

# Marine National Park in Thailand

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## 1. Marine Parks

There are presently a total of 26 Marine National Parks (MNPs) in Thailand, of which 21 are formally legalised, while five are in different stages of the process of legalisation. There are located along the Gulf of Thailand coast and Andaman Sea coast. Of which 16 of parks are situated on Andaman Sea coast. For 21 legalised parks cover area about 5,810 km<sup>2</sup>. (figure 1 and Table 1)

**Table 1** Marine National Park in Thailand

NO.	Park Name	Year Inscribed	Total Areas (Km <sup>2</sup> )	Marine Areas(Km <sup>2</sup> )
1	Khao Sam Roi Yot	1966	98.08	20.88
2	Tarutao	1976	1,490.00	1,264.00
3	Thaleban	1980	196.00	2.00
4	Mu Ko Ang Thong	1980	102.00	84.00
5	Ao Phangnga	1981	400.00	347.00
6	Mu Ko Surin	1981	135.00	102.05
7	Sirinath	1981	90.00	68.00
8	Khao Leam Ya-Mu Ko Samet	1981	131.00	123.00
9	Had Chao Mai	1981	230.87	137.22
10	Mu Ko Similan	1982	140.00	124.24
11	Mu Ko Chang	1982	650.00	458.00
12	Laemson	1983	315.00	267.00
13	Had Nopparatthara-Mu Ko Phi Phi	1983	387.90	325.96
14	Mu Ko Preta	1984	494.38	468.38
15	Khao Lam Pee – Had Thai Muang	1986	72.00	0.00
16	Mu Ko Lanta	1990	134.00	108.96
17	Khao Lak-Lam Ru	1991	125.00	0.00
18	Had Vanakorn	1992	38.00	15.36
19	Tarn Boke Koranee	1998	104.00	0.00
20	Mu Ko Chumphon	1999	317.00	265.55
21	Lam Nam Kraburi	1999	160.00	64.00
		<b>Total</b>	<b>5,810.23</b>	<b>4,245.60</b>
22	Tharnsadet	Proposed		
23	Mu Ko Phayam	Proposed		
24	Had Khanom	Proposed		
25	Ko Ra-Ko Pra Thong	Surveying		
26	Ao Manao-Khao Tanyong	Surveying		

Source: Royal Forest Department's Marine National Park Division (2000)

For international significant areas, There are four national parks which proposed to be the World Heritage site such as Tarutao, Surin Similan and Ao Phang Nga. While Khao Sam roi Yot is being proposed as a Ramsar site. Meanwhile, a part of Mu Ko Phayam is declare as a Biosphere Reserve.

The overall responsibility for MNPs in Thailand lies with the Royal Forest Department (RFD). Previously, the National Park Division administered the terrestrial and Marine parks. However, following a reorganization within RFD in 1993 a separated division Marine National Park Division (MNPD) became responsible for protection, management and operation of MNPs. The major responsibilities of MNPD are:

- Implementation of the National Park act B.E. 2504 (1961), National Forest Reserve act B.E. 2507 (1964), the Wildlife Reservation act B.E. 2535 (1992), Forest act B.E. 2484 (1941), Fishery act B.E. 2537 (1994) and other relevant laws;
- Application of the principles of marine management in promotion and development of guidelines for conservation of natural resources and rehabilitation of ecosystems and environment;
- Prevention, protection and recommendations regarding natural resources to gain the greatest possible benefits and achieve sustainability according to principles of marine national park management and government policy; and
- Research of natural resources in marine national parks and information dissemination to the public, especially children to promote understanding and awareness of the need for protection of natural resources.

While the Natural Resources Conservation Office develops the general policies for the MNPs, It is the MNPs that are directly responsible for the administration of parks. At the headquarters in Bangkok, the MNPD is divided into the following five sections; administration, technical, natural resources conservation, service & development, and planning & budgeting. At the local park level, the park superintendent supported by two assistants administer the parks. Ranger teams composed of one ranger and 11 temporary workers carry out the day-to-day work. The superintendent reports directly to the director of the MNPD. (figure 2 )

In accordance to the National Park Act, national park management is supervised by a committee at national level, calls the National Park Committee chaired by the permanent secretarial of Ministry of Agriculture and cooperatives. It composes of about 20 representatives from several government agencies, NGO and expertise from a university. The secretarial of this committee is the RFD. There is no legal requirement for individual park to have its committee at any level, e.g. advisory committee or local community committee.

## **2. Legal Frameworks for management of Marine National Parks**

The protection and management of marine national parks require several different legislation for implementation and enforcement. Those related legislation are describe below.

2.1 The National Park Act B.E. 2504 (1961) is the major legislation regulating the MNPs. The act covers all land, which has been determined as national parks. In this manner the act cover areas such as mountain, creek,

swamp, canal marsh, basin, waterway, lake, island and seashore. The law describe the protection of the parks. According to the law, the park flora and fauna is protected, and any trade or transport of species out of the park is not allowed.

