

DECENTRALIZED MANAGEMENT THE NEW APPROACH OF THAI COASTAL FISHERY MANAGEMENT

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ABSTRACT

In the last three decades coastal fishery has created employment, provided a supply of good quality animal protein for Thai people. The fishery resources of Thailand are treated as common property, anyone can take benefit from these resources. They are, therefore, heavily exploited by fishers who employ various types of fishing gear. Arising from the development of Thai coastal fishery and the increasing in number of coastal fishers, two severe problems, i.e., the fishery resources depletion problem and the conflicts among fishers problem now exist.

So far, the management of coastal fishery is centralized. The Department of Fisheries (DOF) is the sole agency in managing coastal fishery and all of the management measures has established by the DOF without consulting with the fishers or other stakeholders. Thus, the DOF is hardly to get a satisfy success in coastal fishery resources conservation and management. Therefore, in order to achieve the sustainable development of coastal fishery, a new approach of management should be considered.

In late 1993, with the financial support of the Asian Productivity Organization (APO), Prof. Tadashi Yamamoto is invited to Thailand for providing technical assistances on community-based fishery management, fishing right and decentralization management to DOF officials and instructors of the Faculty of Fisheries. In early 1994, the DOF set up several committees for establishing a decentralize management system. Owing to the reshuffle of the DOF Director General and the economic crisis of the country, the progress of the development is very limited although the present Constitution is clearly mentioned that the government has to manage the natural resources and environment through decentralization.

In late 2003, with political reason, the DOF is pushed by the Deputy Minister of Agriculture and Co-operatives to implement decentralized fishery management through fishery co-management and fishing rights system for coastal fishery. Then, several committees again have been established and each committee has his own assignment. Many instructors from universities and stakeholders are invited to be a member of committees. To support the decentralization approach, a Provincial Fishery Management Committee is established in every coastal province with the mandate of managing the fishery in provincial fishing ground. The members of provincial committee include small-scale fishers, commercial fishers, chairman of Tambon (Sub-district) Administrative Organization (TAO), instructors from universities, DOF officials and other stakeholders. Instructors and officials act as technical advisor only and they will not engage in committee voting. At present, Thai Fisheries Cooperatives are not active in fishery management due to the constraints on legal framework and fisheries cooperatives management. To develop the decentralized management in Thailand may require time and considerable cost because there are many problems to be solved. This is the great challenges to everybody concern.

Key word: Thai coastal fishery, Decentralized management

Introduction

Thailand is a typical tropical country with a total area of 513,115 sq. km. of which about 35 per cent can be classified as mountainous areas. The large and varied interior of the country possesses rich aquatic resources. In addition, Thailand's coast line of 1,875 km includes the Northern and Western reaches of the Gulf of Thailand (GoT) which are relatively shallow waters rich in marine life, and the Southwestern coastline extending 740 km

along the Andaman Sea. These comprise essential nursery areas for juvenile marine and brackish water organisms of significant economic importance, and offer good potential for coastal aquaculture development [1].

Thailand has 24 coastal provinces which are classified into 5 coastal zones as follows [5]: Coastal Zone I – Eastern part of the GoT; Coastal Zone II – Inner part of the GoT; Coastal Zone III – Central part of the GoT; Coastal Zone IV – Southern part of GoT; and Coastal Zone V – Andaman Sea.

For fishery management and statistic collection purpose, the fishing grounds of Thailand are divided into 12 fishing areas of which seven are within the EEZ of Thailand [2].

Roles of Coastal Fisheries to National economy

Coastal fishery is one of the important sectors of Thai fishery industry. Its roles in the national economy are as follows [3]:

To provide high quality animal protein for the Thai people. In the past, fish were treated as the cheapest animal protein. Coastal fishery is the main source of fish supply for domestic consumption. At present, the fish per capita consumption in Thailand is being around 30 kg.

To create national income. In 2000, the gross domestic production (GDP) of fisheries sector was 2.8 billion US\$ which accounted for about 2.5 per cent and 27.6 per cent of national GDP and of agricultural GDP, respectively.

To create employment. Fishery industry can absorb a considerable number of labors for capture fishery, aquaculture, fish processing and fish marketing. From 1995 Marine Fishery Census, the total number of fishers was about 320,000 comprised of 70,000 full-time commercial fishers; 180,000 small-scale fishers; and 70,000 engaged in fisheries related activities. The coastal fishery could absorb a number of labor forces in the rural areas and results to the declining of social problems in the country.

