

STRATEGY AND DILEMMA FOR RE-BUILDING COASTAL COMMUNITY TO RESTORE SUSTAINABLE RESOURCE IN PHANG-NGA BAY, THAILAND

Phattareeya Suanrattanachai

Hiroshima University, Graduate School of Biosphere Science, Department of Food and Environmental Economics,
phataree@hiroshima-u.ac.jp, phattareeya@seafdec.org

Wantana Chenkitkosol, Pornprapa Sakulsaeng and Masahiro Yamao,

Hiroshima University, Graduate School of Biosphere Science, Dept of Food and Environmental Economics,
Wantana@hiroshima-u.ac.jp, bensakulsaeng@hiroshima-u.ac.jp, yamao@hiroshima-u.ac.jp

ABSTRACT

Hundreds of coastal communities located in Phang-nga Bay were exacerbated by Tsunami explosion. Fishers and fish cage farmers accidentally lost their means of fishing and culturing operations to stabilize their conventional livelihoods. The article is placed with two objectives in order to simply describe the re-building of coastal community for restoring sustainable resources. The first objective is to identify dilemmas, which were fishers and fish farmers confronted, have obstructed to restore household economy and livelihoods reaching at the pre-Tsunami level. The second objective is to describe strategy used to facilitate fishers' participation in coastal resource management. To figure out the two objectives, interviews with fishers were conducted at hazard sites particular in Phang-nga Bay. Data and information concerned the relief action plan were gathered from the Department of fisheries (DOF), Thailand and any agencies related. The DOF took a major role to formulate relief action plan. The agency provided an immediate financial relief to lost/damaged fishers and fish farmers. They immediately received the amounts of the financial aid to carry on their conventional livelihoods. They also obtained the certain amount of financial assistance for re-constructing their means of fishing operations and fish cage cultures. On the other hand, fishers and fish farmers themselves agree to conventionally utilize the same fishing grounds for capture fisheries and fish cage culture as they did before the Tsunami disaster. This is a customary strategy to manage users and newcomers entering into fisheries. The dilemmas were mainly concerned the difficulty to receive the relief and inadequate amount of financial assistance for re-engagement in fisheries. Thus, the relief action plan is strategy vital to re-build household economy. In addition, fishers' self-management is traditional strategy to manage priority of resource utilization.

Keywords: the re-building of coastal community, strategy, dilemma, relief action plan, financial assistance

INTRODUCTION

The explosion of Tsunami was major cause to wreck hundred of coastal communities in Phang-nga Province, Thailand. This province is one of the six affected provinces which located along the Andaman Sea coastline in the southern part of Thailand. Both domestic and international organizations provided well documented exacerbation of the Tsunami disaster from various aspects such as biological, environmental and physical aspects. We have conducted a series of socio-economic survey in two coastal villages namely Klongkian village and Haadsai-pleakhoi village settled down under the jurisdiction of Klongkian Sub-district, Thakautung District, Phang-nga Province. These two villages were case studies to give the view of coastal community rehabilitation at post-Tsunami. The rehabilitation of affected fishers' household economy and livelihood was key point in the discussion of this paper. Additionally, activity and means concerned the sustainability of coastal resource management was also defined.

The background of the case studied areas was prevalingly relative to the capacity of the two villages. This capacity describes through fishers participated in coastal resource management as well as in community economic development. The fishers' participation has been handled under the framework of the National small-scale fisheries development plan since 1995 to present (2006). On the other hand, the implication of the village rehabilitation was more emphasized the damage assessment in the affected villages. This implication was so far clarified a workable strategy which was credible to facilitate the affected fishers recovered the community. However, fishers and stakeholders faced dilemmas in rebuilding their household economy and livelihood. This paper will focus on the dilemmas according to the data and information collected through twice surveys in the two villages.

SCOPE OF THE STUDY AND METHOD

An overall purpose of the study is to clarify strategy which workably practiced to encourage the affected fishers to rebuild their capacity and household economy. This study composed of two objectives to accomplish the overall purpose. The first objective was to describe strategy which was implemented by government agencies, non-governmental organization and fishers. This strategy was employed to facilitate fishers restored their livelihood and sustain coastal resource management. The second objective was to identify dilemma fishers and stakeholders confronted in re-building coastal community. These dilemmas have to be made comprehension of both certain and uncertain choices in recovering the community.

