

FORESTRY IN THAILAND

ประเทศไทยมีป่าไม้ที่สวยงามและหลากหลายชนิด



Royal Forest Department
Ministry of Natural Resources and Environment



Forestry in Thailand



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Contents

	Page
Preface	4
1. Background	6
2. Forest Types	8
3. Forestry Activities	12
3.1 Forest Conservation	12
3.2 Reforestation	14
3.3 Forest Production	16
3.4 Watershed Management	18
3.5 Forest Protection	20
3.6 People's Participation	25
4. Forest Biodiversity	28
5. Forest and Global Warming	30
6. Forest Research	32
7. Forestry Institutions	36
8. Forest Policies and Legal Framework	38
9. Royal Initiative Projects	40
10. International Organization Collaboration on Forestry	43
Editorial Board	46

Preface

The Royal Forest Department (RFD) was founded in 1896 by King Rama V to perform the forestry activities such as protecting and promoting the abundance of forests as well as planning the logging project in order for people to gain the maximum and sustainable economic benefits from the forests. In 1961, Thailand began to use the National Economic and Social Development Plan (NESDP) for country development. Therefore, forest policy has been incorporated into NESDP since then. In 1985, the National Forest Policy was established in order to manage and develop the forest resources for sustainability and in conformity with the development of other natural resources. In 2002, the Thai Government introduced a structural and administrative reform. As a result, RFD was divided under the Bureaucratic Restructuring Act 2002 into three departments and 75 offices; namely, Royal Forest Department (RFD), Department of National Parks, Wildlife and Plant Conservation (DNP), Department of Marine and Coastal Resources (DMC) and 75 Provincial Natural Resources and Environment Offices. All share responsibilities in forest resources management of the country. RFD is responsible for managing forest resources outside protected areas, while DNP looks after forest resources in protected areas. DMC, on the other hand, performs resource management of marine and coastal flora and fauna, including mangrove forests. The Provincial Natural Resources and Environment Offices which are attached to the Office of the Secretary to the Ministry of Natural Resources and Environment are responsible for managing forest resources within the provinces.

All forestry activities performed by these organizations are based on the missions of each organization. For RFD, the forestry activities which are currently performed include forest protection, reforestation and rehabilitation, research and development, technology transfer, survey and research on forest biodiversity, promoting participation of local communities, community forest establishment, forest land management, implementation of the Royal Initiative Projects, developing collaboration with international organizations, and providing services, etc. Moreover, RFD has also collaborated with other organizations for other activities in order for the country to gain maximum economic, social and environmental benefits.

The Royal Forest Department has published this document entitled *Forestry in Thailand* in order to introduce the relevant forestry activities currently performed by the Department. It is also anticipated that this document will be useful to all sectors as well as to facilitate the collaboration among organizations for the sustainable forestry development of the country.



(Mr. Somchai Pienstaporn)

Director General

The Royal Forest Department

FORESTRY IN THAILAND

1. Background

The Kingdom of Thailand is located in Southeast Asia between the $5^{\circ} 37'$ and $20^{\circ} 15'$ North latitudes and the $97^{\circ} 22'$ and $105^{\circ} 37'$ East longitudes. It covers a total land area of 513,115 square kilometers. It is bordered to the north by Myanmar and the Lao People's Democratic Republic (Lao PDR), to the east by Lao PDR and Cambodia, to the south by the Gulf of Thailand and Malaysia, and to the west by Myanmar and the Andaman Sea.

Thailand is divided into five regions comprising the northern, northeastern, central, eastern and southern regions. The northern region is mountainous, with the highest point being Doi Inthanon at 2,576 meters above sea level. The northeastern region consists of the Khorat Plateau. The central region is formed by the fertile alluvial flood plain of the Chao Phraya River which runs into the Gulf of Thailand. The southern region is the long and narrow isthmus stretching toward the Malay Peninsula of Malaysia. Administratively, the country is divided into 76 provinces (Changwat).

Bangkok is the capital city.



The country's climate is tropical and influenced by the southwest monsoon and the northeast monsoon. There are three seasons; namely, rainy season, cold season, and summer. The average temperature ranges from 25°C to 28°C. The annual rainfall ranges from 600 to 3,800 mm.



Thailand is a constitutional monarchy under a parliamentary system with His Majesty King Bhumibol Adulyadej as the ruling monarch. The population of the country in December 2008 was 63,389,730 people with 31,255,869 males and 32,133,861 females (data from Department of Provincial Administration). The official language is Thai. Buddhism is the national religion.



2. Forest Types

The total forest cover in Thailand by 2006 was estimated at 15,865,260 hectares, representing about 30.92% of the total land area. This forest area was assessed from LANDSAT-5TM satellite interpretation imageries by excluding fruit tree orchards and rubber plantations. Forests in Thailand can be classified into two main types; namely, evergreen forest and deciduous forest.