2.2 Forest Act B.E. 2484 (1941) is the basis law enforcing the forest areas and resources. The act concerns logging concession operation, non-wood forest products collection. Timber stamp, wood and non-wood forest products during transportation and protection of forest resources.

2.3 National Reserved Forests Act B.E. 2507 (1964) is another law enforcing MNPs, especially, the areas which have been the reserve forests before becoming the MNPs. The act control the utilization and protection of forest areas and resources of the national reserved forests.

2.4 Wildlife Preservation and Protection Act B.E. 2535, concern general provision, hunting, propagating, possessing and trading of wildlife, their carcasses and carcass products, importing, exporting, passing Through, Transporting the wildlife.

2.5 Fishery Act B.E. 2537 (1994) is the additional legislation concerning seawater. The act has especially been used to regulate fishing and marine resources gathering including issues related to encroachment of trawlers into protected seawater areas.

2.6 Harbor Act B.E. 2456 & 2535 (1913 & 1992) is the additional legislation concerning the controlling of seashore development and seawater transportation. The act also control the securities of seawater activities, and provision of boat permits.

2.7 Environment Act B.E. 2535 (1992) is the additional legislation concerning environmental impact assessment to control any development projects within the MNPs.

### **3. Mechanism of MPA Establishment**

The National Park Act provides the legislative means to establish a National Park. Accordance to the law, national park may be declared over any public land where natural features that are of interest and that there shall be maintained with a scenic area to preserving it for the benefit of research, public education and pleasure.

Thus the RFD has set criteria for the national park area as mentioned below.

- 1) The coverage area of park should not less than 10 km<sup>2</sup> which large enough to preserve the ecological process within the area. However, It is also flexible in case of those small areas but contain valuable or unique resources.
- 2) Those areas contain high biodiversity or threaten species including with scenic area, geological phenomenon or historic value.
- 3) Those areas contain educational value which can provide nature education opportunities for public.
- 4) Those areas are suitable for recreation and ecotourism development.

There are many ways that such area was proposed as a national park. Generally, the RFD was requested by other agencies or groups such as local

NGOs, the member of the House Representatives, local authorities, a group of local people and ect. Then the RFD will send officers to survey how is the suitability of those areas. The first report, including details of the natural resources status, present situation within and around the area as well as people attitude, will be submitted to the Division Committee. If those area meet all criteria, the division will propose the RFD to appoint an official park's chief for operation of the areas establishment process.

According to the agreement of National Park Committee, to declare those area as a national park, It is necessary to have an acceptance of local authorities especially, the Tambol Administration Organization and the Provincial Administration Committee.

So the chief has to work closely with the local authorities to gain public agreement. Meanwhile, all information related to the proposed area plus boundary map 1:50,000 of scale and photographs need to be compiled. With an acceptance of local authorities and completed information, the RFD will propose to the National Park Committee for approval. After that, the RFD pass through the ministry of Agriculture and cooperatives(MAC) for acceptance and propose to the Cabinet. Then the cabinet will assign the Council of State(COS) to verify all information before making decision. If without any adjustment, COS will inform the RFD to prepare the print of boundary map at least 6,700 copies. Then, again, all document will proposed to the cabinet for approval. After cabinet approval, the Cabinet Secretarial Office will propose to the King for final approval. The last step is the declaration of park area in the government gazette. The RFD disseminate the government gazette to all related agencies as well as local people around the area for their information. Normally, the process of establishment consume at least 2 years and many parks took more than 5 years.

#### **4. MPA Planning step and relation to scientific principle: ecological**

The management of conservation areas is crucial and significant for the national environment and ecological systems. The objectives are to preserve existing flora and fauna for research and educational purposes, recreational purposes, and for improved living conditions of the people, since natural resources also help people to generate an income. There are a lot of disputes, in terms of conflicts of interest and objectives. One side tries to reserve the natural resources for sustainability in the country's interest, but another wants to utilise the existing resources for economic purposes. Therefore, a Master Plan for Natural Resources Management has to be carefully planned. Without proper a Master Plan or clear objectives, implementation might cause damage to the operation, and create unexpected negative effects to the natural resources and people. Principally, the Master Plan will define conditions, management zoning, objectives, goals, policy implementation, an operational framework, and the expected outcome and consequences. Moreover, the Plan will define a suitable budget and personnel, for the operation of management conservation.

The significance of National Park Management/Master Plan could be summarised as follows:-

- 1) Be a tool for operation, control and supervision, and be a framework for officials, related agencies such as NGOs, local agencies, and government organisations to follow.

