

Institutional and Policy Perspectives in the Management of Fisheries and Coastal Resources in Thailand

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ABSTRACT

Important fishery and coastal resources in Thailand are already being degraded or threatened by various anthropogenic factors. These factors include a rapidly growing coastal population, bureaucratic or administrative problems, overexploitation and pollution. This chapter shows how the government at the national and local levels addresses the problem. Laws, policies and plans are laid out both to counter resource degradation and to manage the resources. Yet, the problems are still around and success appears hard to come by due to implementation problems, lack of necessary financial resources to implement programs and projects, and inherent weakness of the laws, policies and plans, to name a few.

While the situation appears to be bleak, significant inroads in certain areas are made by local communities and their local authorities to manage the resources within the local context. Various laws and policies provided opportunities for the involvement of local communities and the local authorities in resources management. For example, significant recognition of the role of local communities in the management of resources and the environment is found in the 1997 Constitution. On local administration, there are, among others, the Public Administration Act of 1991, Sub-district Council and Sub-district Administration Organization Act of 1994 and the Provincial Administration Organization Act of 1997.

This paper further discusses the intricate linkage and cyclical relationship of policies and plans at the three different levels of administration—local, national and regional—in Thailand. It is hoped that this will lead to better understanding of the institutional issues associated with fishery and coastal resources management in the country.

INTRODUCTION

With more than 2 600 km of coastline, about 70% of Thailand's population is concentrated in and around the coastal area. Twenty-four of 76

provinces (including Bangkok) are considered coastal provinces or highly dependent on the coastal area. Development along the coast has damaged mangrove forests, swamps, and intertidal zones. At present, there are no formal fisheries and

coastal resources management laws in Thailand. However, there exist informal forms of fisheries and coastal area management where traditional practices are common. The recent decentralization of the Thai public administration and its subsequent laws has led to expectations for effective and participatory management of the fisheries and coastal resources. In addition, international involvement has played an increasing role as Thailand has committed itself to the world community in terms of legal, social, economic and environmental cooperation. This local and international involvement can have enormous influence on the national policies for the effective management of fisheries, coastal resources and coastal environment in Thailand. In light of the current status of fisheries and coastal resource law, existing national policies, local initiatives and traditional management practices, a research has been carried out to investigate the management processes related to the historical evolution of public administration, laws and policies; to demonstrate the relationships of local, national and international involvement in designing effective fisheries and coastal resource management plans; and to suggest a desirable management practice that takes into consideration synthesized findings on the institutional, legal and policy framework.

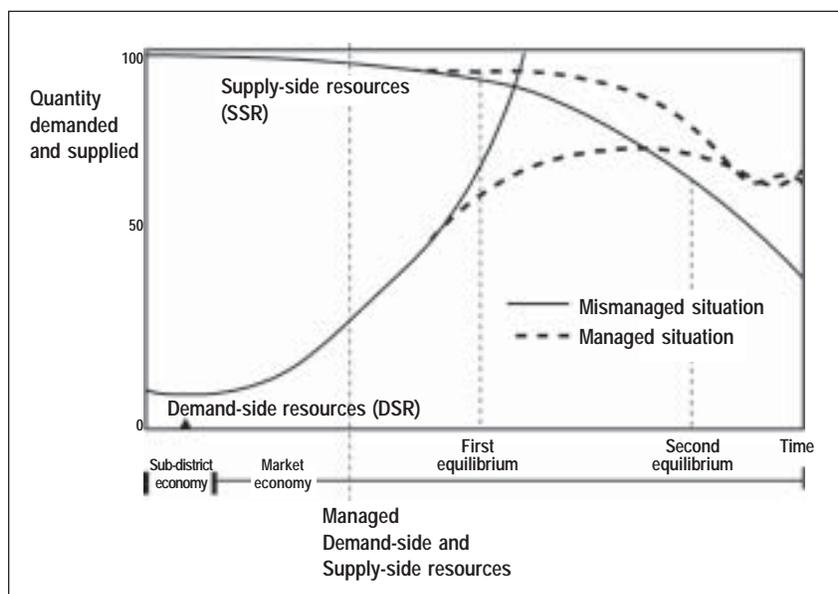
METHODOLOGY

A Supply and Demand Paradigm

A simple economic paradigm of supply and demand can be adapted for resource management purposes when all resources are classified into supply and demand sides. Even though the supply and demand sides of fisheries and coastal resources cannot be entirely distinguished from each other, such clear distinction is assumed for analytical convenience. Resources have their own value when analyzed in the supply and demand framework, but the prices of these resources may not be evaluated with precision, especially when the resources involve social and environmental aspects.

1. Demand-side resources (DSR). The classification DSR is based on resource components that require people to obtain supply-side resources (SSR) for their livelihood or pleasure. At a point when SSR are exhausted, they may turn into DSR. Therefore, both DSR and SSR are interchangeable. Examples of DSR are several groups of human activities that demand fisheries and coastal resources for the fulfillment of their objectives, and the natural resources that require rehabilitation and inputs for their recovery after being exploited by DSR.
2. Supply-side resources (SSR). SSR are resources which exist to fulfill requirements of the DSR. Examples of SSR are fishery products, mangrove resources, seabed and coastal minerals, tourism resources such as water, beaches, coral reefs, ports and infrastructure, and cultural heritage. These SSR are interchangeable with DSR, and at one point in time when SSR are used beyond their maximum point, they become DSR.

Figure 5.1 A Demand-Supply Paradigm.



As shown in Figure 5.1, there is a dynamic between DSR and SSR. Under a mismanaged situation, DSR remain constant during a subsistence economy, and they are expected to rise during a market economy. They are influenced by several factors including population growth, changes in

social values, changes in consumption and modern technologies.

On the other hand, SSR are increasingly exploited as the DSR change from subsistence to market economies. At the first equilibrium point, DSR and SSR are equal. However, this point does not remain fixed for long as DSR exponentially increase. The gap between DSR and SSR grows and at some point SSR change to become DSR which further widens the gap. Under a managed situation, the management arrangements are expected to change both DSR and SSR forms so that the DSR and SSR increase at a slower rate and in the long run adjust themselves to a more sustained equilibrium.

In conclusion, the ultimate objective of fisheries and coastal resource management using the supply and demand paradigm is that desirable management strategies are able to bring together supply and demand to the point where they approach an equilibrium and remain there as long as possible.

The Thai Political Economy System

The historical development of the Thai economy from absolute to constitutional monarchy has impacted the social and economic structures of the country. The social and economic pattern is a result of the changing relationship from a patron-client relationship to a capitalist system. This patron-client relationship created extensive group divisions and remains, to some extent, the basis of Thai politics.

The capitalist system believes in productive capability. Competitiveness in the production of goods and services is the main driving force that leads to maximum social benefit. Inevitably, such competitiveness generates an individualistic culture in which private property rights are greatly respected. The democratic revolution in 1932 created a mixture of the Thai political and economic systems (see Table 5.1). The political economy of a country evolves through time. With increasing international involvement, Thailand's political and economic systems have evolved to a democratic capitalist system. The patron-client system is moving toward a democratic-capitalist system, while the authoritarian-capitalist system and the democratic-patron-client system acted as transitional systems.

Table 5.1. The Thai Political Economy (Thanapornpun 1995).

	Authoritarian	Democracy
Patron-Client Relationship	Authoritarian-patron-client system	Democracy-patron-client system
Capitalism	Authoritarian-capitalism system	Democracy-capitalism system

However, the time period of these movements is uncertain (Thanapornpun 1995). The democratic revolution in 1932 changed the face of Thailand through several revolutions in order to attain democracy, with the King as the symbolic representation of unity. Along the path to a democratic-capitalist system, the Thai political economy is still in a stage of flux and if not managed well, could result in the dramatic exploitation of resources including fisheries and coastal resources. There is some evidence that the Thai political economic system is in a transitional period. This claim comes in the form of intrusion by politically influential investors into the commons such as mangroves and terrestrial forest reserves or marine national parks.

A Matrix Approach

A matrix approach is used to analyze the data. It is based on the idea that fisheries and coastal resource management are multidisciplinary in nature. There are several issues of conflicting uses of fisheries and coastal resources that the matrix method is able to handle. The main feature of the matrix method is that it is able to relate the effects of the fisheries and coastal resources sectors on themselves and on other sectors. Such effects are explained by the use of multipliers if the quantitative data are available.

Logical Framework Approach (LFA)

The LFA can be used to organize and analyze fisheries and coastal resource management problems in a systematic way so that problems can be arranged in terms of cause and effect relationships. An analysis of the relationship results in the identification of problems, issues, and priorities in relation to fisheries and coastal resource management. These techniques are common and widely used in similar research in this field.

Data Collection

This research employs desk studies, consultative meetings, interviews and case studies. The desk study involves compilation of relevant laws and regulations, administrative arrangements and policies and plans on fisheries, coastal resources and coastal environment protection. It also includes a review of literature.

The consultative meetings involve coordination with other relevant organizations and stakeholders through group discussions and small participatory workshops that employ the LFA to build problem relationships and analysis of problem trees.

Interviews

In the interview, the research team met with key informants and stakeholders. Both personal and structural interviews were held. Personal interviews were used in situations where the group interview resulted in false or distorted information.

Several case studies representing different key issues are analyzed based on the DSR and SSR matrix analysis. Four case studies with different analytical themes were selected to reflect the overall framework of the research.

- Case study 1 illustrates the enforcement of laws, policies and plans in Laem Talumpuk in Pak Phanang District, Nakhon Si Thammarat Province;
- Case study 2 illustrates wastewater management from shrimp aquaculture in Ban Kwian Huk in Khlung District, Chantaburi Province;
- Case study 3 illustrates local initiatives in Ban Laem Makham in Sikao District, Trang Province; and
- Case study 4 illustrates international involvement in Tarutao Marine National Park (TMNP) in Muang Satun District, Satun Province.

RESOURCE STATUS AND ISSUES

Demand-side Fisheries and Coastal Resources (DSFCR)

DSFCR are resources that need supply-side resources. Human activities and natural resources and their functions are major examples of DSFCR. With respect to human activities, the demands are highly influenced by population growth, changes in social and economic values, changes in consumption patterns and commitments to regional and international regimes. These human needs for fisheries and coastal resources have made the management of DSFCR a truly difficult task. Despite attempts through formal legislation, the fisheries and coastal resources are still being degraded at an alarming rate.

With respect to natural resources, demands are influenced by conditions of the resources. If the resources are used beyond their maximum carrying capacity, they can turn out to be highly aggressive DSFCR. Therefore, the use of the resources and the ability of these resources to support and assimilate changes in their conditions are the major influential factors.

Human Demand

In Thailand, there are about 46 851 marine fishery households, 16 501 coastal aquaculture households, and 1 552 households doing both marine fishery and coastal aquaculture. Most of these households are considered small-scale whose main livelihoods depend largely on the abundance of fish and coastal resources. Legislation to control the use of these resources can have enormous effects on their livelihoods. On the other hand, if the resources are degraded by these households or other large-scale investors, this can have similar impacts on their way of life. Though some supply-side fisheries and coastal resources such as tourism can provide alternative sources of income, the scale of tourism resources are yet to be determined. In many instances, local initiatives for fisheries and coastal resources management have shown some favorable signs that are

expected to be a role model for other communities. However, external forces together with changes in social values, conspicuous consumption, loopholes in laws and regulations, insufficient knowledge and information, and insufficient law enforcement have been major threats to local management.

An example is the Ko Samet National Park in Rayong Province on the east coast where the local people would like to expand tourism for employment and income. This initiative, if managed properly, should be supported as it is in the people's interest. However, the state saw it differently and refused the expansion citing environmental damage already done by existing establishments. It went on to say that any new tourism operation would worsen the already degraded environment in the National Park. From another perspective, if this local initiative had sufficient scientific and engineering back-up, productive consultation with park officials, and public participation, then the Ko Samet National Park would have been a role model for coastal tourism.

The DSFCR management strategies in Thailand are not implemented in a way that resource owners are guaranteed their ownership rights. Further analysis suggests that the national legislation system has focused its attention on the exploitation of fisheries and coastal resources for macroeconomic growth rather than for the improved well-being of individuals.

In 1997, tourists visiting coastal provinces generated high profits. However, more than 70 percent of spending was in larger cities like Bangkok, Phuket and Chantaburi. The largest share of earnings were by a few large entrepreneurs while individuals, whose livelihoods depend on tourism resources, got a smaller share. In addition, the aesthetic value of the unspoiled islands and towns that the local residence once enjoyed has been degraded as a result of quick and poorly planned construction.

Similarly, as in the case of coastal aquaculture, the export demands from wealthier countries have influenced the extraction of coastal resources while social and environmental costs are left for the locals.

The export values do not show the real losses that the community and the environment have to absorb.

The positive side of these DSFCR is in the quality of human resources. Measures through formal legislation and informal rules have been put into effect. Thailand has to manage its own DSR and to control and monitor the SSR and external forces so that the fisheries and coastal resources management strategies can be brought to a point of balance between DSFCR and SSFCR. While demands and pressures on natural resources continue to increase, Thailand's effort to control population growth are making some headway. Changes in consumption patterns have tremendous effects on natural resources exploitation offsetting the human demands as a result of population growth.

Natural Resources Demand

Natural resources provide for human needs. However, as demand increases, natural resources are used up. Expenditure to bring degraded natural resources back to their original condition would be costly. The supply-demand paradigm in Chapter 1 explains clearly the management and mismanagement scenarios.

There are issues relevant to the natural resources demand as follows:

- Though equilibrium is ideal, there are ways to manage the natural resources to fluctuate around the equilibrium point; and
- Monitoring of fisheries and coastal resources conditions is necessary.

Coastal Aquaculture

Coastal aquaculture, which includes the culture of fish, crab, prawn and shellfish, are increasingly important alternatives to the declining marine capture fisheries. Among all species cultured, tiger prawn (*Penaeus monodon*) is the most popular and occupies a large area of coastal zone. Foreign exchange earnings, employment and associated industrial development have expanded during the past 10 years. The positive contribution of tiger

prawn aquaculture has complemented the impressive economic growth of Thailand. However, negative consequences of tiger prawn aquaculture have also been noted. Environmental costs are not considered. This is misleading but the substantial foreign exchange earnings have prompted the Thai government to encourage the tiger prawn aquaculture industry.

The present slowdown of tiger prawn aquaculture is largely due to the use of unsuitable land (rice fields, fruit orchards, rubber plantations), infestations of pests, disease, and water pollution, mangrove deforestation, increased prices of inputs (feed, fingerling, labor, chemicals), and scarcity of tiger prawn parent stocks. It is also believed that the slowdown in this industry was one of the contributing causes of overall macroeconomic downturn and the financial crisis that hit Thailand in 1997.

A case study in Khlung District, Chantaburi Province, illustrates that the major problem facing the industry has been the changing coastal environment. This resulted from pollution, improper wastewater treatment, improper sludge disposal, uncontrolled industry expansion and weak enforcement of laws and regulations. Apart from environmental problems, the tiger prawn industry is now facing international interventions such as trade restrictions, quality assurance and environmental policy controls by importing countries.