To earn foreign exchange. Thailand is a major export country on fishery commodities that earn around 3 billion US\$ annually from 1995. The major fishery commodities are fresh and frozen, canning and salted, dried and smoked. The important exported fishery products were frozen fish and frozen cuttlefish. The relative shares were approximately 14-19 per cent and 11-14 per cent of total fishery export, respectively. The coastal fishery contributes the main portion of raw material for frozen fish and cuttlefish as well as canned crab due to the high quality of the catches.

To create linkage industry. Along with the development of coastal fishery, many linkage industries ; i.e., ice plant, net making factory, cold storage and processing plants have been established. This result to the increasing of national income and employment.

Structure of Thai Coastal Fishery

Fishery households

In 2000, there were 53,112 marine fishery households in the country of which 98.7 per cent of them are small-scale fishery households. The small-scale fishery household is the household that operate fishing without boat, with non-powered boat, out-board powered boat and in-board powered boat of less than 10 GT. The total number of fishery households decreased by 18.8 per cent from 1995 but total number of small-scale fishery households increased by 12.0 per cent. The majority of the small-scale fishery households was in Coastal zone IV and V (NSO, 2001). These reveal that the coastal fishery resources will be overexploited particularly in the Southern of GoT and Andaman Sea. Thus, the cases on fishery conflict normally appear in these two areas.

Fishing boats

Fishing boats that operate in the coastal area can be divided into three groups, i.e., non-powered boat, out-board powered boat and in-board powered boat. All of them are wooden boats. The 2000 Intercensal Survey of

Marine Fishery results reveal that the total number of fishing boats in the country was 58,119. Out-board powered boats were the largest group in the country with 72.7 per cent. The second largest group was in-board powered boats accounting for 22.8 per cent. Non-powered boats were the smallest group which constituted only 4.5 per cent. Thus, the total number of fishing boats that operate in coastal areas were 51,078 boats.

Fishing gears

The major fishing gears employed by Thai coastal fishers are fish gill net, crab gill net, fish trap, crab trap, long line, bamboo stake trap, push net, baby trawl, set bag net and other manual gears. In the past, the small-scale fishers use low efficiency gears and small in scale that result in their low catches. However, with the rapid development of the fishing technology, the efficiency of fishing gear of small-scale fishers has increased and resulted in a high total amount of fishing effort. The small-scale fishers normally employed more than two fishing gears due to fishing season and available of fishery resources.

Problems of Thai Coastal Fishery

The fishery resources in Thailand are treated as common property anyone can take benefit from these resources. They are, therefore, heavily exploited by fishers who employ various type of fishing gears. Arising from the development of Thai coastal fishery in the last three decades, many serious problems now exist. The two most severe problems are [4]:

Fishery resources depletion. This is the most severe problem of coastal fishery. Studies on the assessment of many important economic species found that the fishery resources in coastal areas are being overfishing and the fish stock is being depleted. Furthermore, the catch composition of marine fishery products has higher trash fish. The small-scale fishers have less catch and the size of caught fish is become smaller. The catch per unit of effort is reduced more than half in the last decade. These result from overfishing and degradation of aquatic environment.

Conflicts among fishers. Owing to limited fishery resources, the fishers who employ different types of fishing gear and use the same fishing ground, compete with each other in exploiting the resources. This leads to conflicts among fishers both small-scale fishers and commercial fishers. This problem is becoming serious as the number of cases and degree of conflicts are increasing day by day.

In the next decade, if these two problems cannot be solved the coastal fishery of Thailand may collapse.

Coastal Fishery Management Program

So far, the DOF is the agency that take responsibility on coastal fishery management of the country. The DOF realize the problems of coastal fishery which is why many management measures have been implemented to protect and develop the coastal fishery resources. The important measures so far taken are as follows [3]:

Area and seasonal closures. This measures is mainly aimed at recovering the Indo-Pacific mackerel (*Rastrelliger brachysome* Bleeker), or "Pla Too" in Thai, which is an important economic species in the country. The DOF conducted a long-term study on this species and found that the coastal areas are the spawning and nursery grounds of the species for the period from February to May. As a result, the declaration of 28 November 1984 of the Ministry of Agriculture and Cooperatives prohibits trawling and purse seining in upper south of the GoT for two periods, 15 February to 31 March and 1 April to 15 May. The gill netters that operate in this area must use nets with mesh size of 4.7 cm and above. For the same reason, the Ministry announced another declaration on 11 April 1985, which prohibits trawling, purse seining and gill netting with mesh size of less than 4.7 cm in the Andaman Sea Area from 15 April to 15 June.

