



Mangrove Forest Conservation in Thailand

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INTRODUCTION

In Thailand, there are mangrove forests along the coastal areas. They play a major role in the ecosystem. They also protect the coastal environment by reducing the erosion and the striking of heavy waves and strong winds along the coast (Pumijumng, 2014). Moreover, mangrove forests have numerous benefits for the local communities of the coastal areas. Therefore, they play an important role not only for humans but also for the biological systems (Soontornwong, 2016).

Because mangrove forests are the major livelihood for the community along the coastal areas, it is important to reserve them and to cooperate with the stakeholders regarding mangrove preservation, rehabilitation, and research. The information resulting from these activities can be applied effectively for the management of mangrove forests in a sustainable way (Pumijumng, 2014).

As all forests and forest products are owned by the state, the poor are still considered as intruders and they did not have any rights for the legal use of forest resources. However, the poor are documented and allowed to use the forest resources in some places. Thus, they can generate income from the forest products to increase their livelihoods. Community forestry management has the potential to protect and authorize local property rights. Moreover, it can give the authority to the local people for the management of particular forest resources in a particular area. Consequently, the livelihoods of the local poor community will become more equitable (Soontornwong, 2016).

The community based natural resources management is a sustainable way in conserving the local natural resources. Moreover, it can also give the benefits to the local communities to get the ecosystem services satisfactorily. Also, the implementation of the community-based natural conservation (CBNC) can prevent the negative impacts on the ecosystem surrounding the affected areas caused by human activities (Rasolofoson *et al.*, 2015) and make a strong authority to the local community (Blaikie, 2006). Regarding the main fundamental rule of CBNC, local people who have the knowledge about the environment and ecological management are preferred to participate through the whole management process of problem identification, setting up the objectives to make the alternative plan, making planning decisions, implementation, and outcome monitoring (Janmaimool, 2016).

It is impossible to manage the various forest areas in a sustainable manner by the government. Regarding with this, community-based resource management was firstly practiced in Thailand about 15 years ago in terms of an alternative way for economic, state-oriented and scientific forestry. It is also bottom-up organizations and the government sector motivated various stakeholders to involve in the natural resources management at both national and community levels (Soontornwong, 2016).

Hai (2015) also stated that participation of local communities plays an important role in the rehabilitation and conservation of mangroves in Thailand. It is not possible to get a successful rehabilitation and conservation without involvement of local communities. At the same time, community-based mangrove forests management can make better environment, social and economic conditions in a sustainable manner.

Main causes of mangrove area deterioration

Mangrove areas significantly declined during 1961-2007 because of the invasion. The main reason of the invasion was primarily to over exploit the resources for the production of charcoal. Later, shrimp farming became the main cause of invasion (Pumijumnong, 2014). Villadiego (2016) also stated that the government of Thailand promoted semi-intensive and intensive shrimp production. That policy rapidly reached to the coastal areas. Consequently, Thailand became the third largest exporter of seafood around the world and also one of the major shrimp producing countries of the world. Those shrimp farms use antibiotics, fertilizers, disinfectants and pesticides which all are released into the water. As a consequence, the mangrove areas had declined as well as impaired the mangrove ecosystem including different species of trees, large number of different plants, animals and micro-organisms growing in the coastal areas of tropical regions. Besides the development of aquaculture, the development of land for the economic and the social growth, agriculture and industry worsen the state of the ecosystem and the environment leading to the decline of mangrove areas due to area expansion and pollution (Pumijumnong, 2014).

Soontornwong (2016) also described that the loss of areas for mangrove forests accounted for 50-60% because of shrimp farming during 1961-1996 according to the National Economy and Social Development Plan. The communities around the mangrove forests use and devastate the resources of the forests. This also affects the economic livelihood and cultural heritage of many communities.

According to the data from DMCR (2014), the mangrove plantation areas across the whole country have decreased dramatically from 1961 to 1996. In 2000, the mangrove forest areas increased about 1.5 times within four years. And then, the coverage of mangrove forest area has increased steadily (Fig. 1). The distribution of mangrove forests by region across the whole country from 1961 to 2014 is shown in Table 1.

