damage their physical assets. Fig.4 and 5 are the finding result of damage assessment indicated the percentage of fishing gear and fish cage distorted by Tsunami attacked. These two figures confirm that fishers and fish-farmers completely lost their fishing gear and fish cage. The lost amounts are one hundred percent of assets value. These affected victims did not entirely loss fishing boat as well as engine, but boat and engine was ruined a portion of boat body and/ or engine. The affected fishers assessed that their boat wrecked only forty-one and seventy-nine percent of fishing boat value at Klongkian village and Haadsai-pleakhoi village, respectively.



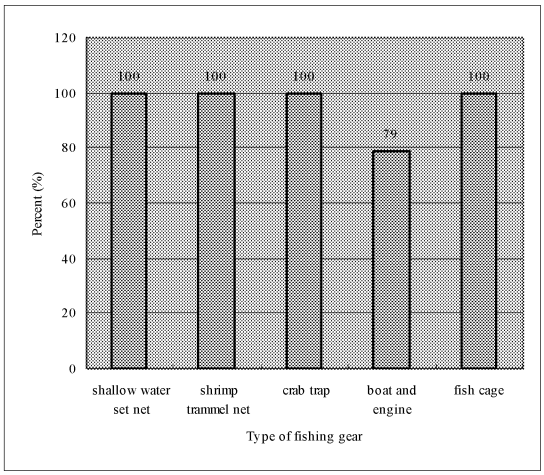


Fig.4 Damage assessment of physical asset at Klongkian village at post-Tsunami

Fig. 5 Damage assessment of physical asset at Haadsai-pleakhoi village at post-Tsunami

4. The rehabilitation of the coastal community

The rehabilitation of the coastal community got top priority to implement assistance to the affected fishers. Findings gained from the village survey indicated two significant strategies. The first strategy was the relief program and action plan formulated by government agencies and non-governmental organization. They had main objective to recover fishers' livelihood and household economy. The second strategy was fishers' self-management on fishing ground particular for shallow water set net and fish cage culture installations. This strategy had objective to resume a designated area to the affected fishers or fish-farmers to settle new unit of fishing assets.

Regarding the finding of the survey, the affected fishers stressed what they most needed was financial assistance to re-construct their means of livelihood. The amount of financial needs illustrated in Figs.6 and 7. The affected fishers at Klongkian village who requested a financial assistance accounted for forty-three, forty-seven, forty-six and five percents of lost amounts for recovering shallow water set net, shrimp trammel net, Indo-pacific mackerel gill and grouper trap, respectively (see Fig.6). Similarly, fishers at Haadsai-plaekhoi village found that shallow water set net fishers required financial need about one hundred percent of lost amount. Fish-farmers demanded financial assistance around two hundred sixty-eight percent of lost amount (Fig.7).

At Klongkian village, the sources of financial assistance given to the affected fishers were shown in Fig.8. Eighty-two percent of total respondent received the financial assistance from the DOF. Other six percent of total respondent obtained the financial aid from charity organization. However, another six percent of total respondent were left, spent their owned savings. The DOF is the major government agency taking responsibility for implementing a relief action plan to rehabilitate fishers' livelihood. The DOF designed the framework of the relief plan through damage

assessment. The certain amount of financial assistance was depended on the national laws and regulations. The laws and regulation was proclaimed the financial assistance.

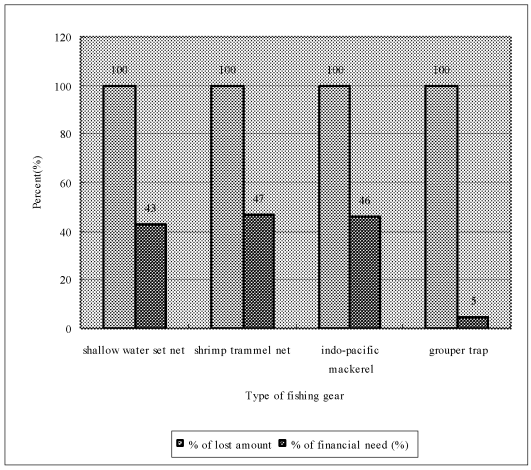


Fig. 6 Financial need assessment at Klongkian village

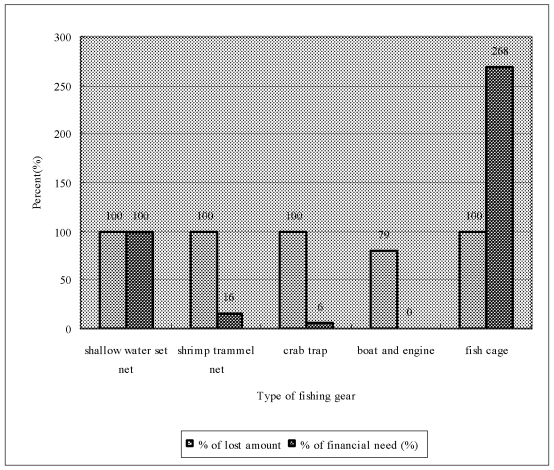


Fig.7 Financial need assessment at Haadsai-pleakhoi village

The fishers engaged in each type of fishing gear talked the amount of financial received from the DOF as seen in Fig.9. Shallow water set net, shrimp trammel net and Indo-pacific mackerel gill net fishers received the amount lower than a half that they needed. To repair fishing boat and engine, they received amounted fifteen thousand baht. Fortunately, grouper trap fisher got full amount of their need.

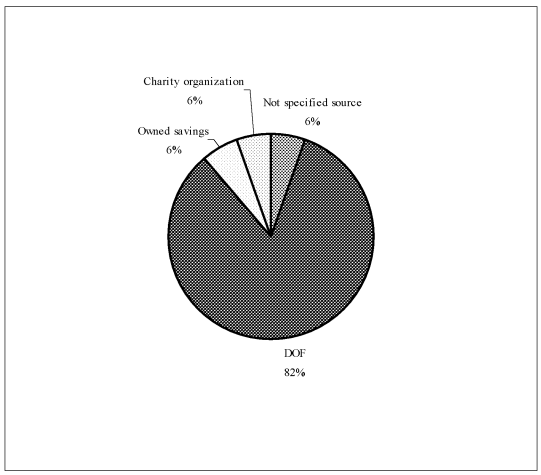


Fig.8 Source of financial assistance found at Klongkian village

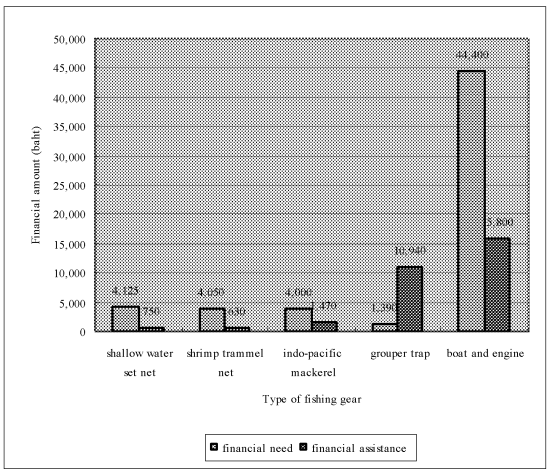
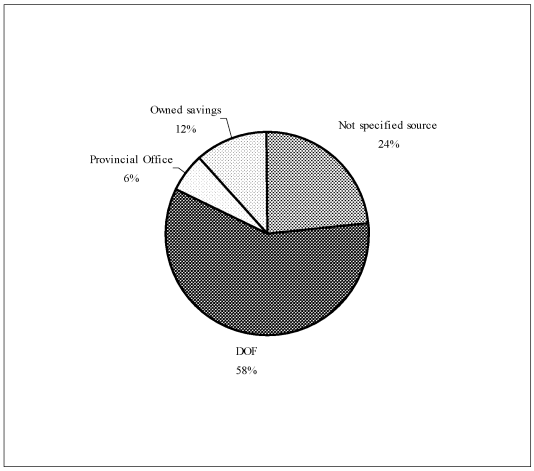


Fig.9 Financial assistance provided by the DOF at Klongkian village

At Haadsai-pleakhoi village, number of fishers was fifty-eight, six and twenty-four percents obtained financial aids from the DOF, Provincial office, and not specified source, respectively (see Fig.10). Twelve percent of total respondent spent their owned saving money. The DOF also implemented the same action plan which provided to the fishers at Klongkian village. They received a lager amount of financial assistance higher than they would have needed really as seen in Fig. 11. Those fishers having engaged in shallow water set net and grouper trap obtained twenty thousand baht to buy fishing gears. The DOF paid the same amount for repairing fishing boat and engine. However, fish-farmers were very disappointed with too small amount of official compensation.



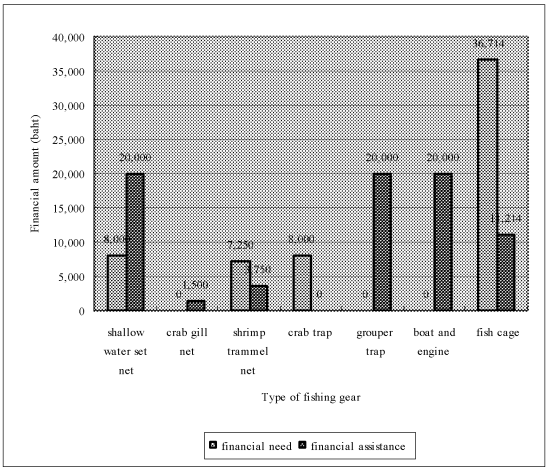


Fig.10 Source of financial assistance found at Haadsai-pleakhoi village

Fig.11 Financial assistance provided by the DOF at Haadsai-pleakhoi village

Financial assistance was greatly helpful to fishers re-engaged in fisheries. Actually, all of the affected fishers and fish-farmers in these two villages initially helped reciprocally. A mutual helps handled among them. They searched and pulled up a sunk-down fishing boat and ruined engine from the sea. Fish-farmers sought and collected a ruined part of fish cage, cage net, floating buoys, ropes and pieces of woods. These materials were used for a new cage reconstruction. In the meantime, shallow water set net fishers collected a wreck net, wooden stake of the set net to repair and re-build a new unit. Both the affected fishers and fish-farmers conventionally re-installed the set net and fish cage at the same previous position.

This meant that they significantly practiced the perception of non-documentary agreement and customary use of designated areas for re-installing fishing assets. The concrete implication of this perception mainly considers through the set net and fish cage users' ownership confirmed their neighbor and position. Certainly, this means was workable and functional to avoid conflicts of the

affected users. This active self-management was a strategic management effort to assist controlled number of users and newcomers entering into particular type of fisheries. However, the fishers' perception on the use of fishing ground did not limit the scale of fish cage engagement and define size and mesh sized net of shallow water set net. They freely handle both fish cage and the set net depended mainly on their owned capacity of investment.

In social sense, fishers and fish-farmers are kinship or close friend. They have similar religious and culture ([3], *Ibid*). These factors are elementary and important components to progressively strengthen the fishers' perception applying for allocable fishing ground management. The indigenous knowledge and experience of the users related to fishing season, depth of water-level, change of tidal water are supportive factors to manage fishing ground.

Financial assistance was crucial strategy necessitated to early rehabilitate a means of fishers' livelihood. In the meantime, fishers' perception on non-documentary agreement and customary use of designated areas for settling fishing gear and fish cage was strategic self-management to utilize fishing ground with avoidance of users' conflict.

5. Dilemma of re-building coastal community

We found at least four dilemmas that local people in the village had faced: 1) the national fisheries policy and law and distribution of financial assistance; 2) access and management of financial assistance and local people's group development; 3) fishing capacity restoration and market demand for fish; 4) function of fishers' self-management on fishing ground and open access in fisheries.

First, regarding on the national fisheries policy and laws, the DOF had a legitimate plan to limit number of shallow water set net. The operation of this type of fishing gear has been banned by the national fisheries law that prohibited its operation. The DOF targeted non-license shallow water set net fishers. The DOF planned to take this opportunity to promote more sustainable and responsible fishing practices and economic incentives [5]. This government agency strictly provided financial assistance only to those fishers who had a license to operate the set net. It brought assistance in kind such as gill net fishing gear to the affected fishers. However, the practice of the national fisheries law is often difficult to contribute the reality of way of life. Some source of financial assistance did not recognize such rules and regulations of fisheries management. It provided the financial assistance to both the fishers with and without the licenses. The shallow water set net fishers re-installed the set net in May, 2005 which was proper annual fishing season for the fishing gear.

Second, both official and in-official community-based organization and local people' group have existed in the villages such as Ao.Bo.To., village fund group, fishers' group, women's group, etc. These groups systematically organized their group's activities. Particularly, Ao.Bo.To. has

been expected to play a leading role in developing community economy and managing local environment and resources including mangrove forests and coastal aquatic resources. In the Tsunami disaster, Ao.Bo.To. is a local management body to keep all records of fishers' damage and lost assessment in the fisheries sector. This organization should take major responsibility to assist its owned community in rehabilitation. However, Ao.Bo.To. did not work effectively. The Ao.Bo.To. had no budget enough to contribute a re-construction of the community. Many sources of financial assistance went directly to contact the affected individual fishers and people's group.

