

NATIONAL FOREST POLICY REVIEW



THAILAND

by

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Introduction

Thailand covers a land area of 513 115 km². It shares borders in the northwest and west with Myanmar, in the northeast and east with Lao PDR, in the southeast with Cambodia and in the south with Malaysia. Thailand's economy is predominantly agricultural and 70 percent of the population earn their living in agricultural or related enterprises. Bangkok is the capital city where all the central governmental and administrative headquarters are located. It is also the principal business and education centre of Thailand. The average population density of Thailand is about 125 persons/km² and about 21.8 percent (1999) of the population is urban-based.

Current situation of forest resources and the forestry sector

Population and economic growth

The total population of Thailand is approximately 62 million. Population growth was above three percent during the 1960s and slowed to 1.8 percent during the 1980s. According to the latest data (2000) it has dropped to below one percent in recent years. According to information from the Office of the National Economic and Social Development Board (NESDB), the latest GNP per capita in 2001 was B79 192 (US\$1 997). After enjoying high annual growth rates (above eight percent) growth slowed considerably after the financial crisis in 1997. In 2002, it stood at 4.8 percent and in 2001 it was between 2 and 3 percent.

Forest area

Forests and forestlands are state property and under the responsibility and management of the Royal Forest Department (RFD). The Forest Act (1941), Section 4, defines "forest" as land that has not been taken up or acquired by any other means according to land law. Rapid population growth and economic development have put substantial pressure on Thailand's forest resources. More than half of the 1960 forest areas have been converted to other uses within only 40 years (Table 1). Forest area depletion gradually decreased when the RFD launched more surveillance and forest protection measures. But forest clearing and encroaching still persist and illegal timber cutting occurs regularly. According to the latest information, 25.28 percent of the total land area is covered by forests, which corresponds to about 0.2 ha per capita.

Table 1. Forest area changes and population of Thailand

Year	Forest area ¹ (km ²)	Percent	Population ² (million)
1960	277 082	54.00	26.2
1961	273 629	53.33	28.0
1973	221 725	43.21	39.7
1975	205 250	40.00	41.0
1976	198 417	38.67	43.1
1978	175 224	34.15	45.2
1982	156 600	30.52	48.0
1983	154 028	30.01	49.7
1985	150 866	29.40	51.5
1988	143 803	28.03	54.9
1989	143 417	27.95	55.9
1990	141 110	27.50	56.3
1991	136 698	26.64	57.0
1993	133 553	26.03	58.3
1995	131 485	25.62	59.5
1998	129 722	25.28	61.5

¹ Forest Resources Assessment Division, RFD.

² Department of Local Administration.

Changes in forest management

Timber used to be an important export commodity and has played a significant role in Thailand's economic development. Foreign timber companies have harvested teak from natural stands in the north since the end of the nineteenth century. In 1968, the RFD started to place all forestlands under management plans and prepared timber-harvesting schemes. This was necessary as the poor condition of many logged-over forests indicated overexploitation; forest stands had deteriorated faster and yields from the second cut were quite low. Forest management plans have been reviewed and improved several times to suit environmental conditions and economic situations. To protect the forest from overexploitation, in 1979 half of the forests that previously had been made available for exploitation were closed to timber harvesting and it was hoped that these forests would recover naturally to their original state. However, existing logging roads provided access for poor and landless people who converted forests to farmland. By 1990, an estimated 10 million people lived on reserved forestland without title to the land. The establishment of new villages on forestlands was beyond the control of the RFD. The only forests that remained were in remote and inaccessible areas or in national parks where protection measures were enforced more strictly. Finally, the Royal Thai Government (RTG) yielded to population pressure and provided forestland to these people through land allocation programs.

In November 1988, a devastating tropical depression caused flashfloods, pocket landslides and thousands of slope failures in Nakornsithammarat Province. Many villages in Phipun and Lanska districts were destroyed completely. Depths of 1 to 3 m of sand and debris covered rice fields. More than 300 people perished in this event. Hundreds of logs were found among boulders and debris. Many people, including NGO activists, attributed illegal timber cutting in the mountains as a partial reason for the catastrophe. This led the RTG to impose a nationwide logging ban in January 1989, which prohibited timber exploitation in natural forests. This was a turning point for forest management and planning. The remaining forests have been managed for protection and conservation purposes only; timber harvesting rights were revoked. The RFD has been reviewed and the Forest Management Division, which is responsible for preparing timber-harvesting plans has been dissolved. Forest protection and conservation activities have been strengthened. More forestlands have been declared as protected areas (e.g. national parks, wildlife sanctuaries, forest parks, non-hunting areas). The budget allocated for forest plantations to rehabilitate forestlands has been increased and supported by the RTG.

Rate of deforestation

After the RTG imposed the logging ban and strengthened its efforts for surveillance and forest protection, forest encroachment decreased noticeably. It is estimated that the annual rate of forest depletion at present is around 50 000 ha. Generally, forest encroachment has been conducted by destitute people or rural landowners who have their lands on the margins of natural forests and who have tried to expand their farmlands gradually, although influential people also played a not insignificant role. Appearing on maps only, there is no visible evidence to identify the boundary of the reserved forest on the ground. The RFD once posted signs or erected posts along the boundaries of all national conserved forests and protected areas to notify local people of their boundaries. But this practice was discontinued, encouraging farmers or landowners to extend their farmlands into forestlands. The highest rate of forest depletion occurred during 1976 and 1978 with an average of 1.16 million ha *per annum* (Charupat 2001). Another cause of deforestation is infrastructure development projects on forestlands (e.g. roads and reservoirs).