- 2) Help develop the efficiency and continuity of management and implementation.
- 3) Be a standard for decision making in problem solving processes and management processes in the National Park.
- 4) Help to develop an educational system, in terms of nature conservation knowledge and awareness to the public.
- 5) Be a frame and direction for natural resources research and study.

According to the RFD policies, Director General of the Royal Forest Department, Dr. Plodprasop Suraswadee announced the directive policy on protected area management planning that it should be “an area approach.” There are 3 main principles for the area approach planning which are:-

1. Mutual benefit and utilisation means planning objective must cover natural resource conservation, utilisation, and tourism.
2. Focus on dispute resolution
3. Increase local community participation in order to decentralise natural resource management power.

Planning the Master Plan is the continuing process of trying to arrange the objectives of protection and reservation valuable natural resources to agree with community demand on recreation and income generation. The process includes data collection, site surveys, data analyse and determination of local potential, forecasting future results and consequences, problem analysis, alternative assessment and selection. All National Park also has the same manner of planning process. The process is:-

1. Review important policies and plans on natural resources reservation and management, national park management, international and domestic tourism policy, and other related laws and regulations.
2. Collect primary data, site surveys, review available research and academic document related national park management, tourism, recreation.
3. Analyse all details, constraints, and problems that might occur and the effects on the operation of the National Park in the future.
4. Draft the management plan of a natural resources conservation plan, recreation plan, environmental education plan, tools and equipment maintenance plan, and national park management plan. Set objectives, identify target areas, allocate budget, and place officials in charge of each plan.
5. Set up Priority of each plan for implementation during the next 5 years.
6. Determine strategy to deliver plan to implementation.

Generally, the RFD will define Term of Reference (TOR) for Master Plan study and employ consultants, or universities to develop master plan for the park. The master plan development process is limited by time. Eighteen months is the maximum period for consultant to complete their report and submit to the RFD committee. After that, the plan must be finally approved by the general director. Then the plan is ready for implementation. The duration of plan normally about five years. Anyhow, the implementation under plan can be extended more than 5 years until all proposed activities have been completed.

## 5. Budget :

### 1. Government Budget

The principal fund appropriated each year for financing protected areas, including marine national parks, is from the government. The budget per unit area is normally allocated on the basis of area coverage and management needs. The value of budget received from 1993 to 2001 appears in Table.....

### 2. Parks Revenue

Revenue is another major source of funds used to finance park projects. Actually, the fund has to support any project types such as nature conservation and protection, technical research and park service provision. At present, there is a tendency that the park project proposals deal with visitor service provisions and development of accommodation. In the year 2001, about 0.35 million US dollars were approved for financing 18 park project proposals. (Table )

### 3. Other sources of fund

There has been substantial amount of funds from other sources put in use for tourist facilities development and for personnel training programs in recent year. Especially during 1999-2000, A majority of these funds were received through loans from OECF under the Social Investment Project (SIP) and MIYASAWA Plan. Moreover, There are some small grants have also been received from Tourism Authority of Thailand, NGO, and private sectors. The records of finance for operation of MNPs during 1993-2001 are shown in Table .....

**Table** The Summary funding Records of marine National Parks during 1993-2001

Year	Annual Funds (US \$*)			
	Government Fund	Revenue fund	Other sources	Total
1993	1,508,747.50	74,844.50	N/A	1,583,592.00
1994	2,386,420.00	70,806.80	12,500.00	2,469,726.80
1995	2,965,284.25	136,671.00	28,625.00	3,130,580.25
1996	3,450,633.75	163,974.50	113,225.00	3,727,833.25
1997	4,265,455.50	240,741.90	307,000.00	4,813,196.90
1998	2,685,510.00	334,923.35	145,487.50	3,165,620.85
1999	3,322,025.00	551,789.67	3,886,551.00	7,760,365.67
2000	3,502,860.00	568,126.97	4,228,318.00	8,299,304.97
2001	4,807,305.00	357,568.95	406,250.00	5,571,123.95

Source: Royal Forest Department's Marine National Park (2001)

## 6. Revenue : Entrance fee/ concessions/ fines

Revenue are generated by the parks through collection of entrance fees, accommodation, fines, fee on tourist vessels anchoring/staying overnight, concession from any private tourist service activities such as food shop, souvenir shop, canoe service, and etc. Those amount of income is transferred into a fund handled by the Revenue National Park Committee in RFD, chaired by the general director. The committee disburses funds to terrestrial and marine national parks. There is a separate budget for the marine national parks. The funds provided by the committee are disbursed to finance park

project proposals. These proposals comprise activities in fields nature conservation and protection, technical research, and park service provision. According to the law, only legalised parks are able to collect the fee from any activities within the parks. In the last decade, the amount of parks revenue, 21 parks, is approximately 0.35 million US dollars a year. In 2001, about 0.35..million US dollars were approved for financing 18 park project proposals. (Table )