The DOF did not make a linkage with Ao.Bo.To. or village fund group to implement the relief plan. This agency worked alone with specific purpose of loan for investing on fisheries (see Figs.12). Besides, some of source of financial assistance, for example, the Care foundation strongly guided those who needed financial assistance to establish a new group. The new group establishment was gathered the affected fishers who had the same occupation and interest. This new group specifically managed a loan for investing in fisheries (see Fig. 13). Some source just gave financial aid without any guidance of financial and group management.

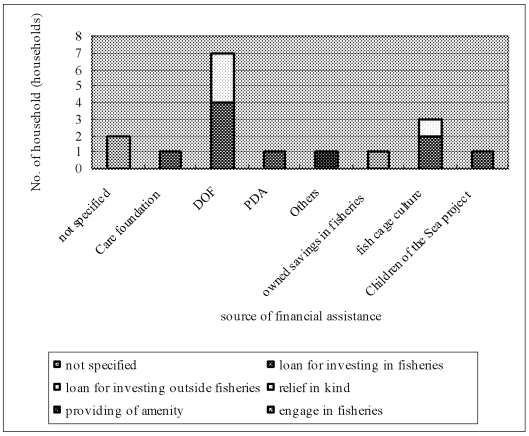


Fig.12 Source of financial assistance and feature of financial management, Klongkian village

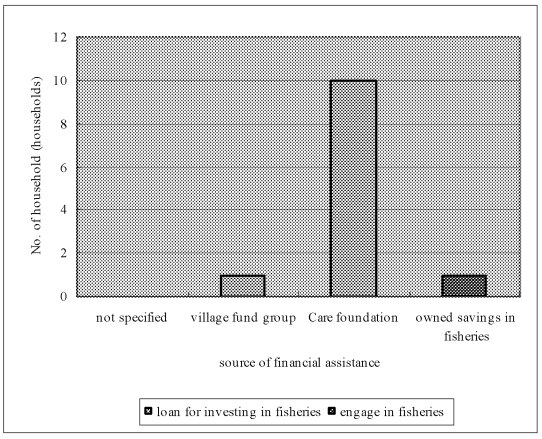


Fig.13 Source of financial assistance and feature of financial management

Third, the affected fishers and fish-farmers re-built their fishing gears and asset to resume fishing operations. They found that market demand for fish was quite low. They were suffering from low fish prices even made fish price even at the central village fish market. Certainly, they gained low income from fishing. Twelve percent of total respondent at Klongkian village notified the problem of low fish price (see Fig.14), while eight percent of total respondent at Haadsai-pleakhoi village recognized the problem of low income (see Fig. 15).

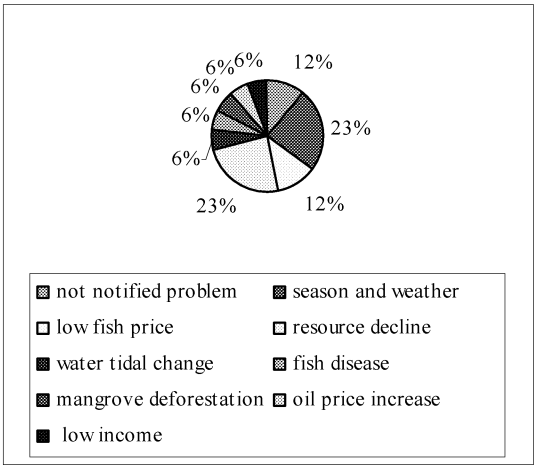


Fig. 14 Problems on community development and coastal resource management notification at Klongkian village

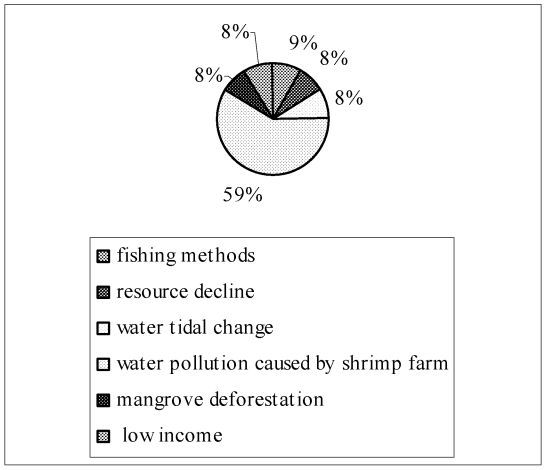


Fig.15 Problems on community development and coastal resource management notification at Haadsai-pleakhoi village

Fourth, fishers' self-management of fishing ground is active and functional to alleviate conflict of users' interest. This self-management strategy is operated based on an open access regime. Practicing on the open access regime, fishers and newcomers can freely entry in fisheries and aquaculture. The strategy does not limit the scale of establishment such number of fish cage and size of shallow water set net. The resource users are interested to enlarge their scale of engagement in capture fisheries as well as in aquaculture. Fish-farmers expanded number of fish cage. Newcomers are interested in installing new unit of shallow water set net beyond areas occupied. The increasing number of fish cage and fishing gear unit is a cause to heavier exploitation of aquatic resources. A high demand for grouper seed leads to heavily collect the seed from wild. As a result, un-limited number of fish cage heads to a high demand for fish bait. This makes a rapid increase in the supply of non-marketable sized fish as fish bait. These problems bring a decline of coastal resource liked the respondents notified the problem as seen in Figs.14 and 15.

Finding dilemma is uncertain and unpleasant obstacle threatening to rehabilitate coastal community. Each practice of strategic management facilitated fishers' livelihood and household economy should carefully consider and handle based on the national policy and mandate. Therefore, active and existed local people' group should be elementary facilitator to help managing the rehabilitation of the community. This is fruitful to alleviate reversed implication.

6. Conclusion

Policy for re-building coastal community has placed a top priority on rehabilitating fishes' livelihood and household economy. To resume fishers' livelihood, re-construction of physical assets were early necessitated in both in capture fisheries and aquaculture. The DOF was the leading

agency to implement the relief program and action plan in fishing communities. It brought financial assistance to the affected fishers to re-construct the new unit of fishing and aquaculture assets. The findings gained from the survey affirmed that the affected fishers and fish-farmers owned small amount of physical assets and less capacity of operation than they had had prior to Tsunami disaster.

Besides, the affected fishers and fish-farmers conventionally applied their customary rule and self-management measures to manage fishing grounds. This was mainly practiced based on the perception of non-documentary agreement and customary use of certain designated areas for re-installing fishing assets. The affected fishers and fish-farmers have fixed such shallow water set net and fish cage culture at the same previous place occupied. These fishers' practices are useful to avoid conflict among them to re-occupy in the fishing ground.

Nevertheless, dilemma found in re-building coastal community was difficult choice to practice and implement. Particular, dilemma was between a legitimacy of national fisheries policy and distribution of financial assistance. In practicing, the Department of fisheries official, fishers, stakeholders and non-governmental organizations concerned should incorporate together to recognize the expectation of national fisheries policy beforehand. Afterwards, these concerned organizations should hand financial assistance to those fishers who had license for the set net fisheries operation. This is necessary to limit uncertain outcome of re-building coastal community not far beyond the prevail level.

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Part III

Tsunami Disaster and Its Impacts to Coastal Resource Management

The Situation on Coastal Resource Management in AoLukNoi Fishing Community after Tsunami Disaster

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1. Introduction

The Tsunami, giant tidal wave which attacked on 26 December 2004 affected many countries in the Indian Ocean. Especially fishers, their family and communities had been seriously affected; since they had been suffering throughout the recovering period as they lost the means of production. They got effects in many aspects from the Tsunami disaster. Beside economic aspect, other severe effects were concerned resource management and community development.

This study had two objectives. The first objective was to assess the effects of the Tsunami disaster on fishers' activities. The second objective was to investigate how resource users and local people made much effort to keep the sustainability of coastal resource management after the crisis.

To achieve these objectives, we conducted survey during June, 2005 in fishing communities where fishers were involved in both capture fisheries and aquaculture. The personnel interview was conducted with the persons who had the responsibility in relief work and coastal resource management project. The structured questionnaire was used to interview 37 sampled fishers who were hit by the Tsunami. The questionnaire composed of fishers' household economic, fisheries' activities and opinion toward the effect of change after disaster in four aspects; namely economic, social, environment and institution. The selected study area was AoLukNoi Sub-district in Krabi Province, which was located in Andaman seacoast, Southern of Thailand.

Table 1 Summary of damages by Tsunami in Krabi Province

Damaged items	Whole area	Krabi Province
Large scale fishing boat	1,337	308 (23.0%)
Small scale fishing boat	3,978	828 (20.8%)
Fishing gear (unit)	49,548	47,273(95.4%)
Fish cage (Sq.m.)	1,266,931	64,806 (5.1%)
Licensed area for coastal aquaculture (Sq.m.)	3,151,392	48,592 (1.5%)

Source: Krabi Provincial Fisheries Office, June 2005

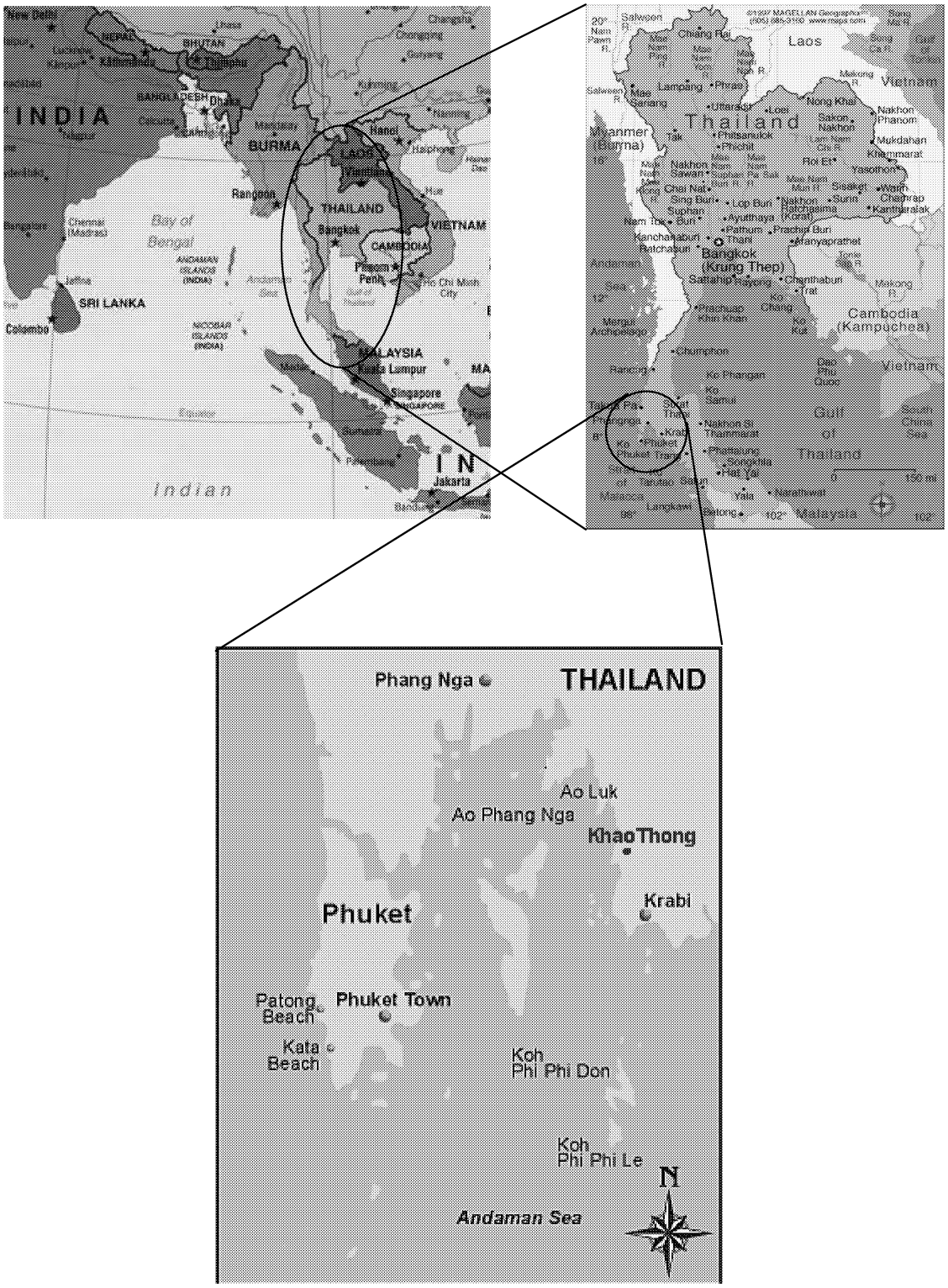


Fig. 1 Map of study areas in Krabi Province

2. Fisheries activity of AoLukNoi Sub-District

AoLukNoi Sub-District, AoLuk District located in Krabi Province, Southern part of Thailand. AoLukNoi composed 6 villages, two of which faced to the sea. Bakan Village was located along the canal named 'Klong Bakan' that was connected to the Andaman Sea. It was quite a large village with 396 households and about 1,900 persons. Most of houses were constructed nearby the canal. Main occupations were fisheries and their related activities, including both capture fisheries and aquaculture. There was about 20% of households had rubber and palm plantation as major income sources of household.

Capture fisheries was a major job for people in this village. There were about 300 fishing boats. The fishers mainly used small sized fishing boats with less than 10 meter in length and mechanized outboard engine with 13-75 hp. The fishing gears employed here were shrimp trammel net, crab bottom net, fish gill net, crab trap, grouper trap and shallow water set net. The fishing grounds were along the 'Klong Bakan canal' and in coastal area in front of their Sub-district and adjacent water in Phang-Nga Bay.