Evergreen Forest

Evergreen forest consists largely of evergreen trees that retain green foliage throughout the year. It can be subdivided into four types as follows:

1. Tropical evergreen forest comprising:

- 1.1 Tropical rain forest
- 1.2 Dry evergreen forest
- 1.3 Hill evergreen forest

2. Coniferous forest

3. Swamp forest comprising:

- 3.1 Fresh-water swamp forest
- 3.2 Mangrove forest

4. Beach forest



Deciduous Forest

Deciduous forest is mainly characterized by the presence of deciduous tree species and always associates with the very long period of dry season. It is commonly found throughout the country except in the southern region and also in Chanthaburi and Trat provinces in the southeastern region. Deciduous forest is broadly subdivided according to the species compositions into three types as follows:

1. Mixed deciduous forest
2. Deciduous dipterocarp forest or dry dipterocarp forest
3. Savanna forest



Forest types are often classified according to topographical characteristics and species compositions of the forests; thus, more types of forests may be subdivided. As seen in the book entitled *Forest of Thailand* (2006) written by T. Santisuk, the evergreen forest is subdivided into 14 types.

Forest area of Thailand		
Year	Forest area	
	Hectare	% of the country area
1961	27,362,900	53.30
1973	22,170,700	43.21
1976	19,841,700	38.67
1978	17,522,400	34.15
1982	15,660,000	30.52
1985	15,086,600	29.40
1988	14,380,300	28.03
1989	14,341,700	27.95
1991	13,669,800	26.64
1993	13,355,400	26.03
1995	13,148,500	25.62
1998	12,972,200	25.28
2000	17,011,080	33.15
2004	16,759,100	32.66
2005	16,100,130	31.38
2006	15,865,260	30.92

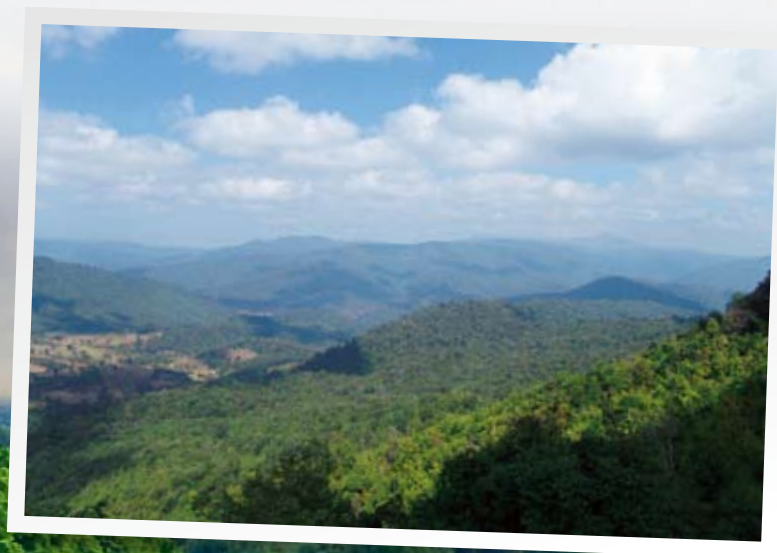
Source: *Forestry statistics of Thailand 2007*, Royal Forest Department

3. Forestry Activities

Forest resources are of utmost importance to the economic and social development of the country. Protection and enrichment of forest resources for sustainable benefits, therefore, are crucial functions which involve various forestry activities.

3.1 Forest Conservation

Ministry of Natural Resources and Environment is the primary state agency being responsible for forest conservation of the country. Its main objectives are to manage the forest resources for sustainable benefits to people and communities and to maintain the balance of ecosystem and environment. Its mandates thus include establishment of



protected areas for forest conservation, reforestation and rehabilitation of degraded forests, conducting research and development on forestry and related subjects, and promoting people’s participation in forest conservation in harmony with the lifestyle of local communities.

The important forest conservation areas in Thailand are national parks, wildlife sanctuaries, no hunting areas, forest parks, biosphere reserves, areas in watershed class 1 and watershed class 2, botanical gardens, arboretums and various experimental areas such as species, provenance and progeny trials. For the national parks and wildlife sanctuaries, there are specific laws and regulations stipulated for the protection, control and management.

Some major forest conservation areas in Thailand			
Conservation type	Number	Total area (ha)	% of the country area
National park	110 ¹	5,513,532	10.75
Wildlife sanctuary	57	3,657,872	7.13
No hunting area	60	523,304	1.02
Forest park	113	123,671	0.24
Botanical garden	16	4,137	0.01
Arboretum	55	4,265	0.01

¹ All gazetted

Source: Department of National Parks, Wildlife and Plant Conservation, 2008

3.2 Reforestation

The Royal Forest Department established the first teak plantation in Phrae Province in 1906. This plantation was established for the experiment by Phraya Wanphrukphijarn (Thongkham Savetsila) who further continued to establish a few planting trials in subsequent years. In 1941, the Royal Forest Department set up the reforestation program as its mandate and thereafter has established plantations for both teak and other timber species annually according to the allocated budget. The plantations established by the Royal Forest Department consist of commercial plantations, watershed improvement plantations, plantations for restoration of degraded reserved forests, plantations for environmental conservation and plantations for the Royal Initiative Projects. The government organizations dealing with reforestation of the country are Royal Forest Department, Department of National Parks, Wildlife and Plant Conservation, Department of Marine and Coastal Resources and two state enterprises, namely Forest Industry Organization and Thai Plywood Co., Ltd. The total plantation area established by government organizations by 2007 amounted to 1,302,647 hectares.