Shifting cultivation practised by hilltribes and ethnic Thais who live in the hilly and mountainous areas is another problem faced by the RFD. Shifting cultivation is the traditional way for many farmers to grow annual crops for their subsistence. Most of the forests in catchment areas in the north and the northeast, particularly under evergreen forests with fertile soils, have been affected severely by shifting cultivators. The old shifting cultivation areas have become covered with dense grass and subject to forest fire in the dry season. Undisturbed forest stands of evergreen trees are hard to find.

The RFD and the Hilltribe Welfare Office of the Public Welfare Department have implemented a program to settle shifting cultivators in the North. But some settlements have failed to meet the targets. According to the plan, permanent villages will be provided with access roads, schools, health centres and agricultural extension offices. Permanent agricultural practices with soil conservation techniques and promising crops have been introduced to support a better living for the settlers. Migration from neighbouring countries into Thailand has been arrested by strict control measures. Extension staff have raised the awareness of the importance of soil and nature conservation. Now, the clearing of forestland outside allotted areas is strictly illegal and violators are subject to prosecution.

Forest plantations

The first teak (*Tectona grandis*) plantation of less than one ha was established at Mae Paan forest, Sungmen District in Phrae Province by the local forest office of the RFD in 1906. Plantations expanded to almost 160 000 ha by 1980. Up to 2000, the RFD had established 835 235 ha of forest plantations (Annual Report 2001). These plantations serve two main objectives: (i) re-forestation of disturbed forests and (ii) rehabilitation of disturbed watershed areas. Some areas have been reforested for amenity or aesthetic purposes but not for timber production.

The Forest Industry Organization (FIO), a government-owned enterprise, started a forest plantation program for timber production in 1967 and the main species was also teak. The timber, grown on 33 659 ha, is not old enough to be harvested yet; the organization has been affected adversely by the logging ban since 1989 and is facing a financial crisis because its main income was derived from selling logs and sawntimber harvested from natural forests. The small amount of imported timber cannot sustain FIO's operations much longer.

To reduce timber imports from neighbouring countries, the RFD with support from the RTG launched a forest plantation promotion project in 1994 to encourage and support private landowners and local farmers to establish forest plantations of commercial tree species covering 1.28 million ha within 12 years. Through this project, plantation owners could receive a subsidy of about US\$700 from the government for each hectare planted. This project appears to have made little progress because it attracted less interest from the private sector and local farmers than expected. By 2000, forest plantations established under this program covered an area of 160 707 ha, well below the target. The main reasons that discouraged farmers and landowners from investing were the long gestation period, particularly for high-value species, and insufficient knowledge to protect trees from insect attacks. Many young plantations have been destroyed by shoot and stem borers.

The first forest plantations of fast-growing species with rotations of 10 to 15 years (e.g. *Eucalyptus camaldulensis* and *Casuarina equisetifolia*) were established by farmers and private landowners for commercial purposes more than 40 years ago. On soils with low pH in some provinces around Bangkok agricultural crops failed, so that planting trees was viewed as a viable alternative on such soils. Most of the small timber from these plantations is used in construction as scaffolding and temporary posts for fencing.

Some commercial companies and (semi-)private enterprises supported the RFD in establishing forest plantations (e.g. the Thai Petroleum Industry, the Telecommunication Authority of Thailand and the Thai Cement Company). Local people and communities, schoolchildren, monks, educational institutes and villagers also unite to plant trees on disturbed forestlands on national days every year. Besides the aforesaid projects, the RFD also supports many royal-initiated projects to plant trees on various occasions. Nursery centres operated by the RFD nationwide regularly distribute millions of tree seedlings to local people and local institutes or communities free of charge. These planted trees will be additional sources of timber for rural communities in the future. It is estimated that forest plantations in Thailand covered about 950 000 ha in 2000.

To date, the private sector has invested little in forest plantations and the total amount of timber produced in plantations is not sufficient to cope with domestic wood consumption. The country continues to depend heavily on imported timber.

Protected areas

According to the Forest Act (1941), all forestlands including wasteland, excluding those areas covered by land deeds issued under the land law by the Department of Lands or the areas that the RFD has relinquished, are recognized as state forests. Forestlands are under the purview of the RFD; occupation and encroachment without proper permission is illegal. However, some of these forestlands fall under the National Forest Conservation Act (1964). In 1999, 1 221 forests or about 56 percent of the existing forest areas were declared national conserved forests. The main purpose of the National Forest Conservation Act is to protect forests from clearing, degradation and occupation and to conserve them as permanent forests for the benefit of posterity. Any license for activities that will affect the natural condition of forests of this category is hard to obtain from the RFD. The National Park Act (1961) identifies specific forest areas as national parks; the Wild Animals Reservation and Protection Act (1960) declares wildlife sanctuaries and no-hunting areas; and cabinet resolutions have reserved permanent forest and watershed areas (Classes 1A and 1b). They are all protected by laws with stringent control measures. By 2001, there were 81 national parks (46 277 km²), 68 forest parks (887 km²), 53 wildlife sanctuaries (34 849 km²), 55 non-hunting areas (4 452 km²) and 54 arboreta. They are all protected by the Forest Act. Budgets for forest protection and conservation have increased steadily and reached 74 percent of the RFD's total budget in 2001 (Annual Report RFD 2001).