Gear restriction. In order to preserve the coastal fishery resources, the Ministry declared a regulation on 20 July 1972 which prohibits trawling and push netting within 3,000 m from shore. These gears are considered to be destructive in that they catch a big amount of trash fish, more than half of which are juveniles of economic importance. Furthermore, these gears disturb the sea bed, resulting in a decline of fishery resources.

Limited entry. Owing to the limited fishery resources, in 1980, the DOF made an announcement regarding the registration of trawlers and push netters in an attempt to control the number of these gears. No more licenses were issued to fishing vessels. Only the fishers who have fishing licenses can apply for an annual extension of their fishing licenses. The fishing licenses are non-transferable to other operators except when these are children of fishers.

Mesh size limitation. For the protection of small-size pelagic resources, fishing with light-lure and net with mesh size of less than 2.5 cm are prohibited by the declaration of Ministry of 14 February 1977. For squid fishing with light from electric generator, the mesh size must be 3.2 cm and above, as declared on 5 November 1981.

Although these measures have been implemented for more than two decades now, the coastal fishery resources have yet to recover to a satisfactory level for the following reasons:

1. The DOF is not the only agency implementing fishery management program. There are several agencies concerned with the program. Thus, it is very hard for the DOF to implement any measures efficiently.
2. The collaboration by fishers is limited. As mentioned above, fishery resources are treated as common property and coastal fishery is open access fishery. The fishers are not willing to collaborate with the DOF for the fishery management program. They just want to catch as much as they can each day because they believe that if they follow the DOF fishery program, they will be the losers.
3. The law enforcement cost is very high. The construction and operation costs of patrol boats are considerable; the DOF provides quite a big budget for them each year in the past two decades but it is still inadequate. Furthermore, it is doubtful whether the benefit from recovery of fishery resources can meet the cost of law enforcement.
4. Low efficiency of enforcement. The limited number of staff and patrol boats versus the coastal length of 2,614 km allows the huge number of fishing boats to operate various types of fishing gears. Other reasons for the poor enforcement of laws in Thai waters are as follows:
 - Lack of motivation by field staff to enforce laws;
 - Lack of appropriate and effective penalties;
 - A view that many illegal fishers have no alternative source of income;
 - Pressure brought to bear by influential persons who include owners of fishing boats, creditors of fishers, middlemen (who may also be owners and creditors), and sellers of fishery inputs such as fuel, nets, ice, etc.;
 - Lack of appropriate equipments on the part of law enforcement units;
 - Lack of staff in law enforcement unit; and
 - Cultural attitudes relating to enforcement prohibitions.

Development of Decentralized Coastal Fishery Management

Decentralization is the delegation of power, authority and responsibility from the central or national government to lower levels, or smaller units of government, such as states or provinces, or to local-level institutions, such as community organizations. Decentralization can be operationalized in four ways:

- Deconcentration: the transfer of authority and responsibility from the national government departments and agencies to regional, district, and field offices of the national government.
- Delegation: the passing of some authority and decision-making powers to local officials. The central government retains the right to overturn local decisions and can, at any time, take these powers back.
- Devolution: the transfer of power and responsibility for the performance of specified functions from the national to the local governments without references back to central government. The nature of transfer is political (by legislation), in contrast to decentralization's administrative transfer, the approach is territorial or geographical rather than sectoral.
- Privatization: the transfer of responsibility for certain governmental functions to NGOs, voluntary organizations, community associations, and private enterprises [6].

The development of decentralized coastal fishery management of Thailand can be classified into phases as follows.

Preparation Phase.

The failure of the fishery management program in the past has pushed the DOF to rethink on managing the coastal fishery of the country. A concept that has received much attention is decentralized management. The coastal fishery should be managed by the stakeholders and communities. The essence of such system is that fishers or fisher institutions, rather than the government, should be responsible for the management and regulation of fishery. It is generally believe that if fishers or fisher institutions were given management responsibilities, they would be committed and responsive to management and conservation measures [7].