The reforestation in Thailand has also been carried out by private sectors for more than 30 years. Teak (*Tectona grandis*), *Pinus* spp., *Casuarina* spp., *Eucalyptus* spp. and *Acacia* spp. are the main tree species selected for reforestation. Particularly, *Eucalyptus camaldulensis*, which is an exotic fast growing tree species, is mostly chosen for reforestation by private sectors.

Reforestation by government organizations and plantation areas by 2007

Item	Area (ha)
Re-Afforestation by government budget	723,983
The reforestation campaign in Commemoration of the Royal Golden Jubilee	455,573
Reforestation by Forest Industry Organization	43,996
Reforestation by Thai Plywood Company Limited	5,743
Reforestation according to Ministry's regulations	25,879
Reforestation by concessionaire budget	47,473
Total	1,302,647

Source: Forestry statistics of Thailand 2007, Royal Forest Department

Plantation areas of government organizations and private sectors in 2008 for some tree species

Species	Area (ha)
<i>Tectona grandis</i>	836,000
<i>Pinus</i> spp.	689,000
<i>Casuarina</i> spp.	148,000
<i>Eucalyptus</i> spp.	480,000 ¹
<i>Acacia</i> spp.	148,000

¹ Private sectors only

3.3 Forest Production

Forest production comprises two main types of products, namely wood products and non-wood forest products.

Wood Products

Wood products in Thailand include log, sawn timber, and other types of products, such as veneer, pulp, paper, plywood, particle board, fiberboard, etc. The demands of each of these wood products for domestic consumption are diverse. There are many wood-based factories throughout the country to manufacture these wood products, some for domestic consumption while others for exportation. Some wood products are imported for domestic consumption.



Wood production, import and export of Thailand (unit: 1,000 m ³)			
Year	Wood production	Import	Export
2005	8.9	2,335.3	1,369.9
2006	12.9	1,227.3	1,316.1
2007	285.3	1,933.3	1,739.9

Source: Forestry statistics of Thailand 2007, Royal Forest Department

Import and export values of major wood products of Thailand in 2007 (unit: Baht)

Item	Import ¹	Export ²
Paper and paperboard	38,165,636,055	41,270,678,012
Veneer sheet	814,736,484	284,183,450
Wood pulp	11,934,403,400	147,420,212
Particle board	248,854,426	8,038,278,789
Fibreboard	508,838,203	7,727,471,875
Wood flooring panels	12,422,482	42,669,441
Wooden furniture	1,021,423,008	17,168,150,692

¹ Import from Malaysia, Indonesia, China, USA, Germany, Italy, Lao PDR, Taiwan and Japan

² Export to USA, Japan, South Korea, Hong Kong, China, Taiwan, Canada, UK, Germany and Malaysia

Source: Forestry statistics of Thailand 2007, Royal Forest Department

Non-wood Forest Products

Non-wood forest products include a diverse array of useful products which can be obtained from both plants and animals. Some of major non-wood forest products are medicinal plants, edible plants, rattan, bamboo, bee products, lac, pine resin, natural dye, etc. Although it is difficult to estimate the exact values of the harvest and consumption of these products in the country, they are of significance to the rural and national economies. Approximately five million rural people dwelling nearby forests are partly dependent on non-wood forest products for their subsistence and extra incomes.



3.4 Watershed Management

The watershed areas in Thailand have been classified into five numeric classes (i.e. watershed class 1 to watershed class 5) according to the important features and significant degree of the watershed ecosystem control for which the details of the characteristics of each watershed class were also described. Among these five watershed classes, watershed class 1 and watershed class 2 are the important parts of the watershed areas. Therefore, the Thai Government Cabinet declared on 2 June 1987 that areas fallen within the boundary of watershed class 1 and watershed class 2 are defined as head watershed which amounts to the total area of 13,585,897 hectares or 26.4% of the country area. Due to the variation of topography, geology, climate and forest types, the entire country area was then divided into 25 main watersheds, e.g., Chao Phraya watershed, Ping watershed, Moon watershed, Ta-pee watershed, etc.

In addition to watershed classification, regulations to control land use in each watershed class have also been stipulated in order to control and minimize the impacts on quantity, quality and flow duration of water.