The survey conducted in June 2005 found that fishers mainly employed only one type of fishing gear (40.5%). Most of these fishers were operating cage culture in the same time. They tended to used fishing gears such as grouper trap and crab trap. They flexibly switched work time between capture fishing and cage culture. (Table 2)

Table 2 Number of fishing gear employed by a fisher and major type of fishing gear

Number of type of fishing gear	%	Type of fishing gear	%
No fishing	13.5	Crab trap	32.4
One type	40.5	Shrimp trammel net	29.7
Two types	32.4	Crab bottom net	24.3
Three types or more	13.5	Grouper trap	18.9
Total	100.0	Mackerel gillnet	16.2
		Sand whiting fish gillnet	8.1
		Sardine gillnet	5.4
		Seabass gillnet	2.7
		Squid trap	2.7
		Shallow water set net	2.7

Source: Field survey in June 2005

Some fishers had expanded income source of household by cage culture. There were 70 households involved in cage culture. They set up their cages along the canal. The main species cultured here were grouper (*Epinephelus cocoides*), oyster (*Crassostrea belcheri*) and green mussel (*Perna viridis*) (Table 3). Fish culture adopted the floating raft type. For shellfish culture, they used hanging rope style. The total number of cage along KlongBakan canal was estimated nearly 1,000 cages. Cage farmers preferred grouper to other species, since it was a highly marketable species.

They got higher profit from grouper production and marketing. They sent products to hotels and restaurants in Krabi and Phuket city which were the famous tourist places.

Table 3 Number of species in culture by a farmer and major species

Number of type of culture	Percentage of fisher	Species of culture	Percentage of fisher
No culture	37.8	Grouper	51.4
One type	45.9	Oyster	18.9
Two types	8.1	Green mussel	13.5
Three types or more	8.1	Sea bass	2.7
Total	100.0		

Source: Field survey in June 2005

3. Aquaculture pattern in Bakan village

Cage culture in this village was classified into two groups according to the scale of production; small-scale culture with 4-40 cages and large-scale culture with more than 40 cages up to 132 cages. Ninety percent (90%) of cage farmers belonged to the small-scale group that needed less investment cost. They formerly operated capture fishing by using fish gill net, crab trap and grouper trap. They shifted culturing little by little from capture fishery. At the beginning, they constructed one or two cages nearby their house to storing of trapped fish. They sold only crab or other species of fish to collectors in village. The small and less-valued fish caught by gill net were used as baits for feeding grouper. After they sold those cultured fishes, they could expand the scale of cages' production. Finally, the main source of income in fisheries activity derived from cage culture, not from capture fishing anymore.

The large-scale cage culture establishments in Bakan had been operated by only 5-6 fishers, who operated cage culture as a main business. They bought the fish fingerings from other fishers in the village who did not own any fish cages. If the amount of fish fingering was not enough, they bought it from outside-collectors, such as in Phang-Nga or Surat Thani Province. Large scale cage culture needed a large volume of bait, 70-200 kg per day. The price of bait was 10 baht per kg. They bought it from middleman in village and Krabi city being 40 km far. Since the demand of bait for feeding fish was very high, there were 4-5 fishing boats operated fish gill net to catch only sardines (*Sardinell*a spp.) to sell as bait in Bakan and other areas.

The cage culture in Bakan could continue and expand in number since they had never experienced the water pollution. The fish-farming business trended to get large return, so that many fishers wanted to establish their own cages. Most fishers mentioned that they got daily income from capture fishing to spend day by day. But they got bigger amount of money when they sold cultured fishes monthly or periodically. The livelihood of fishers in Bakan village was getting better with cage culture fishery.

4. Damage of fishery activities from Tsunami

Almost all fishers and cage farmers in Bakan village got affected from disaster. Some boats that float nearby the canal's bank were sunk down by the tidal wave. Many boats were partially broken. Most of the fishing gears such as shrimp trammel net and fish gill net that left on boats or in the temporary huts near shore were swept by the wave. The stationary gears, like shallow water set net installed near coastline, were completely collapsed (Table 4).

Table 4 Summary of damage in Bakan village

Type of damage	Number of fishers	Damage value (Thai Baht)	Amount of compensation (Thai Baht)
Fishing gear	36	455,000	292,200
Boat	14	200,000	173,300
Aquaculture	59	14,100,200	1,009,500
Total	109	14,755,200	1,475,000

Source: Department of Fisheries, August 2005

Comparing with other types of fishery activities, aquaculture got the most serious damage in term of value. Fish fishers said the entire stocking fishes disappeared after the wave swept all cages. Stocking fishes were almost the marketable sizes that were ready to be sold prior to the coming new year. They had already spent 8-12 months to feed these fishes but they lost all within a few hours. Total damaged value in cage culture was estimated about 14.1 million baht from 59 fish cage farmers. The loss per fish-farmer ranged from 10,000 baht to 4,000,000 baht depending on the size of operation (1 US$ = 40 baht). Small-scale farmers got damage around 53,800 baht on average, while large-scale farmers lost 1,768,800 baht on average (Table 5).

Table 5 The level of damage value in aquaculture

Unit: Thai baht

Level of damage	Number of fisher	Damaged value	Average damaged value	Min.-Max. of damaged value
Less than 100,000 baht	38	2,044,000	53,790	7,000-100,000
100,001-200,000 baht	10	1,796,500	179,650	120,000-200,000
200,001-300,000 baht	6	1,415,700	235,950	205,700-270,000
More than 300,000 baht	5	8,844,000	1,768,800	700,000-3,960,000
Total	59	14,100,200		

Source: Department of Fisheries, August 2005

The losses of 37 households sample derived from both capture fisheries and aquaculture (Table 6). The assessment figures were prepared in three categories: the average value of fishing

gears before the tsunami, the average loss amount of fishing gears after the tsunami and percentage of loss relative to the value of fishing gears before the tsunami. Fishers lost fishing boasts and engines, with being estimated at 72% of the value they had owned before the tsunami. The amount of losses in capture fisheries included fully damaged of shallow water set net, sardine gill net, sea bass gill net, crab trap and grouper trap. Partially damaged gears were mackerel gill net, crab gill net, shrimp trammel net and sandfish gill net. On the other hand, the loss of fish cages and shellfish culture has put high value damaged.

Table 6 The damaged value and percentage of loss of fishing gears

Fishing gear	The average value of fishing gears before tsunami (Thai baht)	The average loss amount of fishing gears after tsunami (Thai baht)	% of loss relative to the value of fishing gears before tsunami
fishing boasts and engines	53,067	38,047	71.7
shallow water set net	70,000	70,000	100.0
sardine gill net	8,200	8,200	100.0
sea bass gill net	16,000	16,000	100.0
crab trap	3,500	3,500	100.0
grouper trap	4,600	4,600	100.0
mackerel gill net	9,640	7,520	78.0
crab gill net	8,750	7,200	93.8
shrimp trammel net	8,760	6,320	72.2
sandfish gill net	3,000	1,500	50.0
fish cage	64,988	40,213	61.9
shellfish culture	108,875	84,125	77.3

Source: Field survey in June 2005

5. Effects of disaster from fishers' viewpoint

After the disaster, many changes occurred including fishery resources, fishing activity and fishery society. The result showed both negative and positive effects to fishing community (Table 7).

- *Economic aspect*

All fishers and cage farmers in Bakan village admitted the income gained from fishery activity sharply declined and remained low level throughout 2005. The catch had decreased and the price of fish was not increased. The reason behind consumers' avoidance of eating marine fish, according to them, was that they (the consumers) had a negative idea about the fish landed. Those fishers who had to borrow money or loan from relatives or friends to invest new fishing gear and new equipments of cage culture accounted for 75% of the sampled fishers. Local people rushed to establish a new financial group, and to revitalize the currently existing groups. They expected that these groups would work as a conduit of financial assistance given to them. Some fishers had never borrowed money from the groups before the Tsunami, although they joined the groups as members. They had had enough money to invest and pay expenses on daily basis. However, they heavily

borrowed money after the crisis.

- *Social aspect*

Fishers and people were very nervous about the terror of natural disaster. Although they did not feel safe in living in the coastal communities, they did not want to move out there. They preferred to stay nearby the sea, rather than inland housing lots. Since almost all the people in village got more or less effect from the disaster, the mutual help among them to rebuild their effort was strengthened.

- *Environmental aspect*

Catch was very low for a few months after the Tsunami. The fishers compared their status of catch with that of the same period of the previous year. Moreover, the size of fish that they caught after the disaster became smaller. There was the increasing of using small-sized fish during this recovery period. When fishers trapped the juvenile grouper for culturing in cage, catch of fish, shrimp and crab in mangrove area were decreased.

- *Institutional aspect*

Sub-district Administrative Organization (Ao.Bo.To.- in Thai) was a local government unit that provided initial help for affected people. Its emergency budget was allocated in order to help people to secure their daily life. Fishers in Bakan village together with Ao.Bo.To. replanted mangrove trees in sub-district coastal area to enhance aquatic resources.

Table 7 Rank of the major effects by fishers' opinion in AoLukNoi Sub-district

The changes	Direction of change	Percentage of fishers
Economic aspect		
Income of fishing activities	decreased	100.0
Price of harvested fish	decreased	86.5
Depending on loan and other credit	increased	75.0
Social aspect		
Nervous to next disaster	increased	91.9
Mutual help among people	increased	43.2
Being member of people's group	increased	33.3
Environmental aspect		
Fishery production compare with the same period of last year	decreased	67.5
Size of caught fish around your Sub-district	decreased	38.9
Aquatic animals in mangrove area (include fish larvae)	decreased	27.0
Institutional aspect		
Supported facilities from Sub-district level	increased	41.7
Replantation of mangrove trees	increased	38.9
Utilization of small-size fish	increased	21.6

Source: Field survey in June 2005

6. Re-building capacity in fishery activities

The first priority of the recovery work in fishing village was commonly the same as other affected areas. Fishers were eager to re-establish fishing activities as quick as possible so that they could earn income to support their livelihood. Some cage farmers had little idea about accessible financial sources for new investment. They roughly estimated one unit of cage culture to cost 16,000 baht. This did not include fish fingerings. To restart fishing activities in Bakan, there were many ways that fishers combined them together.

- Government source of help

The relief help to Bakan came from many sources. The initial help started from Ao.Bo.To., which was the local government organization. Ao.Bo.To. AoLukNoi gave 1,000-3,000 baht for emergency help to the affected people. The Department of Interior released special budget to hire the 105 jobless people in Bakan village to clean up public areas within 25 days. This policy aimed at helping people to earn additional money during the recovery period.

Relief help from government agencies supported people to start their occupation. Department of Fisheries, Ministry of Agriculture and Cooperatives provided not more than 20,000 baht per damaged boat. The compensation for lost boat or crack down boat got 60,000 baht to buy the new boat. The lost and damaged fishing gear was to be replaced by a new set of fishing gear with 10,000 baht per fisher. All cage farmers sought the compensation for the losses and damages; however, they received not more than 20,000 baht per person.

Compensation from government might not be enough to recover all of the losses and damages. Cage farmers could rebuild some amount of cages with this compensation, but they still needed other sources of loan for re-investment.

- Non government source of help

In Bakan village, CARE foundation program was established to provide loans to affected fishers. They organized and joined the membership of a group with revolving fund operation. At the beginning, 80 members formed a group and achieved consensus to manage funds through the guidance of CARE's staff. They raised loan from the group, ranging between 20,000-50,000 baht, depending on size of their culture operation. Beside loan activity, CARE trained members to manage group's activity in long term.

- Self-help in recovery period

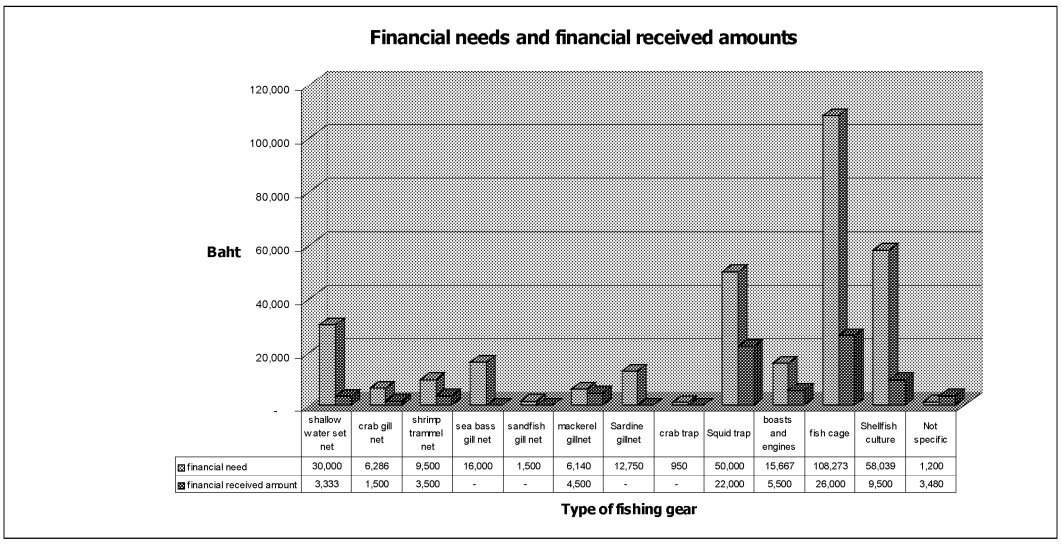
Fishers and farmers started to recover their sunken fishing boat and lost fishing gear and cage's equipment after disaster. Some parts could be repaired and reused, but some parts were completely destroyed. Fish cage farmers in Bakan village organized a group on a voluntary basis to help each other. The group collected fish as much enough as dealers needed, so they did not bring their harvested fish to market by themselves. Also farmers reduced the cost of cage's equipment by buying them in the big amount to get the lowest price per unit. Fish cage farmers' group of Bakan

village was not registered with the Department of Fisheries, but it was the spontaneous group that they formed in recovery period.