In 1993, the DOF with the collaboration of the Department of Fishery Management (DFM), Faculty of Fisheries, Kasetsart University, established a community-based fishery management (CBFM) program for Thai coastal fishers. However, the understanding on CBFM concepts of concerned people is very limited. Thus, the DFM, with the financial support of the Asian Productivity Organization, invited Professor Tadashi Yamamoto to Thailand in December 1993. Professor Yamamoto spent one month with researchers from DOF and DFM, a one week seminar was organized at DFM in order to convey a clear concept of CBFM for researchers and instructors. Then a ten-day field trip was made to three provinces in Southern Thailand to meet the provincial fishery officials and heads of several fishing communities to explain the concepts of CBFM to them.

In early 1994, the DOF set up several committees for establishing the CBFM in Thailand. The urgent tasks are (a) drafting a new fishery law to incorporate the CBFM and (b) pilot project preparation. Unfortunately, due to the economic crisis of the country and the reshuffle of the DG of DOF, this program has a slow movement only three pilot projects have been implemented and most of the coastal fishers misunderstood on the concepts of CBFM.

The present Constitution that enacted in 1997 provided many sections for decentralized management. In Section 76 of the Thai Constitution has mentioned that “The State shall decentralize powers to localities for the purpose of independence and self-determination of local affairs.....The State shall promote and encourage public participation in laying down policies, making decision on political issues.....”. This means that the government has full responsibility to promote decentralization and public participation. In addition, Section 79 stipulates that “The State shall promote and encourage public participation in preservation, maintenance and balance exploitation of natural resources and biological diversity and in the promotion, maintenance and protection of the quality of environment in accordance with the persistent development principle as well as the control and elimination of pollution affecting public health, sanitary conditions, welfare and quality of life”.

Result from the Section 76 and 79, a Tambol Administrative Organization (TAO), the local organization at sub-district level is established in each Tambol for the whole country. It has given a mandate on local environment protection and natural resources conservation and mangement. However, most of the TAO officials can not carry out their mandates due to their low position and to the fact that the TAOs are controlled mainly by local influential groups.

Legal framework preparation phase

In order to provide legal support to decentralized management of coastal fishery and to accord with the above Sections of the Constitution, a new fishery law is drafted with participation of all stakeholders. This law consists of 16 chapters as follows:

- Chapter I: Principles
- Chapter II: Definitions
- Chapter III: Zones
- Chapter IV: Management of Aquatic Resources
- Chapter V: Community-Based Fishery Management

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| Chapter VI: | Inland Fishery Zone |
| Chapter VII: | Coastal Marine Fishery Zone |
| Chapter VIII: | Commercial Marine Fishery Zone |
| Chapter IX: | Overseas Marine Fishery Activity |
| Chapter X: | Foreign Fishing Activity in Thai Waters |
| Chapter XI: | Aquaculture |
| Chapter XII: | Protected Species and Protection Areas |
| Chapter XIII: | Health, quality and Export |
| Chapter XIV: | Monitoring, Control and Surveillance |
| Chapter XV: | Jurisdiction and Penalties |
| Chapter XVI: | Miscellaneous |

There are many sections that related to decentralized coastal fishery management through fishery co-management and community-based fishery management systems. The key contents of those sections can be summarized as follows.

1. Encourage fishermen, fishing communities, the public, and provincial and local authorities to work together to create Local Fishery Committee for the purpose of better managing, conserving and developing the aquatic resources (Section 18).
2. Establish a Local Fishery Committee (LFC) and designate an area of waters within coastal marine fishery zone which is under jurisdiction of the LFC. The LFC has exclusive authority to issue local fishing permit (Section 19).
3. An area of coastal marine fishery shall designate as a designated community fishery area. Members of the public can initiate and participate in decision-making regarding the establishment of criteria for and creation of a designated community fishery area (Section 51).
4. No person shall harvest aquatic resources within the Coastal Marine Fishery Zone unless the person engaged in the harvesting is registered small-scale fishers or the person who has a permission written from LFC (Section 59).

Although the draft new fishery law is a comprehensive fishery law that covers all aspects of fishery industry, but it requires a long procedure for getting approval from the parliament. So far, the law is under the considerations of agencies concerned.

Implementation phase

In September 2003, with the political reasons, the Deputy Minister of Agriculture and Cooperatives Ministry pushed the DOF to implement decentralized coastal fishery management with the following procedures.