Watershed classification and characteristics

Watershed class	Slope (%)	Characteristics
Class 1	More than 50	It is the high elevation area on the upper part of the mountain with steep slope, valley and cliff. Its characteristics and properties could easily cause severe environmental damages to the area by land use alteration. The area should be protected and reserved as head watershed. Watershed class 1 was divided into two subclasses as class 1A and class 1B. Watershed class 1A denotes the watershed area with forest cover that has never faced disturbance of any kind. This area should be protected and reserved as head watershed and maintained as natural resources of the country. Watershed class 1B is the watershed area on which the forest cover has been cleared and the land was disturbed or altered for other land use development.
Class 2	35-50	The area is on the high mountain. It is the second best area to be kept as head watershed. Some activities (such as logging, mining, etc.) can be operated in this area with close supervision.
Class 3	25-35	It is the upland or foothill area with moderate to steep slope. The area is less erosive. Generally, logging, mining, fruit tree orchard and some agricultural crops can be undertaken on this area.
Class 4	6-25	It is the area at foothill or along the banks of stream or river. The area generally was encroached and deforested for agriculture and other activities.
Class 5	Less than 6	The area is almost flat or gentle slope. Forests in the area have been cleared for agriculture, especially paddy and other activities.

Source: Watershed classification, Office of National Environment Board (1990)

3.5 Forest Protection

Forests are the important natural resources of the country and must be protected for sustainable benefits. Nevertheless, forests are still threatened and destroyed by human and natural disasters from which forest protection must be undertaken for each case accordingly.

Forest Area Protection

Forest destruction in Thailand has generally occurred in two types as follows:

1. Forest destruction has occurred due to the demand of timbers for utilization and trade. Currently, there are several high economic value timbers (such as teak, Siamese rosewood, etc.) which are of high demand in both domestic and foreign markets for wood-based industries and handicrafts.



2. Forest destruction has occurred due to the demand of forest land by rural people for residence and agriculture as well as the occupation of large forest areas by the capitalists for construction of resorts or for large scale agriculture, such as rubber plantations, oil palm plantations, etc.





The loss of forest resources and lands from both cases has long been the serious problem to forestry development of the country. Forest protection via vigilant guard and law enforcement is therefore compulsory to Thailand and is still burdensome to the Royal Forest Department. Nevertheless, the loss of forest resources and lands has still occurred continuously because the high demand for forest land and timbers still remains. Forest protection and suppression of forest encroachment and destruction can only slow down the rate of forest resources depletion. Hence, successful forest protection requires other additional measures such as creating awareness among the people and encouraging the people or communities to participate in forest protection in collaboration with responsible agencies.

Currently, the Royal Forest Department has established 433 Forest Protection Units all over the country. These units are supervised by 13 Forest Resources Management Bureaus and six branches. There are additional 62 Provincial Forest Resources Destruction Protection and Suppression Coordinating Units attached to the Forest Protection and Fire Control Bureau. Therefore, there are altogether 495 units for forest protection within the Royal Forest Department.

Forest land management is the project set up according to the Government Cabinet Resolution on 16 September 1997 on the guidelines for land and forest resources management by specific location and the Resolution on 30 June 1998 on the solutions to land use problem in the forest areas by land and forest resources management project. The objective is to find the solution to the problem of inadequate land for agricultural purpose. The Forest Land Management Bureau of the Royal Forest Department is responsible for forest land management project. To date, there are about 300,000 people who have been verified and given the Sor Thor Khor certificate which entitles them the rights to live and farm in national reserved forests.



Forest Fire Protection

Forest fire has become a serious problem and caused severe loss to both natural forests and plantations. Most forest fires in Thailand are caused by human activities and the fires are commonly surface fires. The surface fire that occurs in dry dipterocarp forest normally has the flame height of 0.5-3 meters while that occurs in mixed deciduous forest with dense bamboo undergrowth could have the flame height of 5-6 meters. Forest fires occur throughout the country but mainly in the northern and northeastern regions. Forest Fire Control Units have been established to deal with forest fire problem with the following tasks:

1. To control, monitor and prevent forest fire;
2. To encourage people to participate in forest fire control, perform public relations and campaign for forest fire prevention.

During the past five years of forest fire protection, the forest areas destroyed by forest fire have been declining. It is also anticipated that forest areas destroyed by forest fire would be reduced further.

Forest areas destroyed by forest fire during 2004-2008	
Year	Areas (ha)
2004	32,281
2005	30,284
2006	8,622
2007	1,878
2008	11,330

Source: Department of National Parks, Wildlife and Plant Conservation (2008)

The campaign to raise public awareness on forest fire and the usage of appropriate tools and equipment as well as new technology (e.g. satellite imageries) are essential in forest fire protection. Recently, satellite imageries are used to search for hot spot for locating the possible fire occurrence location associated with ground check. As a result, forest fire can be controlled effectively and the forest areas destroyed by forest fire would be declined as well.

Frequency of forest fire occurrence and damaged areas in 2008		
Region	Frequency	Areas (ha)
Northern region	3,628	4,640
Northeastern region	1,313	4,085
Central region	568	2,297
Southern region	60	308
Total	5,569	11,330

Source: Department of National Parks, Wildlife and Plant Conservation (2008)

Forest Insect Pest and Disease Protection

Forest protection from insect pests and diseases in Thailand is undertaken in two aspects, i.e., technical aspects and services. The technical aspects are involved in insect pest and disease survey, study on biology and ecology of insect pests and diseases as well as developing methodology to prevent and control insect pests and diseases damaging seedlings or trees in the nursery beds, plantations and natural forests. For the services, the forest insect and disease clinic is set up to assist government organizations, private sectors and farmers to solve the insect pest and disease problem in the nurseries and plantations. Suggestions and demonstration for insect pest and disease protection methodology are also provided. Pesticide spray is also supplied upon request in order to eliminate and prevent insect and disease outbreak in any area.