Targeted respondents were the affected fisher and fish-farmer household lived at Klongkian village and

Haadsai-pleakhoi village. The number of the respondent was 35 households in June and 29 households in November in 2005. The first survey was conducted with focusing on damage and need assessment. This survey included the implementation of the national relief program. The second survey would monitor how the fishers and fish-farmers renovated their household economy and livelihood. The data collection would be analyzed through descriptive statistic value and merely considered on mean value. The mean value would be figured on tables and charts.

BACKGROUND OF THE STUDY SITES

The background of the studied sites describes relatively to the prevalent community at pre-Tsunami. This background generally gives profile of the governance structure through the establishment of local organization. On the other hand, fishers and stakeholders practiced in the national small-scale fisheries development program. In addition, the background also addressed fishers themselves enrolled in fishing ground management and allocation.

The geographic position of the two villages roughly pointed in the Fig.1. These villages settle down on the apart of 1,960 km² of the Phang-nga Bay. Mangrove forests were 250 km² boundary areas covered along the Bay [1]. The background of the villages' development portrayed information in table I. This table illustrates the village was developed under the national policy. In 1995, the national policy adopted a bottom-up approach to encourage people's participation in community development and resource management. The policy initially trained local people to involve in problem-solution analysis. People's participation was based on democratic scheme. The new Thai constitution was promulgated in 1997 in order to strengthen the people's empowerment. The constitution placed a great emphasis on the decentralization of central authority. According to this strategy, the central government began to devolve authority to local levels in various ways.

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.

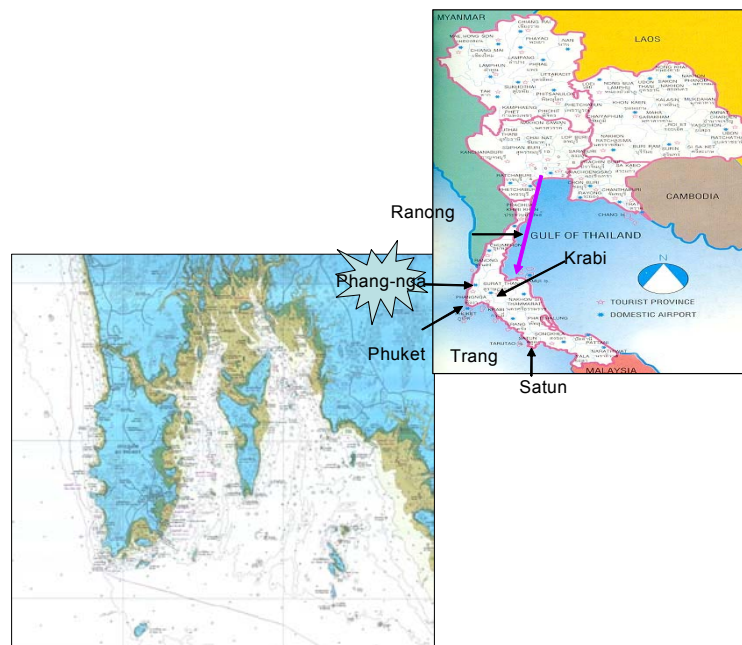


Fig.1 Map of the studied sites located along Phang-nga Bay, Phang-nga province

The local people's group is as primary task force unit at village level. The group is a community-based management unit (CBMU). Member of the CBMU composes of resource user and stakeholders [2]. At recent, Klongkian

sub-district administrative organization (Ao.Bo.To.) has taken responsibility to develop community. The Ao.Bo.To. has mainly provided basic infrastructure to villagers.

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

Year 1995	1997	2000 - Present
National policy		
Bottom-up approach to promote people's participation particular sub-district level in community development and resource management	Promulgation of the new Thai Constitution, 1997. This constitution was to implement decentralization and de-officialization of authorities from central government to local administrative body.	The sub-district administrative organization (Ao.Bo.To., in Thai) is official local management body. Ao.Bo.To. has functions to involve in community development, social welfare, education environmental aspects, and so on. Part of resource management work becomes a local issue.
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

In the same period of time, 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). 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' network plays 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.

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.

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.