- Other sources of help

In the aftermath of a disaster, several sources of organizations provided financial aid in order to repair and reconstruction. In case of the standard amounts were not big enough to cover all reconstruction, other financial sources were needed for the re-investment process. People in Bakan village also got financial assistance or loan in other sources such as saving groups, village fund groups[1] and women's groups in their community. In addition, some people had to ask loan from private moneylender.

The survey in June 2005 had the sample of 37 fishers in Bakan village to response the structured questionnaire for financial need and financial assistance sources of fishing gears reconstruction (Fig. 2). Financial assistance was requested to repair their loss. The distribution of aid to tsunami-hit fishers in the first six months still did not cover their needs. Most of the donors continued to help the poor by offering many recovery programs. However, they did not have clear information on actual needs and lacked mechanisms to deliver direct assistance.



	shallow water set net	crab gill net	shrimp trammel net	sea bass gill net	sandfish gill net	mackerel gillnet	Sardine gillnet	crab trap	Squid trap	boasts and engines	fish cage	Shellfish culture	Not specific
financial need	30,000	6,286	9,500	16,000	1,500	6,140	12,750	950	50,000	15,667	108,273	58,039	1,200
financial received amount	3,333	1,500	3,500	-	-	4,500	-	-	22,000	5,500	26,000	9,500	3,480

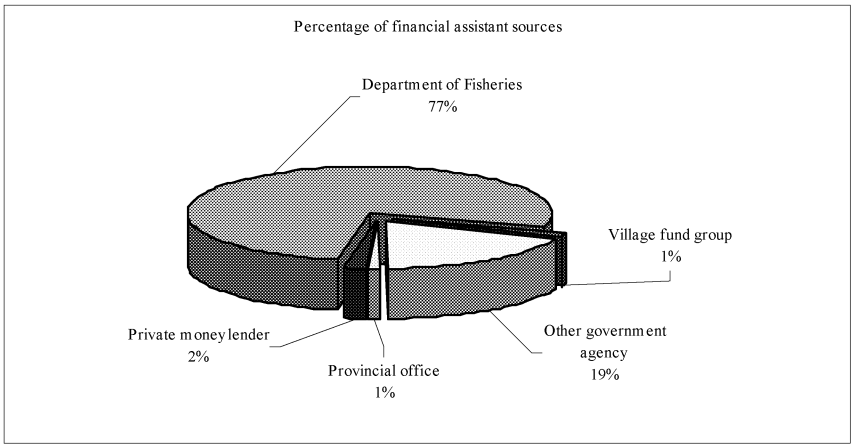
Source: Field survey in June 2005

Fig. 2 The damage value and financial need by type of fishing gear

A summary of sources of financial assistance in Bakan village was shown in figure 3. Most

1 The village fund program started in 2001 in 70,000 villages all over the country. Thai government provided one million baht to each village for the purpose of supporting people's occupation

of the fishers received financial assistance from the Department of Fisheries (77%). Apart form the Department of Fisheries, other sources were other government agencies and private moneylenders who provided financial assistance to the tsunami affected people.



Source: Field survey in June 2005

Fig. 3 Source of financial assistance in Bakan village

Combination of self-help and relief help from outside could start the fishing activities in Bakan village after stopping for several months. Fishers and cage farmers tried to earn income as fast as possible. The monthly household income was surveyed by type of fishery activities. During six months after the Tsunami, 40.5% of fishers had fisheries income between 5001 - 10,000 baht (Table 8). That was less than national average monthly income, which was 14,617 baht (NSO, 2004). Those engaged only in culture fishery obtained higher income than other types of fishers.

Table 8 Range of monthly household income by type of fishery activities

	Type of fishery activities				
Range of income	Only capture	Only culture	Capture& Culture	Fish labour	Total
Less than 5000 baht	2		3		5
5001 - 10000 baht	6		8	1	15
10001 - 15000 baht	2		1		3
15001 - 20000 baht	1	1	3		5
20001 - 25000 baht		1			1
25001 - 30000 baht	1		2		3
More than 30000 baht	1	2	2		5
Total	13	4	19	1	37

Source: Field survey in June 2005

7. Coastal resources management activities

In the past, most of fishers employed push net for fishing activity. This gear operated with engine boat near shoreline had huge negative impact on coastal resources. It was used to catch all species of fish including juvenile fish. According o Fisheries Act, push net was declared as illegal fishing gear if it operated within 3 km from shoreline. This coastal area was declared to be conservation area for fish stock.

There were some conflicts among fishers who employed push net and crab net, since they used the same fishing ground. The coastal area in front of AoLukNoi was not so wide. There were a good number of small islands within the immediate coastal area, under which this area became fertile fishing grounds. Push net fishers in Bakan village were prohibited to operate in this adjacent area. To stop this conflict, push net fishers had to change their fishing gear to other types such as shrimp trammel net or crab trap. After they stopped operating push net, they started to carry out fish cage culture in their village's canal. Some fishers found that their catch increased after few months of stopping push net. Anyway some fishers had problem of changing fishing gear, because they did not have skill for new gear. They decided to operate fish cage culture instead of capture fishing.

Nowadays, Bakan village does not have any push net operators. Fishers have realized the importance of mangrove forest along Bakan canal as the nursery ground of fish's juvenile. Especially, juvenile of grouper was the most important, because it was caught to stock in fish cages. That could reduce investment cost in term of fish fingering for cage culture.

Before attacked by Tsunami, the system of cage culture in this area was like open access. Who came to set cage first could reserve that place. Normally they set up their cages nearby their houses. After the Tsunami, some fishers could start to set up cage culture with their own money earlier than other fishers who did not have enough money. However, according to the consensus among people, they set up their cages at the same place as it was before to avoid conflict with others.

People have a plan for replanting mangrove trees in the Sub-district's area in 2006, since some parts of mangrove were damage by the Tsunami. They recently have purposed project 'Community's mangrove forest' to look after and manage some parts of mangrove forest by local people.

Based on the data, the change of each aspect was linked to others. For example, the change in economic aspect had effect on environmental aspect. Fishers suffered from low income and high expenditure in fishing activity, which often encouraged them to catch small size of fish or cut the mangrove tree to make fishing gear. That may cause the reduction of fish stock.

Some positive effects were also found during the recovery period. To solve the problem, fishers organized the mutual help to each other. The social network among them was strengthened in the same time. The institution was the important factor of sustainable coastal resource. The local organization facilitated affected fishers to recover their occupation and also kept the management rule to protect coastal resources.

The Case Study of Klongkian Sub-district, Phang-nga Province After Tsunami Devastation

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1. Introduction

The Klongkian sub-district composes of eight villages. This sub-district is under the jurisdiction of Takuatung District, Phang-nga Province. The sub-district was affected by Tsunami disaster. Abundant mangrove forest areas were a natural fence to protect local people's lives. The Klongkian sub-district would be generally described such socio-economic status of household and damage assessment of affected household. In addition, this sub-district proceeded the recovering of its village. Data collection and information was done at two villages in June, 2005.

2. General information of Sub-district

In general, local people had an average age 40 year olds (see table 1). A household consisted of 4 members on average. One member engaged in fisheries and other one member occupied in non-fisheries sectors. Two family members were studying.

Table 1 Household information according to family member and their manpower engagement, Klongkian Sub-district, Takautung District, Phang-nga Province

Item	Klongkian sub-district
No. of household (households)	35
Age (year olds)	40
No. of family member (persons)	4
No. of family member in fisheries sector (persons)	1
No. of family member in non-fisheries (persons)	1
No. of family member studying (persons)	2
No of unemployment family member (persons)	1

According to table 2 showing educational level of respondent, 49% of total respondents who were head of family graduated from elementary school. Fourteen percent (14%) of total respondents who were spouses were also graduated from elementary school level.

Table 2 Family status with educational level, Klongkian Sub-District, Takautung District, Phang-nga Province

Educational level	Family status				Total	
	head of family		spouse			
	No. of household	%	No. of household	%	No. of household	%
elementary school level	17	49	5	14	22	63
junior school level	3	9	2	6	5	14
high school level	2	6	0	0	2	6
college level	1	3	0	0	1	3
university level	2	6	0	0	2	6
illiteracy	1	3	0	0	1	3
missing data	1	3	1	3	2	6
Total	27	77	8	23	35	100

Local respondents had two sources of income. One was from fisheries sectors and the other derived from non-fisheries sector. Table 3 shows monthly household income and expenditure. Gross household monthly income on average was 13, 473 baht. The gross incomes from fisheries and non-fisheries sectors were 9,521 and 4,070 respectively. Total household expenditure per month was 8,030 baht. Total expenditures for agriculture and for fisheries operation was 5,857 baht. In the fisheries sector, expenditures for capture fisheries and aquaculture were 4,874 and 912 baht, respectively. Finally, total household net income was deficit after deducting total expenditure from gross income. It was estimated minus 415 baht.

Table 3 Monthly household income and expenditure, Klongkian Sub-District, Takautung District, Phang-nga Province

Item	Klongkian sub-district
No. of household (households)	35
Gross household income (baht)	13,473
Gross income from fisheries sector (baht)	9,521
Gross income from non-fisheries sector (baht)	4,070
Total household expenditure (baht)	8,030
Total expenditure for agriculture and fisheries operation (baht)	5,857
Total expenditure for fishing operation (baht)	4,874
Total expenditure for aquaculture management (baht)	912
Net income from fisheries (baht)	3,736
Total household net income (baht)	-415

3. Damage assessment in fisheries sector

Fisheries sectors are important source of household income as seen in table 3. A fishing household engaged in multi-types of fishing gear. This meant that a fishing household had at least two types of fishing gears employed. A fishing household often engaged in both capture and aquaculture. Table 4 indicates the average amount of fishing gears that belonged to the property of fishing household. This table indicates the estimated value of fishing gears that a household had owned before Tsunami disaster, and their estimated damage by it. The table herewith shows four fishing households had owned shallow water set as fishing gear asset. Actually, these households owned not only shallow water set, but also other types of fishing asset. This was the reason why amount of asset value at pre-and post-tsunami was a little difference.

Table 4 Fishing gear and effort damaged assessment, Klongkian Sub-District, Takautung District, Phang-nga Province

Fishing gear asset	Klongkian sub-district		
	no. of household (households)	total amount of fishing gear asset (baht)	total amount of fishing gear asset lost (baht)
not engaged	1	0	0
shallow water set net	4	37,565	39,065
crab gill net	1	57,500	57,500
shrimp trammel net	4	63,963	50,838
Indo-pacific mackerel	2	44,875	14,625
crab trap	1	10,510	10,510
boat and engine	10	70,805	46,465
fish cage	11	71,669	65,942
missing	1	0	0
total	35		

Remark: Total amount of fishing gear asset means total amount of all types of fishing gear employed at a fishing household

Table 4 is to concretely provide how heavily local fishers and fish-farmers suffered from the loss of means of livelihoods. Fishing households had owned crab gill net and crab trap completely lost them. Ten fishing households said that their fishing boat and engines were damaged with some part of fishing boat body and engine. These damages costly amounted to 46,465 baht from 70,805 baht. Fish cage farmers averagely lost both fish cage asset and stocked fish amounted to 65,942 baht from 71,669 baht.

4. Fishing household rehabilitation and employment

Damaged fishing households immediately received assistance in kinds such water, foods, clothes and so on after the devastation of Tsunami. Head of village and Klongkian Sub-district Administrative Organization (Ao.Bo.To.) member and council took responsibility to record the loss of fishing household. The recorded figures were to provide the evidence of computing the amount of financial assistance. Table 5 illustrates the amount of financial need, received financial assistance and re-investment to rebuild fishing gear assets. Fishing household was “not engaged” status which

meant this household did not start engaged in capture fisheries sector, but they owned at least one type of fishing gear.

Table 5 indicates that crab trap fishing household received financial assistance, but it did not spend the money for re-investing in fisheries sectors. Other fishing households engaged in such shallow water set net and fish cage culture rebuilt new unit of fishing asset by spending financial aids. They received 11,750 and 11,669 baht for rebuilding shallow water set net and fish cage, respectively.