SUPPLY-SIDE FISHERIES AND COASTAL RESOURCES (SSFCR)

The SSFCR are marine capture fisheries, deep-sea fishery, mangrove resources, seabed and coastal minerals, and coastal tourism resources. The following subsections present analyses of SSFCR status and identify predominant issues associated with the SSFCR.

Marine Capture Fisheries

Marine capture fisheries are fishing activities in the sea starting from the mangroves and intertidal zones to Thailand's 200-mile EEZ. Deep-sea fisheries in international waters will be considered in the following subsections.

Marine capture fisheries in the EEZ involve different types of fishing gear, different boat sizes, different species caught and all other fishing activity within the national boundary as provided for by UNCLOS. In it, Thailand gained 60 percent more in sovereign waters but lost about 300 000 square miles on the high seas after it was declared part of the neighboring countries' EEZ.

Even though the sovereign waters of Thailand increased, fishery abundance is questionable, as most of the Thai waters have been heavily exploited. There has been visible evidence indicating that the quantity and quality of Thailand's fisheries have been degraded to the point close to or exceeding the estimated maximum carrying capacities. In addition, the catch of high priced fish has decreased resulting in additional efforts to compensate for higher fishing costs. Consequently, incidents of Thai fishing boats caught encroaching the waters of neighboring countries are increasingly being reported. Within Thailand, trawlers intrude into the prohibited 3 000 m zone which is preserved for small-scale coastal fishers and into protected areas.

Recently, there was a proposal for an expansion of the conservation zone in Phangnga Bay, which would take in waters off Phuket, Krabi and Ranong. Inshore fishers demanded that the Fisheries Department extend the conservation zone from 259 square miles to 773 square miles to allow a greater area for the rehabilitation of fish stocks. The Phuket Fishery Association representing commercial trawlers initially proposed the conservation area be expanded to 401 square miles but the meeting opted for 649 square miles as suggested by fishery biologists.

An agreement of sorts was reached. A committee was set up to study the appropriate area and report within three months. It agreed that the current protected area is the basis for further discussion but enforcement would only continue in the original 259 square miles zone for the time being. There are several issues associated with the marine capture fisheries as follows:

- The qualitative and quantitative abundance of fishery resources has decreased;

- Increasing competition to enter protected zones;
- Attempts to reach agreements on joint ventures with neighboring countries;
- Attempts by the government and concerned institutions to enforce existing laws and regulations and issue new regulations;
- Attempts by small-scale fishers to protect fish spawning grounds and to extend current areas under conservation; and
- The private sector has expressed its desire to fish in international waters.

Deep-Sea Fisheries

The deep-sea fisheries open a new frontier for the Thai fishing industry as a result of the Chulabhorn research conducted jointly with Burma during November 1989 to January 1990. The amount of catch and the costs involved appear to entice boat operators. However, the deep-sea fishery in Thailand is still at an initial stage of research on feasibility, preparation for equipment and modern fishing technology, legal and policy perspectives and joint-venture possibility. Countries like Japan, Taiwan and China have had much experience in deep-sea fisheries, from which Thai fishers can learn. Joint fishery ventures seem to be the best alternative to move Thailand's stagnant fishing industry forward. However, joint-venture deals sometimes involve unfair benefit distribution and breaking of the joint-venture rules and regulations. All parties involved in joint fishery ventures have to play an appropriate role to implement the agreements; otherwise benefits will not accrue to all. There are several issues identified in the present research as follows:

- There is deep-sea fishery potential on the western coast of Phuket and around the 90 East Ridge. Some attempts by the Department of Fisheries in conjunction with Phuket Fisheries Association and Burma have shown favorable economic returns;
- There are a few fish species such as yellow-fin tuna (*Thunnus albacares*), tuna (*Thunnus tonggol*), eastern little tuna (*Euthynnus affinis*), and skipjack (*Katsuwonus pelamis*) to be caught for commercial purposes;
- Need for training to enhance fishers' experi-

ences have been indicated;

- Modern fishing gear and technologies and supporting storage facilities are needed. These involve high initial investments;
- Supporting onshore facilities have been developed along with the air transportation of fish catch to markets, mainly to Japan; and
- Joint-venture development is necessary.

Mangroves

Mangrove timber and wood products are in high demand. Mangroves are cut for charcoal, while hardwood from several remote islands has been heavily logged for timber. During the period 1961 to 1993, mangrove forests have been reduced by more than 54 percent. However, in 1996, the mangrove area gained 13% due to the proposed ban on mangrove concessions and a 1996 cabinet resolution that prohibits all new mangrove concessions. The ban was triggered by problems in the tiger prawn industry and a relative loss of international competitiveness of Thai prawns to neighboring countries. Other reasons that contributed to this ban are the changing attitudes of the population toward mangrove conservation, the roles of the non-government organizations' (NGOs) mangrove rehabilitation programs and the natural regeneration of mangrove forests.

Increased mangrove cover is both a quantitative and quality consideration. Mangrove quality refers to the composition of mangrove tree species, its aquatic life and the local community which it supports. According to reports and observations, biodiversity of mangrove forests has changed. Many mangrove forest species have been lost forever. Some of the main factors responsible for this reduction in quality are activities such as direct use of mangrove timber, wastewater drainage and sludge from shrimp farming and global climate change. The local communities living in and around the mangrove forests are also affected due to the loss of their means of livelihood. Their economic, social and cultural characteristics have been altered to the point that some areas of indigenous knowledge has quickly disappeared. Issues concerning the management and use of mangroves are:

- Mangrove resources are highly dependent on domestic and international forces such as government policies to encourage group management of shrimp farm operation in line with mangrove existence and shrimp prices in the international market. These factors have dramatic effects on both mangrove quantity and quality;
- Although there is a positive trend in mangrove management, there is still uncertainty whether this trend can be maintained;
- The recovery rate of natural or rehabilitated mangroves is slower than the use rate; and
- Mangrove forests can be educational sites where eco-tourism can be promoted.
- Some disputed areas are under joint development; and
- The transportation of petroleum products by pipeline is controversial as their construction requires cutting trees as well as disrupting local communities and historic sites.

Coastal Tourism

Coastal tourism resources include 3S-1C (sun, sand, sea, and culture). Thailand is fortunate to have sunshine throughout the year with monsoons affecting both sides of the coast alternately every six months. Tourism is favorable year round. Clean beaches, white sands and appropriate beach slopes are the main attractions. In Thailand, sand mining is a new phenomenon. Sand is sold for beach nourishment and used for landfill and road construction. The sea is another important component involving clear and clean water, colorful and unspoiled coral reefs and fish, moderate wave movement free from stinging jellyfish. Again, Thailand is considered fortunate to have these qualities on both coasts (i.e., Phuket, Krabi, Trang on the west coast, and Chanthaburi, Prachubkirikhan, Chumphon, Surathani, Songkhla on the east coast).

These three components of coastal tourism are attributes of nature which, if left untouched, are dependent only on natural functions. However, activities such as marine capture fisheries, coastal aquaculture, tourism, infrastructure development, industrial waste and household sewage and other activities are also competing with these resources used for tourism. These activities can be considered as a form of culture, which can degrade and/or enhance the quality of coastal tourism resources. Culture includes tradition, art forms, architecture, infrastructure, transportation, communication, laws and regulations. These are major components of culture that are significant for the existence of tourism resources in the natural system. There are several issues related to coastal tourism resources:

- Many mineral deposits in Thailand, especially tin, have been mined to exhaustion;
- Sand mining is being practiced despite being illegal. This is a dangerous practice as several negative consequences follow such as coastal erosion and loss of esthetic values;
- Petroleum exploration in the Gulf of Thailand is well developed, while the Andaman Sea is still at an early stage of development;
- Coastal tourism sites have been developed following similar development patterns;
- Several coastal developments have benefited a few large developers while the local people get a smaller share;
- The traditional way of life in communities

Coastal Minerals

Minerals found in the coastal zone have been heavily mined. For example, there are no longer any tin deposits which can be commercially mined. Sand mining is another issue which has received much public attention. There are domestic and regional demands for white sand either for house and road construction or for beach nourishment. Exploration of mineral deposits along the coastline is more difficult. During the survey and exploration for minerals, it is inevitable that mangrove trees are cut.

Other important seabed minerals are petroleum products such as crude oil, condensate and natural gas that are found scattered in the Gulf of Thailand, the Andaman Sea and in some disputed areas near Cambodia and Malaysia. Oil and gas exploration is well developed in the Gulf of Thailand while the feasibility for similar development in the Andaman Sea is still being studied. In terms of sand, seabed and coastal minerals, several issues have been identified:

- continues to change, even in remote areas;
- Fisheries and coastal resources continue to be degraded because of exploitation from both sea-based and land-based activities including wastes;
- Some coastal tourism sites are learning from past mistakes. They are moving toward more local participation and environment-friendly approaches; and
- Increasing competition to access new tourist sites such as marine national parks.

Case Study: Shrimp Wastewater Co-Management in Ban Kwian Huk, Chantaburi Province

Ban Kwian Huk is managed under the Kwian Huk Sub-district Administration Organization, Khlung District, Chantaburi Province (see map in Figure 5.2). The coastal area has been used for shrimp aquaculture for some time. Chantaburi was one of the pioneers of the shrimp farming industry. Coastal resource problems occurred as shrimp farms became increasingly susceptible to diseases. The infestation resulted in the collapse of the shrimp industry in this province. One of the main causes was the improper management of wastewater and sludge drained from shrimp farms into common waterways. This polluted wastewater and sludge was later pumped into the ponds unintentionally or unknowingly.

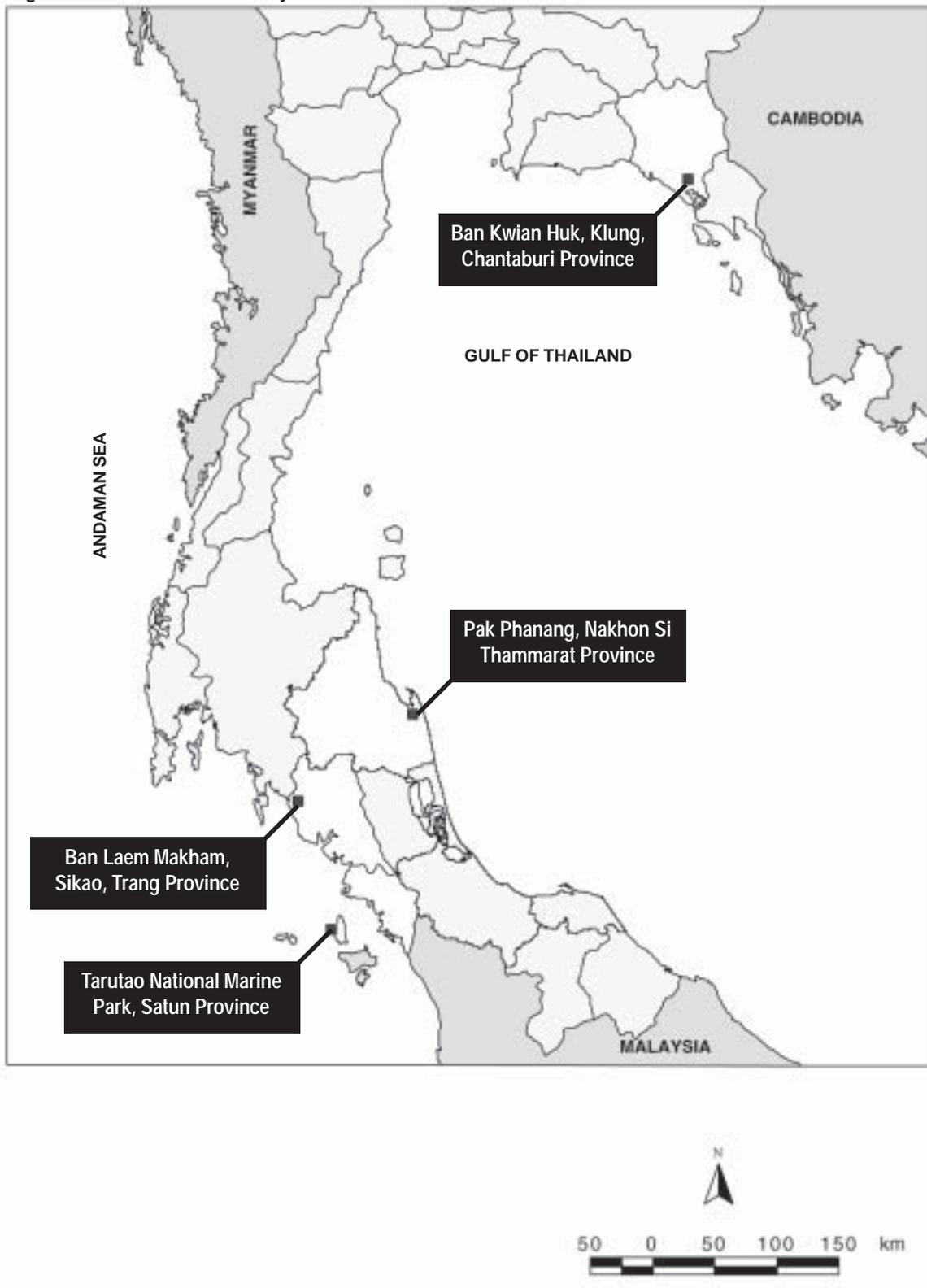
The implementation of measures to regulate shrimp production and control wastewater quality requires the development of an effective management plan. Techniques such as co-management can be used to overcome environmental problems caused by contaminated water supplies, shrimp diseases and the open-access nature of the resources used for shrimp aquaculture. The rationale for co-management employed within the Integrated Coastal Zone Management (ICZM) framework is a process for producing effective management plans based on an ecosystem approach and local community participation.

This case study focuses on identifying the stakeholders in Ban Kwian Huk. The stakeholders in turn identify key issues to be addressed. Through this process, the community has focused its effort on

capacity building of the shrimp farmers as partners with the local government officials in the development of a local community-based action plan. A need for education was clearly identified and addressed through a series of training courses, education campaigns, cross-site visits, seminars and workshops led by the shrimp farmers and local officials. The steps in the formulation of the co-management approach, using the present wastewater problem and sludge disposal as starting point, are as follows:

- Step 1: Define the problems and opportunities, existing policies and work plans of the government at both national and provincial levels. The conflicting policies and plans are identified and will be updated. A planning team composed of shrimp farmers and the public is created to work to identify management and sustainable development options and to decide on the planning approach.
- Step 2: Some necessary data are identified and collected by a collaborative team of shrimp farmers and government officials. The team analyzes the current situation and considers options including zoning of land and water use.
- Step 3: Plans and options are prepared and presented for public discussions. They are then revised taking into account the plans of the government and budget.
- Step 4: Formulation of actions for implementation are undertaken to include as much cooperation as possible from concerned institutions. Some training may be required with major emphasis on project proposal development. It is important that in many stages of developing the project proposal as identified in Step 3, the Kwian Huk Sub-district Administration Organization has to involve concerned government agencies so that the proposed budget will be approved. The projects and action programs should be monitored and evaluated to adjust to changing environments.

Figure 5.2 Location of Case Study Sites.