**Table** Total Revenues Generated and Spent at Marine national Parks during 1993-2001

Year	Revenue Fund (US Dollars*)		
	Generated	spent	Paid to TAO
1993	250,326.7	74,844.5	-
1994	226,761.7	70,806.8	-
1995	284,271.4	136,871.0	-
1996	305,185.7	163,974.5	-
1997	310,676.6	240,741.9	-
1998	346,837.5	334,923.4	-
1999	365,060.1	551,789.6	15,471.8
2000	481,788.8	568,126.9	23,190.2
2001	1,066,342.4	357,568.9	50,143.5

\* 1 US dollar = 40 Baht

Source: Royal Forest Department's Marine National Park Division (1993-2001)

#### **7. Tariffs paid to government :**

According to the new constitution in 1996, the Tambon Administration Organizations (TAOs) were set up. There is a requirement for a park to bestow its surrounded communities at about five percentage of its revenue for communities' environmental development project. However, the mechanism of transferring these amount has not been clarified. Then, starting from 1999, the marine national parks had disbursed amount of 38,712..US dollars for TAOs (Table ).

#### **8. Economic Benefits:**

Marine national parks system provides both direct and indirect benefits to the Thai's society. These protected areas contain diverse and important ecosystems and biological resources. Such habitat as mangrove forests, coral reefs, seagrass beds, soft sediment communities and beaches not only provide home for many important marine species but also form the basis for several subsistence benefits to the local people and contribute to the valuable tourism industry, research and education.

##### Coral reefs

Over 50 percent of all coral reefs in Thailand are include in existing marine national parks. According to many studies, notably by Phuket Marine Biological Research Center, The park coral reef are in better condition than those in other areas, although they are not as healthy as they were 10-15 years ago. Such parks, as Mu Ko Surin, Mu Ko Similan, Mu ko Lanta, Mu Ko Chang contain some of the finest coral reefs in the country in term of size, species diversity and condition and these sites are of international significance.

Coral reef areas in marine parks play important role in economic development of Thai's society. Not only offer critical habitat to numerous marine species which result to support fisheries activities and significant food source for people, there are also generate huge incomes for the country in term of tourism activities. There are about 70% of total incomes from tourism activities generated by marine tourism activities.

#### Mangrove forests

Several coastal and marine national park of Thailand were established in order to protect the mangrove habitat which have been declining at an alarming rate throughout Thailand's coastal zone. By one account, this habitat still significantly underrepresented (Chattamart, 1998). Only one-sixth of about 160,000 ha of mangrove forests is included in coastal parks. Similar to coral reefs, mangrove forest offer critical habitat to an abundance and variety of marine life which, in turn, support fisheries and other traditional activities. The mangrove forest in Ao Phang-nga, Tarutao, and newly established parks such as Mu Ko Chumphon and Kraburi have better habitat condition than the rest. At present, mangrove forest is also a become popular ecotourism destination for both domestic and international tourists.

#### Seagrass beds

Seagrass habitat, another significant coastal habitat for marine lifes, provide great benefit for people, especially, local communities along the coastline. The largest seagrass bed are also found in coastal protected area particularly, in Andaman Sea coast such as Had Chao Mai, Mu Ko Lanta, Mu Ko Phetra. Not only dugong, endangered species and reserved wildlife of Thailand, but also many marine species usually use these areas for feeding.

#### Other marine resources

Most coastal and marine parks in Thailand are either permanent or seasonal habitats for several important marine flora and fauna. The most common species of flora found in park are algae and phytoplankton. Many species of fish mollusks, sponges, worms, crustacean and echinoderms can be found abundantly in most parks (Faculty of Fisheries, Kasetsart University, 2000). Some notable species such as dugong dolphin, and whale shark appear frequently in some parks where their habitats is less disturbed. At least 4 species of sea turtle come to the park beaches for their annual hatching.

#### Evergreen Forest

Because the coastal area of Thailand is influenced by high intensity monsoon rainfall, most coastal areas and many islands established as marine national park are carpeted in lush evergreen forest. Even though the area of this forest is not large, particularly on most islands, it supplies a sufficient amount of fresh water for local people and visitor use year round the well experience has shown in Tarutao, Mu Ko Surin, Mu Ko Similan and Mu Ko Chang. More importantly, the forest contains very diverse and endemic species of flora and fauna including other living organisms.

#### Scenery and beach

Many of the country's most spectacular coastal scenery and beaches occur within the boundaries of the coastal and marine national park system. As

such, marine national parks serve as prime destinations for domestic and international tourism (Appendix 1). Scenery and beaches of Had Nopparat Thara-Mu Ko Phi Phi, Khao Leam Ya – Mu Ko Samet and Mu Ko Ang Thong have attracted over a million visitors annually.