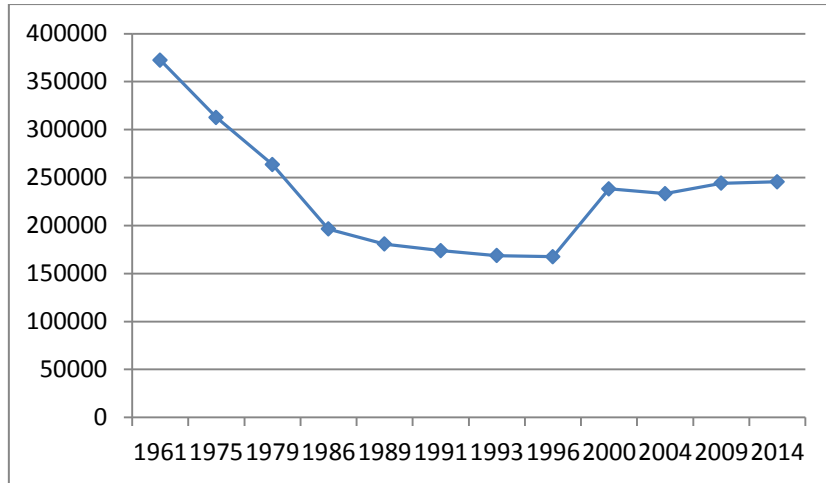


Fig. 1. Mangrove Plantation Areas (hectare) in Thailand (1961-2014)

Table 1. Mangrove distribution in Thailand by region

Region	Plantation areas (hectare)											
	1961	1975	1979	1986	1989	1991	1993	1996	2000	2004	2009	2014
Central region	66,890	36,500	31,232	1,016	596	406	5,363	5,451	12,054	7,997	12,109	10,904
Eastern region	54,845	49,000	4,414	27,981	20,709	11,084	13,048	12,658	22,741	24,360	25,848	26,344
East coast of Southern region	56,449	35,500	33,776	19,644	17,084	13,980	16,425	16,571	32,808	27,348	29,269	32,137
West coast of Southern region	194,172	191,700	194,156	147,796	142,218	148,352	133,847	132,904	170,727	173,604	176,783	176,148
Total (ha)	372,356	312,700	263,578	196,436	180,607	173,822	168,683	167,584	238,330	233,308	244,010	245,534

Source: Department of Marine and Coastal Resources (2005, 2013, 2014)

Mangrove for the Future (MFF)

Mangroves for the Future (MFF) is a partnership-based regional initiative in the coastal communities including Bangladesh, Cambodia, India, Indonesia, Maldives, Myanmar, Pakistan, Seychelles, Sri Lanka, Thailand and Vietnam. The main objective of MFF is to promote the conservation of natural resources and to get the sound ecosystems along the coastal areas in a sustainable manner. MFF covers a wide range of coastal ecosystem such as coral reefs, estuaries, lagoons, sandy beaches, sea grasses and wetlands although the initiative mainly focuses on ecosystem of mangroves (IUCN, 2016).

There are two levels in implementing the MFF project such as regional and national levels. At the regional level, Maldives, Indonesia, India, Sri Lanka, Seychelles and Thailand are the country members in the first phase of the regional level. All these countries are under the supervision of the Regional Steering Committee (RSC), selected from each country and organization partners such as FAO, UNEP, CARE and WI in cooperation with IUCN and UNDP as main focal points. At the national level, the project is implemented under the National Coordination Body (NCB) (MFF, 2011).

MFF is funded by the international agencies. In Thailand, the Department of Marine and Coastal resources takes the responsibility as a major role in the national program on mangrove forest management to implement the objective of the MFF program by cooperating with the local, national and international organizations and academic institutions. MFF plays an important role to provide the incentives including the needed grants to local communities and to authorize the local communities to participate vigorously in the rehabilitation and management of mangroves. In implementing the MFF program, the specific projects were outlined to meet the needs of local communities by the support of the government and other organizations (Hai, 2015).