Timber production, imports, and exports

Before the imposition of the logging ban in 1989, domestic timber production was about 3.5 million m³ *per annum*, which was sufficient for domestic timber consumption and export. Due to economic development domestic consumption increased during the 1990s and increasingly imports of timber and other wood products (e.g. sawntimber, plywood, veneer sheets, wood panels, particleboard) had to be relied upon, mainly from neighbouring countries. Domestic timber was derived only from forest clearing owing to infrastructure development (e.g. roads, dams) or through the confiscation of illegal timber (about 25 000 m³/yr). Rubberwood from old plantations is another major source of timber for the furniture industry. Timber imports were comparatively high from 1990 to 1997 and decreased sharply after the economic downturn of 1997 (Table 2). The construction and housing industry has been affected seriously. Sceptics may doubt how Thailand, which banned timber cutting, could export timber as shown in Table 2. The explanation is that these "exports" were re-exports of high-value timber purchased from neighbouring countries by local Thai traders. In addition, a portion of the exports was in the form of sawntimber produced from imported roundwood.

Table 2. Domestic wood production, import and export ('000 m³)

Year	Domestic wood production ¹	Imported timber ²	Exported timber ³
1985	1 882.6	418.2	11.2
1986	2 014.7	348.6	29.2
1987	2 149.0	725.2	112.0
1988	2 048.1	1 123.5	181.1
1989	919.0	2 508.0	53.3
1990	491.0	3 341.0	48.6
1991	231.5	3 281.1	57.8
1992	119.4	3 815.0	45.1
1993	64.5	3 168.2	53.8
1994	62.3	4 063.7	62.4
1995	34.9	3 463.6	80.5
1996	43.9	3 151.8	45.4
1997	59.7	2 358.6	79.7
1998	54.8	1 239.7	108.2
1999	50.2	1 397.3	289.3
2000	46.4	1 856.8	378.5

Note: ¹ Industrial wood and confiscated sawntimber, ² industrial wood and sawntimber, ³ sawntimber
Current annual domestic industrial wood consumption in Thailand is about 2.0 million m³ (Table 3).
Trees on private land and plantations are another source of timber. Owing to the ever-increasing

price of construction timber, local timber consumers have turned to trees previously considered as non-commercial species. Housing estate companies use other construction materials to substitute for wood.

Table 3. Industrial wood and sawntimber sources ('000 m³)

Year	Roundwood			Sawntimber
	Domestic production	Imported	Domestic consumption	Imported
1986	1 989.8	152.7	2 142.5	n.a.
1987	2 117.7	282.9	2 400.6	442.3
1988	1 999.6	446.9	2 446.5	676.6
1989	872.1	1 193.3	2 065.4	1 314.7
1990	228.2	1 847.4	2 075.6	1 493.6
1991	87.6	1 747.5	1 835.1	1 533.6
1992	90.7	2 036.7	2 127.4	1 778.3
1993	55.9	1 366.7	1 422.6	1 801.5
1994	39.3	1 548.9	1 588.2	2 514.8
1995	26.5	1 377.9	1 404.4	2 085.7
1996	20.1	936.3	956.4	2 215.5
1997	32.4	895.5	927.9	1 463.1
1998	27.1	278.1	305.2	961.6
1999	26.6	465.7	492.3	931.6
2000	26.1	713.6	739.7	1 143.2

Source: Royal Forest Department Annual Report 2001.

The high price of construction timber also induces local people to fell trees in state forests illegally, to convert it to sawntimber and to sell it locally for house construction. The RFD has employed various measures to arrest this activity but none has succeeded; the amount of confiscated timber seems to increase *pro rata* with the price of timber in the local market and illegal timber traders have become more cunning in conducting their business.

The wood industry

Owing to the declining roundwood supply from domestic and external sources, many sawmills had to close down. Others have been downsized or do not operate at full capacity. However, furniture and wood-processing factories have increased. In 2000, there were 514 small-scale sawmills, 45 labour-powered sawmills, 5 745 woodworking and furniture factories, 607 labour-powered woodworking factories and 52 pulp and paper mills. Most woodworking and furniture factories are small cottage factories. Because of the scarcity of timber and high timber prices, all factories have attempted to improve efficiency to reduce waste. Many old factories have been retooled with new machines; new woodworking technology from the United States, Japan, Sweden, Germany, Norway and the United Kingdom has been introduced along with imported machinery.

Industrial roundwood

Domestic roundwood production, mainly from infrastructure projects, amounts to approximately 25 000 m³ *per annum*; added to confiscated round logs (around 5 000 m³) the total of 30 000 m³/yr is far below imports of roundwood, which exceeded 700 000 m³/yr in 2000 (Table 3). The shortage of roundwood has forced most sawmills to close; less than 50 sawmills are now running at full capacity using imported timber. All domestic and imported round logs are converted into sawntimber and processed further into secondary wood products or sold as construction timber.

Sawnwood

Similar to roundwood, the greater portion of sawnwood supplied to the domestic market comes from neighbouring countries; the principal suppliers are Malaysia, Lao PDR, Myanmar, Cambodia and Indonesia providing a total amount exceeding 1 million m³/yr (Table 3). The United States and New Zealand are also major sources of sawntimber.