The integrated coastal area management (ICAM) approach resulted in the formation of a local Shrimp Farmers Group. This was later transformed into the newly decentralized organization, the Kwian Huk Sub-District Administration Organization. This planning process enhances the shrimp farmers capability to identify problems, explore solutions, and formulate action plans to integrate them into the provincial integrated master plan. The experience demonstrated that sustainable farm development can be initiated by a process of organized management arrangements at the local level under the ICZM framework. It has shown that shrimp farmers, who were once blamed for much of the degradation, can be effective coastal zone managers.

Co-management Approaches for the Management of Shrimp Wastes

Co-management strategies are described in this section to provide opportunities for the Shrimp Farmers Group to improve production through minimized self-pollution problems and other poor production factors, including outbreaks of disease. The rationale for co-management practices employing the Integrated Coastal Management (ICM) framework for the promotion of shrimp production and wastewater management is a promising model. The model is expected to adjust the DSR (aquaculture operations) and the SSR (natural function) to equilibrium by having the stakeholders and supporting institutions working together. The local shrimp farmers expressed their eagerness to form a group in order to create collective power for management, seek government support and request external funds. Initially, the group has to encourage the local community to become active participants. The Government officials have the academic knowledge whereas the shrimp farmers have their extensive experience. Working in cooperation will eventually generate benefits to all parties.

The co-management strategies of farm water supply in shrimp farming are presented as follows:

Strategy One:

Prepare procedures to eliminate existing sources of sludge, sediment and other pollutants entering the water channels.

Rationale:

Sludge from shrimp farms is a major source of pollution. Elimination of this pollution is the first step in improving water quality in the water channels. This involves including as many shrimp farmers as possible in the Shrimp Farmers Group. Farmers are strongly urged to begin considering innovative ways to use portions of their pond area for use as a water reservoir and develop separate intakes and outlets.

Objective:

To identify all existing sources of sludge and sediment entering the water channels and to develop procedures to deal with pollution.

Action:

1. Identify where sludge and sediment enter the water channels;
2. Identify seasonality of sludge and sediment entry;
3. Identify methods to be used to eliminate sludge and sediment sources; and
4. Collect baseline water and soil data from several locations from the main water channels.

Strategy Two:

Legislate rules to prevent sludge and sediment from entering water channels.

Rationale:

Once the Shrimp Farmers Group is able to eliminate pollution from farms, the Group must establish rules to prevent the same problems from reoccurring. It is important for non-members to realize the importance of group action against common problems.

Objective:

To develop rules to control sludge and sediment disposal into common water channels and to seek agreement with non-members to discuss future protocols.

Action:

1. Identify methods and community rules to control future sludge and sediment sources and their entry into the water channels;
2. Identify how sludge and sediment from non-member sources will be prevented from entering the water channels;
3. Identify how the Shrimp Farmers Group rules will be monitored and enforced; and
4. Prepare protocols to be discussed with the non-members.

Strategy Three:

Conduct problem/solution workshops to identify long-term solutions.

Rationale:

It is important to circulate the Shrimp Farmers Group findings and activities to a wider audience. This will facilitate future cooperation. Experiences from other stakeholders in the same or different areas are beneficial to the Shrimp Farmers Group to learn and design management strategies.

Objective:

To seek other people's knowledge and experience for mutual benefits. It is also a public relations campaign to increase the credibility of the Group.

Action:

1. Prepare relevant documents and locate resource people to conduct the workshop;
2. Identify participants;
3. Review information; and
4. Formulate solutions based on the results of the workshop.

Strategy Four:

Plant mangroves along the inner edges of the water channels.

Rationale:

Mangrove trees play an important role in water quality control. They aid in the reduction of organic

materials draining into the water channels and help remove excess dissolved nutrients from the routine release of water.

Objective:

To initiate the use of mangrove trees as a natural method of water quality improvement in the canals and water channels.

Action:

1. Identify locations for mangrove tree planting;
2. Mangrove planting at demonstration sites near the Shrimp Farmers Group farms;
3. Use Shrimp Farmers Group farm locations for water quality sampling and testing; and
4. Use planting activities as a participation tool for neighboring shrimp farmers, students, local scholars, and the public.

Strategy Five:

Conduct farm production trials.

Rationale:

The Shrimp Farmers Group members participate in farm production trials. These farms have to demonstrate current financial viability and agree to use a reservoir for preconditioning water and follow recommended farm management procedures for at least two crop cycles.

Objective:

To demonstrate that implementation of sustainable production measures using improved water supply strategies and renewed operating practices improve profitability.

Action:

1. Select five to ten Shrimp Farmers Group members who are willing to participate in the farm production trials;
2. Monitor and evaluate all stages of production; and
3. Provide production guidance to participating farms.

Strategy Six:

Remove sludge.

Rationale:

The existing accumulated sludge should be physically removed. The physical removal of sludge and its preventive control are beneficial to shrimp farming success.

Objective:

To prevent pollution from entering the shrimp ponds, exhibiting one of the important factors for successful shrimp farming.

Action:

1. Undertake the development of sludge removal plans including the sourcing of equipment, materials, and techniques; and
2. Provide labor and operating costs for sludge removal programs for exhibition farms.

NATIONAL POLICIES, PLANS, LAWS AND INSTITUTIONS

Historical Development of Policies, Plans, Laws and Institutions

When the Thai script was invented in 1283 by King Ramkhamhaeng written laws were based on Hindu scriptures. Important policies of the period included free trade, irrigation systems development and water supply systems. As the social and economic arrangements were based on an agrarian system, the policies were largely related to agricultural production. There was no direct policy, plan, law and institution aimed at managing the fisheries and coastal resources, and coastal environment as abundant supply made this unnecessary.

During the Sukhothai period (1235-1350), a paternal government existed. The state was a large family comprised of parents and children. The head of the family, who was often the father, had an absolute authority to govern the family. The family represents the capital city and other inner-ringed cities. The public administration was decentralized so that the outer-ringed cities have their own

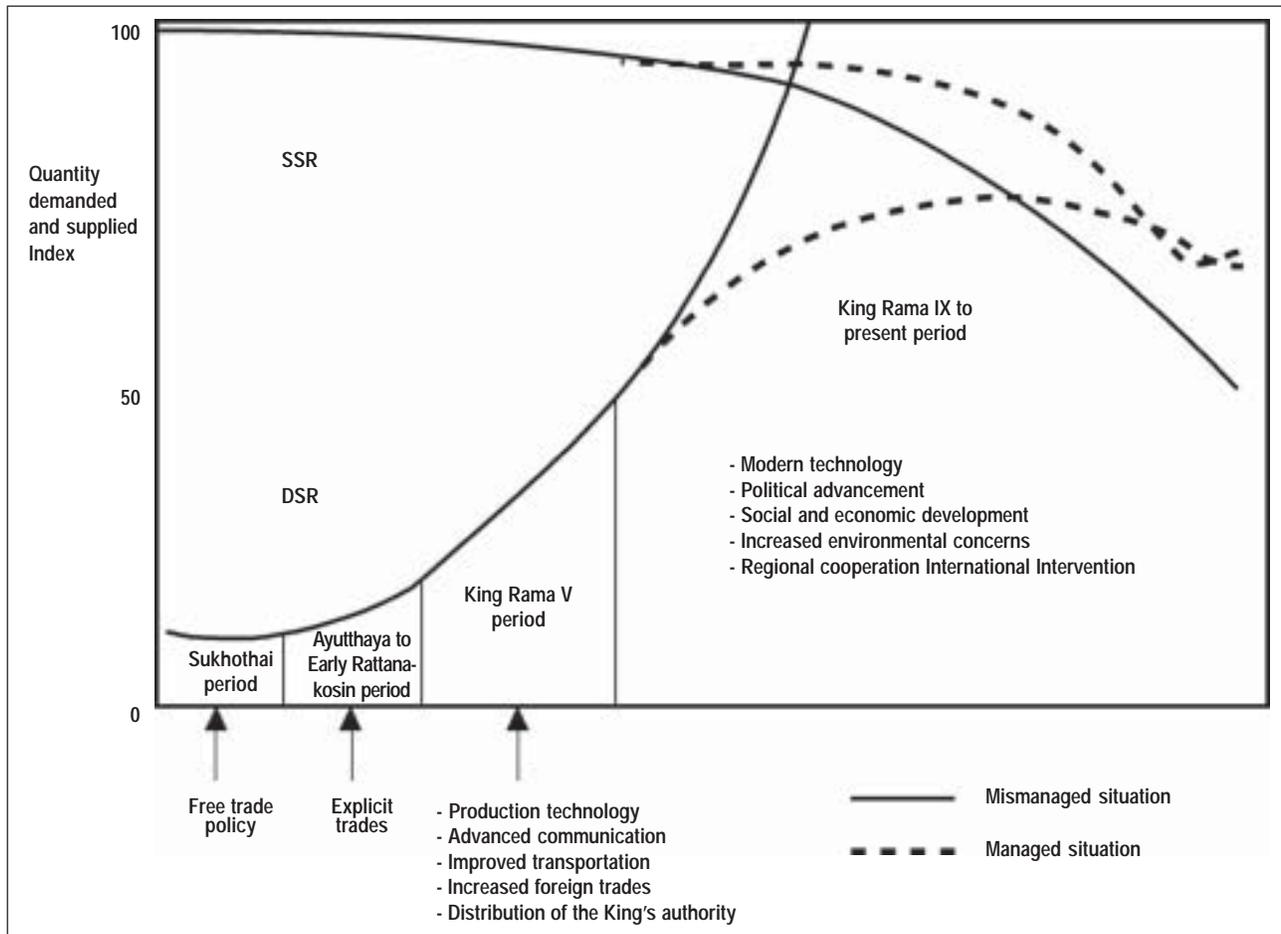
paternal governments who were dependent on the government in the capital city.

In the Ayutthaya period (1350-1767), the status of the King changed from a father figure to a presumed god. This affected the public administration system, changing it from a paternal government to absolute monarchy. Administration was based on the Four Pillars Ministerial System which was derived from the Khmer and Indian civilizations. These were the four main ministries necessary for the government to control and promote the prosperity of the state and the people. These were: interior, palace, finance and agriculture, which dealt with governance led by the King, taxation and revenue for the King and government officials, and food production. The structure of the public administration system was not complicated compared with later developments. It was considered sufficient, as the supply of resources was still abundant. This structure was practiced until the reign of King Rama V of the Rattanakosin era (1868-1910). The laws were classified into three categories: laws enabling the King to have absolute power and maintain the morals of the King; laws prescribing the regulation for civil servants, land laws and social status of the governed civilians and other laws addressing other governance issues. It can be seen that prosperity and peace relied heavily on the morals of the King. Administration was aimed at the well-being of the King and his monarchy, while the well-being of the people depended on the King's morals in relation to religious beliefs.

During the reign of King Rama V, Thailand increased its international involvement, as there were trading affairs with many western countries, so the public administration, laws and policy become more internationalized. In this era, the King's power was reduced by the establishment of central, provincial and local administrations. The first laws concerning fisheries appeared in the era of King Rama III in the form of water revenue laws. These laws were revised later during the reign of King Rama V and called the Water Revenue Act (Rattanakosin Year 120), which described the revenue that was collected from water usage, especially from the fishers.

The main policies during the reign of King Rama stressed on five main aspects:

Figure 5.3 A Demand-Supply Paradigm with Historical Development in Thailand.



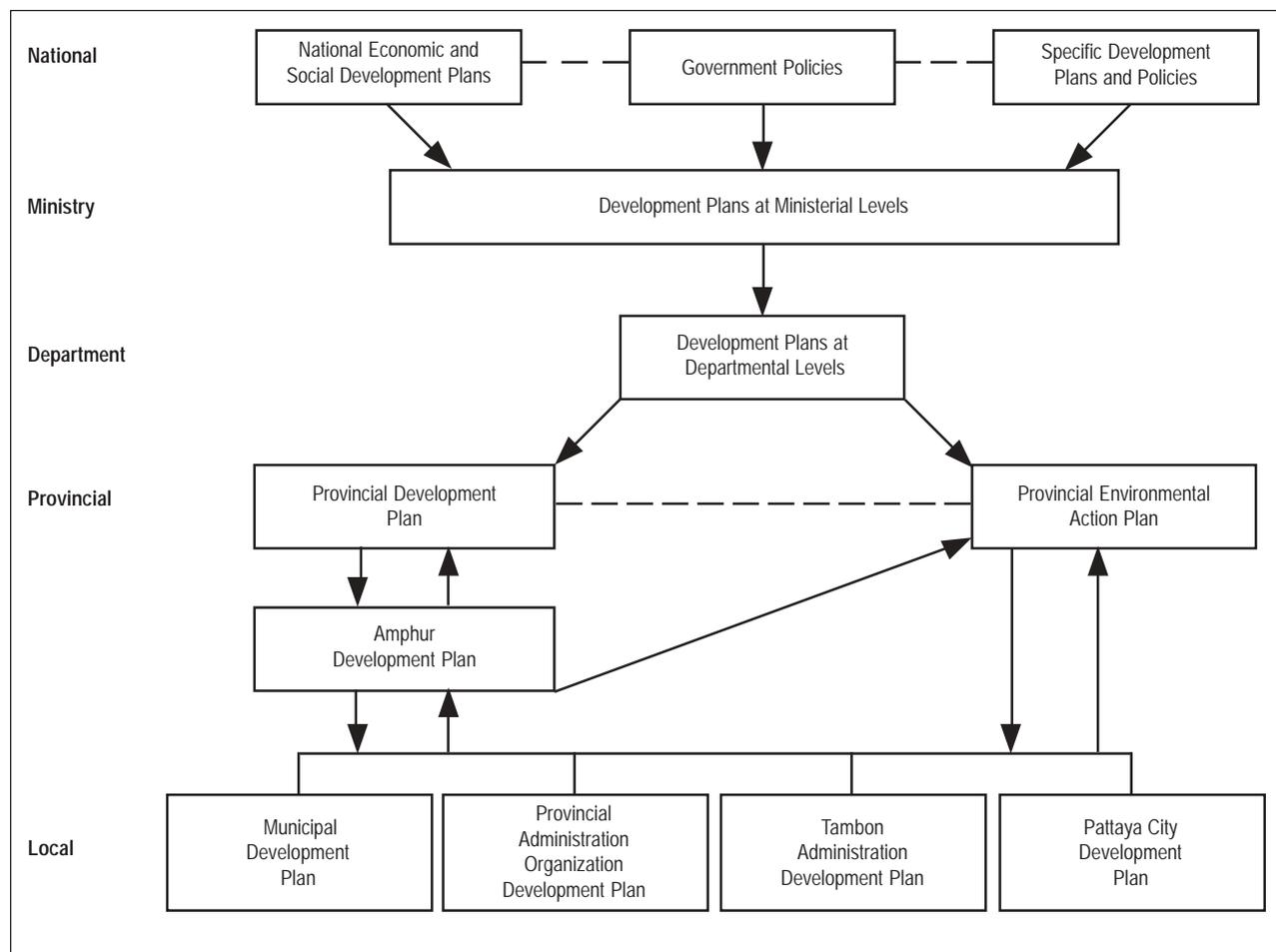
- Uniting Thailand through control over all states;
- Strengthening the public administration system to prevent colonization from the west;
- Facilitating improved livelihood opportunities for civilians so that the tax collected could be used for infrastructure improvement as well as avoid western colonization.
- Central administration has controls over outer-ringed cities; and
- Fair treatment for all under-governed civilians.