- 1) A Fishery Management Committee (FMC) is established in every coastal provinces. The members of the committee comprise of representatives of small-scale fishers and commercial fishers (equal number), chairman of TAO in the province, fish monger, fish processor, representative of governor, 2 instructors from university and Provincial Fishery Chief is chairman of the committee. According to the advice of Professor Yamamoto, the instructors and other officials will not engage in any voting. Their main task is to provide technical advice and other assistances.
- 2) The mandate of FMC is to designate the provincial fishing ground and establish fishery management measures for this fishing ground. However, the management measures that establish by FMC should not overrule any fishery management measures of the DOF. In addition, FMC has authority in granting a fishing right to a fisher. At present, all coastal provinces have finished the establishment of their provincial fishing grounds and some provinces have overlapping areas. Base on the proposed fishing ground of each province, the DOF will be the agency to finalize the provincial fishing ground of each province. For the management regulations and measures, some FMCs have proposed some measures but these measures are not implemented due to lack of legal support.
- 3) All fishers both small-scale and commercial fishers have to register with the Provincial Fishery Office. Only the registered fishers can apply for a fishing right. The registration covers number and size of management of fishing vessel and types of fishing gear and their number. The Provincial Fishery Office provided a

registration service for every fishing community. So far, there are a number of fishers that did not registered owing to lack of information.

4) When the new fishery law is enacted, the FMC members will be authorized on law enforcement. They can arrest any poachers who operate fishing in their own provincial fishing grounds.

5) In order to understand the attitudes of small-scale fishers and other stakeholders on decentralized management, the DOF with the collaboration of Coastal Development Centre (CDC), Kasetsart University conducted a survey in 22 coastal provinces from February to April 2004. The interviewed samples are 2,200 samples of which the majority are small-scale fishers and the others are commercial fishers, NGOs, researchers, officials and instructors from universities. The collected data is analysis by the researchers of CDC and the report of the study will be available in June 2004. The outcome of the study will be used for next step implementation.

Pilot Projects

In order to gain an experience of decentralized management, the DOF implemented two pilot projects one in Phang-Nga Bay (Andaman Sea) and the other in Bangsaphan Noi (GoT). The first one is semiclose sea model and the second one is open sea model. The Phang-Nga Bay project has a good progress because there was a good support on budget and assistances from the DOF, Bay of Bengal Program and Italian NGOs. Furthermore, the small-scale fishers in Phang-Nga Bay are very active to participate in decentralized management. The followings are the activities of the project.

Management of Mangrove Resources. The coastal fishing communities have realized that mangrove forest is the home of aquatic animal juveniles and the abundance of fishery resources has a close relationship with the available mangrove forest areas. Therefore, in most fishing communities notice boards “ Do not cut the mangrove trees” have installed in mangrove forest areas. Apart from the conservation campaign, mangrove reforestation and forest activities have also been performed in these areas. Mangrove reforestation program is one of the main activities that the people (including students) in the fishing communities have fully participated. Because the fishers have realized that if the mangrove forests in their communities are rich they can assure that they will have a good catch. In addition, the fishers can earn more money from eco-tour in the mangrove forest areas. A committee has established in many fishing communities, this committee has an authority to set up regulations for the sustainable utilization of mangrove forest.

Management of Sea-Grass Resources. Similar to mangrove forest, the sea-grass areas are the good habitat for aquatic animals, especially blue swimming crab the target species of small-scale fishers. The sea-grass areas are destroyed by trawlers and push net as well as by pollution. Sea-grass transplantation that was conducted in some areas in the South of Thailand showed good results with the subsequent appearance of commercially important aquatic animals as well as dugong in the sea-grass beds. Some fishing communities have an agreement to declare the sea-grass area as a marine protected area and they are not allow anyone to fish in that area. The enforcement has been practiced by the member of the communities.

Releasing Gravid Female Blue Swimming Crab. A large number of gravid female blue swimming crabs were sold daily in the markets. In order to avoid the resources depletion problem, the fishers have established a program on releasing the gravid female crab. In Phang-Nga Bay two sets of cage 2x2x2 m were distributed to the fishing communities in the target areas. The caught gravid female crabs were stocked in the cages until they spawned and were then sold. The money from selling the crabs was kept as a revolving fund for the group. At present, the revolving funds of the fishers groups in Phang-Nga Bay is more than 100,000 baht. In some fishing communities, the money is donated to the temples, mosques or schools.

Sea Ranching Activity. In order to enrich the coastal fishery resources, the DOF has provided seeds of shrimps, fish and crabs for releasing them to coastal areas particularly the areas where close to fishing communities. This activity can encourage a sense of ownership and responsible fishing behavior within the fishing communities for their fishery resources and aquatic environment in coastal waters. The fishing communities have a willing to pay for the seeds and fry in the future because they learned that they can get better catches from this activity.