Wood-based panels

The production of wood-based panels in Thailand is not sufficient for domestic consumption. Plywood, veneered panels, particleboard, fibreboard and parquet panels are imported mainly from neighbouring countries. Other major suppliers of particleboard and fibreboard include Italy, Australia, the United States, Norway, Brazil and Canada. The value of imported wood-based panels was US\$32 million in 2000 and US\$22 million in 1999.

Pulp, paper and paperboard

Thailand depends heavily on imported pulp from abroad. There are only a few pulp factories and a meager supply of timber for making pulp, although domestic production is increasing (Table 4). Self-sufficiency in domestic pulp production is still a distant goal.

There are very few paper factories in Thailand that can produce quality paper. Domestic paper and paperboard production is much lower than local consumption. Therefore most paper and paperboard has to be imported (Table 4). The main suppliers are Japan, the United States, Germany, Finland, Canada and Russia.

Table 4. Pulp and paper production in Thailand ('000 tonnes)

Year	Pulp		Paper and paperboard	
	Domestic production	Imports	Domestic production	Imports
1996	502	416	68	469
1997	553	414	73	404
1998	822	328	73	133
1999	756	439	73	365
2000	764	469	81	979

Source: Royal Forest Department Annual Report (2000)

Current and emerging issues, trends and critical problems

Apart from population pressure and forest fire, it is speculated that a further serious problem will be diminishing external timber supplies. Some neighbouring countries, which are currently the main sources of imported timber, have started to reduce timber production and promote their own domestic wood industries.

Population pressure

Forest encroachment by rural poor people is chronic. The RTG has yielded to pressure from the many people who inhabit state forestlands and provided official occupancy rights periodically. The principal policy of the Ministry of Interior implemented at provincial and district levels encourages rural people to have their own lands for living, producing crops and raising animals; but this conflicts with the policy of the Ministry of Agriculture and Cooperatives, implemented by the RFD, which tries to protect the existing natural forests. Reflecting on previous government resolutions to solve encroachment and population pressure, the RFD had to give in and continuously reduce the area of reserved forestland.

The RTG, by ministerial resolution on 4 April 1985, granted amnesty to all forest encroachers who had been arrested and prosecuted and allowed them to use the land that they had occupied formerly; this resulted in extensive forest destruction as there was no evidence to establish the

exact land boundaries. Thousands of new forest encroachers discovered this loophole and joined forces in clearing more forests. There are no reliable data but it is estimated that the forest areas occupied by these people amount to two million ha.

Besides the 1985 resolution, the RTG tried to mitigate land pressure by launching the SOR-TOR-KOR program in 1982. This program planned to allot all degraded forests throughout the country to landless farmers or those who had insufficient land for their livelihoods; the allocation amounted to 2.4 ha for each family. This program continues today and millions of hectares of forest have been converted as a result.

In 1997, a survey conducted by the Agricultural Land Reform Office revealed that there were still approximately 0.6 million landless families in 44 provinces. This means that there are now more than one million landless families and many of them live on state forestlands. From 1992 to 1999 the number of landless families increased by two percent *per annum* (Report of Situation of Environmental Quality 2001). Forest encroachment will continue as long as offenders are not relocated to new settlements; these people also speculate that they have higher bargaining power than the government.

The RTG's forest zoning program of 1991 allocated 1.1 million ha of degraded forests, suitable for agriculture, to landless people. This is one of the RTG's policies to provide lands for poor rural farmers and also to relieve land pressure.

Owing to these government policies vast areas have been lost as state forestlands (Table 5).

Table 5. Conserved forests that have been revoked and allotted for other uses

Year	Number of forests	Areas revoked (ha)
1987	1	3 500
1989	1	35 556
1990	3	3 970
1991	6	8 964
1992	2	810
1993	2	2 089
1994	3	16 630
1995	3	109 486
Total	21	181 005

Source: 100 years of Royal Forest Department Report.

It is evident that the top-down government policy to protect and conserve natural forests has failed to obtain the cooperation from the rural poor who live close to or within the forests. The policy-makers do not know enough about or understand the lives of forest encroachers who are destitute and have no rights to the natural resources, although others may exploit them officially. Many NGOs, local community leaders and ringleaders have incited them to request the RTG to take part in the management of forest resources. This request gained stronger and stronger support from the public and became a political issue that finally forced the RTG to yield to the pressure.

The RFD had to set up community forest projects in 1987 starting with 72 communities in buffer zones around protected areas. The objective was to share the responsibility of conservation and protection of natural resources between the RFD and local communities; local communities had the right to manage the allotted forests to suit their own needs. Local community committees were expected to develop individual management plans under the supervision of a forestry official. Until 2001, 8 668 villages had been allotted community forests (Annual Report 2001).

The proposed Community Forest Bill is still being considered by parliament. There are still controversial issues, particularly from local communities who demand that they should have the right to manage, inhabit and make use of protected areas in proximity to their communities. The RFD on the other hand is concerned that if many people still live in protected areas, it cannot control poaching or collection of non-wood forest products.