## **9. Achievements**

### Decreasing of illegal fishing

Although fishing within the marine parks is an important issue, the problem is address in a relatively effective way. The use of illegal fishing equipment and dynamite fishing has therefore been reduce during the last five years. Various local NGOs and local people have in particular played a significant role in increasing awareness as well as work hand in hand with park staffs for habitat protection. Many cases occur in both Thai Gulf and Andaman sea coast for example Had Chao Mai in Trang province, and Mu Ko Chumphon in Chumphon province.

Another effective factor for decreasing of illegal fishing would be the increasing of tourism activities in park areas. This will automatically repel the illegal fishing activities from the park areas. The best experiences occur in Mu Ko Similan, Mu Ko Surin Mu Ko Chang and Mu Ko Samet

### Increasing of public awareness

At present, Thai society realize that the most valuable natural resources remained only in Protected Areas. The lost of forest cover especially in high land or watershed areas causes serious disaster. Several lessons leant from previous events such as landslide in Petchaboon Province and Nakorn Sri Thammarat Province. While coastal communities also learnt that the loss of coastal habitat such as mangrove and seagrass lead to the loss of their income and livelihood. Now, the protection of natural resources in several parks is not solely implemented, a very good experience occur in Had Chao Mai national Park. Here local people play important role in coastal protection and maintenance.

Various local NGOs working with local fisher folk organizations have in particular played a significant role in increasing awareness among local people about the negative environmental impact of using such equipment.

There are not only in the local scale of awareness improvement but also in the national scale. Presently, most visitor from throughout country who visit parks, play important role in environment protection of parks.

### Increasing of nature education opportunities

Most parks especially the coastal parks where encompassed with communities are required to implement the environmental conservation project as their rutine work. The target group would be the school kid and local people nearby the parks. Moreover, three the Marine National Park Education Centers (MNPC) are also set up especially for implementing the nature education development program as a main duty. Each year, at least approximately 300 students and local people will be trained by parks and MNPCs.

Nevertheless, there are several techniques have been used for giving the nature education opportunities for people. For example, several parks and MNPCs will cooperate with school teachers to provide nature and environmental knowledge and activities for students within their schools. Another technique Mobile Unit of Environmental Learning is also used by the MNPCs.

So far, park areas have played important role in nature education for school students in different levels. Most habitats in parks become an outdoor laboratory for students and teachers. Several areas are frequently used by Schools and colleges for example Ko Kudee in Khao Leam Ya–Mu Ko Samet, Ko Chang, Sam Roi Yot fresh water swamp, Had Wanakorn and Had Chao Mai.

#### Increasing of research opportunities

Accordance to the high diversity of ecosystem and fertile habitats within the park areas, those ecosystems provide excellent study areas for researchers who interested to do their research works. Furthermore, the mechanism of park management also encourage researchers to work in the park areas. The well protection of parks will ensure that those study areas be undisturbed.

#### Increasing standard of nature interpretation system

Although the interpretation service in parks is not reach the international standard at present, several interpretation facilities are continuedly developed. A lot of news techniques have been used for facility development such as nature trail, underwater trail, exhibition both indoor and outdoor, different type of signs. Meanwhile, the park's personnel are also regularly trained for building up interpretive skill.

#### Increasing of marine protected areas

Both the total area and number of marine national park has expanded markedly during the past decade, with trend to continue expansion.

#### Increasing of stakeholder involvement

Compare to the last decade, accordance to the new constitution, there are more local involvement in park management. Begin with the establishment process which required by the National Park Committee that all new proposed areas need the acceptance of TAO. And now, the RFD also conduct the study research with the aim to gain the effective model for participation and cooperation in PAs management.

## **10. Issues & Current Challenges in MNP management**

At present, MNPD faces a number of challenges in MNP management. These challenges are described in the following paragraphs. The analysis focuses on major issues such as fishery, tourism and general management

### Fishery

Fishery activities are considered a central problem in many MNPs, especially for the coastal parks where cover fishing grounds for traditional fishery. The conflict between parks and people on marine resources utilisation is currently increase. According to existing legislation, fishing with in the area of parks is prohibited. It is noted that when it come to enforcement, this aspect is treated in a somehow flexible way, with some MNPs allowing fishing. However, Local fishermen in general feel that the MNPs put unnecessary constrains on local fishing activities.

The use of illegal and inappropriate fishing gear has negatively impacted the MNP environment. Thailand's coast is especially rich in seagrass species as many as 12 species are found. The use of inappropriate fishing gear including finely woven fishing nets is very damaging on the seagrass. In this way the habitat for numerous marine animals are destroyed. Moreover, destructive fishing practices can be very damaging to the coral reefs. It is especially the use of explosives and use of fine nets which have negatively impacted the coral reefs.