Determination of Conservation Zones. To secure the coastal fishery resources, the small-scale fishers have requested the DOF to use buoys to mark areas for the conservation of aquatic resources in coastal areas and also requested a notice board to warn against fishing operations in these areas.

Surveillance Measures. In order to protect their fishing grounds from the poachers, the fishers have grouped themselves and requested the provincial governor to designate or appoint them as “Volunteer to protect the aquatic resources”. Monitoring, control and surveillance were conducted continuously at night with the competent authority, i.e., policeman, DOF officials. In order to strengthen their capability in surveillance practice, the DOF with the collaboration of Thai Royal Navy has provided a training course on “Marine Protection Volunteer” for them. The training covers military practices and knowledge on fishery law and regulations.

Fishing Gear Replacement. Since trawlers and push net are treated as the destructive fishing gear, therefore the fishers in the fishing communities who employ these gears will be convinced or pushed by the other fishers to change their destructive gear to the non-destructive gears (gill nets, traps, hook and lines, etc.) The DOF has provided a compensation fund for the one who want to replace the gears.

Community Fish Market Establishment. In general, the small-scale fishers have to sell their catches to the local middlemen or money lenders and they normally obtained the low price. Thus, if the fishers need more money they have to catch more and more that results to the depletion of the coastal fishery resources. Therefore, for getting higher income from the same amount of catch, the fishers have grouped together and established a community fish market in the fishing community. The members of the group accumulate their daily catches with the group and once the amount of catches reach the target the group will call for an auction. With the big amount of fish, there are many fish mongers join in the auction and then the price of catches has increased 30 per cent from the individual sell.

The pilot project in Bangsaphan Noi has less progress due to the inadequate number of staff to implement the project and the assistances from outside are rather limit. In addition, the fishers in this area have less attention in project participation than the fishers in Phang-Nga Bay and the open sea has more difficulties in management. However, from both pilot projects the DOF can gain both success and failure experiences for further improvement.

Constraints of the Development

The development of decentralized management through CBFM in Thailand is slowly making process owing to the following reasons:

1. The key persons of DOF lack a clear understanding of the concept of CBFM, thus leading to lack support on the decision makers of DOF.
2. The present fishery law and fisher institutions law are not in accord with the CBFM.
3. Since fisher institutions are the main mechanism for the development of CBFM, the fisher institution in the country is not well organized and weak in actions.
4. The small-scale fishers in many areas hardly to accept CBFM due to their low level of socio-economic conditions and knowledge on CBFM.
5. Most of the fishery officers and other officials concerned with the CBFM have inadequate understanding of the concept of CBFM.
6. Lack of external agents. The number of competent NGOs, academic and research institutions that can assist in defining the problem; provide independent advice, ideas and expertise; guide joint problem solving and decision making; initiate management plan; and advocate appropriate policies are rather limited.

Conclusion and recommendations

Decentralized coastal fishery management aims at sharing authority and responsibility to manage the fishery between government, the community of local fishers, and other resource stakeholders. Decentralized management addresses the crucial management issues of who controls the rights to use the fishery resources and who obtains the benefits from these resources. Decentralized management shows promise for addressing many of the requirements of sustainable, equity, and efficiency in small-scale fishery management. However, it should keep in mind that decentralized management requires compromise, respect and trust between all stakeholders. Therefore, the DOF should provide adequate personnel and budget for continuous development of decentralized management.

In order to achieve a rapid progress of decentralized management, the followings should be done.

1. The new fishery law should be enacted as soon as possible then the decentralization has full legal support.
2. Since the fishers institutions such as fishery cooperatives which are the key body for decentralized management are rather weak due to inappropriate of the present laws. Thus, a fishery cooperative law should be drafted urgently for strengthening the fishers institutions.
3. It is revealed that the majority of the fishers and fishery officials lack of understanding on the concepts of decentralized management that including FCM and CBFM. Thus, the DOF with the collaborations of NGOs, and academic and research institutes conduct short-term training course and information transfer through available media for common understanding of resources stakeholders and public on decentralized management.
4. The collaborations of all stakeholders should be strengthen and encourage them to work together as partners not competitors.
5. Adequate financial resources should be provided for decentralized management. The sustained funding is crucial to the sustainability of decentralized management.

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