A dramatic change in Thailand's political system took place during the reign of King Rama VII (1932) when absolute monarchy was superseded by democratic reforms and the status of the King was transformed from being a presumed god to a symbolic leader. The public administration system remained

the same as in the reign of King Rama V. Only some new local organizations were allowed to be established. There still existed a top-down administration that enabled the central administration to pool authorities and resources within its hands.

From the graphical representation of DSR and SSR movements shown in Figure 5.3, the Sukhothai period shows a constant demand as a subsistence economy prevailed. Increased foreign trade is evidenced during the Ayutthaya to early Rattanakosin periods, and dramatic increases during the reign of King Rama V when production, communication, transportation and foreign trade were improved. During the reign of King Rama IX, Thailand opened its economy to international markets and associated Thailand with the international community.

Figure 5.4 Policy Formulation and Planning Processes at Different Levels of Administration.



Public Administration Systems and National Policies

National policies are formulated by the central administration and then given to the provincial and local administration for implementation. The public administration structure involving central, provincial and local administration is shown in Figure 5.4. This process has been under heavy criticism as it has created many undesirable consequences resulting in the degradation of fisheries, coastal resources and the coastal environment. The general public does not have true participation in managing their resources. Majority of the benefits generated from this form of administration fall into the hands of politicians, their clients, capitalists and high-ranking government officials. For the past 15-20 years, there has been some movement among intellectuals, white-collar workers, non-government organizations and grassroots organizations to push for political and bureaucratic changes and local management. In

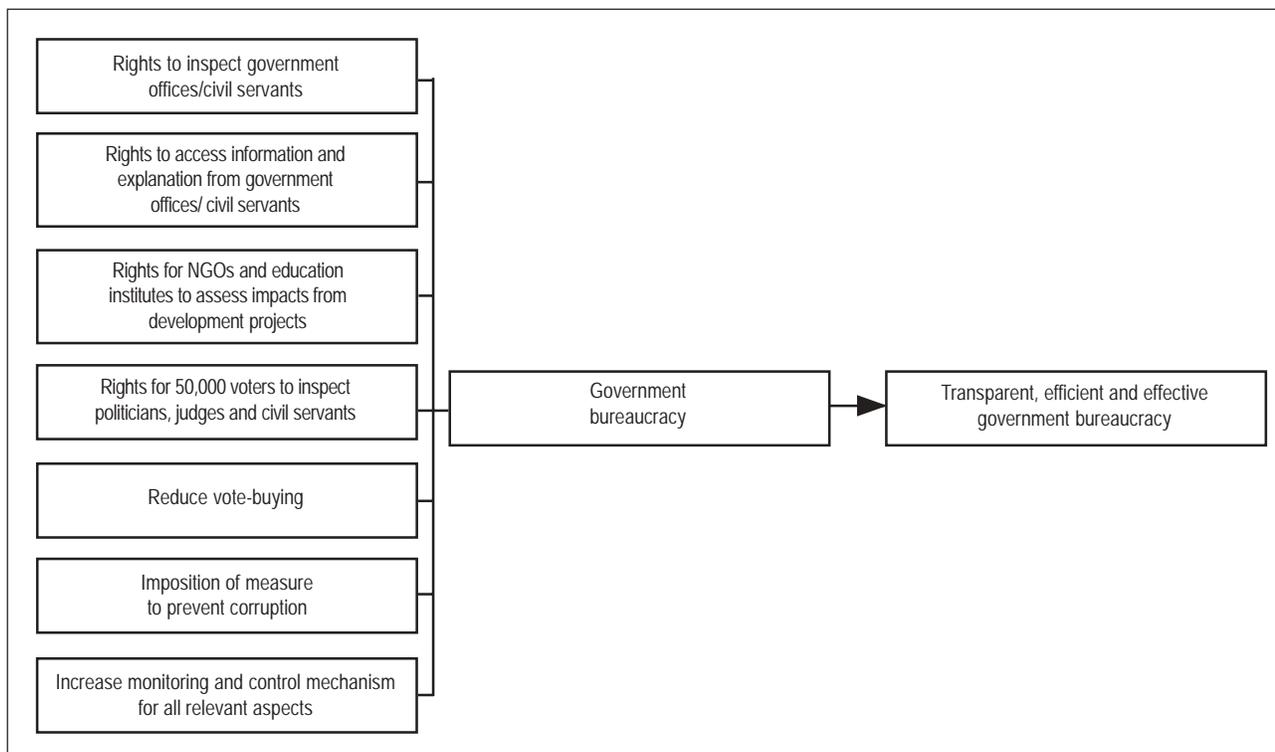
addition, globalization requires a less centralized form of administration. The New 1997 Constitution and other laws revolutionized how Thailand is governed especially in resource and environmental management.

As shown in Figure 5.5, there are at least seven measures supported by the New Constitution to enable a more transparent, efficient and effective political and bureaucratic system for the management of fisheries, coastal resources and coastal environments.

National Policies

Centralized public administration prevails in most resource management policies in Thailand. This includes fishery and coastal resources. A majority of national policies shows unclear roles and responsibilities of the concerned institutions. Current government policies emphasize the sustain-

Figure 5.5 Measures to Enable Government to Become More Transparent, Efficient and Effective.



able use of the fisheries and coastal resources. Some key policies are the National Forest Reserves policy (1964), the Non-Hunting Area policy (1984), and the Fishery Protection Zone (1972). These policies are considered appropriate for the physical characteristics and sustainable use of the fisheries and coastal resources.

Many coastal zones are covered by mangrove forests. They act as buffers preventing coastal erosion and are nurseries for aquatic animals. The preservation policy is expected to conserve this intricate and interdependent ecosystem. A fertile mangrove forest supports fisheries, recreation and tourism.

Settlement in the coastal zone should be avoided as it is susceptible to natural calamities such as typhoons, coastal erosion and floods. However, there have been several cases of encroachment of mangrove forests, beaches and saltwater swamps for settlement.

The objective of the fish protection zone is to conserve the fertile spawning and nursing grounds of aquatic animals. In addition, it protects the small-scale fishers from the destructive fishing practices of large-scale commercial fishing operations.

Though well intentioned, the policies are not fully implemented. Among the reasons are insufficient decentralization, unclear boundaries of mangrove forest reserves, imposed boundary overlaps with private lands as well as the inefficiency and ineffectiveness of the relevant institutions. Flexible approaches in solving conflicts concerning settlement in protected forest reserves is another reason. This problem is intractable due to frequent changes in government and the tendency of politicians to use the Land Code as a bargaining chip to maintain their position as land right is the most crucial issue in Thai politics.

Land increasingly becomes a major factor in government planning because of previous policies on promoting population growth, agricultural export-oriented policies, and policies on unlimited land holdings. The first two policies have created demand for land. Consequently, people encroach the national forest reserves, converting them into settlements and farms for their livelihood. The last policy has resulted in a few landlords with large landholdings, many small landholders and numerous landless people.

At present, the population growth policy has been effectively replaced by population control while the agriculture export orientation and unlimited landholding policies are still in effect. There have been serious efforts put into community forestry policies to solve the problem of encroachment in national forest reserves. The rationale is that man and forest can coexist. This policy has been well received by the public. It is still at the stage of public hearings and undergoing formal procedures.

National Plans

In Thailand, relevant national plans for fisheries and coastal resources management can be classified into two main groups, the National Economic and Social Development Plans and Specific Development Plans.

- The National Economic and Social Development Plans. These plans play a crucial role in the development direction of Thailand. There have been seven plans so far and at present, the eighth plan is in effect. The former plans focused mainly on infrastructure development, exports and a rush to become an industrialized country ignoring environmental protection. However, the eighth plan focuses on human resource development and public participation in designing the development direction. With regard to fisheries and coastal resources management, the contents of the plan involve:
 1. rehabilitation of the fisheries and coastal resources by promoting alternative use; and
 2. participation of communities in planning and implementing the use of these resources and the importance of information for decision-making and planning.
- Specific Development Plans. These plans aim at developing a specific area, topic or target population. These are extensive and involve many aspects. There are many committees nominated or elected to implement the plans. The many plans and committees have created problems of

overlap, confused lines of command and insufficient coordination.

Apart from these plans, there are other plans at the ministry, department, provincial, district, sub-district and local levels. Most deal with the well-being of the people and treat the environment as a separate concern. Many plans continue to focus on construction of facilities, which generally involve high capital investment and often are not fully and efficiently used for the designed purposes.

National Laws, Regulations, and Institutions

National laws, regulations and institutions are closely related in that the government's institutions implement and enforce laws and regulations with the primary purpose of peace and order. In a market economy, the national laws and regulations attempt to control the exploitation of scarce natural resources. Institutions involve attempts to implement laws and regulations and maintain the integrity of the natural resources.

There are direct laws regarding coastal resources and coastal environmental management and laws similar to those that originated during the reigns of King Rama III and King Rama V in the form of the Water Revenue Act. Today, there are at least 37 related laws, among them:

- Forest Act, 1941;
- Forest Reserves Act, 1992;
- Local Administration Act, 1914;
- Public Administration Act, 1991;
- Fisheries Act, 1947 amended in 1985;
- Wild Animal Protection and Reserves Act, 1992;
- Provincial Administration Organization Act, 1997;
- Sub-district Council and Sub-district Administration Organization Act, 1994;
- Enhancement and Conservation of National Environmental Quality Act, 1992;
- Land Code, 1954;
- Civil and Commercial Code;
- Navigation in Thai Waters Act, 1913; and
- The 1997 Constitution of the Kingdom of Thailand.

There are also several cabinet resolutions and ministerial notifications allowing sufficient flexibility in the implementation and enforcement of these laws and regulations.

There are a considerable number of laws and regulations concerning natural resource management, but several problems hindering such activities exist. These include:

- Loopholes;
- Light penalties;
- Repetition and conflicting content;
- Difficulties in implementation and enforcement; and
- Centralized and complicated procedures for law enforcement.

The following matrix (Table 5.3) shows the relationship between roles and responsibilities of concerned institutions for fisheries and coastal resource management.

Case Study: Law Enforcement in Fisheries and Coastal Resources in Laem Talumpuk

Laem Talumpuk (see map in Figure 5.2) is a classic case study of insufficient laws and poor enforcement of regulations. It represents conflicting uses of resources, such as marine fisheries and mangroves. In addition, shrimp aquaculture has been developed in vast areas and encroaches into the mangrove forests where local people derive their livelihoods. The problems occurring in this area are complex and are affecting the local people and institutions.

Geographically, Laem Talumpuk is situated in an elongated hook of Pak Phanang Bay surrounded by mangrove forests. The hook serves as a catchment causing the sediments to deposit. This has resulted in the extension of the Pak Phanang Bay shoreline creating shallows, which allow mangrove forests to colonize. The newly formed mudplain is a natural phenomenon creating new un-owned land that government instruments are unable to manage. There have been disputes between the local people and urban areas whose interests are conflicting. The local people want the new land to be covered with man-

grove forests so that it will protect the village from strong winds, storms and typhoons while others want this land for future development such as shrimp farming.

The main livelihood of the people in Laem Talumpuk is fishing. However, the sea is increasingly being subjected to exploitation by large trawlers encroaching the protected zone. Mangrove forests are converted into shrimp ponds or lose their characteristics by sedimentation and dry-out. The local people are exercising their resource use rights with limited support from legal instruments and insufficient attention from concerned institutions. However, the establishment of the Sub-district Administration Organization in 1994, and with strong local leaders, has encouraged the local people to attempt to protect their rights and to request for more local government support. These initiatives appear to work but there are still loopholes wherein the local people and the resources are further exploited.

With relatively weak village cohesion and limited attention from the local government, Laem Talumpuk continues to be an area of conflict and intensive competition for resource use among stakeholders. Problem issues identified in the present research are outlined as follows:

- Trawlers and large-scale push netters encroach the prohibited 3 000 m zone displacing small-scale fishers from their traditional fishing grounds;
- Mangrove forest destruction and illegal claims on mangrove lands brought about by the open access regime of property rights in mangroves;
- Susceptibility to natural disasters such as heavy monsoons and tropical typhoons which limits tourism development and capital investment;
- Insufficient local government attention to help the local people exercise their rights to use and protect the fisheries and coastal resources;
- The local people have weak cohesion and attachment to their local organization brought about by the seasonal migration of fishers in search of better fishing grounds; and

Table 5.2 Interrelationship Matrix Between Roles and Responsibilities of Fisheries and Coastal Resources Management Institution.

	Soil Management	Water Management	Aquaculture	Fishery	Agriculture	Forestry	Transport & Communication	Industrial	Mining	Urban Development	Tourism	Natural Disaster Management	Environmental Management	Land Use and Planning
1. Office of the Prime Minister														
1.1 Office of the National Economic and Social Development Board	RFM	RFM	RFM	RFM	RFM	RFM	RFM	RFM	RFM	RFM	RFM	RFM	RFM	RFM
1.2 The Bureau of Budget	BM	BM	BM	BM	BM	BM	BM	BM	BM	BM	BM	BM	BM	BM
1.3 The Tourism Authority of Thailand	-	-	-	-	-	-	-	-	-	S	RP	-	S	S
2. Ministry of Finance														
2.1 Bank for Agriculture and Agricultural Cooperatives	-	-	B	B	B	B	-	-	-	-	-	-	-	-
3. Ministry of Agriculture and Cooperatives														
3.1 Department of Fisheries	-	RP	RPE	RP	-	S	-	S	-	-	-	-	-	-
3.2 Royal Forest Department	-	-	-	E	-	RPE	-	S	-	-	S	-	S	RPE
3.3 Land Development Department	RP	S	-	-	S	-	-	-	-	-	-	-	S	S
3.4 The Royal Irrigation Department	-	RPE	-	-	S	-	-	-	-	-	-	-	-	S
3.5 Department of Agriculture Extension	-	-	S	-	P	S	-	-	-	-	-	-	S	-
3.6 Agricultural Land Reform Office	PE	S	S	S	S	-	S	-	-	-	-	-	-	PE
3.7 The Cooperatives Promotion Department	S	-	S	-	S	-	-	-	-	-	-	-	-	-
3.8 Department of Agriculture	R	R	-	S	R	-	-	-	-	-	-	-	-	-
3.9 The Forestry Industry Organization	-	-	-	-	-	S	-	RP	-	-	S	-	-	-
3.10 Fishery Marketing Organization	-	-	S	-	-	-	-	S	-	-	-	-	-	-
4. Ministry of Science, Technology and Environment														
4.1 Office of Environmental Policy and Planning	FM	FM	-	-	-	-	-	-	-	-	-	-	FM	-
4.2 Department of Environment Quality Promotion	P	P	-	-	-	-	-	-	-	-	-	-	P	-
4.3 Pollution Control Department	PE	PE	-	-	-	-	-	-	-	-	-	-	PE	-
4.4 The National Research Council of Thailand	R	R	R	R	-	R	R	R	R	R	R	R	R	R
4.5 Wastewater Control Organization	-	-	P	-	R	-	-	-	-	-	-	-	-	-