Trawling has also had a very negative impact on marine resources both in the Andaman Sea and the Gulf of Thailand. In particular, the use of push nets and explosives along the shallow coast of Thailand has resulted in the severe decline in fish resources. These change have also made the life of the local fishermen harder.

### Tourism Development

The number of tourists coming to Thailand is rapidly growing and this increases the pressure on the MNPs. Eight of existing parks have attendance exceeding 100,000 visitors per year (Appendix ). During visitation in parks, tourists will rely on various service and infrastructure provided at marine national parks including overnight accommodation, guided boat tours, and other nature interpretation services. Then tourism demand for coastal and marine parks is quite high for both the natural resources being used and the tourism infrastructure of the park. Both physical and environmental carrying capacity is being exceeded at several locations, thereby leading to congestion, the deterioration of the nature-oriented recreational experience and resource degradation.

At present, the park management is in weak position to control the entry of tourists to the marine parks, especially the island parks such as Mu Ko Samet, Mu Ko Chang, and Mu Ko Phi Phi. Consequently, a large number of tourists do not pay entry fees and are unregistered.

The tourism problem also relates to the control of tourist activities within the park. The marine national parks base the zoning system mainly on terrestrial park model and marine areas of park are not properly zoned. The pressure from tourists is therefore localised to certain sites in the parks, especially coral reefs. This has also resulted in MNPD having to close reefs that were frequently visited by divers in Mu Ko Similan.

The quality of recreational and educational experience at marine national park is not meet its potential. Several parks are the destination for visitors from around the world such as Mu Ko Surin, Mu Ko similan, Khao Leam Ya - Mu Ko Samet and Mu Ko Chang. But not many park officials are trained in coastal and marine environmental education. Also the nature interpretation service in most park is only in local and national standard.

The expansion of coastal and offshore island resorts, the extension of cruise ship service to new locations, improve transportation to former remote locations are all expected to have considerable influence on coastal and marine parks especially impact on environment. Mu Ko Chang National Park is an experience of rapid expansion of infrastructure and transportation to the island.

Low quality of tourist vessels also create environmental impact to natural habitat especially coral reefs. Almost all tourist vessels do not have proper storage system for wastewater and sewage is, therefore, directly flushed into the sea. Oil spilt are always released from the tourist boat, particularly the boats that are converted from fishing boat. This is polluting the marine environment and thereby, threatening reef.

#### Land Encroachment

Marine national Park face problems as a result of land encroachment. The parks have in particular faced problems because people involved in shrimp farming have encroached into the marine protected areas and thereby destroyed mangrove forests and occupied the land. Previously this used to be a serious issue in Khao Sam Roi Yot national Park. However this park has now managed to deal with this problem relatively successfully and the park has rehabilitated destroyed mangrove forest. Anyhow, in several parks, many destroyed areas can not be claimed back to the park area. Shrimp farming also constitutes a serious problem, threatening the Ao Phang-nga National Park. However, in this park the current problem mostly relates pollution from shrimp farms located in areas neighboring the park. Several parks including Had Nopparatthara-Mu Ko Phi Phi and Khao Leam Ya - Mu Ko Samet parks face serious difficulties because of encroachment and land disputes. The conflicts are more and more complicate due to high benefit gained from the tourism business in this two parks.

#### Legal constraints

The National Park Act is outdated and the law was not developed specially for marine national Parks. A key issues relation to the act is the unresolved problem concerning seawater. There are still uncertainties about how

seawater can be designated as a part of a park. Attempts have been made to interpret “land” to include the sea bordering islands and seashore.

These unresolved legal issues put severe constraints on the national parks’ ability to regulate economical and recreational activities in seawater area. The parks have for example been unable to properly zone the aquatic areas of the parks.

Moreover, neither the National Park Act nor other relevant acts under RFD, including the National Forest Reserve Act of Wildlife Reserves Act, give the parks any legal authority to create buffer zones surrounding the protected areas. The parks are therefore unable to regulate environmental unfriendly activities taking place in areas neighboring the parks including shrimp farm and resort.

Also the regulations for tourism service in the park is unpractical. Several regulation issued by the RFD is now no used or being used with very few concessions. For instance, the regulation defines after the permission issued, and as soon as the constructions all construction is then belong to the RFD and it is the investor responsible to maintain the building. Although, this is aims to prevent the legal status of the building in case of occurrence of conflict among the RFD and investor into this concession.

#### Management & Capacity Gaps

Besides the legal constraints, there are several other factors that significantly constraint the MNPDP to effectively operate the marine national parks. Some of these factors relate directly to capacity constraints within RFD and the MNPDP.