The land allocation projects are inadequate. There are still many new and old forest encroachers living on forestlands who do not want to be relocated to the new areas. They speculate that the RTG will eventually yield to pressure. Many so-called representatives of poor farmers from all parts of the country petition the government every year. A specific condition is permitting forest encroachers to stay permanently in protected areas such as national parks or wildlife sanctuaries and allowing them to harvest natural forest products for subsistence use. The present government is confronted with a stalemate situation. Its policy concerning natural resources and the environment, submitted to parliament on 26 February 2001, states that the government has to improve and rehabilitate degraded natural environments with participation from local rural people. However, local people and NGOs ignore their obligation to protect and conserve natural resources.

Most foresters, conservationists and national environmental management institutes consider that the remaining natural forests have reached a critical threshold for maintaining the balance of nature and an overall suitable environment because the existing forests are not distributed evenly throughout the kingdom. The northern mountainous region (17 provinces) has the highest forest cover (43 percent); the northeastern region with the greatest area (19 provinces) has the lowest forest cover (12.4 percent); the central region (18 provinces) has a forest cover of 23.8 percent, mainly in the west; the eastern region (eight provinces) has 20.6 percent forest cover mainly along its eastern border; and the southern region (15 provinces) has 18.2 percent forest cover mostly on steep mountain slopes (Forest Statistics of Thailand 2000). Most of the undisturbed forests are located in remote mountainous areas or in protected forests.

Forest fires

Thailand has heterogeneous forest types of complex biological composition. They can be grouped into two main types – evergreen and deciduous forests. The former covers an area of about 5.84 million ha (11 percent of the country) and the latter covers 7.13 million ha (14 percent). In deciduous forests, leaves accumulate on the forest floor during the dry season (November to January) and the dry undergrowth is burnt by annual forest fires. Forest fires mainly originate on farmlands or forestlands around villages and spread to adjacent forests. Fortunately most tree species are fire-tolerant, but seedlings and saplings are vulnerable. The loss of organic matter on the forest floor decreases soil fertility.

The RFD has established forest fire control centres in areas of high fire risk. However, with limited resources and equipment, suppressing forest fires in very remote areas is beyond the capacity of the control centres. Often, military aircraft and helicopters are requested to control forest fires in sensitive areas.

Domestic wood consumption

Domestic wood consumption has increased along with the population growth and economic development. Sawntimber for construction has the greatest share of domestic wood consumption (fuelwood excluded). Most neighbouring timber-supplying countries are now encouraging and promoting domestic timber industries, reducing exports and paying more attention to conservation. Consequently the amount of round logs and sawntimber exported to Thailand is decreasing.

The RTG has anticipated future timber shortages. Besides various forest plantation promotion strategies, the RFD has tried to encourage the private sector to invest in forest plantations. The government promulgated the Forest Plantation Act (1992) to facilitate long-term land leases of state forestlands for a low fee of B10/rai/yr (US\$2.5/ha/yr). The RFD also offers a subsidy and technical support; tax breaks are included if trees are grown on private land. Local nurseries operated by the RFD provide seedlings, free of charge, to local farmers to grow on their idle land. It is hoped that the ever-increasing price of timber in the local market will induce more local people and the private sector to invest in forest plantation in the future.

Implications of international conventions

Thailand supports most international natural conservation conventions or agreements. Regulations and rules have been imposed and laws have been devised to implement the agreements without conflicts. Some protected forest areas have been proclaimed as World Heritage sites. Successive government policies, since the imposition of the 1989 logging ban, to protect and conserve natural resources with backing from NGOs and the public have corresponded well with international agreements or conventions.

Thailand is a signatory to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on World Heritage, the Ramsar Convention, the Convention on Climate Change (UNFCCC), the Convention on Biological Diversity (CBD)³, and the International Tropical Timber Agreement (ITTA). Focal points to deal with these conventions or agreements have been selected in various RTG agencies. Besides sending delegations to annual meetings, Thailand has hosted many meetings under these conventions. Participation in other conventions like the Convention to Combat Desertification (CCD) and the Convention on the Conservation of Migratory Species of Wild Animals (CMS) is being considered.

Current national forest policies

National forest policies

From 1962 to 1981, four national economic and social development plans (NESDP) stipulated that 50 percent of the country area must be reserved under forests. This was reduced to 40 percent in the fifth NESDP (1982-1988) to suit economic and social conditions. The sixth NESDP specified 15 percent of the forests to be managed for conservation purposes and the remaining 25 percent to be managed for production. This was reversed by the seventh NESDP (1992-1996), which reacted to rapid forest degradation and the deterioration of the environment; forest areas for conservation were increased to 25 percent and 15 percent was allocated for timber production. The most recent NESDP still maintains 40 percent as forestland. This figure does not correspond with the real situation. The latest information and data derived from remote sensing in 1998 indicate that forest cover in Thailand has shrunk to 25.28 percent. However, forestlands outside forested areas are still recognized as state forests by forest acts, although they may be without any trees.

Many sections of the Thai Constitution stipulate public rights in the protection, conservation and management of natural resources (Appendix 1). This is the first time that the constitution has stipulated public rights in sharing responsibility and preparing management plans for the exploitation and conservation of natural resources.

Specific forestry policies

Depletion of forest areas, deterioration of the environment, climate change, conflicts over water resources in the dry season, flashfloods, landslides, flooding in the rainy season, depletion of natural resources and other environmental problems have forced the RTG to formulate forest policies to handle these problems. But no specific forestry policy has been issued so far.