Table 5.3 Interrelationship Matrix Between Roles and Responsibilities of Fisheries and Coastal Resources Management Institutions. (continued)

		Soil Management	Water Management	Aquaculture	Fishery	Agriculture	Forestry	Transport & Communication	Industrial	Mining	Urban Development	Tourism	Natural Disaster Management	Environmental Management	Land Use and Planning
5.	Ministry of Public Health														
5.1	Office of the Permanent Secretary for Public Health	-	S	-	-	-	-	-	-	-	-	-	S	S	-
5.2	Department of Health	-	S	-	-	-	-	-	-	-	-	-	S	S	-
5.3	Department of Medical Services	-	S	-	-	-	-	-	-	-	-	-	-	S	-
5.4	The Food and Drug Administration	-	S	-	-	-	-	-	-	-	-	-	-	SE	-
6.	Ministry of Interior														
6.1	Department of Land	PE	-	-	-	-	-	-	-	-	-	-	-	-	PE
6.2	Public Works Department	-	P	-	-	-	-	P	-	-	P	S	P	P	-
6.3	Department of Town and Country Planning	-	-	-	-	-	-	S	S	-	PE	-	-	S	PE
6.4.	Department of Local Administration	E	P	S	SE	S	SE	-	-	P	S	S	P	E	-
6.5	The Royal Thai Police Department	E	E	E	E	E	E	E	E	E	-	S	S	E	E
6.6	The Community Development Department	-	-	S	S	-	-	-	S	-	-	S	-	S	-
6.7	The Office of Accelerated Rural Development Agricultural Cooperatives	-	P	S	S	-	-	P	-	-	-	S	-	-	-
7.	Ministry of Industry														
7.1	Office of the Permanent Secretary for Industry	-	S	-	-	-	-	-	PE	-	-	-	-	E	-
7.2	Department of Industrial Works	-	S	-	-	-	-	-	PE	-	-	-	-	E	-
7.3	Department of Mineral Resources	-	S	-	-	-	-	-	-	PE	-	-	-	E	-
7.4	Offshore Mining Organization	-	-	-	-	-	-	-	-	P	-	-	-	-	-
7.5	Petroleum Authority of Thailand	-	-	-	-	-	S	-	P	-	-	-	-	-	-
8.	Ministry of Transport and Communications														
8.1	The Harbor Department	-	-	-	-	-	-	P	S	-	-	S	-	P	-
8.2	The Meteorological Department	-	S	-	S	S	-	S	-	-	-	-	S	-	-
8.3	Port Authority of Thailand	-	-	-	S	-	-	P	-	-	-	-	-	-	-
9.	Ministry of Defense														
9.1	Royal Thai Navy	-	S	S	-	S	S	-	S	S	-	S	S	S	-
10.	Ministry of University Affairs	R	R	R	R	R	R	R	R	R	R	R	R	R	R

Note: B= Budget; R= Research; F= Plan Formulation; M= Monitoring; I= Implementation; P= F+ I+ M= Planning; E= Enforcement; S= Supplement.

- Illegal and ecologically unsustainable activities are increasingly evident in the coastal zone such as sand mining, shrimp wastewater discharge, sludge drained into the mangrove forests, cutting of mangroves, hunting of protected animals and intrusion into the mangrove forests for settlement.

It has been shown that fisheries and coastal resources use conflict is mainly due to poor law enforcement. Hence, the following are suggested steps for effective fisheries and coastal resources management in Laem Talumpuk:

- Step 1: Use of information technology such as Geographical Information System (GIS) to establish clear boundary for mangrove forest reserves encompassing the newly formed mudplain. This boundary has to be made known to all stakeholders.
- Step 2: Revision of land right titles in many previous land regulations under the Land Code of Thailand. The priority for such revision is to ensure that local benefits are protected. It is important to encourage all stakeholders to participate in the revision.
- Step 3: Local government institutions and the Sub-District Administrative Organization should work together to enforce laws and regulations concerning the national forest reserves, fisheries resources and shoreline. Clear responsibilities should be established with the aim of strengthening the Sub-district Administration Organization.
- Step 4: Enhancement of management skills of the local people and stakeholders. It is important to enhance awareness of the local people, public and responsible government officials to wisely use the resources as well as to prohibit exploitation.
- Step 5: Establishment of local surveillance units to monitor compliance of the law. These units are to be independent of political influence. Representatives from all stakeholders are to be included.

Law Enforcement Strategies for the Fisheries and Coastal Resource Management

There are at least 37 laws and regulations regarding fisheries and coastal resources management in Thailand. Enforcement of laws and regulations differs from one locality to another depending on government policies, local activities and their environmental impacts, and local administrative structure.

Laws and regulations which regulate the policies on local fisheries and coastal resources are as follows:

- Forest Reserves Act, 1992;
- Wild Animals Protection and Reserves Act, 1992; and
- Ministry of Agriculture and Agricultural Cooperative (MAAC) Notification on 2 July, 1972 prohibiting the use of push nets and trawls within 3 000 m of the coastline.

Laws and regulations that regulate human activity and their environmental impacts are:

- Fishery Act, 1947;
- Land Code of Thailand, 1954;
- Navigation in Thai Waters Act, 1913;
- Civil and Commercial Code of Thailand, 1935;
- Town Cleanliness and Tidiness Act, 1992; and
- Enhancement and Conservation of National Environmental Quality Act, 1992.

Laws and regulations on local administration are as follows:

- Sub-district Council and Sub-district Administration Organization Act, 1994;
- Provincial Administration Organization Act, 1997;
- Local Administration Act, 1914;
- Public Administration Act, 1991; and
- Constitution of the Kingdom of Thailand, 1997.

Table 5.3 shows certain activities that have violated laws and regulations in Laem Talumpuk.

In a legal perspective, violations of the existing laws and regulations are subject to fine and punishment. However, in reality these activities still exist in Laem Talumpuk. Persistent violations are caused by a variety of factors such as:

- Fines and punishments are less severe compared with returns from the violation;
- Loopholes in laws and regulations allowing violators to go unpunished;
- Centralized law enforcement with insufficient cooperation among law enforcement agencies;
- Lack of dedicated personnel, budget and equipment;
- Cohesion among violators forcing officials to back down; and
- Government policies are relaxed to avoid protests.

A recent example of community efforts to enforce the law occurred on 26 July 1998 when 300 small-scale fishers blocked Songkhla Bay in order to prevent cargo ships leaving port. The protesting fishers demanded the authorities prohibit large anchovy purse seines from fishing in provincial

waters. Local officials were unable to negotiate, which led the Agriculture Minister to intervene. The Minister finally approved the Department of Fisheries' proposal to impose a ban on anchovy boats and those using gill nets from fishing in Songkhla waters.

Strategy One:

Support cooperation among stakeholders.

Rationale:

The centralization of Thailand's public administration system is inefficient in enforcing laws and regulations. It has also created confusion through a complicated hierarchy and lines of authority that in turn lead to insufficient cooperation among local and central institutions. The local people and institutions are not considered sufficiently qualified to manage their fisheries and coastal resources.

Objective:

To encourage local stakeholders and administration to identify, plan and cooperate in the manage-

Table 5.3 Violations of Laws and Regulations in Laem Talumpuk Arising from Human Activities.

	Land Code, 1954	Civil and Commercial Code	Forest Reserves Act, 1992	Wild Animal Protection and Reserves Act, 1992	MAAC Notification on 2 July 1972	Enhancement and Conservation Act, 1992
1. Drainage of sludge from prawn aquaculture into non-hunting areas				Violation of Articles 54 and 57		
2. Prawn farms in the mangrove forests under forest reserves			Violation of Articles 14 and 31			
3. Mangrove timber harvesting			Violation of Articles 14 and 31			
4. Hunting protected animals in mangrove forests				Violation of Articles 16 and 47		
5. Sand mining in public beaches						
6. Sand mining in private beaches	Violation of Articles 9108 and 108					
7. Human settlement in mangrove reserves		Violation of Article 1337				
8. Trawling within 3 000 m from the coastline			Violation of Articles 14 and 31			Violation

ment of their inherited resources.

Action:

1. Identify local fisheries and coastal resources;
2. Identify local stakeholders;
3. Draft management plans;
4. Conduct public hearings, obtain consensus; and
5. Specify roles and responsibilities.

Strategy Two:

Provide information on resource status, policies, plans, laws and regulations and make them available to the public.

Rationale:

The 1997 Constitution of the Kingdom of Thailand has guaranteed rights to the public to access to information. The information can be used for making local management plans and revising the plans when resource status changes.

Objective:

To provide information as a necessary component for publicly accountable decisions. Each decision made should be accepted by the majority of the people.

Action:

1. Improve people's knowledge about their constitutional rights through the media, distribution of printed materials and local government offices; and
2. Establish local networks for disseminating information and analyze knowledge via existing local administrative offices such as Sub-district Councils or Sub-district Administration Organization.

Strategy Three:

Establish a feedback system.

Rationale:

Patron-client relationships are a dominant feature

in Thailand's political economic system. This has resulted in a passive local administration which needs to be revised. Supervision will help reduce patron-client relationships. Efficiency and effectiveness of the public administration system is expected to improve.

Objective:

To enable proper supervision of government officials by the people.

Action:

1. Design a process of mutual supervision that is accepted by government officials and the public, and
2. Integrate the process in the daily work by means of reports, group discussions and collective decisions.

Strategy Four:

Accelerate the process of issuing legislation in accordance with the New Constitution of the Kingdom of Thailand.

Rationale:

There are several measures in the New Constitution that support local administration. The Constitution also provides for the rights of the local administration to issue local legislation. It encourages the local administration to play a role in conserving its culture and traditions, planning its education system and managing its natural resources and environment; otherwise, local people may lose their rights to manage their resources under the present laws and regulations.

Objective:

To accelerate the process of issuing legislation in accordance with the New Constitution

Action:

1. Draft a local master plan;
2. Identify the local resources and their ability to support local prospects; and

3. Integrate the local master plans into the national plan to influence national legislation.

LOCAL USE AND MANAGEMENT OF FISHERIES AND COASTAL RESOURCES

Local communities in Thailand's coastal areas are dependent on fisheries and coastal resources. There are some potential conflicts between the state and the local management practices, i.e., the state uses centralized laws and regulations while the locals rely on their indigenous knowledge. There are beliefs and social cooperation mechanisms which exist among local coastal communities. These factors have played a dominant role in some localities where state interventions are supportive. However, most coastal communities are still in a confused state of management. There are some positive trends of encouraging these local beliefs and social cooperation to play increasing roles in managing fisheries and coastal resources. These are endorsed in the 1997 New Constitution and its subsequent laws and regulations. The decentralization process will take some time to be adopted formally by local administrators.

Local Ownership and Resource Use Rights Regimes

The relationship between local communities and natural resources forms an important subject in studies related to coastal resources management. This is because, at the local level, communities have always been interacting with their surrounding environment. Such interaction can be viewed in two dimensions. One, people live off the resources and the environment by exploiting them to serve their needs. Two, people fear that the surrounding resources and the environment will be exploited, and will eventually affect their dependence on the environment in the future. In the absence of state or outside interventions, the condition of the environment depends largely on the balance between exploitation and protection levels of future uses. This people-resource interaction forms the main core in the development of local and indigenous use and management regimes, which differ between communities. These differences occur because of their ability to define ownership rights and use customary rules developed by the communities (the state and outside interven-

tions play important roles in a later stage of governance).

The understanding of ownership rights and customary rules of coastal communities is important in the analysis of access to the fisheries and coastal resources. Various fisheries and coastal resources have different forms of ownership and resource use rights and are affected by population pressure and changes in patterns of resource use over time. This implies that the types of ownership and rights to resources change over time.

The main economically important coastal resources in Thailand are fishery resources aquaculture resources, mangroves, land, water, coastal tourism, minerals, and cultural heritage. Considerable emphasis is given to these resources in the analysis here.

Fishery Resources and Aquaculture

Marine flora and fauna were considered open access resources in earlier times when population and use patterns were still minimal and subsistent. There were no restrictions on access to fishery resources.

Population growth together with the market and cash economy began to affect fishing communities about 30-40 years ago through the introduction of motorized craft, modern gear and ice storage. Types of ownership and resource use rights took different forms. Increased competition for the resources led to the need for resource reserves for each community. Different degrees of restrictions were introduced in order to limit access to fishery resources by other fishing communities. The fisheries have become common property resources which a community member could access but subject to the community's customary rules. By itself, the nature of common property resources is subject to exploitation. The situation worsens when outsiders intrude into the delineated community boundary. Outsiders usually have better gear and technologies that allow them to extract more of the common resources.

Interactions between local people and outsiders resulted in the loss of local communities' absolute

sovereignty of their common resources. This in turn led to state intervention. Through the state legislation process, zones were imposed but it failed in many fishing communities as the state was unable to enforce the rules effectively.

Most local communities are confused about how to exercise their rights due to the interference of outsiders and the state into their original rights. Identification of rights, acknowledgment of local ownership rights, customary rules, and the state's formal rules should be shared in order to effectively manage these resources. Aquaculture in a marine water body around coastal communities (cage, raft, mud plain aquaculture, except prawn aquaculture in ponds) is generally localized for community members. Since private property rights do not apply to any public water bodies in Thailand, the arrangements for aquaculture are based on the customary rules set by the community or acknowledged by the neighbors. This is one case where outsiders are minimally involved as aquaculture activities involve low priced species and low export demand. State intervention is in the form of supporting aquaculture technologies.

Mangrove Forests

Mangrove forests are considered state property and are crucial to the coastal ecosystem. As with fishery resources, the property rights have changed over time. However, state intervention appears to have had a positive impact on the status of mangroves by issuing laws and regulations concerning mangrove forest zones, cancellation of new charcoal production, supporting mangrove rehabilitation programs and providing information on mangrove rehabilitation. After the boom and bust of prawn aquaculture, the public has increasingly realized that the exploitation of mangrove resources for prawn production has resulted in an almost total collapse of the prawn industry. This has shown that local management practices proved to be more sustainable. This statement, although arguable, is supported by some non-government organizations and local governments.

There have been many studies and reports about the causes of mangrove destruction. However, practical solutions are still ambiguous as the man-

agement of mangrove resources involves many stakeholders and the complicated nature of the resources itself. Competition for mangrove resources is stiff as local communities, state and private enterprises are uncertain on the level of compromise. Mangrove resources were used by local communities for many years before the state imposed formal laws and regulations. There should be a mechanism to allow access for the local people, however, this generosity may lead to loopholes that would allow for further exploitation of these resources.

Coastal Lands

The Land Law Code of Thailand legally allows the use of coastal lands for tourism, aquaculture or other infrastructure development. The legal status of coastal lands is more complicated than farmlands. Many fishing communities are located in mangrove areas and intertidal zones. Access rights are granted by the local committee, despite the illegal nature. However, there are cases when the state gives special permits to the local people to build houses. This seldom occurs due to the high cost of land in certain situations such as when the land has potential for tourism and other industrial development. The ownership rights of coastal lands are site specific and most often local people are refused access to state-owned lands, such as beaches, situated between privately-owned lands. In some cases, conflicts emerge between local occupants and influential outsiders as land that has long been settled by local occupants is claimed by outsiders. Resolving these conflicts is costly and time consuming.