Table 5 Financial need assessment, financial assistance and re-investment for rebuilding fishing gear asset, Klongkian Sub-District, Takautung District, Phang-nga Province

Fishing gear asset	Klongkian sub-district			
	no. of household (households)	total amount of financial need (baht)	total amount of financial assistance (baht)	total amount of re-investment (baht)
not engaged	1	2,500	0	2,500
shallow water set net	4	29,025	11,750	10,375
crab gill net	1	22,000	12,000	38,000
shrimp trammel net	4	8,038	4,270	8,525
Indo-pacific mackerel	2	4,250	5,900	6,450
crab trap	1	0	20,000	0
boat and engine	10	32,950	13,479	25,853
fish cage	11	28,153	11,669	10,596
missing	1	0	0	0
total	35			

Fishing households employed in crab gill net, shrimp trammel net and indo-pacific mackerel gill net obtained financial assistance, being 12,000, 4,270 and 5,900 baht, respectively. These amounts of money were not enough to buy new unit of fishing gears compared with amounts of re-investment of those type of fishing gear. On the other hand, fishing household needed to repair fishing boat and engine received financial assistance with amount of 13,479 baht. However, it could not cover the cost for fixing damaged fishing boat and engine. In actuality, these household spent 25, 853 baht to repair boat and engine.

5. Conclusion

In Klongkian sub-district, sampled households had two main income sources coming from fisheries and non-fisheries sectors. The findings of the survey show that income from fisheries was larger amount than that from non-fisheries. This meant sampled households depended mainly on fisheries sectors. However, a balance between gross household income and total household expenditure indicates that a sampled household fell into deficient and found it hard to take care of their family.

The Tsunami disaster destroyed fishing gear assets both in capture fisheries and aquaculture. The disaster made a reduction of fishing household capacity to provide employment opportunities in fisheries sectors. Many of sampled fishing households lost fishing gears and fish cage cultures. They faced instable household economic status according to unemployment and underemployment in fisheries sectors. This made the fishing households remained low income level. These households had to seek more financial source to buy new units of fishing gears, since they had obtained little amount of financial assistance.

Part IV

The Restoration of Fishing Community and Coastal Resource at Post-tsunami

The Restoration of Fishing Community and Coastal Resource at Post-tsunami

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Overview of Damage Assessment Affected by Tsunami

1 Introduction of the survey

Fishing communities that locate along the Andaman Sea side have faced a crisis of fisheries economic development. This is because Tsunami disaster affected to hundreds of fishing communities on 26th December 2004. Thousands of fishers and fish farmers lost the means of livelihood and their means such as fishing gears, fishing boat body and boat engine and also ruined their capacity building for fisheries engagement.

Some fishers were damaged with a part of means of production. These fishers did not earn daily income. Fish-farmers carried out fish cage culture and shellfish culture also lost fish cages and fish stocking in the cages. On supply side, production of capture fisheries and cage culture sharply dropped down. On demand side, consumption of fisheries product in urban areas decreased. These became main constraints to the economic recovery of fishing communities. Fishers found it difficult to sustain an effective framework of coastal resource management, too. Local money lender and fish traders living at the same village faced severe default of clients, particularly fishers. They had often obtained a source of fisheries investment as well as expenses of daily fishing operation, from the money lender or the traders. Due to the Tsunami disaster, they could not afford to repay any liabilities. This led to a shortage of available monetary funds in the affected fishing communities. The lack of funds became a great obstacle to the recovery of fisheries business, thereby plunge the lost/damaged fishers and fish farmers into the poor. They eagerly strived to earn daily income by utilizing coastal resource without any consideration.

Our survey in damaged fishing villages highlighted on two points. The first concerned government's relief policy and action plan that would contribute to re-build an economy of fishing communities and its capacity building damaged in Tsunami disaster. The second point paid attention on a role and capacity building of fishing communities with references to sustaining coastal resource management. This survey conducted an assessment of damage and loss in social and economic terms at selected fishing communities. Observation on re-constructing the means of fishing operation by particular types of fishing gears was included into the survey. It purposed to clarify how fishers and stakeholders had participated in decision-making process of fishing ground allocation and management.

Selected and visited survey sites were representatives of fishing communities along the coastlines of Andaman Sea site. Data and information collected from the surveyed sites gave an overview of damage assessment and a lesson learned from the recovery process of those wrecked fishing communities.

2. Objectives of the survey

2.1 To observe fishing activities and their impacts to resources and environments

2.2 To investigate the management measure on coastal resources

2.3 To assess the logistic of 'social capital' degree in fishing communities after Tsunami disaster

3. Methods and studied

3.1 To collect data and information including policy and plan from local governments, provincial office of fisheries, district office of fisheries, sub-district administrative organization (Ao.Bo.To.).

3.2 To interview with lost/damaged fishers and fish-farmers to recognize problems and needs in fishing communities.

3.3 To simply and rapidly analyze data and information gained from the surveyed sites and government officials.

4. An overview of fisheries sectors in Andaman Sea site

The Department of Fisheries (DOF), Thailand divides 24 coastal provinces into 5 coastal zones. The coastal provinces along the coasts of Andaman Sea are named as coastal zone No. 5. This zone consists of six provinces, namely Ranong, Phang-nga, Phuket, Krabi, Trang and Satun provinces (see fig.1).

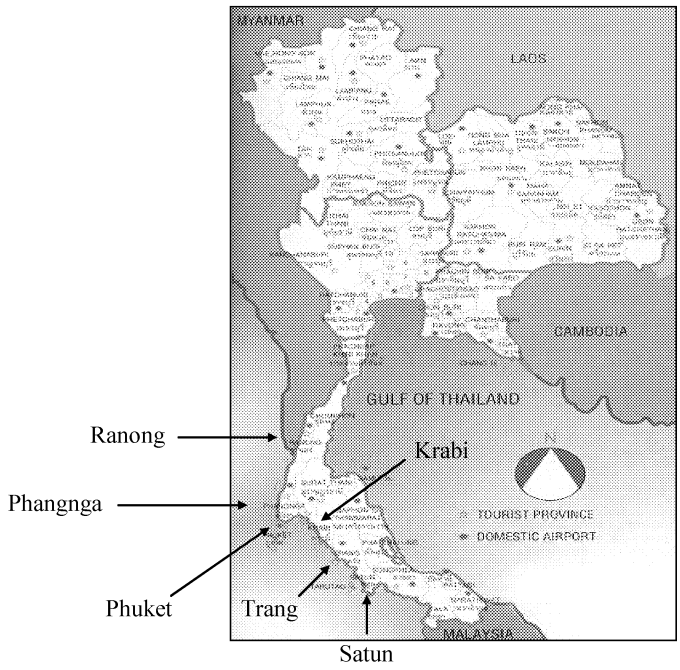

Fig.1 Map of six provinces along the Andaman Sea coast affected by Tsunami

According to the DOF's report, the total number of fishing households was 25,012 in the six provinces of Coastal Zone No.5 facing the Andaman Sea (DOF, 2000). These households can be categorized into three types. The type 1 is engagement involving marine capture fishery only. The type 2 is that in coastal aquaculture only. The type 3 is the engagement in both marine capture and coastal aquaculture. Fig. 2 illustrates the percentage of fishing households in the six provinces to the total.

Fish farming households amounted to 5,016 in number (DOF, *Ibid*). Proportion of fish farming households was 27%, 24%, 21%,19%, 6% and 3% in Trang, Phang-nga, Krabi, Satun, Ranong, and Phuket, respectively (see fig. 3).

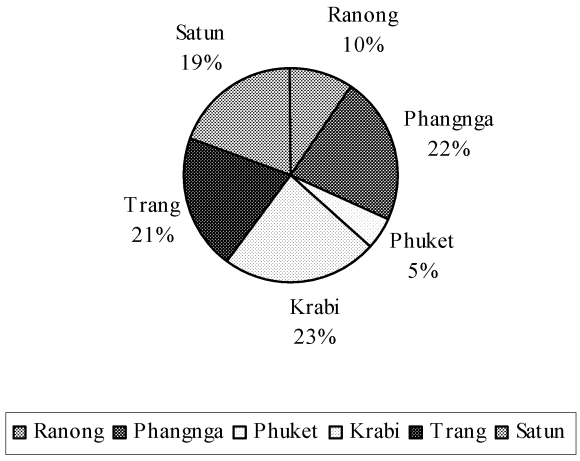

Fig.2 A number of fishing households in year 2000

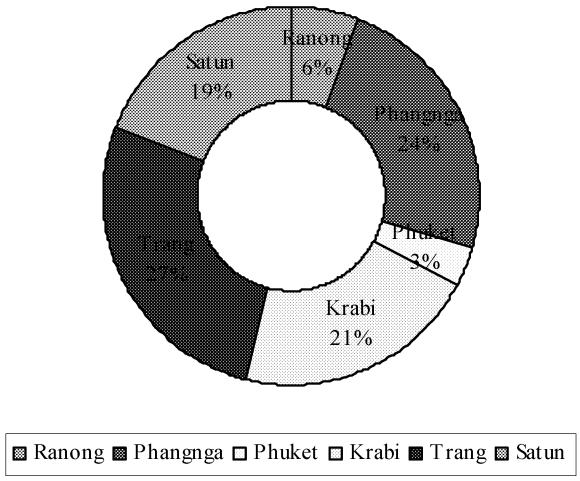

Fig.3 A number of fish farming households in year 2000

The total numbers of fishing boats were 23,156 boats employed in the Andaman Sea coast. Phang-nga and Krabi provinces had a 23% of share to the total fishing boats occupied in the coastline. Phuket province had only a 5% of total fishing boats employed in the province (see fig. 4).

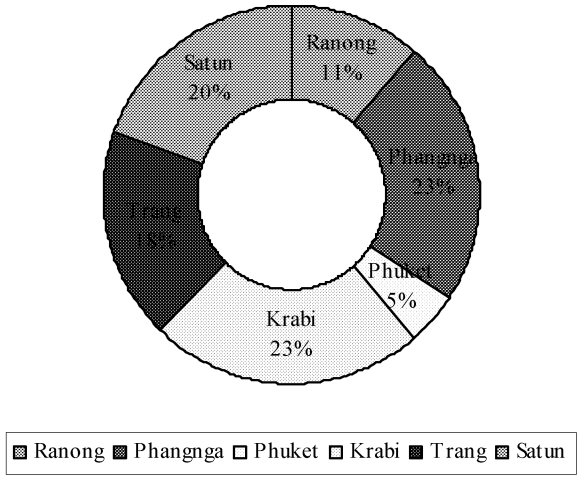

Fig.4 A number of fishing boats employed in the Andaman Sea site in year 2000

5. Damage assessment of fisheries sectors at post tsunami

The Tsunami devastation affected to hundreds of coastal communities located along Andaman Sea site. The DOF officially reported that the numbers of lost/damaged fishing boats were 7,319 boats as of February, 2005. The six provincial offices of fisheries took responsibilities to summarize an immediate damage assessment in fisheries sectors in their owned provinces. They gave a report on the assessment to the DOF's, headquarter, in Bangkok.

Fig.5 shows the number of fishing boats recorded in year 2000 and the number of lost/damaged fishing boats wrecked in December 2004. Phang-nga province recorded the largest number of lost/damaged fishing boats, being 1,232 boats. In Phuket province, lost/ damaged fishing boats were more than number of fishing boat recorded in 2000. A large number of boats might have been anchored at jetties and fishing ports in Phuket during Christmas holiday.

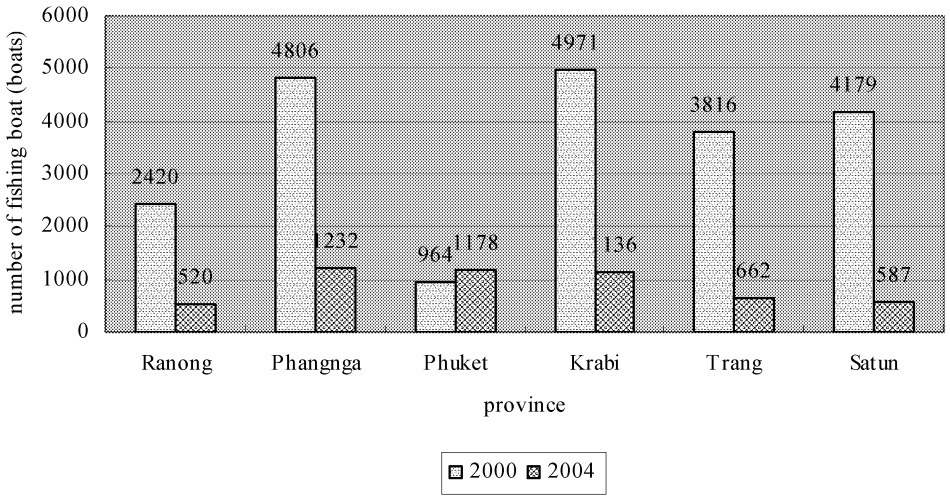

Fig.5 A number of fishing boat year 2000 and number of lost/damaged fishing boat in December 2004

National Relief Policy and Action Plan and Zoning Policy

The DOF, Thailand took a leading role to adopt the government policy to provide a relief plan to contribute thousands of the lost fishers. The relief plan was a contributive strategy to re-construct a means of fishing operations and to recover aquaculture production. Table 1 shows the process of immediate coastal resource relief and rehabilitation program. The DOF made much effort implement all necessary programs and projects for the relief.