First of all there are certain financial limitations on park management. The budget proposals forwarded by the parks are prepared by the respective superintendent. These proposals should be based on management plans. In four parks there are no management plans and in these parks the proposals are made by the park superintendents supported by instructions from the planing and budgeting sub-division in MNPDP. The remaining 17 parks have developed management plans. Nevertheless, current management plans are unrealistic with regard to operation and manpower. This severely constraints the park in developing pragmatic annual financial proposals. Furthermore, the individual parks are forced to make significant re-adjustments as to RFD budget allocations to specific budget lines. This often happens under circumstances when parks have to tackle unexpected problems including natural disasters. A major consequence of such reallocations is that parks will have fewer finances for activities directly related to nature conservation.

Management plan is also insufficient. Consultants among from Kasetsart University, have developed management plans for seventeen parks. Among these six plans are outdate such as Tarutao, Ao Phang Nga, ..... In particular, financial resources have put limits to the quality of these plans. The consultants have been unable to formulate plans base on adequate understanding of human and material resources available for park management.

The marine park plans are therefore, in general, unrealistic. There is still a tendency that park protection and development is depending on skills, capability and interests of the individual park superintendent.

The parks face capacity problems with regards to staff skills. The park superintendents and chief assistants have all forestry backgrounds. They have only received some sporadic training related to marine park management. The lack of technical and professional skills in other necessary fields is striking such as environmental education and interpretation, social science, marine science and ect. Moreover, most of park guard are low paid temporary employees. They have no job security and incentives. The performance of the temporary staff is therefore relatively poor.

There are also important challenges concerning data collection and general management of data about natural environment of the parks. Currently, the parks lack baseline data and parks have not developed a uniform system for habitat and biodiversity monitoring. It is also important to note that the staff of parks does not have the skills or the facilities to use GIS. Insufficient and outdate data restrict the park monitoring efforts.

#### Stakeholders Co-operation in Park Management

The achievement of co-operation among stakeholders with important stakes in coastal resources management is challenge for coastal management in general and for protected marine areas in particular. The co-operation among the following stakeholders is of great importance:

- Besides being responsible for the development of fishing industry, Department of Fisheries(DOF) is responsible for the development and enforcement of fishery laws, regulations, training, extension and research. DOF maintain offices at provincial and district levels. However, because of lack of capacity in term of staff, DOF does not have capacity to undertake its duties within the marine national parks. Consequently, this put constraints on the limited RFD resources allocated for management of the parks.
- The Ministry of Interior (MOI) and in particular the Land Development Department (LDD) and the TAOs which falls under this ministry, are of great importance. The LDD is responsible for dealing with land disputes arising from land claims within parks. Furthermore, according to Thailand's decentralisation policy, as embedded in the New Constitution from 1997, the provincial Government and the TAOs are to play a more significant role in local management of natural resources. It is also important to note that according to the new policies 20% of income generated at marine park are to be transferred to TAOs.
- Tourism Authority of Thailand (TAT); this government agency now plays an increasingly stronger role with regards to nature conservation and awareness raising among tourists regarding nature protection. The agency also plays a significant role in being the only official

agency responsible for education of tourist guides. Nevertheless, the agency's direct experience in marine protected area management is still limited.

- The Office of Environmental Planning and Policy (OEPP) under the Ministry of Science, Technology and Energy (MOSTE) has the direct responsibilities for issue related to policy and planning issues related to natural resources and environment
- The Natural Resources and Biodiversity Institute (NAREBI) is especially relevant because of its leading role in field such as coastal policy development, co-ordination of natural resources policies, including the co-ordination of community based organizations such as TAO, community organizations and public institutions. In addition the NAREBI is support to play a leading role with regard to data analysis and the development of information networks.
- Local and international tourist operators and private enterprises involve in transporting tourist have indicate genuine interests in helping MNPd to protect the natural habitats of the parks. These operators have also financial means to play important roles in nature protection. However, so far MNPd has not been sufficiently capable of mobilising private enterprises for nature protection and tourism awareness campaigns.
- The relation between local communities and some marine national parks has been characterised by conflict, especially arising from land claims and conflicts over land. This is probably a reason why fisher folk organizations and the relatively large number of NGOs involved in coastal resources management including NGOs such NGO COD-South, WFT and Yadfon (Raindrop Foundation), have only to very limited extent been involve in marine protected area management.

Currently, there are no mechanisms or institutional arrangements at national provincial and local level that can facilitate stakeholder and cross-sectoral cooperation. Consequently, participation and cooperation in marine protected areas conservation have suffer because of the absence of such mechanisms and arrangements. At present monthly meeting organised by provincial governments have been the only mechanisms to facilitate cooperation between the different role players.

## **11. How to deal with challenges and strengthening effective of MPA**

At the current situation, Thailand's marine protected areas are facing with many challenges. Then the Royal Thai Government must put more efforts to improve and strengthen the conservation and management of marine protected areas.