Under the Ministry of Natural Resources and Environment, the Department of Marine and Coastal Resources (DMCR) also has the responsibility as a specific institution for the management, rehabilitation and conservation of mangroves in the country according to the Marine and Coastal Resources Management Act. To take advantage of the local communities and ecosystems around the mangrove forests, there is a strong cooperation between DMCR and other national and international organizations and local communities (Hai, 2015).

Government support for the Mangrove Forest Conservation

In Thailand, the local communities become more aware of the conservation and utilization of mangroves. The participation of stakeholders through the conservation process becomes more acceptable (Pumijumnong, 2014). As soon as the local communities become aware of the causes of mangrove forests degradation and the various advantages of mangrove rehabilitation as well, they become willing to participate in the coastal ecosystem conservation process. Therefore, the communities have been established in the management of mangrove forests at the national level (Hai, 2015).

Moreover, the government sectors (DMCR) established a system of learning centers by collaborating with local communities and others. This learning center focuses on educating the local communities about the role of mangroves and provides the technical information about rehabilitation and conservation. To understand the needs of the local communities, DMCR and the Thai network held the annual meeting regularly. As a result, it can help for the preparation of mangrove forest management plans or proposals to support the local communities (Hai, 2015). However, there are still challenges in maintaining the ecosystem along coastal areas such as waste water discharge and accumulation of heavy metals (Pumijumnong, 2014).

Policy

Government set up the policy on mangrove and coastal ecosystem management. The Cabinet Resolution approved the policy for the Enhancement and Conservation of Environmental Quality submitted by the National Environmental Board on November 26, 1996. The main purpose of that policy is to maintain the mangrove conservation areas not less than 0.16 million hectares and also for the conservation and rehabilitation of all coastal resources. According to the Department of Marine and Coastal Resources, there are 0.18 million hectares of protected mangrove areas. The effective control and management should be performed to maintain the environment which can affect the coastal areas (Pumijumnong, 2014).

The Enhancement and Conservation of the National Environmental Quality Act, B.E. 2535 is a basic Act to control efficiently the usage of and to protect the natural resources in Thailand. Moreover, it has significantly changed the management pattern of the environmental and natural resources. It also includes the specific action plans for the sustainable development principles. In the Act, the key principles focus on the environmental protection which is mainly taken by a National Environmental Board. Among duties, the following duties are taken by the Board are:

1. To submit policies and plans for enhancing and conserving national environmental quality for the Cabinet's approval
2. To recommend regarding financial, fiscal, taxation, and investment promotion measures for the implementation of the policies and plans for B.E. 2535 to the Cabinet
3. To supervise the management and administration of the Environmental Fund

In terms of environmental protection, the Enhancement and Conservation of National Environmental Quality Act mainly emphasizes four parts as follows:

- (1) environmental quality standards;
- (2) environmental quality management planning;
- (3) conservation and environmentally protected areas; and
- (4) environmental impact assessment report

Policies, laws and by-laws play a major role for the participation of local community in forest management. In Thailand, the policies were set out for the rehabilitation and conservation of mangrove forests which have already progressed gradually. The Marine and Coastal Resources Management Act came out on June 24, 2015. This new law enables the participation of communities, local governments and other groups in rehabilitation and conservation of mangroves. The setting up for the cooperation of multi-stakeholders is now officially supported to develop the management plans for the marine and coastal resources including mangroves at the national level (Hai, 2015).

CONCLUSION

There are mangrove forests along the coastal areas in Thailand. In the past, local people along the coastal areas encroached and used the forest products for their livelihoods. After many years, the mangrove areas deteriorated due to encroachment. Urbanization, industrialization, aquaculture and agriculture worsened the ecosystems and environment along the coastal areas. In 2015, the government set up the Marine and Coastal Resources Management Act. DMCR takes the responsibilities as a specific institution according to the new law and a major role in the national program in the MFF project for the management, rehabilitation, and conservation of forest areas. DMCR established the learning centers to educate and to provide

the technical information concerning mangrove rehabilitation and conservation to the local communities. The community-based resource management was also introduced in Thailand about 15 years ago. The local communities became aware of the conservation and utilization of mangroves as well as the participation of stakeholders which became more acceptable. Government legally supports the cooperation of multi-stakeholders for the development of marine and coastal resources management plans.

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