There are many insect pests and diseases that affect the health of forest resources in both natural forests and plantations. Successful prevention of forest resources from damages by these agents is therefore dependent on rapid detection and assessment of the damages in order to solve the problems effectively. If the insect pests and diseases have spread out in the large area, the responsible office will assign specialists to advice and solve the problems.

Many insect pests have often damaged some economic forest tree species for which regular care needs to be exercised to minimize the loss. For instance, bee-hole borer and defoliator are the major insect pests in teak while gall wasp and some diseases (e.g. canker, leaf blight, leaf spot) are the serious pests in *Eucalyptus* spp. Likewise, seeds of some forest tree species, such as *Acacia catechu*, *Dalbergia cochinchinensis* and *D. oliveri*, are often damaged by some insects and the loss of sound seeds could be as many as 90 per cent.

3.6 People's Participation

The participation of communities in natural resource management is a section contained in the 2007 Constitution of the Kingdom of Thailand and has also been addressed in the Tenth National Economic and Social Development Plan (2007-2011). By adopting the principles of the philosophy of sufficiency economy as the guidelines, the strategies for the biodiversity-based development and stabilization of the resource base and the environment have been formulated in three approaches, i.e. to maintain the resource base and the balance of ecosystems, to create the good environmental conditions in order to enhance the level of life quality and sustainable development, and to develop the value of biodiversity and local wisdom, so that sustainable, balanced and fair conservation and utilization of natural resources could be achieved. The main operational guidelines, therefore, are as follows:

1. Promoting community rights and participation in resource management by decentralization of resource management to potential local communities, supporting the participation process and network formation for resource conservation and management by local communities, and promoting the establishment of community forests.
2. Developing co-management systems for conservation and restoration of natural resources by encouraging communities to participate in forest rehabilitation as well as setting up measures to strictly control the utilization of natural resources in order to maintain the balance of ecosystems.



Royal Forest Department and Department of National Parks, Wildlife and Plant Conservation have launched a number of projects that provide people with the opportunity to participate in rehabilitation, conservation and utilization of forest resources in different forms; for instance,

- ✿ Promoting private reforestation and farm forestry;
- ✿ Performing land-use classification according to land-use patterns into three categories, i.e. conservation forest, economic forest and agricultural land;
- ✿ Promoting forest rehabilitation on various special occasions on the watershed, national parks, wildlife sanctuaries and communities areas;
- ✿ Promoting ecotourism in the national parks and wildlife sanctuaries as well as offering the communities located nearby those areas to involve in and to benefit from ecotourism activities.

In addition, the Royal Forest Department has also emphasized on promoting the establishment of community forest which is the important operational framework that provides local communities the opportunity to participate in sustainable forest management, conservation and utilization of natural resources under respective laws and regulations. The community forest development master plan has been formulated with the long-term objective to develop the potential of the people and people's organizations in natural resource management under the guidance and supervision of government authorities. At present, the number of community forest establishment projects which have been implemented during the years 2000 to 2009 throughout the country is 6,858 projects for 7,523 villages covering the total area of 423,893 hectares.





Community forest establishment projects in Thailand			
Region	Number of projects	Number of villages	Area (ha)
Northern region	2,193	2,287	209,795
Northeastern region	3,190	3,655	143,691
Central region	811	910	51,827
Southern region	664	671	18,580
Total	6,858	7,523	423,893

Source: Community Forest Management Bureau, Royal Forest Department (2009)

4. Forest Biodiversity

Thailand is among a few countries in the world that possess tropical forests. There are many types of tropical forests scattering in different regions throughout the country. With its diverse geographic characteristics, Thailand is therefore one of the countries in the world that is rich in biodiversity. It possesses approximately 7% of the world flora and fauna. There are more than 2,000 species of flora and fauna that are endemic only to Thailand.

There are approximately 15,000 species of flora found in Thailand and these account for 5.56% of the species found in the world. There are about 633 species of ferns, more than 1,000 species of orchids, more than 3,000 species of fungi, and more than 1,000 species of medicinal plants.



For the fauna found in Thailand, there are approximately 1,408,500 species which are approximately 2.6-10% of the species found in the world. There are 292 species of mammals, 962 species of birds, 318 species of reptiles, 123 species of amphibians, 606 species of fresh-water fishes, 1,672 species of marine fishes and many invertebrate species (data from Biodiversity-Based Economy Development Office, 2008). For the microorganisms, there are about 7-10% of the biodiversity found in the world.