Forest resources and land-use change

As mentioned earlier, many forestlands have been converted for other uses. The RFD has to yield to the policies issued by the government. It has had to reduce forestlands over time. The remaining forests occur mainly in mountainous watersheds of the main rivers. The RFD wants to proclaim them as protected areas as soon as possible.

³ It was submitted to parliament for approval. However, parliament has not ratified the CBD yet.

Forest management

The logging ban of 1989 is still valid and its reversal is unlikely because it has strong general support. The existing forests will be managed for conservation and protection purposes only.

Forest and biodiversity conservation

The RTG has a strong policy to protect and conserve natural forest resources. Laws and regulations have been promulgated and issued to implement all commitments of international agreements. The government policy on natural resources as proclaimed on 26 February 2002 states that the participation of local communities is essential to maintain and conserve biodiversity. Therefore the RTG promotes local community management of natural resources and biodiversity (Situation of Environmental Quality 2001).

Non-wood forest products

Thousands of rural Thais who are living close to or within forests are forest-dependent. Forests are natural food sources (e.g. vegetables, fruit, wildlife, insects, young plant shoots, mushrooms, honey and insect eggs). The collection of some non-wood forest products such as honey, wasp eggs, rattan shoots and resin is prohibited by forest laws. Currently, the new constitution recognizes the rights of indigenous and rural people to use natural resources. Many sections allow local communities to use natural resources in a sustainable way.

Trees outside forests

All trees on private lands are private property according to the law. The RFD has a policy to promote tree planting by the private sector.

Investments in forestry and wood processing

Investment in forestry declined after the logging ban of 1989, with the exception of the rubberwood sub-sector. The RTG does not want the private sector to expand the wood-processing industry. Owing to limited supplies of timber, most factories and sawmills have had to shut down. Only cottage wood industries with a few workers can survive now.

People's participation, decentralization and devolution of forest management responsibilities

The current constitution of Thailand recognizes the rights of the people to manage natural resources. The Community Forest Bill is under consideration by parliament. The objective is allocating forestlands to local communities to be managed by local people to suit their own needs. Forest products from each community forest are to be shared among local people. Any benefits will be returned to the local community. Community committees have to prepare forest management plans corresponding with local needs.

However, the RFD still reserves the right to oversee protected areas because they are common property and need a considerable amount of human and financial resources to manage.

Forestry research, education and extension

Research in forestry has been conducted mainly by the research divisions of the RFD. The main topics of research concern wildlife, wood technology, forest insects, forest ecology, watershed management, hydrology, silviculture, tree breeding, mangrove forests, forest economics, tree improvement and wood technology. Only 4.2 percent of the total budget for the RFD in 2001 was earmarked for research.

Only the Faculty of Forestry of Kasetsart University, a government education institute located in Bangkok, provides graduate forestry degrees.

Forestry extension is done mainly by the RFD, NGOs and the public media including newspapers, radio and television stations. Extension campaigns against forest fires have been conducted vigorously but the results are unsatisfactory. Rural people do not understand the negative effects of forest fires. The RFD also has an extension division to introduce technology and forestry knowledge to the public.

Forest plantations

The expansion of forest plantations is an important goal of the RFD. Some indigenous tree species with promising growth rates have been studied and introduced to the public. A new plantation act has been promulgated to support and encourage private sector investment. Tree improvement research programs have been set up to obtain better tree characteristics. Teak and local pine improvement projects funded by the Danish government have been implemented successfully.

Watershed management

The forest cover in many watersheds has been degraded severely by shifting cultivators. Consequently, the RTG decided to set up the National Hydrological Committee to oversee the management of water resources. The Watershed Classification Committee was established in 1992. This committee has studied and identified criteria for classifying watershed into five classes according to physical and environmental parameters (Appendix 2). All watershed areas have been classified and demarcated. Watershed areas in Classes 1A and 1B are under strict control; any land-use change requires special permission from the cabinet. However, hilltribes do not recognize their importance of watersheds and ignore these regulations.

Shifting cultivation practices and deforestation affect water resources downstream and this has attracted government attention. The Watershed Division was created in the RFD in 1975 to oversee watershed areas. Rehabilitation of degraded catchments has been partially successful.

Policy instruments of specific forest policies and implementation processes

All forestry policies issued by the RTG are supported by ministerial regulations, orders, or rules, to be implemented by the RFD at various levels. Additional regulations and rules might be issued at departmental levels to ensure that policies are implemented successfully. All forest officials who have direct responsibility for implementation are informed of any new policy. Forestry officials at the administrative level are summoned to RFD headquarters to acknowledge the policy, if needed. However, some policies take time to implement when financial and other supporting resources are required. Compiling necessary information to support policy implementation sometimes takes weeks as implementing procedures and practices need work plans to be prepared by technical specialists. Besides implementation, the RFD has to inform other government agencies if cooperation is needed. A joint committee is created if a policy needs multilateral assistance for implementation; an *ad hoc* subcommittee may also be formed to examine specific issues.