Table 1 The process of an immediate coastal resource relief and rehabilitation for restoring community development implemented by the DOF, Thailand

Procedure	Year 2004	Year 2005			
	December	January	February	March	April
1. Survey and assess collapse of fishers' capacity in fisheries sectors such capture and aquaculture.					
2. Initially release immediate relief to fishers for repairing fishing efforts					
3. Formulate rehabilitation plan for fisheries sectors based on the national laws and regulations.					
4. Release additional amounts of immediate relief for repairing or buying new fishing efforts					
5. Gradually distribute financial support to suffered fishers who lost fishing effort based on the needed relief assessment.					
6. conduct research and survey to make scientific assessment on fisheries biological, environmental and social criteria in six damaged provinces					

The DOF formulated an immediate relief action plan to recovering small-scale and commercial scale fisheries. Main purpose of the action plan was to provide subsidy and financial support to the lost fishers or fish-farmers to re-start their engagement. The DOF designed a framework of financial support to fishers and fish-farmers. The DOF calculated a certain amounts of financial support to a damage assessment. The certain amount was so far followed the discipline of national laws and regulations to provide an allowable payment of financial assistance. Table 2 generally draws an immediate relief action plan and rehabilitation in particular for small-scale fisheries.

Table 2 An immediate relief action plan and rehabilitation for small-scale fisheries

Type of victim	Priority	Fishing boat		Fishing gear	Fish cage
		Boat body	Engine		
Registration 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-registration card holder	2	_____ 70% of the amounts formulated_____			
Eco-tourism boat	3	On-going consideration on damage assessment			

Remark: * registration card holder means fishers or fish-farmers made recording on type of their engagement and capacity such is type of fishing gear, fishing boat length, number of fish cage and stocking aquatic species with the DOF, Thailand in November 2003

The DOF reported that 3,985 fishers who had got fishing boats lost/damaged in six provinces could receive financial relief in February, 2005. Fig. 6 shows a ratio of those fishers who obtained a government relief to the total number of affected fishers. They mostly spent for re-construction and/or repairing of fishing boats (see fig. 6). In Satun province, the DOF might not yet obtain summary report on launching an amount of the financial relief to lost/damaged fishers of the province. In addition, both registered and unregistered fishers were compensated by the DOF's scheme, with including small and large sized fishing boats.

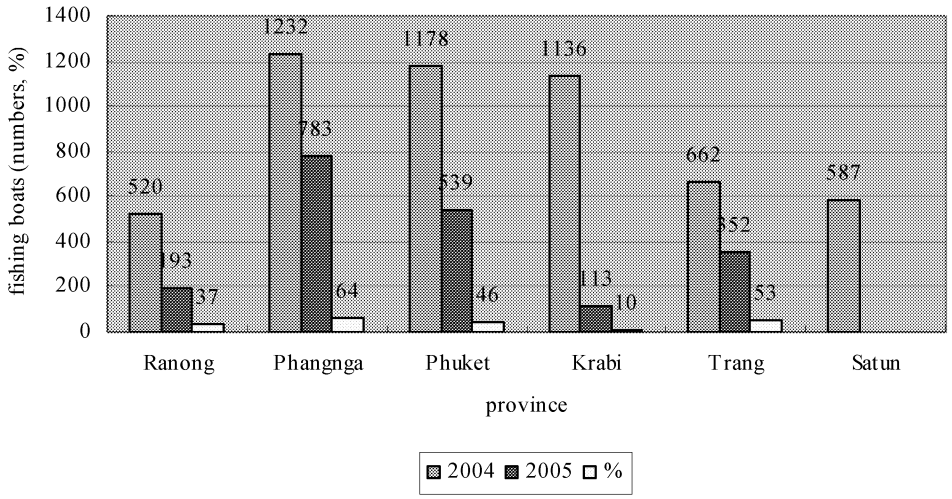

Fig. 6 A number of lost/damaged boats and gotten relief boat

Fig. 7 illustrates the number of lost/damaged fish farmers obtained a financial relief , which was provided by the DOF. It compensated 3,076 lost/damaged fish farmers in total number and launched the provision of the financial relief to 903 lost/damaged fish farmers in Phang-nga province in February 2005.

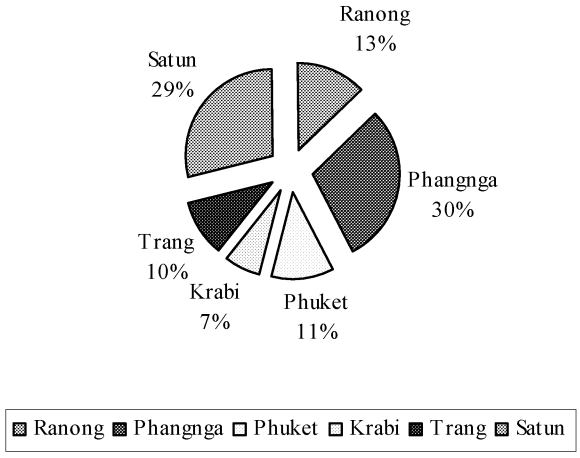

Fig. 7 A number of lost/damaged farmer assisted by the DOF, Thailand in February, 2005

Fig.8 indicates the DOF launched the financial aids to fishers for buying new fishing gears. In Phang-nga province, thirteen percent (13%) of those fishers obtained the financial assistance to build new unit of fishing gear. The Phang-nga provincial fisheries official said that a slowdown in launching the financial assistance to the lost fishers, because he and other official concerned, had to carefully re-check both number of fishers and amount of financial assistance. This was to ensure in handed financial aids to the lost fishers.

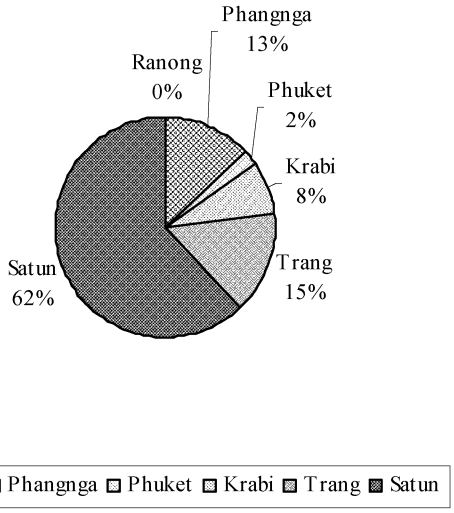

Fig.8 Fishers lost fishing gear, gotten financial relief provided by DOF, Thailand in February 2005

6. Medium-term coastal resource rehabilitation and community development

After the DOF provided an immediate relief to the affected fishers, it also formulates and implements a research and survey action plan. It scientifically conducts an assessment on fisheries biological, environmental and social criteria at post-Tsunami. The DOF is using results and data analysis of the research and survey to design a strategic rehabilitation project and framework. The project framework is an applicable tool to enhance coastal resources and environments and to recover an economy of coastal communities.

Table 3 illustrates a research and survey action which consists of four activities. The first topic was a subject relevant to a study on fish sanctuaries and habitat. The study placed an emphasis on artificial reef placement and its shape. The DOF officials started the survey from February to April 2005. The officials made a survey on Tsunami destroyed the artificial reefs along the Andaman Sea coastlines to collapse. The results of the survey are information to help the DOF officials to provide a budget to restore artificial reefs.

Table 3 An action plan for conducting a scientific assessment on fisheries biologies, environment and fishing community

Studied topic	Year 2005								
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
1.study on fish sanctuaries and habitat		━	━	━					
2.study on fisheries resource assessments		━	━	━					
3.study on type, number, and methods of fishing gear employing in fisheries including species composition of fish productivity		━	━	━	━	━	━	━	━
4. study on fishers and stakeholders' attitude on keep continuing in fisheries or entering into new job.				━	━	━			

The second subject concerned fisheries resource assessments. The DOF officials conducted a fish landing survey and data collection to assess how Tsunami affected to fish school, species composition and its productivity. The results of the survey are useful to utilize aquatic resource with care. This information is useful so far to provide an appropriate management activity. A fish releasing activity is a contributive activity to quickly rehabilitate coastal resources.

The third subject focused on fishing operations and capacity practiced in fisheries sectors, in order to clarify type, number and methods used in fishing operation. This study was to monitor whether fishers still used the same types of fishing gear and the same numbers of fishing gear. It was also to examine whether they employed in a new type of fishing gears. Through this survey, a trend of fisheries resource exploitation would be clarified.

The fourth subject concerned fishers and stakeholders' attitude. This examined fishers and stakeholders whether they still have willing to continue fishing. The purpose of the study was to asses a restoring of fishing community and a manpower employ in fisheries sector.

7. Relocation policy at post tsunami

The Thai government immediately provided thousands of temporary shelters to tsunami victims after they lost their houses and other possessions. These victims had customarily lived along coastal line prior to tsunami. They hopefully expected to rebuild their new houses at the previous places. They voiced that they wanted to keep their way of life, culture, tradition and society. To relocate new houses back to tsunami victims, the government should reconsider a settlement plan of houses. This policy was solely different from Sri Lanka's relocation policy which was to set up the conservative buffer zone. People are not allowed to rebuild new houses and infrastructure within the zones between beach and 100-200 meters. This zone was boundary from 100-200 meters which did not allowed people to rebuild new houses. Such a zoning policy intends to prevent the coastal regions and local resident from tsunami in future [1].

In Thailand, resettlement policy was herewith considered based on the review of documents. This policy was practiced on two sites. One site was a resettlement in the national park. This was handled at Kok Muk Island, Trang province. The other site was a relocation of new houses on the tourism areas such in Phang-Nga, Krabi, and Phuket provinces. On the other hand, the Thai government had no special policy for settling any coastal fishing communities which were save and surrounded by the mangrove forest areas. The government just campaigned for mangrove reforestation and conservation.

In Koh Muk island, Trang province [2], the Special High Level National Tsunami Land Sub-committee accompanied with the national park official, the provincial governor's office, members of sub-district administrative organization and community members discussed and brainstormed to solve problems of land use for relocation. The mission group concluded that the land used for new house relocation belonged to group property. No one had any right to sell the land. The villagers live in this island were allowed to settle only in a part of the mangrove forest in the national park of the island. However, Koh Phi Phi island relocation was also different from the case of the Koh Muk island, even under the same national park law. In Koh Phi Phi island, land tenure ownerships were not clearly defined under legitimacy of the national park law ([2], *Ibid*).

The Phuket Action Plan was headed and formulated by the World Tourism Organization (WTO). This plan composed of two main aims. One was to run recovery in the wrecked targeted areas. The other was to resume travelers' confidence ([1], *Ibid*). The Thailand Authority of Tourism (TOT) was leading government agency adopting this plan to revitalize marine tourism in Andaman Sea side. Meanwhile, the Thai government itself created a master plan for the rebuilding of beach resorts. In practice of the master plan's implementation, tsunami victims did not agree with this plan. This is because the master plan framework had moved the victims away from their occupied land areas. Followed the plan, the Thai government did not permit the affected people to rebuild new houses. However, it is very hard to persuade particular small-scale fishers to follow the plan. They

gave reasons why they wanted to sustain their way of life as fishers and so far they did not have place to go out from fisheries. They had little choice to get job opportunities outside fisheries as well as fishing communities. A vigorous attempt has been made by the small-scale fishers and to access their right to head up their livelihoods and social security [3].

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[2] UNDP, Thailand. 2006. Tsunami-hit Thai Muslim Community Granted Land Rights in a National Park at http://www.undp.or.th/news/news-060307.html.

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Part V

Roles of Local Institution and People's Participation in Tsunami Recovery

People's Participation in Microfinance Program for Tsunami Recovery in Thailand

Pornprapa SAKULSAENG, Masahiro YAMAO,
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1. Introduction

The fisheries sector along the Andaman coastline of Thailand was seriously affected by the December 2004 tsunami. Many fishers have still suffered from the loss of boats and gear, or fear of the sea. Their income is not enough to cover family expenses. The cycle of poverty and debt arises when they lack resource and socio-economic strengths. The living and producing conditions of fishers have deteriorated since the tsunami disaster. Economic damages resulting from the tsunami were focused chiefly on the fishing industry. It suffered an estimated $12.5 million (500 million Baht) in losses. Based on the statistics of the Department of Fishery (2005), there are 6,799 houses of small-scale fishers destroyed, and over 6,783 boats, 110,129 fishing gears of different types and 40 hectares of fish cages have been destroyed. In all, the livelihoods of an estimated 100,000 to 120,000 Thais were affected in a negative way by the tsunami.

Several sources of donor agencies and the government have now supported large amounts of funds through the channels of microfinance programs (World Bank, 2005). The implementations of microfinance activities are now considered as a useful reconstruction tools in order to raise their quality of life. Microfinance can play an important role in rebuilding local communities by providing financial services to micro and small enterprises as well as households (Ministry of Finance, 2005).

Demand for microfinance services increased after the disaster. As the first priority, loans are provided to fishermen who need to rebuild their boats and gears and purchase food for their family. In mid and long term development; people can use microfinance to generation income activities such as fishing farming and merchant shops.

2. People's participation and TAOs development

People's participation implies the active involvement in development of the rural people since the establishment of the National Rural Development Program (NRDP) in the Fifth National Economic and Social Development Plan in 1982. People's participation should be viewed as an active process in which people take initiatives and action that is stimulated by their own thinking and deliberation and which they can effectively influence. Active participation of rural people can be brought through local community or people's organization. People's organizations are voluntary, autonomous, democratically and have worked at grassroots level to organize local groups and to

mobilize them to carry out certain activities (Brown, 2001).

The participatory action has gradually become an important local development for people. The government is widely recognized that true and sustainable development takes place when the stakeholders of community and democratically share ideas and visions, as well as participate and take responsibilities together in development activities. The administrative power and resources of the central offices should be decentralized to the local level with people's participation in community development.