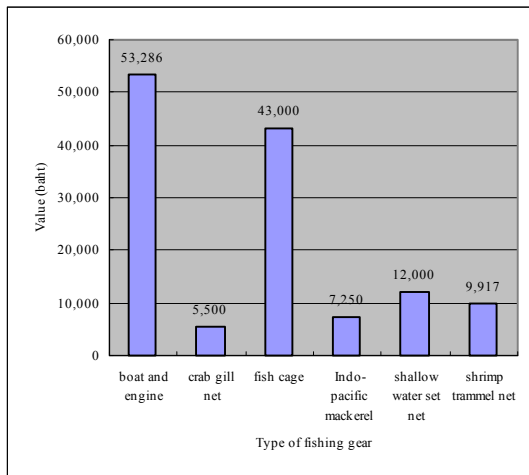


Fig.2 Physical asset in value on average At Klongkian village at pre-Tsunami

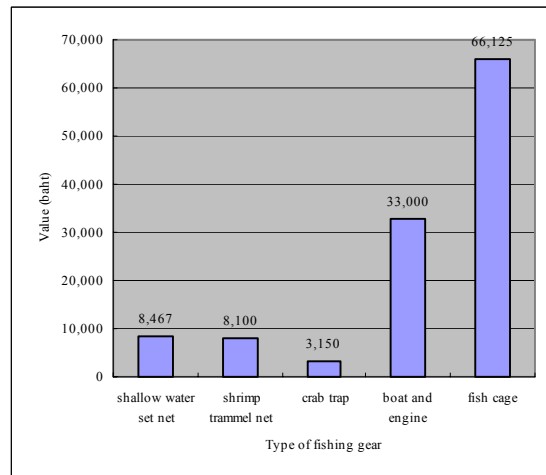


Fig.3 Physical asset in value on average at Haadsai-pleakhoi village at pre-Tsunami

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.

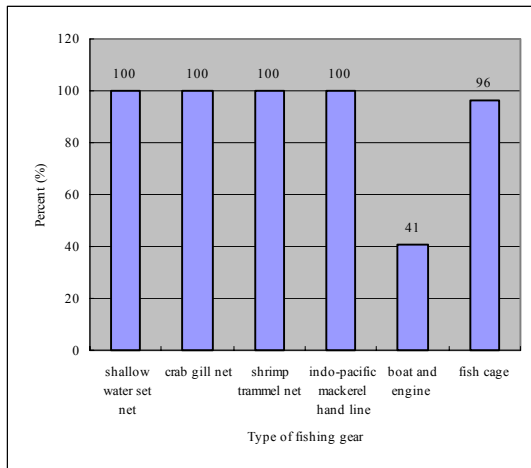


Fig.4 Damage assessment of physical asset at Klongkian village at post-Tsunami

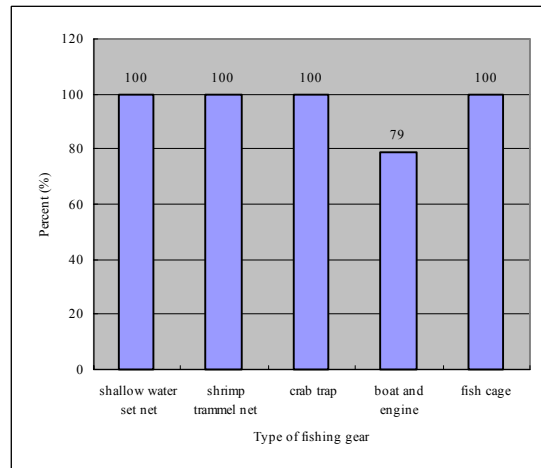


Fig. 5 Damage assessment of physical asset at Haadsai-pleakhoi village at post-Tsunami

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-pleakhoi 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).

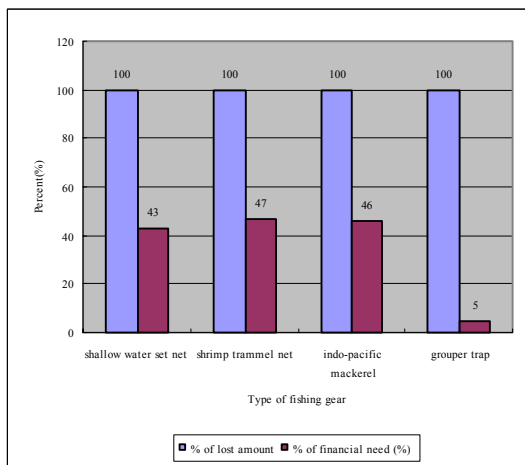


Fig. 6 Financial need assessment at Klongkian village

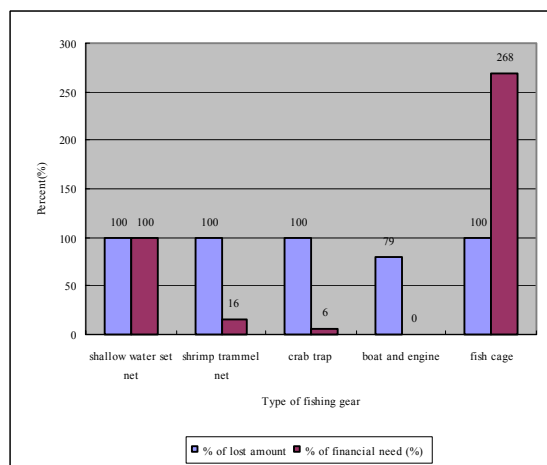


Fig.7 Financial need assessment at Haadsai-pleakhoi village

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.