The public is never provided with the details of the policies. Information is privy to concerned officials only. If people's participation is needed or if people are affected by the policy, the RFD will inform them. This is one of the weaknesses of the extension services of government agencies. Another oversight is the lack of monitoring and evaluation of policy implementation. Practically, the RFD sets up a committee within its headquarters to supervise and take action on all forestry policies. The Director-General or Deputy Director-General chairs the committee and the director of the concerned division acts as secretary. The directors of regional forest offices and the chiefs of provincial forest offices have to know all forest policies in detail and clarify them for subordinates. The directors of concerned divisions in the headquarters of the RFD have to inform all concerned officials to take action.

Specific non-forestry policies affecting the management of forests

Policies in agriculture and other land uses: The Department of Agriculture and the Department of Agricultural Extension issue agricultural policies. They do not affect forest management. The

policy of protecting the remaining forests has been recognized by all government agencies and the private sector. Thus this matter is taken into account in land-use and agricultural policy formulation.

Policy on the environment: The government recognizes the importance of the forests in maintaining a suitable environment for people. This has shaped government policies. It ensures that the policy on the environment does not negatively affect forests or trees and many environmental improvement projects also include tree planting.

Rural development policy: Natural forest conservation and protection are included in the constitution and the rural development policy to maintain and improve the rural environment. At the rural level, a forest officer is a member of the drafting committee for the rural development policy to ensure that forest resource management is incorporated appropriately into rural development programs.

Industrial development policy: The RFD does not permit the establishment of new sawmills. Gradually, wood-processing enterprises have installed high-efficiency machinery to increase recovery rates. Sawdust from furniture factories that use rubberwood as raw material is now used as a planting media to grow mushrooms. Sawdust and wood shavings are being used in particleboard factories and sometimes are converted to briquettes. Many lesser-known species are being used as raw material. Even the old stumps of trees in the logged-over forests are being used by the furniture industry.

Infrastructure policy: The RTG has strict regulations for controlling construction projects (e.g. dams, roads, airports, reservoirs, highways, high-tension power lines). They have to be passed by the national environmental committee, of which forestry experts are members. Every infrastructure project should minimize damage to natural forest resources.

Employment policy: Employment in the wood industries has declined since the logging ban. This has not affected other sectors and forest resources as the number of personnel involved in the forestry sector is very low.

Trade policy: Owing to limited domestic timber supply Thailand has become a major timber importer. As long as timber imports satisfy domestic wood consumption, the conservation of forest resources is guaranteed.

Tourism policy: The Tourist Organization of Thailand is aware that high numbers of tourists can lead to the deterioration of tourist locations. The most serious problem is pollution. The RTG has launched a campaign against pollution in resort areas, national parks, beaches, cultural places and temples. Access roads to tourist destinations have been improved. The RFD also supports the government tourism policy; all national parks are managed under a national park master plan. The RFD budget for improving the management of tourist areas under its domain has been increased.

Process, mechanisms of and institutional arrangement for forest policy formulation

The first national forestry policy was reported in the first NESDP in 1962, which stipulated that 50 percent of the country area should be preserved as forestland. Other forestry policies have been formulated for different reasons. Some have been formulated by the cabinet, some have been proposed by the RFD, some have been the ideas of senior government officers and sometimes a natural catastrophe has caused the government to formulate a new forestry policy. All policies must be approved by the government and the cabinet before being accepted as government policies by all concerned agencies.

Process of forest policy formulation

Whatever the original source is, the proposed idea will be considered, prepared as a draft by the RFD and submitted to the Minister of Agriculture and Cooperatives for consideration before forwarding to the cabinet for final approval.

Capacities for policy formulation, monitoring and evaluation

The RFD has competent staff to formulate forest policies and to monitor and evaluate their implementation. A committee has been set up within the RFD headquarters to review each policy. It meets regularly to monitor and evaluate progress. Progress reports are prepared and forwarded to policy-makers for perusal. The RFD regulations require progress to be reported on a monthly basis. This is a built-in monitoring procedure.

Forestry policy implementation and impacts

The budget for policy implementation is provided by the RTG. Implementation may be constrained if the policy affects many people; such constraints must be resolved. If there is no functional division with direct responsibility to implement the policy, a new mechanism is devised. Additional staff can be relocated from other divisions to strengthen the work force. Officials from headquarters will inspect progress in the field periodically. At the end of the year, the annual progress report is prepared and submitted to the committee for consideration; it is then forwarded to policy-makers and the government.

Impacts and effectiveness of forest policies

The logging ban

The main objective of the logging ban is to conserve the remaining forest resources. It raised the price of timber products considerably and forced domestic wood consumers to use other material. Twelve years after the imposition of the ban people no longer feel any impact and deforestation and forest degradation have been slowed.

Forestland allocation

Most land allocation programs have been successful. But irregularities have been observed as some influential people or friends of politicians also obtained lands distributed through the programs. These practices have been arrested and more stringent measures have been applied.

Forest plantations

This aims to encourage the private sector and local farmers to grow trees of commercial species to supply the domestic market and reduce imports. The RFD has campaigned hard to encourage the private sector to invest in forest plantations. The response has been rather poor.

Forest protection and conservation policy

The government has provided the RFD with resources to cope with the problem of illegal forest encroachment and illegal timber cutting. Forest protection activities have been strengthened and can be handled effectively, which can be partially attributed to the participation by local people who have united to combat forest encroachment and illegal timber cutting.

The impacts and effectiveness of forest policies depend on the number of people involved, their educational level, the gravity of the problem and the economic situation of the people who are affected by the policy.