Firstly, the legal framework need to be improved, since the law is outdate, the marine national parks cannot managed effectively. By the developing and institutionalising a proper legal framework, the MNPd will be able to improve the park management and avoid conflicts with

stakeholders including governmental institutions and local communities. Thereby, the capacity of the MNPD will be strengthened.

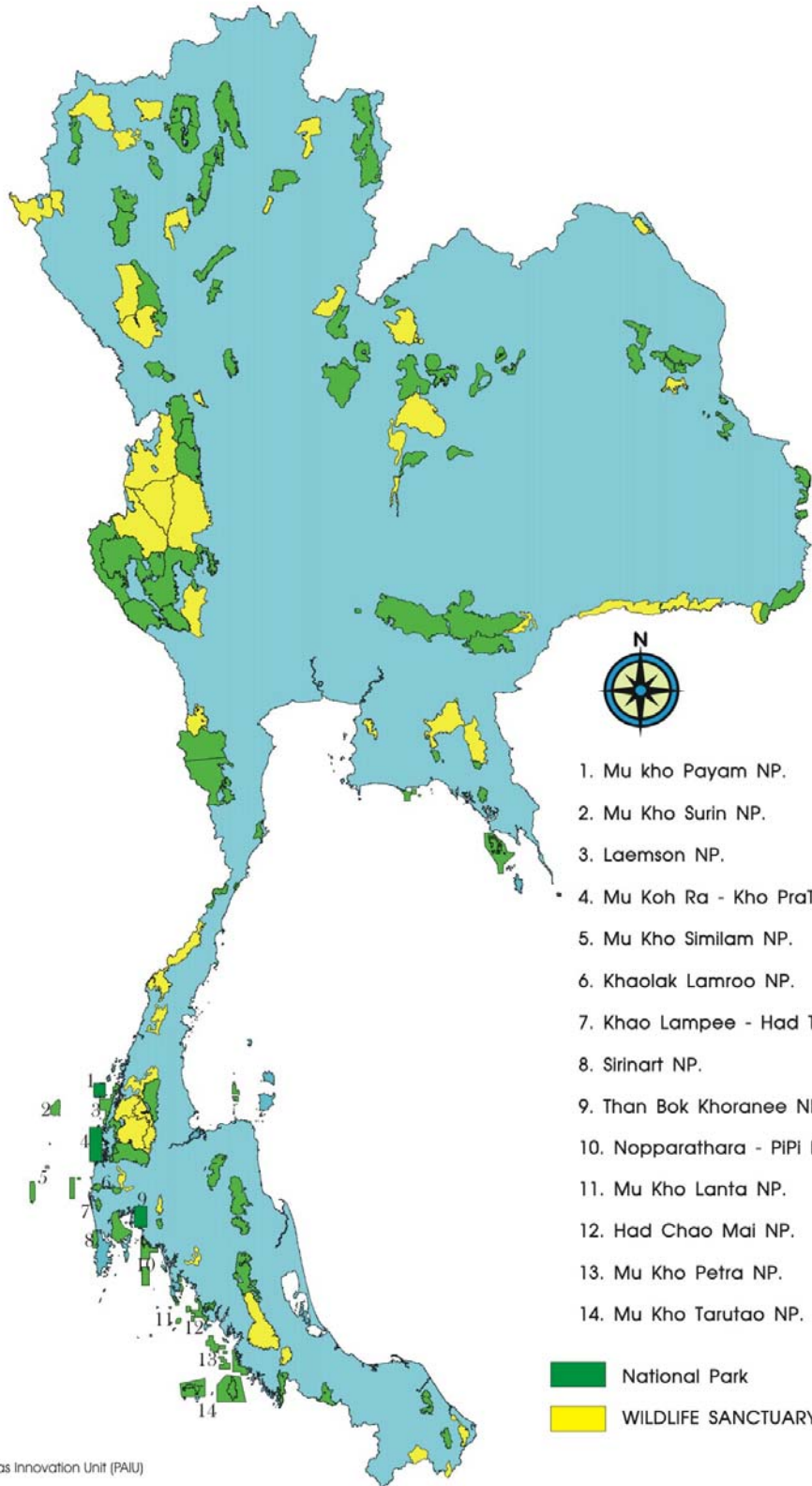
Through the development of proper management tools the quality of the management in the marine national parks will be improved significantly. The tools such as proper and sufficient management plan, increasing fund and finance, proper system for park resources monitoring, database system, procedure for effective revenue collection and spent, park entry registration system and zoning system, these must be developed to address and solve problems and obstacles in park management.

Personal development need to be conducted for different staff categories. The training curriculum also need to be modified to meet the need of MNPD requirement. The training will revolve around the following topics: Marine national park management including zonation, marine ecosystems, monitoring teamwork and community participation ecotourism management, nature interpretation.

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## Map of Marine National Park in Thailand affected by Tsunami



Source : Protected Areas Innovation Unit (PAIU)