It appears that the local people settling in mangrove forests and disputed lands are losing their rights based on formal land laws. High costs and lengthy rights claims are the main obstacles for the local people whose rights are not protected by the state.

Water Resources

Water resource problems in the coastal area can be classified into two types: water pollution and water shortage. The first problem can be found in saltwater, brackishwater and freshwater, whereas the

second type of problems is related to freshwater. The use of water resources, particularly freshwater, is highly competitive in coastal areas. Being an open access resource, the rights of the local people to control the allocation of the resource and to prevent it from being polluted are limited.

Some coastal communities are reluctant to claim their rights to unpolluted water, as they themselves have contributed to the pollution through their household wastes. However, in the case of industrial wastewater, it is a right and is guaranteed by legislation that the coastal communities should not be affected by the wastes that cause high mortality in fish aquaculture. In theory, the legislation to control and prohibit the effluents from industries seems to be sufficient. However, in practice, enforcement is a problem.

In the case of water shortage, the local people have limited control as water depends largely on natural climatic conditions and on the policy of the central government (dam or water regulatory management). The normal practice is for urban people and industries to be given a higher priority to access the freshwater supply.

Coastal Tourism

Tourism is a major industry in Thailand generating foreign exchange earnings and employment. However, tourism also has social and environmental costs. Despite the preponderance of new tourism approaches such as nature or eco-tourism, their practical applications are still obscure. Coastal tourism in Thailand has inevitably fallen into using this jargon without any clear understanding of definitions and their practical implementation.

Coastal tourism involves diverse kinds of coastal resources such as coral reefs, clear water, sandy beaches, forests, aquatic organisms, and indigenous people and cultural heritage. These resources should be protected due to their significant contribution to the whole ecosystem. However, the equilibrium between supply and demand of these resources is still undetermined. One reason is the improper determination of prices. Several attempts to solve these non-market attributes have been reported, but no satisfactory outcome has been made.

Coastal tourism resource rights classification remains obscure. However, from the local point of view, safeguards for the coastal resources are vital and initiatives have been undertaken through local beliefs and social cooperation. Pressure to share coastal tourism resources comes from the demand for new tourist sites developed with minimal regard on the importance of such resources to the local people. Formerly well-defined rights of local people have been altered by means of outside involvement with a supporting hand from the state legal system. Locals are lured by promises of quick income and disregard the associated social, economic and environmental costs. The rights of the local people are expected to improve with the implementation of the 1997 New Constitution. It will take time before people realize what their rights and responsibilities are provided for in the Constitution.

Coastal Minerals

Coastal minerals found in the seabed and in coastal areas include oil and gas, tin, antimony, manganese, lignite and columbite-tantalite. Mining these minerals is made through concessions granted by the state. Most concessionaires do not come from local communities. Local residents are involved mainly as workers. The complication of concession arrangements limits access of the local people to these resources which go mainly to urban-based or foreign-based companies.

Cultural Heritage

The local cultural heritage is, to a certain extent, promoted through tourism development. Local prices are affected by the artificial demand on goods services brought about by tourism rather than by natural supply and demand. Ownership rights of local people seem to be insufficiently acknowledged in an attempt by influential tourism developers to seek new tourist attractions. These rights are guaranteed by the New Constitution. If necessary, laws and regulations enabling fair use of the local people's cultural resources need to be drafted so that local heritage can be protected and preserved. It is Thailand's most difficult task to identify and guarantee the coastal cultural heritage, as these resources are highly abstract. It depends largely on the cohesion and knowledge of the local people to

perform and protect their cultural heritage so that these are respected by the state and outsiders.

Local Approaches with State Involvement in Fisheries and Coastal Resources Management

The mobile characteristic of certain coastal resources especially fisheries poses problems in defining boundaries and rights of access. Most coastal resources are shared by individuals, either within a community or between different communities. The attempts of local people to draw resource use boundaries are limited by their capability to control the resources. In these cases, disputes and conflicts over resource use are inevitable both among members of the same community and between different communities.

When disputes occur between local communities, social institutions play important roles in resolving the problems or requesting involvement by the state. At the village level, two main institutions affect the social behavior of village members: the formal village and state influenced committee and the informal village council. The formal committee is led by an elected village headman and is composed of several elected members. The village council coexists as an informal institution that has a looser organizational structure. This village council is generally composed of a few village elders and other influential figures. The village council does not have a fixed council leader as its leadership may change according to its concern.

In 1994, the parliament passed a new law enabling the establishment of a new sub-district administrative organization. This is a formal inter-village institution. It is tasked to deal with sub-district development activities. This institution is allowed by law to collect its own taxes within the sub-district. Along with this new decentralized sub-district administrative institution is an old bureaucratic sub-district council which is expected to dissolve in due time. This institution has the task of helping resolve disputes and conflicts. Dispute resolution is mainly undertaken through meetings.

Disputes between sub-districts or provinces are more complicated if the conflicting parties do not have close social relations. Local leaders tend to use their personal connections as a first attempt to find solutions. Formal ways of resolving disputes are less preferred by locals. Many rural communities in Thailand are highly self-reliant, both in economic and political terms. Legal actions against the local people are usually brought by outsiders when they are involved in disputes over fishery and coastal resources. Formal laws and regulations are used only when it is unavoidable.

Belief systems also play some roles in natural resources management especially as it reflects to social cooperation. The life of the local Thai people is generally tied to a belief in the supernatural. This belief is rooted mainly in Buddhism and also to some extent Hinduism, as it was influential prior to the arrival of Buddhism. Belief in the supernatural is an important factor behind many customary practices. Some practices connected with these types of belief are applicable for enhancing the protection of coastal resources from exploitation. These include the releasing of marine life such as fish and turtles into natural habitats, ordination of trees, and sacred sites. Social cooperation is an important aspect of Thai societies, particularly at the community level. The concept of social cooperation is found to apply in various activities concerning community self-reliance and collective actions to solve problems facing natural resource management.

Case Study: Local Initiatives in Fisheries and Coastal Resource Management in Ban Laem Makham, Trang Province

Ban Laem Makham is a fishing village in Khao Mai Kaew sub-district, Sikao District, Trang Province (map in Figure 5.2). The local management initiatives are being supported by a local non-government organization (the Yadfon Association) and local government agencies. These initiatives are successfully managing fisheries and coastal resources. The people in Ban Laem Makham faced several resources management problems as outlined below:

- Intrusion of large, modern commercial trawlers and push netters whose interest is making profits, whereas small-scale fishers

aim for basic livelihoods;

- Exploitation of mangrove forests for commercial charcoal production by large outside concessionaires and by the local people; and
- Negligence of local government in protecting the rights of the local people.

It was the local people who initiated the project to protect and use their resources as they have the customary ownership rights over these resources.

It is an important factor that the local resource owners are able to identify and exercise their own rights to use and protect the resources vital to their livelihood. Another feature of their success is the capability of village leaders (both formal and informal). These two characteristics can be made sustainable with the support of government agencies. In Ban Laem Makham, the support of a non-governmental organization (Yadfon Association) and some concerned private enterprises are necessary. The strategy of the Ban Laem Makham community is to symbolize their unique resources (e.g., turtles) and promote their protection through some powerful media (i.e., TV, newspaper, radio) so that the population is made aware of their importance. The steps of success in Ban Laem Makham are as follows:

- Step 1: Local people face problems with resources depletion due to aggressive exploitation by outsiders. The local people asserted their rights of ownership over these resources and the role of the state in protecting them.
- Step 2: Local leaders and people conducted several informal meetings to plan strategies to protect their resources and exercise their use and ownership rights. The local leaders are farsighted, active and sincere.
- Step 3: Involvement of government organizations and non-government organizations is necessary. Local initiatives can be shared by both organizations but efficiency may be more with NGOs.
- Step 4: By trial and error, the local communities, through several formal and informal meetings, brainstorming and stakeholder participation, are able to identify unique, achievable and effective management

strategies.

- Step 5: The government is involved particularly in dispute resolution by virtue of their authority through laws and regulations.
- Step 6: Establishment of groups associated with occupational interests so that the bargaining power could be increased and solidified to counterbalance external forces. In addition, the groups are able to set customary rules through meetings of members and other stakeholders involved in a dispute.
- Step 7: Awareness raising through popular media to share ideas with other communities, as well as open the idea to the public.

There are several key beliefs that are contributing factors in successful local management. Religion (Islam) is a major attribute creating a cohesive bond among the Ban Laem Makham people. The religious practices facilitate consultation via meetings and consensus on management strategies. The role of women may be passive in the meeting places but this role becomes dominant when such management affects households and children's well-being.

In summary, the experiences from Ban Laem Makham show the efforts of the local people to protect their ownership rights to fisheries and coastal resources. The strategies taken to implement local initiatives have been through a participatory approach involving many stakeholders. GOs and NGOs have been active and supportive. They enhanced the local people's power to protect their resources for present and future generations. The local communities also employed their beliefs and social cooperation as tools to strengthen the power within the community while the popular media was enlisted to generate support from the public. The levels of integration of several well-defined resource issues and stakeholders appear to work.

Co-management Approaches for the Management of Fisheries and Resources Under the Present Decentralization Process

Co-management encourages involvement of all six groups of stakeholders:

1. The state;
2. The media;
3. NGOs;
4. The local community;
5. The private sector; and
6. Academe.

In Thailand, local initiatives have been started mainly by the NGOs while the state, private sector and other stakeholders act as supporters in terms of campaigns, personnel, facilities and funds. The strong point of the NGOs is that they are able to cooperate with other stakeholders, especially the community and media. They are also independently administered which allows for quick implementation. However, they do have weaknesses such as the lack of financial resources to support long-term projects, sensitive responses to criticism and limits to their ability to ensure that other stakeholders cooperate.

One of the purposes of co-management is to coordinate all related parties to work together on an equal footing. The ultimate goal of this management approach is to harmoniously use and conserve precious coastal resources in such a way that they are safeguarded for the present and future generations. The co-management approach is supported and encouraged by the Constitution of Thailand through at least two provisions:

Section 56.

The right of a person to give to the State and communities participation in the preservation and exploitation of natural resources and biological diversity and in the protection, promotion and preservation of the quality of the environment for usual and consistent survival in the environment which is not hazardous to his or her health and sanitary condition, welfare or quality of life, shall be protected, as provided by law.

Any project or activity which may seriously affect the quality of the environment shall not be permitted, unless its impacts on the quality of the environment have been studied and evaluated and opinions of an independent organisation, consisting of representatives from private environmental organisations and from higher education institutions providing studies in the environmental field, have

been obtained prior to the operation of such project or activity, as provided by law.

The right of a person to sue a State agency, State enterprise, local government organisation or other State authority to perform the duties as provided by law under paragraph one and paragraph two shall be protected.

Section 290.

For the purpose of promoting and maintaining the quality of the environment, a local government organisation has powers and duties as provided by law.

The law under paragraph one shall at least contain the following matters as its substance:

- (1) *the management, preservation and exploitation of the natural resources and environment in the area of the locality;*
- (2) *the participation in the preservation of natural resources and environment outside the area of the locality only in the case where the living of the inhabitants in the area may be affected;*
- (3) *the participation in considering the initiation of any project or activity outside the area of the locality which may affect the quality of the environment, health or sanitary conditions of the inhabitant in the area (The Council of State of Thailand 2001).*

In order to ensure the participation of local communities, as enshrined in the Constitution, several strategies are in order. These are:

Strategy One:

Encourage the adoption and use of local initiatives by means of indigenous knowledge and social cooperation.

Rationale:

Local initiatives based on indigenous knowledge and social cooperation are vital tools for the management of fisheries and coastal resources as these indigenous practices and values have been developed and polished through time. They must be adapted to

fit with the rapidly changing ways of resource use. It has been widely accepted that local people are entitled to have access rights to use and manage their resources with support from the state and civil society.

Objective:

- To identify several existing forms of local initiatives;
- To document local initiatives in a practical and adaptable form for implementation; and
- To exhibit local ways of managing their resources.

Action:

1. Identify local initiatives through research conducted by educational institutions, government and non-governmental organizations, (i.e. Yadfon Association, Andaman Project for Participatory Restoration of Natural Resources), local and grassroots organizations (i.e., Provincial and sub-district administration organizations) in cooperation with the leaders and the community;
2. Identify leaders who can work together to upgrade the community's well-being;
3. Identify a resource for management and conservation; and
4. Demonstrate local initiatives leading to improved economic well-being.

Strategy Two:

Establish a network to share experiences on implementing local initiatives to manage fisheries and coastal resources.

Rationale:

The successful application of local initiatives should be shared so that they can be applied in other similar cases. The local community with support from concerned institutions takes a dominant role in the establishment of a local network.

Objective:

To share experiences learned from successful and unsuccessful projects. Several strategies to deal with the implementation of local initiatives should be discussed and revised to fit with the socioeconomic characteristics of the communities and adapted to the demands of a globalized market economy.

Action:

1. Grassroots institutions provide opportunity for local communities to meet through field visits, demonstration projects, agricultural exhibition fairs;
2. Provide training and education for local people to meet, discuss and adapt lessons learned from different management initiatives; and
3. When local communities have sufficient cohesion with one another, with government agencies, with local administration organizations, with NGOs and with the private sector, encourage the establishment of a network involving a number of local communities working with concerned institutions.

Strategy Three:

Disseminate information.

Rationale:

There is a lot of information on fisheries and coastal resource management collected by the government and the private sector. This information is useful for local communities to learn from and adapt to their situations. This knowledge can be a framework for making decisions, to invest or start new local projects. In addition, local communities should also know the initiatives of the private sector. Local communities need details of proposed development projects in order to carry out actions to prevent or mitigate possible negative impacts.

Objective:

To support local initiatives by giving local people information on government policies, plans, laws and regulations.

Action:

1. Through local administrative organizations, local people are encouraged and given explicit rights to access the requested information with full support from concerned institutions;
2. The local people are to be trained to exercise their rights in a proper manner;
3. Using the information, the local leaders are able to write local project proposals as well as manage their own projects; and
4. Database systems should be made available for public access and they should be in both interactive and assisted systems.

INTERNATIONAL INVOLVEMENT

Thailand cannot manage its fisheries and coastal resources in isolation. In a global world, countries interact on economic, financial, political, social and environmental issues. The recent financial crisis, which hit most Asian countries, has shown the importance of international involvement. Through their international networks, countries in need of financial assistance were able to obtain grants from multilateral funding institutions such as the World Bank and the International Monetary Fund (IMF). The extent of the impact depends to a large degree on the economic development and preparedness of a country. In solving a country's economic crisis or other disputes such as genetic patents or intellectual property rights, all countries need to cooperate. ASEAN can perhaps act as an example of such cooperation in the region.

Fisheries and coastal resources management schemes are part of the interwoven relationship among countries, especially countries that share common maritime borders. Thailand shares its borders with Cambodia, Indonesia, Malaysia and Myanmar. A policy to use the marine resources of one country inevitably affects others. In addition,

there are conventions and agreements created in the international arena that affect a countries' behavior in using the world's largest common property (international waters) and in solving possible maritime conflicts among neighboring countries.