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.

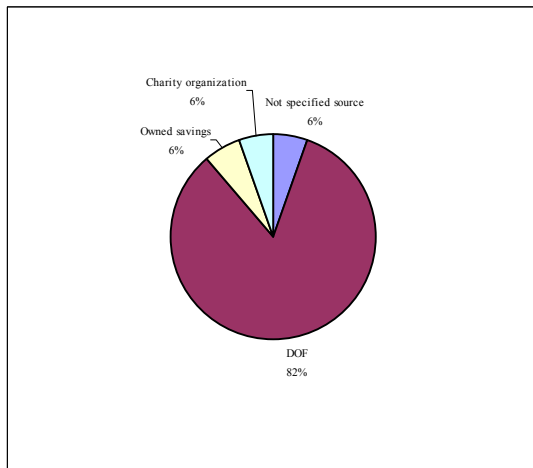


Fig.8 Source of financial assistance found at Klongkian village

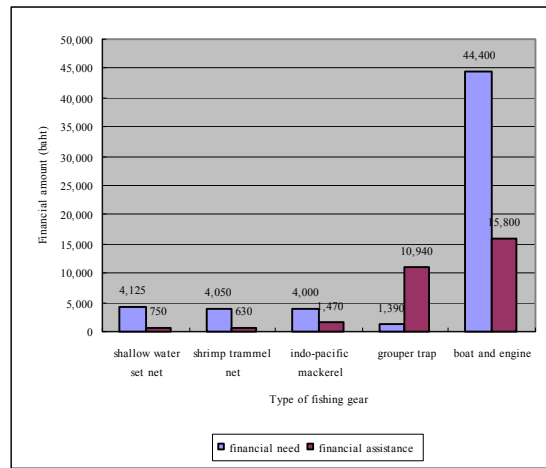


Fig.9 Financial assistance provided by the DOF at Klongkian village

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.

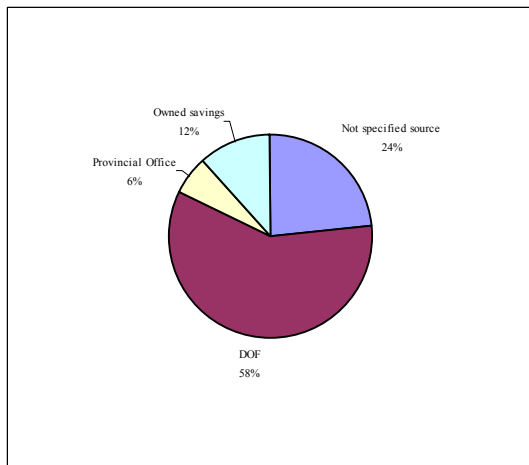


Fig.10 Source of financial assistance found at Haadsai-pleakhoi village

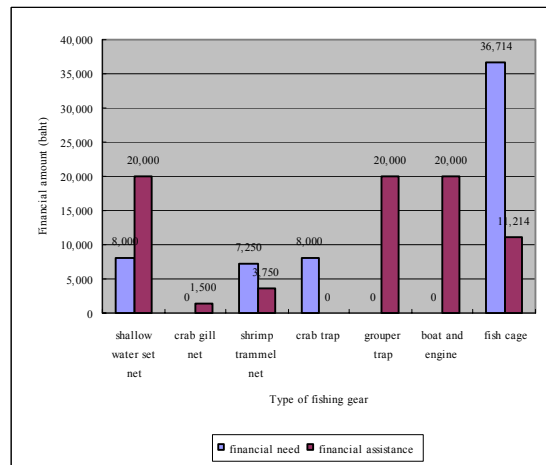


Fig.11 Financial assistance provided by the DOF at Haadsai-pleakhoi village

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.

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's 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.