In 1994, the government announced the Tambon Council and Tambol Administrative Organization (TAO) (Sopchokchai, 2001), which became effective on March, 1995. Political administrative at the tambon *(or sub-district)* emerges because tambon are considered as the local government unit at the provincial administration. The council members of TAOs are elected representative from each village *(Moobaan in Thai)*. The president is also elected through democratic voting. TAO under concessive support of major ministries carries out development project with the allocation of budget. TAO has responsible to decentralize administrative power to local people and to revitalize the people's participation in community development affairs at the tambon and village levels. The role and function of TAO can be summarized that 1) the local authorities have the freedom to manage development and provide public services according to the needs in the local community. 2) Local administrative can formulate development plans, personal policy, as well as budget and financial policy. 3) People in local community can monitor, control and oversee the results and performance of the TAO. They can sue any public officials or organizations that fail to perform their authorized functions (Sopchokchai, 2001).

3. The role of microfinance in development

3.1 An effort to advance microfinance policy

In recent years, economic development and globalization have created opportunities for poverty reduction. The access to appropriate and sustainable microfinance services has been pointed out repeatedly to contributes to higher income and better livelihood (Robinson, 2001). Many poor households are faced with transitory food insecurity, even though their incomes seem to provide a sufficient livelihood base over several years. Thus, there is a potential demand for saving, credit and insurance services to more effectively stabilize consumption and to raise the ability to escape chronic poverty (Kanbur and Squire 2001).

The Ministry of Interior proposes microfinance service as a powerful tool for poverty reduction. From the early 1990s, the poverty alleviation project has been implemented. It is aimed at raising the quality of life of rural people which are below the poverty line. In addition, Thai government has been given a strong mandate by the people to revitalize the economy and put the

country back on the path of growth. The 1997 crisis[1] has given the opportunity to launch a wealth creation process that will be firmly grounded in the grassroots of the economy. Since 2001, the village revolving fund (the village fund program) has been launched to provide revolving fund for rural development. And to complement the village fund, the one-village-one-product has also been launched to assist with ass aspects of commercial project including product development, marketing and others. Another key program enjoying great success is the people's bank program. The people's bank program aims mainly to provide financial support for the creating of new entrepreneurs. With respect to microfinance, this government, through the grassroots focus policies, is confident that microfinance will play an increasing larger role in the development of the Thai economy.

3.2 Microfinance program for tsunami recovery

An effort to eradication and poverty alleviation, particular in the worst affected areas from the tsunami 2004, is of enormous concern to the Thai government. The microfinance program is one alternative by adopt group-lending methodology. People are largely inspired by the belief that such program reach the poor and have a positive impact on rebuilding lives in post-tsunami. The banner of microfinance has the most important recent tool to reduce poverty (Chakrabarti;et al., 2005)

Loans, saving and other financial services will help poor families rebuild their lives in a post-disaster by giving them, means to start or grow their own businesses. Recovery initiative during several months has formed partnership with government, non-government organization and local people in microfinance services (Counts; el at., 2005). These schemes are characterized by relatively small loans. The repayment period is relatively short, about year or so. The administrative structure is generally light and the entire process is participatory in nature. Borrowers are organized into groups, which reduces the risk of default. These are also effective mechanisms which disseminate valuable information in order to improve the health, legal, rights, sanitation and other relevant concerns of the poor. These programs have significantly increased women's security, autonomy, self-confidence and status with the household (Zaman, 2001). The microfinance is firstly to provide much needed loan to members, and the second main component is income generating activity.

4. Objectives

4.1 To discuss the roles and function of people's participation for achieving community development.

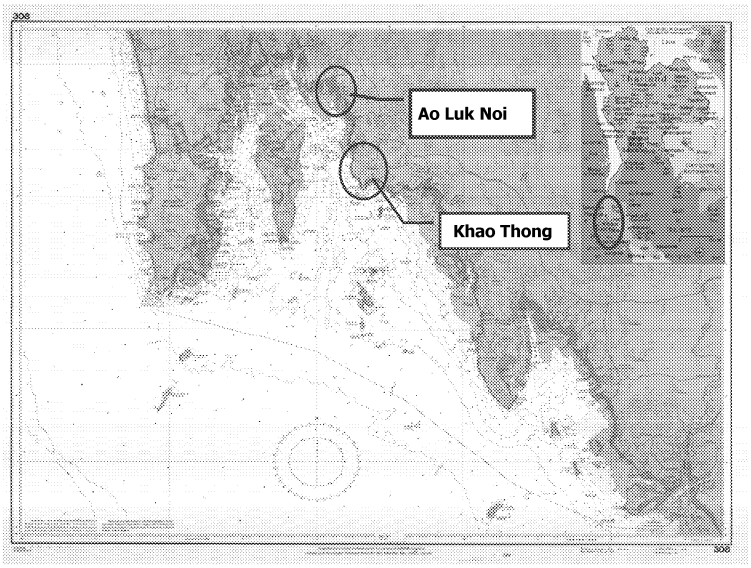
4.2 To study the microfinance programs for rebuilding lives in post-tsunami.

[1] The economic crisis of South East Asia in 1997: The economy has sunk into the deep crisis and caused the contagion effect around Asia and the world.

5. Methodology

5.1 Areas map and main sites visited

The survey was conducted in Krabi province that is representative sites for fishing and tourism activities. Krabi province is located 814 kilometers from Bangkok, covering an area of 4,708 square kilometers and total population was 358,383 in 2000. The devastation caused by the tsunami has been put at 2.55 billion baht (US$64 million) (Krabi tsunami provincial report, 2005). The study mainly focused on fishing villages in two sub-districts, namely Khao Thong and Ao Luk Noi (Fig. 1).



5.2 Data collection and analysis

Primary data were collected by random sampling, using structure of questionnaires interview during June 2005. The survey was conducted with interviewing of 69 households in three villages in Khao Thong sub-district (23 households in Khao Thong village, 25 households in Tha Lane village and 21 households in Tha Thong Lang village). Statistical tools employed in data analysis were percentage and mean. In Bakan village of Ao Luk noi sub-district, 37 households were interviewed. In-depth interview was focusing on women's group. Secondary data were concerned about national policy and microfinance programs.

Khao Thong sub-district was selected to present the microfinance revolving funds projects. Ao Luk Noi sub-district was selected, in that women were actively involved in income-generating activities through participation in women's groups. Both sub-districts are focused on microfinance program in order to rebuild lives and livelihoods of people in post tsunami.

6. Result and Discussion

6.1 Case of Khao Thong sub-district

6.1.1 Background and the impacts of the tsunami

Khao Thong sub-district is located in Muang district, Krabi province. The great majority of people are Moslem, 5,155 (2,640 male and 2,515 female) in 2000. Administratively, Khao Thong comprises 6 villages. The study was conducted in 3 coastal villages facing Andaman Sea. Local people heavily depend on capture fisheries, aquaculture and marine tourism. The impacts of the tsunami in three villages of Khao Thong sub-district have been a heavy loss of livelihood and extensive property damage. Thirty-three small fishing boats, 3 unregistered large fishing boats, 5,459 pieces of fishing gears, and 417 sq.m. of fish cages were damaged in three villages of Khao Thong sub-district(Andaman Forum , 2005).Tsunami may lead people into the vicious circle of poverty. Fisherfolk and other microentrepreneurs who lost their livelihoods are now seeking grants and/or loan for rebuilding lives and livelihoods. The sources of credit people can access are private financial institutions and village moneylenders. Some moneylenders charge a high interest and extending loans with requiring collateral. Sixty-one percent of household in affected areas earned monthly income in post tsunami less than 10,000 baht (Table 1). The respondents felt their amount of income in post tsunami is decreased due to the loss of boats and gears, declining catch and decreasing price of products. Immediately after the tsunami disaster, those households having saved money have had to husband it for such emergency needs as foods and medicines for their survival. The majority of people interviewed in this study said that they borrowed money from informal and/or formal sources to secure working capital in the operation of fishing and other activities, or to acquire physical assets, such as building, boats and gears and tradable goods. They mentioned that, although they would obtain loans, they would find it difficult to purchase the assets to fulfill their livelihoods. It is because the overdue loans and high interest make them less creditworthy.

Table 1 Monthly household's income (baht)

Income/Village	Khao Thong	Ta Lane	Tha Thong Lang	Total
<10,000	15 (65.2%)	13 (52.0%)	14 (66.7%)	42 (60.9%)
10,000 – 19,999	5 (21.7%)	5 (20.0%)	6 (28.6%)	16 (23.2%)
20,000 – 29,999	1 (4.4%)	3 (12.0%)	-	4 (5.8%)
30,000 – 49,999	2 (8.7%)	-	1 (4.7%)	3 (4.3%)
> 50,000	-	4 (16.0%)	-	4 (5.8%)
	23 (100%)	25 (100%)	21 (100%)	69 (100%)

Source: Field survey, June 2005

6.1.2 Recovering livelihoods in Khao Thong focusing on revolving fund activity

The government acted quickly, and rehabilitation operation was joined with support from United Nations agencies, NGOs and other development. By increasing their income, skills, and confidence, the government and several partners have supported people on microfinance programs. Social mobilization under the microfinance programs will focus primarily on sowing of participatory decision-making for the common interest of the community and aspect of building harmony among sometimes disparate groups in the same locality. The participatory approach will make people feel they are the owner of the process of rehabilitating and modernizing their own communities (Intaramo, 2001). The long term goal of the participatory development is to enable the most vulnerable people of the villages to contribute more effectively in community's development and to share equally in its benefits.

In Khao Thong sub-district, the tsunami recovery programs have supported the affected people by providing village-based revolving fund activities. A small amount of loan will be provided to each individual household to restart their livelihoods. The repayments will be continued to be a source of revolving fund for future operation. The revolving funds are mostly managed by local community. The term of repayment and interest rate are decided by the village committee. Funds will be revolving in community without returning money to the providers (Fig. 2).

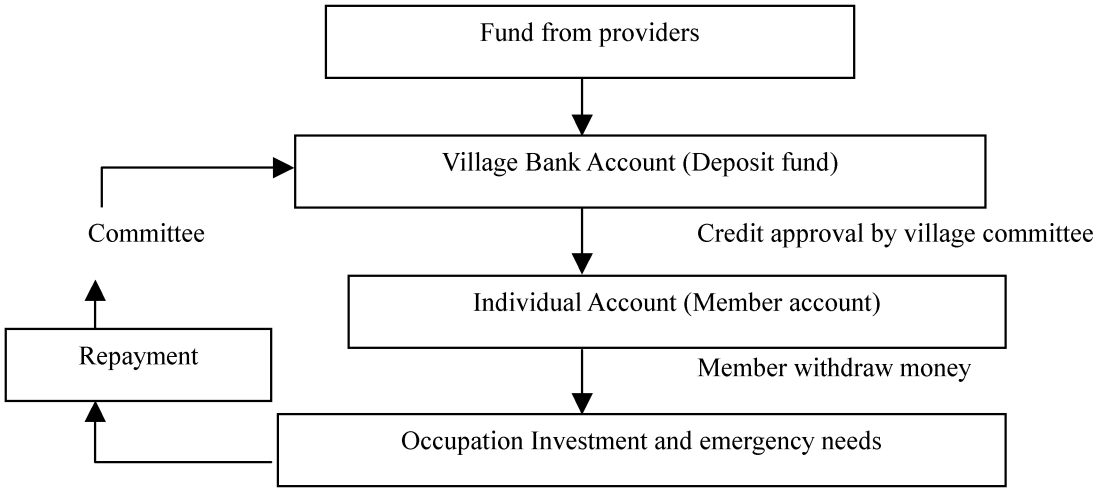


Fig. 2 Village-based revolving fund structures

6.1.3 People's participation revolving fund program

In three village, 49.4% of people participated in CARE foundation program that was initiated by non government organization namely "CARE[2]" (Table 2).

Table 2 People's participation in microfinance's membership

Microfinance program (group)	Khao Thong	Ta Lane	Tha Thong Lang	Total
CARE foundation program	15 (38.4%)	16 (76.2%)	13 (44.8%)	44 (49.4%)
Village fund program	12 (30.8%)	3 (14.3%)	11 (37.9%)	26 (29.2%)
Fishers groups	4 (10.2%)	2 (19.5%)	1 (3.4%)	7 (7.9%)
Poverty alleviation programs	5 (12.8%)		1 (3.5%)	6 (6.7%)
Saving groups	2 (5.1%)		3 (10.3%)	5 (5.6%)
Women groups	1 (2.6%)			1 (1.1%)
Total	39 (100%)	21 (100%)	29 (100%)	89 (100%)

Source: Field survey, June 2005

6.1.3.1 CARE foundation program

The rate of people's participation in CARE foundation program was highest because CARE's main activity specified to help people affected by tsunami. CARE's emergency program was started at the beginning of January 2005. The relief program included in medical supplies, clothes, establishing occupation and credit schemes to the community.

The main activity of CARE foundation program is to provide microfinance services through establishing a system of "revolving fund". CARE staff and local partners have encouraged people to set up this system in all the villages that were damaged by tsunami. The revolving funds activities started in Khao Thong village in January, followed by Tha Lane and Tha Thong Lang villages in March 2005. One hundred thirty (130) persons in Khao Thong village participated in the membership of this program, which was much more than the number of members in Tha Lane village with 83, and that in Tha Thong Lang village with 70.