The decline in forest areas during the past 30 years affected the abundance and integrity of forest ecosystems and the status of many plant and animal species. Some species have been extinct while some species are endangered, rare, or threatened. Thailand is very concerned about the importance of the biodiversity because it is fundamental to the sustainable economic and social development. Therefore, policies, measures and plans for conservation and sustainable utilization of the biodiversity have been established and used for the national operational framework. There were three issues of the policies, measures and plans established so far, i.e. the first issue (1998-2002), the second issue (2003-2007), and the third issue (2008-2012). The important contents of these three issues are reduction of the loss of biodiversity of the country; conservation of forest areas containing high biodiversity; protecting the endangered species and genotypes as well as the critical ecosystems; survey and research on biodiversity of plants, animals, insects, and microorganisms; building the motivation to local communities and the network for biodiversity conservation; campaign for the sustainable utilization of biodiversity in the existing community forests; enhancing the abundance of biodiversity in order to be the firm foundation for the livelihood of Thai people; research on the merits of biodiversity for the sustainable utilization for the country's economy; and building the mechanisms for the fair and equitable access as well as benefit sharing from biodiversity development for the country.

Moreover, Thailand has ratified the Convention on Biological Diversity (CBD) on 31 October 2003 and the convention has thereafter been effective since 29 January 2004. As a consequence, Thailand has become the 188th member party of the Convention.



5. Forest and Global Warming

Nowadays, global warming has affected the living of almost all organisms on earth and the situation is getting worse. Therefore, the appropriate measures need to be set up to retard or inhibit this situation. Thailand has considered this matter as the priority task requiring urgent action. Therefore, the processes to support Clean Development Mechanism (CDM) Project in forestry have been prepared. Forests play an important role in improving the better global climate. In Thailand, there are many types of tropical forests scattering throughout the country. These tropical forests can absorb carbon dioxide efficiently. Each individual tree will absorb carbon dioxide from the atmosphere, fix carbon into the wood and release oxygen to the atmosphere by which it can decrease the global warming effectively. In addition, protecting the existing forests and minimizing destruction and degradation of forest resources are also the important activities that can decrease the global warming and also support the policy in Reducing Emission from Deforestation and Degradation in Developing Countries (REDD).



Thailand has formulated the National Strategies on Climate Change Mitigation (2008-2012) as follows:

1. To build up the adaptability to deal with and minimize the risky impacts from the climate change;
2. To support the reduction of greenhouse gases emission and the increase of gases absorption by sink based on sustainable development;
3. To support research and development for clearly understanding of the climate change;

4. To encourage the awareness and participation in solving the problems of the climate change;
5. To enhance the potential of personnel and agencies in dealing with the climate change;
6. To develop the operational framework for international collaboration.

In the forestry context, reforestation, forest resource conservation, community forest establishment, providing continuous education, promoting people's participation in forestry activities and strong law enforcement, all are major efforts to protect and increase forest resources. These efforts are in part aimed at reducing the greenhouse gases which are the major causes of the global warming.

Moreover, the Royal Forest Department has promoted tree planting in various important events throughout the year and also designated these events as the important days of the Department as follows:

1. National Forest Conservation Day (14 January)
2. World Forestry Day (21 March)
3. Arbor Day (Visakha Bucha Day of every year, usually in May)
4. Anniversary of the Royal Forest Department Establishment Day (18 September)
5. National Annual Tree Care Day (21 October)



6. Forest Research

Forest research in Thailand is carried out by many organizations. Royal Forest Department, Department of National Parks, Wildlife and Plant Conservation, Department of Marine and Coastal Resources, and Thai Plywood Company Limited are the major government organizations being responsible for forest research of the country. These organizations are attached to the Ministry of Natural Resources and Environment. Moreover, there are a number of universities, academic institutes and private sectors that also conduct forest research. Forest research areas consist of silviculture, forest products and wood industry, forest economy, forest ecology and environment, forest ecophysiology, forest microbiology and insects, forest biodiversity, community forestry, watershed, wildlife, mangrove forest, marine and coastal resources, national park, and other forest-related subjects. Within the Royal Forest Department, Forest Research and Development Bureau is directly responsible for research, disseminating research findings, technology transfer and providing technical services on forestry.



The Royal Forest Department is always aware of the need to conduct research in order to apply the research findings for forestry development of the country. For instance, research on silviculture and genetic improvement to increase plantation yield has been carried out for several valuable tree species particularly for teak, one of the most economic important tree species of Thailand. In 1965, Teak Improvement Centre was established in Ngao District, Lampang Province with the prime mandate to conduct research in teak for various aspects, e.g. flower and fruit development, seedling production, silviculture, tree selection and genetic improvement for superior genotypes, etc. This Centre has been in operation for more than 40 years now. Recently, teak seedlings propagated by tissue culture technique from more than 30 superior genotypes have been distributed to farmers for teak plantation establishment. In addition to teak, some exotic fast growing tree species which are of economic value, e.g. *Eucalyptus* spp. and *Acacia* spp., are also studied and developed for superior genotypes for commercial plantations.