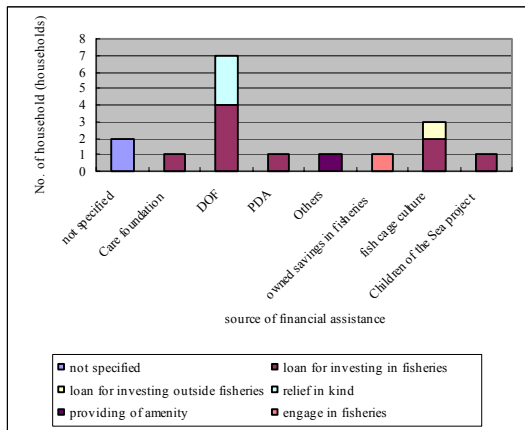


Fig.12 Source of financial assistance and Feature of financial management, Klongkian Village

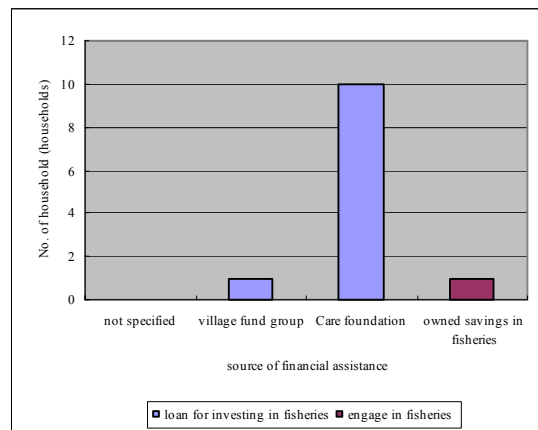


Fig.13 Source of financial assistance and feature of financial management, Haadsai-pleakhoi village

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).

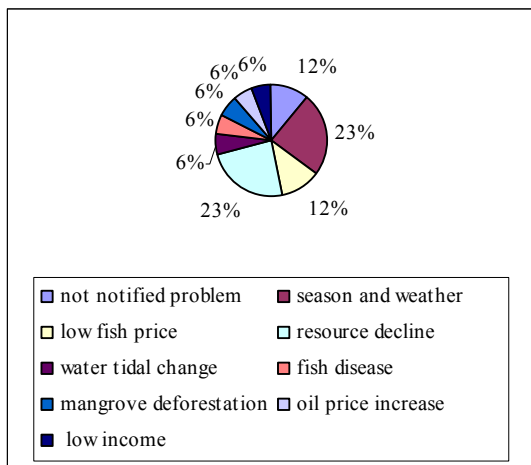


Fig. 14 Problems on community development and coastal resource management notification at Klongkian village

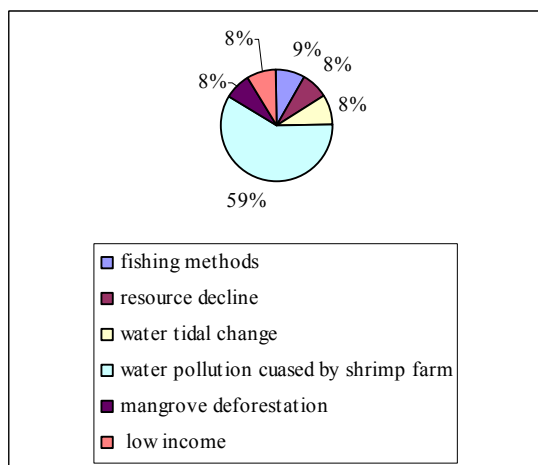


Fig.15 Problems on community development and coastal resource management notification at Haadsai-pleakhoi village

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.

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.

REFERENCE

- [1] Chong, Kee-Chai and et.al.1998.Successful Co-management of Phang-nga Bay Fisheries Through Fisheries Community Bonding. The World Bank/WBI's CBNRM initiative at <http://srdis.ciesin.columbia.edu/cases/india-001.html>
- [2] Yamao, M. and P. Suanrattanachai.2002. Background and Project Proposal of Locally Based Coastal Resource Management in Pathew District, Chumphon Province (LBCRM-PD). Collaborative Project Between Southeast Asian Fisheries Development Center and the Department of Fisheries, Thailand. LBCRM-PD No.2, July 2002, 50pp.
- [3] Pimoljinda, J. and Boonraksa, V. Community-based fisheries co-management case study: Phang-nga Bay, Thailand at www.worldfishcenter.org/Pubs/way%20Forward/8%20pimoljinda.pdf.
- [4] Pomeroy, R.S.1995. Community-based and co-management institution for sustainable coastal fisheries management in Southeast Asia. *Ocean & Coastal Management*,27(3),pp.143-162.
- [5] National Rapid Environmental Assessment-Thailand at www.unep.org/tsunami/reports/TSUNAMI_THAILAND_LAYOUT.pdf.