Types of International Involvement

Thailand is committed to several international agreements on the conservation and management of fisheries and coastal resources. The most important development in the international scene affecting Thailand's marine fisheries is the proclamation of 200-mile EEZ by neighboring countries. There are also some projects and joint ventures that have come into effect as a result of this proclamation. Other types of international involvement that directly or indirectly influence Thailand's fisheries and coastal resources management programs are also discussed later in this section.

UNCLOS and the Coastal Zone

The advent of UNCLOS led Thailand to declare its EEZ and define its territorial waters. Under the Convention, Thailand gained 60 percent more in sovereign waters but lost about 300 000 square miles of high seas (international waters) to neighboring countries. Following the depletion of marine resources in the Gulf of Thailand and the enactment of the 200-mile EEZ, Thai fishing fleets were forced to enter the waters of Malaysia, Myanmar, Indonesia, India, Cambodia, Bangladesh and Australia.

One of the implications of the 200-mile EEZ is the continued struggle of Thai fishing boats to find more productive fishing grounds. A joint fishing venture arrangement with neighboring countries, where fishing grounds are still productive, is one of the solutions adopted. Occasionally, Thai fishing companies do not enter into joint-venture arrangements with other countries. Instead, they poach in other countries' fishing grounds. There have been several incidents in the past of illegal entry by Thai trawlers in the no-fishing zones of Myanmar, Malaysia, Cambodia, and Vietnam. Many Thai fishing boats and crewmen have been detained in these countries.

While neighboring countries have ratified the UNCLOS, Thailand is still reluctant. Despite this, Thailand is negotiating joint-venture arrangements and bilateral or multilateral cooperation schemes in areas including financial support; fishing technologies; fish handling and storage facilities; public and private investment cooperation; training in terms of technology, partner countries' cultural and legal system knowledge and registration of Thai crewmen for legal protection of their rights.

Thailand has other obligations under a number of conventions on fisheries, biodiversity and pollution. These obligations have existed for some time now. They include:

- Convention on Wetlands (Ramsar, Iran 1971);
- The Convention on Biological Diversity;
- The Convention of the World Meteorological Organization;
- The United Nations Framework Convention on Climate Change;
- The Convention on the Protection of World Culture and Natural Heritage; and
- The International Convention for the Prevention of Pollution from Ships (MARPOL 73/78).

In addition, there are other recent international initiatives which establish a legally non-binding principle for the protection and sustainable use of marine resources. The Global Programme of Action for the Protection of the Marine Environment from Land-based Activities and the UNCED Agenda 21 are two important ones. Thailand is also involved in a number of regional initiatives and programs on coastal and marine issues in cooperation with ASEAN members such as:

1. ASEAN Cooperation Project under Environmental Programme; and
2. United Nations Environmental Programme - Regional Seas Programme; and
3. Asia Pacific Economic Cooperation (APEC) Marine Resources Conservation Working Group.

Joint Ventures

Thai-Myanmar joint fishing ventures began almost a quarter century before the establishment of the EEZ. According to the Fisheries Department, Myanmar granted a fishing concession to Thai companies in 1975 and this ended five years later as both parties had insufficient experiences for such an operation. In 1989, Myanmar authorities granted a fishing concession to Thailand once again, and by 1990, the Thai Fisheries Department had set up the Thai-Burma Fisheries Co. Ltd. Fifty percent of the total shares were owned by the company, 22.5% by businessmen and 22.5% by industrialists. Eventually, fishing by the Thai private sector in Myanmar ended in 1993.

In 1995, Myanmar again granted fishing concessions to Thai fishers, this time in the form of joint investments. Each Thai company had to invest in supplementary fishery-related businesses in at least three out of five alternatives: ice making, fish meal production, cold storage, fish canning or shrimp farming. Unfortunately, six Myanmar crewmen were killed by Thai crewmen on board a Thai fishing trawler. This incident prompted Myanmar authorities to cancel the fishing concessions. It is estimated that 500 Thai trawlers are illegally fishing in Myanmar waters, supposedly with unofficial passes from local Myanmar officers or minorities who oppose the regime.

In January 1998, the Thai Minister of Agriculture and Agricultural Cooperatives and the Army Commander-in-Chief discussed fishery ventures in Myanmar and other issues involving Thai fishers detained by Myanmar authorities. Thailand requested that Thai fishers caught poaching be treated in a humane and friendly manner. After a meeting and a visit of the Thai Army Commander-in-Chief, 98 out of more than 100 Thai prisoners were released.

The problems with the fishing ventures in Myanmar were largely due to Thai fishers working in no fishing zones, breaking promises and contracts, using radio communication gear without permission, and committing violence against Myanmar crewmen. According to a Thai businessman, some countries

have a different way of handling the business. Thai fishing crews are confused by various regulations in Myanmar. Some have been charged for violating Myanmar laws while others have been stopped and their fishing boats and gear confiscated.

Some joint-venture deals with Malaysia have suffered a similar fate. Deals were ceased, negotiated and restarted and so on. However, private sector stakeholders of the two countries have created different kinds of fishing deals such as special permits for Thai-Malaysian registered fishing boats to fish in Thai waters off the coast of Satun Province. In addition, many small-scale Thai fishing boats prefer to sell their catches to Malaysian markets in Perlis or Langkawi as they offer better prices. Many of them offered contractual support. This type of bilateral agreement has been carried out quite a long time with minimal interference from institutions from the Thai side.

The most successful joint-venture fishery arrangement may be the one with Bangladesh. Nevertheless, there have been reported violations, arrests of Thai crewmen and other problems but they have been peacefully resolved through the full cooperation of the two countries. The major factors contributing to the success of these joint-venture arrangements are promises, respect of cultural differences and strict implementation of agreed rules.

Deep-Sea Fisheries

From November 1989 to January 1990, the Chulabhorn research vessel conducted a joint marine survey with Myanmar in the Andaman Sea off the western coast of Thailand. The scientists concluded that a sustainable rate of catch in Myanmar waters would be between 1.39 million and 1.75 million tons per year. The survey also found that the catch would include 0.9 million tons of high value shrimp. Attention has been given to deep-sea fisheries for tuna species in international waters. Several infrastructure facilities have been built such as ports, cold storage, transportation systems and air cargo facilities to serve the Japanese tuna market. High investments

in modern fishing vessels and a limited capability for deep-sea fishing appear to be the major constraints for Thai fishers to venture into international waters. The Thai government and the private sector in Phuket have cooperated to develop the deep-sea fisheries in 900 East Ridge by establishing commercial cooperatives, conducting research, training and conferences to help interested investors.

Regional and International Tourism

Thailand receives significant foreign exchange annually through regional and international tourism. Thailand has gained a good tourism reputation throughout the world due to its unique culture, well developed tourism facilities and beautiful natural resources. However, an important issue that needs to be considered is at what costs Thailand has incurred to achieve this reputation.

The coastal ecosystem has been depleted to serve the demands of the tourism industry. There is evidence of stained beaches, unplanned hotel and resort construction, coral reef destruction, pollution and loss of culture and local traditions. These costs should be included in national accounting to reflect the negative impacts of tourism. The Visit Thailand Year and the recent Amazing Thailand campaigns may be contributing to these undesirable consequences of tourism.

Thailand's current policy on tourism focuses on sustainability such as eco-tourism, nature and cultural tourism. However, there has not been a real or extensive practical application of these tourism concepts possibly because these forms of tourism, considered simple and self-sufficient, are contrary to the large capital investments of conventional tourism. A recent discussion facilitated by the National Economic and Social Development Board discussed the development of Phuket as an international city. This so-called international city will inevitably involve a large investment to cater to all sorts of tourist. With Phuket planning for such a large-scale project, the neighboring provinces of Phangnga, Krabi, Trang and Ranong will also be developed to serve tourism and affiliated industries.

Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT) Development Project

Due to stiff global economic competition and increasing trade protectionism, three of the ten member countries of ASEAN have proposed special cooperation areas encompassing Northern Sumatra province of Indonesia, the four northwestern states of Malaysia (Perak, Penang, Kedah and Perlis) and five provinces of Southern Thailand (Narathiwat, Pattani, Yala, Songkhla and Satun).

Located between Sumatra and Langkawi in Malaysia, TMNP is likely to become a regional strategic area for an IMT-GT development project, especially in the tourism aspects of economic cooperation. The project also intends to confer preferential domestic status on any investors from the member countries seeking to invest anywhere in the Triangle. The most important forces, which will influence the realization of a regional economic cooperation within the IMT-GT, are a shared common race, religion and culture.

The objectives of the IMT-GT development projects are to increase trilateral trade cooperation and minimize trade barriers such as tariffs, taxes, and trade regulations. It also emphasizes investment promotion, human resource development, technology transfer and relaxation of labor migration among the member countries. In terms of agriculture and fisheries, it promotes joint fishery ventures, agriculture production and agro-industrial development. Regarding tourism, the joint investment on communication and transportation networks on land, water and air will connect tourist destinations. Another important aspect is the joint protection and management of the environment, especially in the Straits of Malacca where Tarutao, Langkawi and Northern Sumatra are located.

Recently, Malaysia proposed a custom office in Tarutao so that tourists from Malaysia's Langkawi need not undergo customs processing in the mainland of Satun. Tourists need to travel only 4.5 km from Langkawi directly to Tarutao instead of some 25 km to Satun and then 22 km to Tarutao. The Langkawi Development Authority (LADA) realized that Langkawi is ideally located to take advantage of future

developments in Tarutao. The building of a new road linking Satun and Bukit Puteh in Kuala Perlis, Malaysia would be the latest gateway to Tarutao and Langkawi. The Satun Provincial Governor has also expressed his eagerness to develop Satun and its tourist attractions (Tarutao, Adang, Rawi and Lepe islands, and other nearby islands and national parks) aiming for an estimated income of 50 million baht per month during the Amazing Thailand years (1998-1999). The development needed for these tourist destinations is mainly infrastructure development (i.e., port development and road construction). The province, with support of 40 million baht from the Tourism Authority of Thailand (TAT), will develop a road linking Pantai Melaka to Taloh Wow Bay on the Tarutao Island, a distance of 12 km. It is expected to be completed by the end of 1998. For long-term tourism development, the province is expected to obtain some 400 million baht from TAT, Royal Forestry Department and Southern Border Province Administrative Center (Sor-Or-Bor-Tor) for the period of four years until the year 2001.

Joint Development Area (JDA)

There are some concerns about the oil and gas joint exploration project in Thailand-Malaysia JDA. The agreement was reached between the two countries' Prime Ministers in May 1998. On the Thai side, environmental impact assessments of pipeline routes are underway. It is expected there will be disputes over benefits. However, the project will go ahead and problems will be solved as various sectors realize the importance of oil and gas development for the progress of the Southern Seaboard Program.

On the upper Gulf of Thailand, there is also a Thailand-Cambodia JDA for oil and gas exploration. The oil and gas will primarily serve the Eastern Seaboard Program. There has been a proposal to explore oil and gas deposits in the Andaman Sea within Thai waters. It is reported that the exploration and development of any oil and gas network would minimally affect fisheries and coastal resources. However, when the proposal is implemented some negative consequences may occur. At this stage, a majority of the fishers and the public has a positive reaction to this development as they expect to share the benefits.

World Trade Organization (WTO) and Trade Restrictions

There are several forms of trade restrictions imposed by developed nations. For example, Thai prawn exports have been restricted by the United States for environmental reasons. Quotas and a General System of Preferences (GSP) on Thai export products have been considered (and reconsidered) for lifting. Many times, trade restrictions are imposed based on claims to protect the global environment. These trade restrictions are a barrier to entry thus discouraging free trade. This type of restriction raises the cost of Thai export products which consequently has an enormous effect on attempts to extract more of the existing resources. Fisheries and coastal resources are unavoidably being subjected to further exploitation.

The WTO plays a major role in free trade policy. Thailand has attempted to find a solution to the Thai prawn trade with the United States but long court processes and indecisive judgments are discouraging.

There are many international regimes that directly or indirectly affect fisheries and coastal resources management in Thailand. In summary, some important issues relevant to international regimes are:

- International regimes forces Thailand to limit its capability to independently manage its fisheries and coastal resources.
- Use of fisheries and coastal resources is intensified due to a rush to extract these resources to fulfill requirements imposed by international organizations and international markets.
- Regionalization will be further developed to counterbalance international interventions in the region especially in terms of economic and legal cooperation.
- Cooperation is sought by neighboring countries requesting a share of Thailand's fisheries and coastal resources such as the National Marine Park needs to relax its rules to facilitate private investments (both domestic and foreign) for regional and international tourists.

- Some advanced tourist destinations such as Pattaya and Phuket require comprehensive development plans to deal with increasing environmental problems.
- Deep sea fisheries are to be promoted to encourage Thai fishing vessels to fish in international waters as fish stocks in nearshore areas are already depleted beyond maximum sustainable yield.
- Infrastructures for a deep-sea fishery have been developed.
- There are internal and external forces affecting fisheries and coastal resources management policies and plans. In addition, local plans are increasingly accepted.
- With local domestic and regional self-sufficiency, new concepts of economic development have become a popular approach to solve the current financial and economic crisis.
- Integrated fisheries and coastal resources management should be promoted.

Case Study: International Involvement in Fisheries and Coastal Resources Management in Tarutao Marine National Park, Satun Province

TMNP has a water area of 1 264 km² and is located in the Andaman Sea off the southwest coast of Satun Province (map Figure 5.2). The park is administered by the Royal Forestry Department in Bangkok. The department is the sole proprietor of the park and has full authority to manage the park in such a way that it fulfills the Department's objectives. Apart from the Royal Forestry Department offices and stations on Tarutao and Adang Islands, the TMNP is occupied by local indigenous people, Chao Ley or Sea Gypsies, on Lepe and Adang islands. The livelihood of the Chao Ley depends largely on the marine resources of the TMNP and their contracts with middlemen from Satun and Perlis.

Suggested steps for successful management of the TMNP are:

- Step 1: Identification of existing TMNP resources and stakeholders using both ground survey and remote sensing. It is

important to identify all related parties and their existing problems.

- Step 2: Through the Royal Forestry Department and Provincial and Sub-district Administration Organizations, the information and problems obtained in Step 1 are circulated. The LFA can be used to organize the meeting.
- Step 3: The private sector, in cooperation with Langkawi Development Authority and Perlis government, is encouraged to form joint development projects. Similar moves have been made in Northern Sumatra, Indonesia.
- Step 4: Multilateral cooperation among Thailand-Malaysia-Indonesia and the private sector from these countries is initiated under the umbrella of the IMT-Growth Triangle Development Project.
- Step 5: On the Thai side, preparation of infrastructure, personnel and budget is initiated in a transparent and participatory process. Special attention should be made for the involvement of the indigenous Chao Ley people.