The Royal Forest Department is also aware of the problems of wood shortage associated with the higher price since woods have to be imported from other countries. Hence, the Royal Forest Department has focused on research and development on wood-substitute composite from small wood debris, agricultural waste materials and some plants, e.g. waste from oil palm, Vetiver grass, rice straw, cassava stem, water hyacinth fibre, rice husk, tree leaves, etc. It is the process to make use of the waste materials as well as to increase their value. The materials from wood-substitute composite can be used to make furniture, home decorations and other products.



The Royal Forest Department is the sole organization in the country that has carried out research on lac cultivation and utilization for several decades. The Department has also promoted lac cultivation as a supplementary source of income for farmers by providing brood lac for cultivation to interested farmers. Crude lac is an important raw material used in many industries such as shellac, cloth dye, foods, drugs, cosmetics, ink, etc. Lac is therefore one of the major exported items of the country with the value of several hundred million baht annually.



7. Forestry Institutions

Many organizations have the functions and responsibilities for managing forest resources of the country by performing various forestry activities. These organizations which are either primary or supporting organizations include governmental organizations, academic institutes, non-governmental organizations and private sectors.

Governmental Organizations

Ministry of Natural Resources and Environment (MONRE) is the governmental organization that has direct mandates regarding the management of forest resources of the country. Within MONRE, there are several organizations that are either primary or supporting organizations sharing the responsibilities for various forestry activities which include management, protection, conservation, reforestation and forest rehabilitation, research and development, providing services, promoting people's participation, wood industry operation, etc. Besides MONRE, there are other governmental organizations that also support and deal with forestry activities of the country.

A number of academic institutes also play a crucial role in forestry activities. Several universities in the country offer undergraduate level programs in forestry and natural resources. These universities, to name just a few, include Kasetsart University, Chiang Mai University, Khon Kaen University, Mae Jo University, Chulalongkorn University, Naresuan University, Sukhothai Thammathirat Open University, Mahidol University, Prince of Songkla University, Thammasat University, Mahasarakham University, etc. Kasetsart University has the only full-fledged forestry school in the country. Faculty of Forestry at Kasetsart University offers Bachelor's, Master's and Doctorate degree programs in forestry and related subjects such as forest management, forest biology, forest engineering, watershed management, silviculture, forest products, forestry ecology, tropical forestry, etc.

Non-governmental Organizations

There are many non-governmental organizations that involve in forestry activities. Some concern themselves with environmental matters, some focus on rural development, while others support forest rehabilitation. These organizations, to name just a few, include Thailand Development Research Institute, Thailand Environmental Institute, Foundation for Ecological Recovery, Andaman Project for Participatory Restoration of Natural Resources, etc. Moreover, a number of local communities throughout the country also play a crucial role in supporting forest-based rural development at grassroots level.



8. Forest Policies and Legal Framework

Thailand established the National Forest Policy in 1985 in order to manage and develop the forest resources for sustainability and in conformity with the development of other natural resources so that the country will reap social, economic, stability and environmental benefits. The important policy is to maintain the total forest areas for at least 40% of the country area. These forest areas were further divided into 25% for conservation forests and 15% for economic forests. These forest areas are managed and developed by the state agencies and private sectors toward the specified goals.

The Ministry of Natural Resources and Environment is responsible for the natural resources and environment of the country. Its missions are to reserve, conserve, rehabilitate and develop the natural resources and environment with the participation and active integration of all sectors. The strategies regarding forest resources are as follows:

1. To balance between the conservation and the utilization of the natural resources in conformity with the sustainable development approach;
2. To manage the sustainable and fair utilization of biodiversity;
3. To manage the water resources by integrating into watershed systems;
4. To manage and develop the natural resources and environmental quality by the participation and integration at all levels.

The Royal Forest Department has formulated the action plan based on the strategies of the Ministry of Natural Resources and Environment in order to achieve the objectives and goals addressed in the Ministry's missions and the Tenth National Economic and Social Development Plan (2007-2011). The main targets are forest protection, forest rehabilitation, conservation and management of forest resources and biodiversity, research and development on forestry, technology transfer, promoting people's participation and community forest establishment, verifying the rights of the people to live in the national reserved forests, enhancing the better quality of life of the people in rural and urban areas.



Thailand has promulgated many forest laws which have been effective to control and define the processes for forest protection and forest resource management toward the stability and sustainable utilization of forest resources. At present, there are six forest laws being employed to regulate the forestry activities as follows:

- ✧ Forest Act B.E. 2484 (1941) and subsequent amendment B.E. 2532 (1989),
- ✧ National Park Act B.E. 2504 (1961),
- ✧ National Reserved Forest Act B.E. 2507 (1964) and subsequent amendments B.E. 2522 (1979) and B.E. 2528 (1985),
- ✧ Wildlife Preservation and Protection Act B.E. 2535 (1992),
- ✧ Forest Plantation Act B.E. 2535 (1992),
- ✧ Chainsaw Act B.E. 2545 (2002).