Village committee has a greater responsibility planning for all activities and management. In each village, the committee prepares lists for the total damaged value of affected household in their villages to receive fund from provider. Amount of funds that they need are different in three villages, depending on damaged value. Khao Thong village received the highest amount at 1,700,000 baht while other two villages received approximately one million baht. The individual

[2] CARE is one of the world private humanitarian organizations. The scope of CARE's mission is to serve individuals and families in the poorest communities in the world. CARE has had a country office in Thailand since 1979.

households have to submit application form to committee to get loan. The village committee will examine damaged value and compensation before providing loan for each household. That means communities are able to decide for themselves what the funds are used for.

6.1.3.2 Village fund program

The village fund program, one kind of "revolving fund", has the rate of people's participation being 29.2% (see Table 2). The village fund program started in 2001 in all villages in Khao Thong sub-district, in the same way as 70,000 villages all over the country began to involve. Thai government provided one million baht to each village for the purpose of supporting people's occupations. Each village has 140-150 members on average. Maximum amount of loan per household is 20,000 baht. Repayment will be made for a period of up to 12 months without interest. After tsunami, people were unable to pay debt they had borrowed before. The village fund committee issued the "debt moratorium" for people who faced difficult in repayment. This moratorium is quite different from debt cancellation. In a moratorium, the payment remains due and will increase the debt payments in the future. About 10% of members are now getting debt moratorium and repayment can be extended during a period of rehabilitation lives and occupations.

6.1.3.3 Other types of microfinance program/group

In Khao Thong sub-district, people also participated in the activities such as fisher's groups (7.9%), poverty alleviation program (6.7%), saving groups (5.6%) and women's groups (1.1%) (see Table 2). Those activities become involved in tsunami recovery program with different degrees. Such poverty alleviation programs and saving groups have provided the revolving funds to people in affected areas, too, but there are not big scheme as CARE foundation program. In addition, fisher's and women's groups have supported people by providing occupation training and improving activity skill.

6.1.4 Six months responds in Khao Thong sub-district

Revolving funds have been provided to generate income and begin to rebuild their lives. People were affected by tsunami have received fund loan and used for many purposes. Table 3 shows the purposes of borrowing, firstly 66.3% of people need to repair their boats and gears that were damaged by tsunami. The second purpose is business investment (19.6%) and the third purpose is household consumption (7.6%), respectively. As a result, they have been able to repair their boats and gears and start earning income again.

After the tsunami disaster in Khao Thong sub-district, people were being much concerned in organizing local organization and participated in their membership, thereby benefit the activity of revolving funds. Village-based revolving funds have provided financial sources in their own

community. Local people can manage these funds by themselves as free-interest or low interest and without requiring physical or material collateral. Thus, the respondents in the study areas showed their right expressions of favorable opinion towards the participatory approaches of developing the locality. As the results, people have repaired their boats and gears and started earning income again.

Table 3 The purpose of borrowing

The purpose of borrowing	Khao Thong	Tha Lane	Tha Thong Lang	Total
1. Repairing boats and gears	17 (50.0%)	29 (87.9%)	15 (60.0%)	61 (66.3%)
2. Business investment	8 (23.5%)	2 (6.1%)	8 (32.0%)	18 (19.6%)
3. Household consumption	4 (11.8%)	1 (3.0%)	2 (8.0%)	7 (7.6%)
4. Asset investment	4 (11.8%)	1 (3.0%)	-	5 (5.4%)
5. Child education	1 (2.9%)	-	-	1 (1.1%)
Total	34 (100%)	33 (100%)	25 (100%)	92 (100%)

Source: Field survey, June 2005

6.2 Case of Ao Luk Noi sub-district

6.2.1 Background and the impacts of the tsunami

Ao Luk Noi sub-district is located 36 km southwest of the provincial town and covers area of 14,000 ha. Administratively, Ao Luk Noi comprises six villages. The study was focused on Bakan village that is a coastal village along the canal closed the Andaman Sea. The demographic record shows that 5,345 people (2,692 male and 2,653 female), largely Moslem. According to the survey, Bakan has 396 households with total population being 1,900. This is a quite big village in Ao Luk Noi sub-district. The main sources of incomes are fishing and fish cage culture.

In the aftermath of tsunami, fishers have lost of nets and broken cages. They lost stocking fish that most of them were marketable size. Respondents earned 16,197 baht per month on average, while they had to spend 28,715 baht for expenditure.[3] They have also suffered with high debt and low saving. The assessed value of damage varies from 10,000 baht to 6,000,000 baht[4]. People immediately lost their job and it will be take time to return to previous level again.

6.2.2 Focusing group on income generation activity in Bakan village

Bakan village have many kinds of recovery programs to help people rebuild their lives and livelihoods. Majority of respondents in Bakan village have participated in the revolving funds

3 Interview with the respondents of Bakan village in Ao Luk Noi sub-district in June 2005

4 Estimating of damaged value by interview with the respondents of Bakan village in June 2005

activity as Khao Thong village (Table 6). People can access the financial sources and use for individual purposes. Not only was the revolving fund activity provided recovery programs but the income generating activity also formed to provide activity in supplement business to affected people by tsunami. People including women, old people and children are able to earn an income as in their family. It can also raise their self-esteem; improve their status in the family and community.

Table 6 People's participation in microfinance program in Bakan village

Microfinance program/group	Respondents
Village fund program	23 (53.48%)
CARE foundation program	10(23.26%)
Women's groups	8 (18.60%)
Fisher's groups	1 (2.33%)
Saving's groups	1 (2.33%)
Total	43 (100%)

Source: Field survey, June 2005

As a kind of income generating activity in Bakan village, women's group is the most popular with people participation 18.60% (see Table 6). Many women affected by the tsunami had built tiny business on local natural resources. They dried fish that their husbands or neighbors caught or made processing food or handicraft items for sale in local markets and tourism places.

The study in Bakan village was focused on income generating activities through participation in women's groups. To assist them in post tsunami, the Thai Ministry of Labor has provided start-up funding for income generating activities through the affected region. Training is being provided to women in basic business skills and enterprise development. Assistance is also being provided to poor women in forming and strengthening self help groups. Such groups can provide women with the support and opportunities they need to return to economic activity and restore their livelihoods (Intaramo, 2001).

6.2.3 Recovering livelihoods by women's batik-making group

One of those training projects was set up to teach batik-making for women in Ao Luk Noi sub-district in February, 2005. The local government found skilled trainers, recruited village women, and provided public space for training. The income generating activity will be helped them earn supplement income to their family and provided hope and encouragement to women under incredible stress.

After they have completed basic courses from the Thai Ministry of Labor, In March 2005, beginning with 16 women had to start a new women's group with a batik-making activity in order to

supplement income for their family. Master trainer teaches new members in groups how to make the Batik clothes. Half of members are student who want to earn supplement income in the evening after school finishing. The rural women attempts to organize themselves and act as community owned institutions to enhance sharing in knowledge and understanding of good practices in local development. The capacity to manage financial resources and the confidence acquired become the basis for participation in village development activities. All members invested 500 baht per person and the chairman's investment of about 10,000 baht. The money was used to buy necessary equipment and working capital in a group. Members who come to work at group can get daily income in their business volume of about 50 to 70 baht. The batik making activity provides women with an income, as clients inside and outside village buy the products from them, and also enables them to develop business skills.

6.2.4 Six month responds in Ao Luk Noi sub-district

Women's access to income generating activity gives them a greater economic role in post tsunami. Women have own decision-making about their business plan and women economic empowerment is seen as dependent on social and political empowerment in their community. A benefit with the group has rotated through saving and credit. When the group capital base increases, the group can improve technology and quality of productions.

The increasing incomes enable women to increase expenditure on the well-being of themselves and their children. Women's control over decision-making is also seen as benefiting men through preventing leakage of household income to unproductive and harmful. Other welfare interventions are advocated in addition to health, typically nutrition and literacy campaigns to further decrease vulnerability and improve women's skills (Fig. 3). The economic improvement after tsunami is an assumed outcome from increasing women's income and contribution to women's empowerment

The respondents have positive thinking to formulate self-help group after the tsunami. This batik-making activity will generate an extra income for them and their income became essential for their families. The respondents said that establishing of batik-making group allow them to rebuild their livelihoods now and expand their businesses in the future. Women in Bakan batik-making group are enjoying the rising demand for their colorfully designed batik clothes. Orders are pouring in from nearly communities and provinces. The products go out and people know that it was made in Bakan village, it become a source of pride for everyone. Women's group will increase their resilience and reduce their vulnerability to disasters. Disaster practice, media campaign and pilot projects may help to reduce women's subordination as well as meet their practical needs in disasters. Helping women gain confidence and self-esteem will assist women to take control of their own lives and decrease their vulnerability in times of crisis.

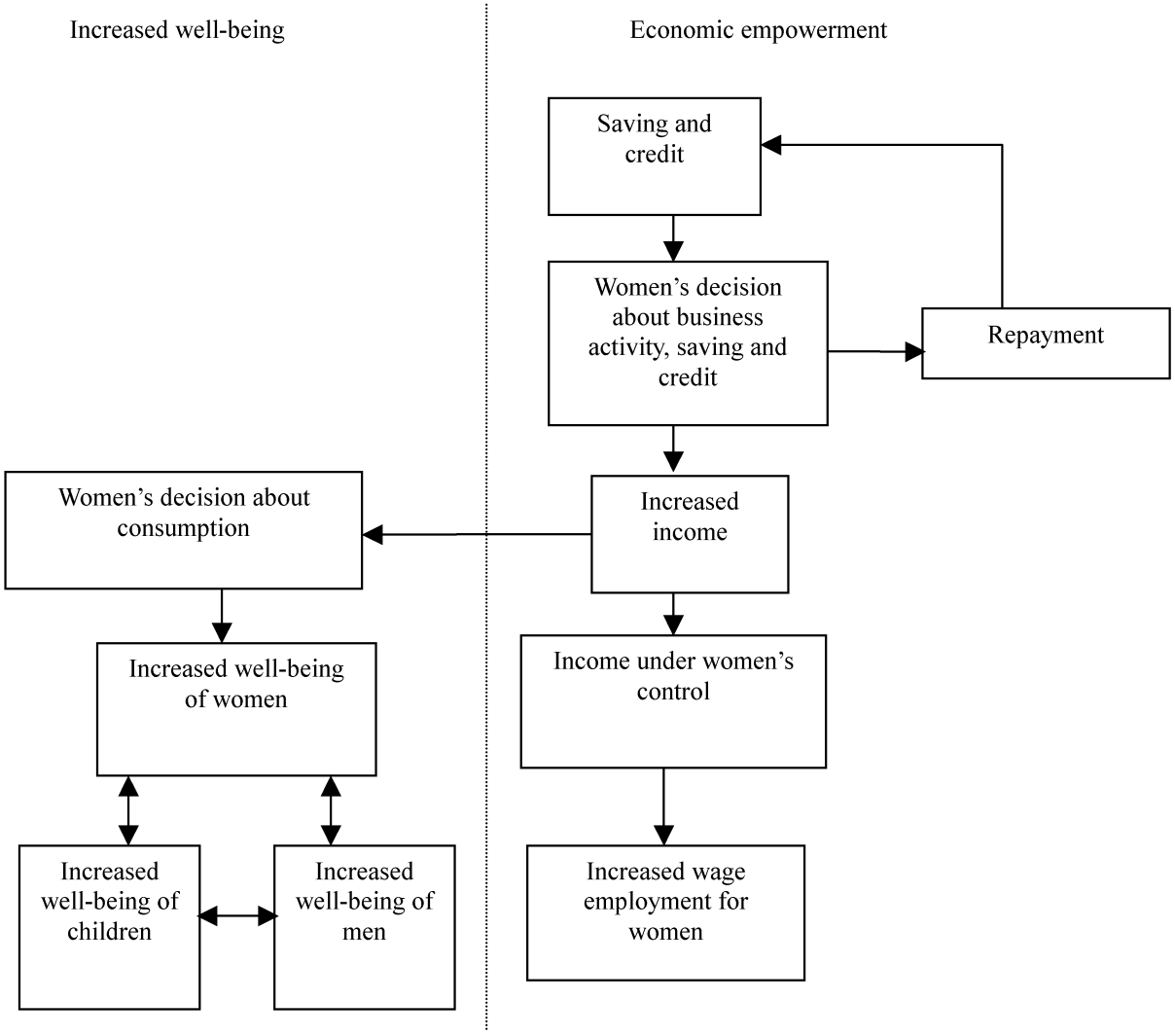


Fig. 3 Financial self - sustainability of women

7. Conclusion

The fishing villages along the Andaman coast and islands were hit worst by tsunami on 26 December 2004. Several sources of donor agencies and the government have supported large amounts of funds through the channels of microfinance program. Many microfinance programs have provided activities for rebuilding lives in a post-tsunami by coordinate with other organizations. With people's participation, they will know well in their community problem and making-decision to solve problem by themselves. The study has observed the microfinance activities in Khao Thong and Ao Luk Noi sub-district in Krabi province. After the tsunami disaster, microfinance activities were increased to support people rebuild their lives and occupations. Village people have their own management to plan and make decision to solve their village problems. In Khao Thong sub-district,

CARE foundation program is the main sources to provide revolving fund activity to members. Most of them need credit to recover their boats and fishing gears that were damaged by tsunami. In Ao Luk Noi sub-district, family members, especially women, are encouraged in women's groups to supplement their income by involving in sale of handicrafts with batik-making.

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