Management Approach for Tarutao Marine National Park

A primary consideration of the synthesis made here is not to suggest dramatic changes to the current management schemes of the Royal Forestry Department. The TMNP is under pressure from national, regional, local and international stakeholders. The TMNP may be considered as the last resource rich area in the west coast of Thailand. Based on the problem tree (Figure 5.6) developed from the workshop with TMNP stakeholders, several strategies are attempted in this research to suggest a sustainable method of fishery and coastal resources management with international involvement. The TMNP is situated near the island of Langkawi in Malaysia. There has been an attempt by the Malaysian authorities to establish an immigration and custom checkpoint in Tarutao. The request is pending as the TMNP development is not focused on tourism, especially international tourism. Capture fisheries in TMNP is illegal under fishery and forestry legislations. Thai-Malaysian registered fishing boats fish mainly in the Thai waters of the

TMNP. Fish caught is sold mainly in Phuket or Malaysian markets. However, fish caught by small-scale fishers, or the Chao Ley, is sold mainly in Perlis market as they have special contracts. As discussed, there is evidence that TMNP is being increasingly subjected to overexploitation, despite its legal status as a national park. Despite many legal barriers, illegal fishing is still rampant.

Strategy One:

Collect and compile all existing information from several ongoing projects and international cooperation.

Rationale:

The status of resources, their stakeholders and ongoing resource use are important if the policies and plans are to be implemented in the TMNP. There are many legal and illegal activities happening, therefore a clear understanding of the resources is crucial. The stakeholders include all local and domestic individuals or groups and also those from neighboring countries.

Objective:

To understand the resource status of the TMNP, its stakeholders and ongoing resource use.

Action:

1. Use ground survey, GIS and remote sensing techniques to identify resources status, TMNP stakeholders and resource use activities; and
2. Compile information about physical, socio-economic and cultural inheritance of the joint counterparts.

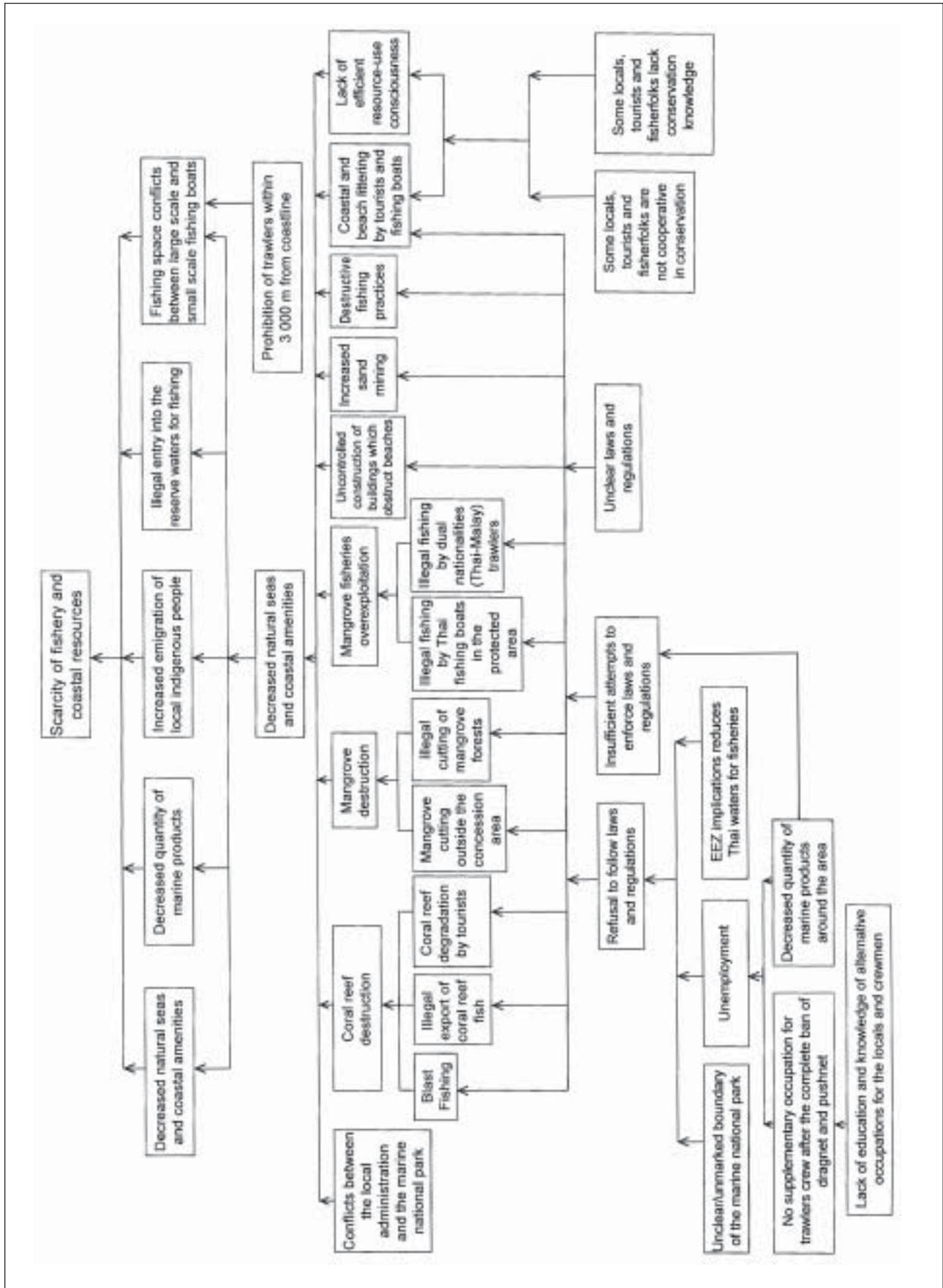
Strategy Two:

Strengthen the local administration to be able to work with central line agencies in Thailand and the Malaysian local government.

Rationale:

Thailand is going through a decentralization process. The local administrative organizations are to handle all the administration and resource

Figure 5.6 Problem Tree of the TMNP's Fisheries and Coastal Management.



management concerns. The ability of these organizations to deal with a highly competitive world is crucial.

Objective:

To manage negotiations and monitor business deals with other organizations both inside and outside Thailand.

Action:

1. Conduct a preliminary study on training needs of the local administrative organizations; and
2. Through training, coordinate officials from the concerned institutions, especially those from the Royal Forestry Department, to jointly develop good working cooperation.

Strategy Three:

Design a joint development plan for the short, medium and long terms.

Rationale:

The TMNP will have to be developed to cater for the needs of its various stakeholders. The most important consideration will be the development direction and benefits distribution. Appropriate and well-accepted joint development plans are needed.

Objective:

To use public participation to design joint development plans for various timeframes.

Action:

1. Through existing agreements (i.e., IMT-GT, JDA, joint-venture deals and others), draft a joint development plan within the framework;
2. Establish a committee to deal with the joint development plan and possible conflicts; and
3. Member parties sign a memorandum on agreements and implementation of the joint development plan.

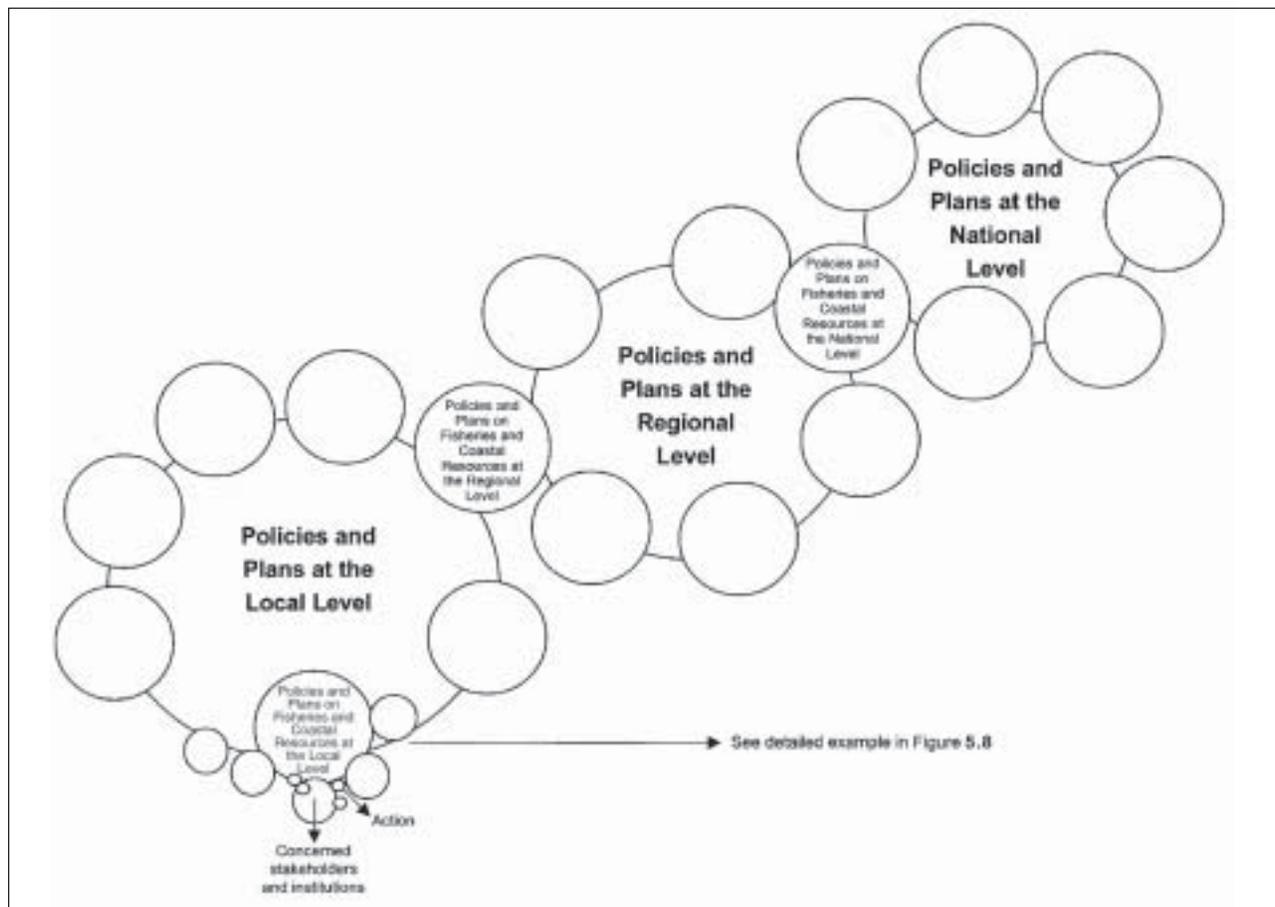
TOWARDS BETTER MANAGEMENT OF FISHERIES AND COASTAL RESOURCES

Although the fisheries and coastal resources in Thailand have been heavily exploited by domestic and international stakeholders, their condition can be improved through better management programs. Under the New Constitution of the Kingdom of Thailand, management policies and plans are going to work through a more decentralized structure. The Constitution guarantees resource use rights for those who are directly using the resources. Capacity building of the local administrative organizations and the local people is an important step in management initiatives.

In Thailand, there are different levels of national, regional and local administration. Conventional policy formulation and planning processes are handed down from the national level to be implemented at the regional and local levels. This has gradually changed since 1994 when decentralization began. At present, the policy formulation and planning process still take both forms. However, the level of compromise is still uncertain. As shown in Figure 5.7, this process of formulation and planning consists of three cycles. The smallest element in the cycle are management issues composed of strategies with identified issues, stakeholders, objectives and actions.

Figure 5.8 shows detailed examples of policies and plans of fisheries and coastal resource management at the local level. The figure depicts how the strategies formulated using several case studies can be related in the framework of administration. It is important to note, however, that this recommendation is based on selected case studies only.

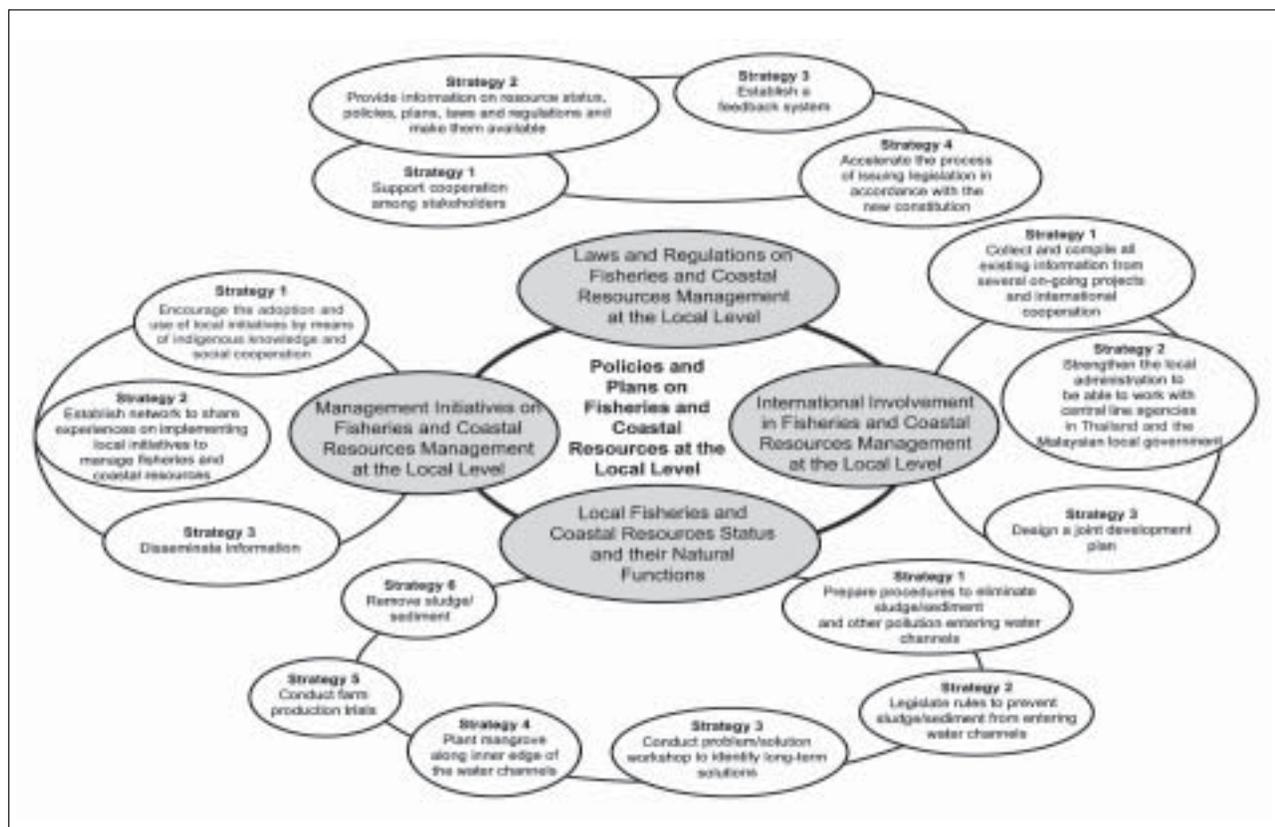
Figure 5.7 Diagram of Interwoven Cyclical Relationships of Policies and Plans Concerning Fisheries and Coastal Resources Management at Three Levels of Administration (1998).



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Figure 5.8 Detailed Diagram of Policies and Plans on Fisheries and Coastal Resources at the Local Level (1998).



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