9. Royal Initiative Projects

His Majesty King Bhumibol Adulyadej has been very concerned and aware of the problems and crises of forests in Thailand. Since forest depletion has occurred rapidly because of the population growth and the economic development. Consequently, drought, unpredictable rain, sudden flood and severe soil erosion often follow. These are very problematic to agricultural practices from which it has become major difficulty to the farmers throughout the country. His Majesty the King has initiated and introduced a number of significant forestry concepts in order to ameliorate their difficulty. Each of these concepts is simple, unsophisticated, reasonable and practical. It can be applied to solve the problems and mitigate the difficulty so that the benefits could be truly gained and the sustainable development could be achieved.

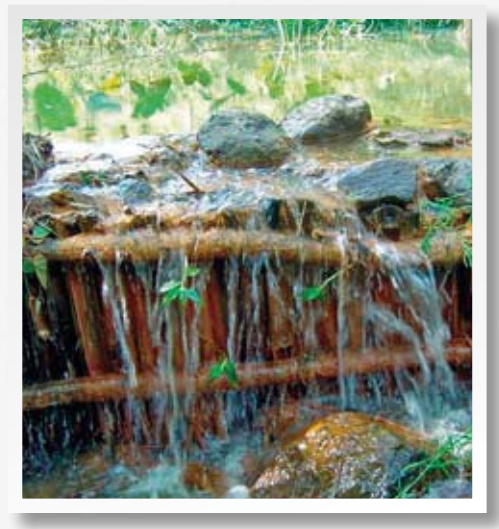


Some important concepts in forest rehabilitation and development of His Majesty the King include:

-  Forest rehabilitation without planting,
-  Reforestation on highland,
-  Reforestation on watershed areas,
-  Reforestation on deforested areas,
-  Planting three types of trees to receive four types of benefits.

Royal initiative projects have been carried out under the initiative thoughts and suggestions of Their Majesties the King and Queen including Royal Family by the responsible agencies which adopt His Majesty the King's concepts on forestry development as the guidelines for the implementation. The purpose is to assist people who are facing the crises and problems throughout the country in order to raise their living standard and quality of life and improve the environment.

In 2008, there were 137 Royal Initiative Projects in forestry context carried out throughout the country; i.e. 65 projects in the northern region, 21 projects in the northeastern region, 25 projects in the southern region, 26 projects in the central, eastern and western regions.



'Forestry officials, first of all, have to plant trees in the minds of people who will then plant trees on the land and tender those trees by themselves.'

This is His Majesty the King's address given at Thung Cho Watershed Development Unit in 1976. It is the truly great philosophy in forestry theory of His Majesty the King.

10. International Organization Collaboration on Forestry

Thailand has also collaborated with other countries and international organizations at bilateral, regional and international levels for a number of forestry activities such as forest resources management, reforestation and forest rehabilitation, conservation of forest resources and wildlife, training and personnel development, etc. These collaborations are in the context of financial and technical assistances to Thailand and in the case of Thailand being a membership of the international organizations. Thailand has ratified several Conventions and has currently been a membership of these Conventions which include the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the United Nations Framework Convention on Climate Change (UNFCCC), the Convention on Biological Diversity (CBD), and the Ramsar Convention on Wetlands (Ramsar). Some of the international organizations with which Thailand has collaborated in forestry activities are as follows:

- 🌿 Australia's Commonwealth Scientific and Industrial Research Organization (CSIRO)
- 🌿 Australian Centre for International Agricultural Research (ACIAR)
- 🌿 Asia Pacific Association of Forestry Research Institutions (APAFRI)
- 🌿 Association of Southeast Asian Nations (ASEAN)
- 🌿 Australian Agency for International Development (AusAID)
- 🌿 Canadian International Development Agency (CIDA)
- 🌿 Center for International Forestry Research (CIFOR)
- 🌿 Danish International Development Agency (DANIDA)
- 🌿 Finnish International Development Agency (FINNIDA)
- 🌿 Food and Agriculture Organization of the United Nations (FAO)
- 🌿 Forest Research Institute Malaysia (FRIM)
- 🌿 Forestry and Forest Products Research Institute (FFPRI)
- 🌿 Intergovernmental Panel on Climate Change (IPCC)
- 🌿 International Centre for Research in Agroforestry (ICRAF)
- 🌿 International Network on Bamboo and Rattan (INBAR)

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- 🍀 International Tropical Timber Organization (ITTO)
 - 🍀 International Union for Conservation of Nature (IUCN)
 - 🍀 International Union of Forest Research Organizations (IUFRO)
 - 🍀 Japan International Cooperation Agency (JICA)
 - 🍀 Japan International Forestry Promotion & Cooperation Centre (JIFPRO)
 - 🍀 Japan International Research Center for Agricultural Sciences (JIRCAS)
 - 🍀 Swedish International Development Cooperation Agency (SIDA)
 - 🍀 United Nations Development Programme (UNDP)
 - 🍀 United Nations Environment Programme (UNEP)
 - 🍀 The World Bank (WB)
 - 🍀 Acid Deposition and Monitoring Network in East Asia (EANET)
 - 🍀 Acid Deposition and Oxidant Research Center (ADORC)



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