Through monthly and quarterly reports, information is fed back to headquarters regularly. Today the RFD has an online computer system connected with all provinces. Therefore information flow is not a problem in the policy formulation process. A weakness is the lack of reliable information on policy implementation from the field; monitoring and evaluation are not sufficiently thorough. Many implementing agencies anticipate that most policies do not last long as new governments frequently introduce new policies. Between 1982 and 2002, Thailand had 10 governments and new governments rarely follow the paths of former ones. The RFD implements its assigned tasks as best as it can.

Conclusions and recommendations

Conclusions

Forestry policies do not last long and lack continuity. Some problems are solved temporarily but emerge again in the future. If policies are not incorporated into the national social and economic plan, they do not endure and their impact is limited.

Forest fire is a serious threat that occurs every year. The RFD has strived to combat fires but they will persist as long as local people do not cooperate with the RFD.

Protection and conservation of remaining forests has been successful owing to participation by all players. The younger generation understands the beneficial functions of the forest and shows great interest in national parks, wildlife sanctuaries and recreational areas in their own provinces.

Ultimately, successful policy implementation depends on people's participation. Fortunately, this has been recognized and incorporated into the constitution.

Recommendations

To solve forestry problems, the RFD and the government have to change their attitudes. Lessons from the past reveal that top-down approaches to policy formulation and implementation are unsuccessful. Policies must suit the existing social and economic situations, environmental conditions and technology to achieve the sustainable management of forest resources. All stakeholders need to be involved in the policy formulation process to ensure that their concerns are heard and considered.

The government has to encourage the private sector to invest in forest plantations. Promotions to grow trees should be conducted at the grassroots level and more incentives should be provided. The government should focus only on protected areas. Commercial tree plantations should be managed by the private sector. Land should be apportioned where problems exist and degraded forestlands, suitable for agriculture, should be distributed to indigenous landless people. The adoption of soil conservation measures should be a condition for obtaining public land.

Forestry policies must be evaluated annually and modified from time to time to keep pace with dynamic changes that occur.

References

- Agricultural Land Reform Office. 2000. *Annual report*. Land Reform Bulletin No. 302.
- Charupat, T. 1998. *Forest situation of Thailand in the past 37 years*. Royal Forest Department, Bangkok.
- Constitution of the Kingdom of Thailand. 1997. Government Gazette, Vol. 114, Part 55a.
- Office of Environmental Policy and Planning. 2001. *Situation of the environmental quality*.
- Royal Forest Department. 1996. *100 years of the Royal Forest Department*.
- Royal Forest Department. 2000. *Forestry statistics of Thailand*.
- Royal Forest Department. 2001. *Annual report*.

Appendix 1. Constitution of the Kingdom of Thailand

(Excerpted from the Constitution of the Kingdom of Thailand enacted on 11 October 1997 published in the Government Gazette Vol. 114, Part 55a, dated 11 October 1997)

Section 46. Persons so assembling as to be a traditional community shall have the right to conserve or restore their customs, local knowledge, arts or good culture of their community and of the nation and participate in the management, maintenance, preservation and exploitation of natural resources and the environment in a balanced fashion and persistently as provide by law.

Section 56. The right of a person to give to the State and communities participation in the preservation and exploitation of natural resources and biological diversity and in the protection, promotion and preservation of the quality of the environment for usual and consistent survival in the environment which is not hazardous to his or her health and sanitary condition, welfare of quality of life, shall be protected, as provided by law.

Any project or activity which may seriously affect the quality of the environment shall not be permitted, unless its impacts on the quality of the environment have been studied and evaluated and opinions of and independent organization, consisting of representatives from private environmental organizations and from higher education institutions providing studies in the environmental field, have been obtained prior to the operation of such project or activity, as provided by law.

Section 58. A person shall have the right to get access to public information in possession of a State agency, State enterprise or local government organization, unless the disclosure of such information shall affect the security of the State, public safety of interests of other persons which shall be protected as provided by law.

Section 59. A person shall have the right to receive information, explanation and reason from a State agency, State enterprise or local government organization before permission is given for the operation or any project or activity which may affect the quality of the environment, health and sanitary conditions, the quality of life or any other material interest concerning or her or a local community and shall have the right the express his or her opinions on such matters in accordance with the public hearing procedure, as provided by law.

Section 69. Every person shall have a duty to defend the country, serve in armed forces, pay taxes and duties, render assistance to the official service, receive education and training, protect and pass on to conserve and the national arts and culture and local knowledge and conserve natural resources and the environment, as provided by law.

Section 76. The State shall promote and encourage public participation in the preservation, maintenance and balanced exploitation of natural resources and biological diversity and in the promotion, maintenance and protection of the quality of the environment in accordance with the persistent development principle as well as the control and elimination of pollution affecting public health, sanitary conditions, welfare and quality of life.

Section 81. The State shall provide and promote the private sector to provide education to achieve knowledge alongside morality, provide law relating to national education, improve education in harmony with economic and social change, create and strengthen knowledge and instill right awareness with regard to politics and a democratic regime of government with the King as Head of the State, support researches in various sciences, accelerate the development of science and technology for national development, develop the teaching profession, and promote local knowledge and national arts and culture.

Section 290. For the purpose of promoting and maintaining the quality of the environment, a local government organization has powers and duties as provided by law.

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

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

Appendix 2. Physical characteristics of watershed classes

WSC1: Class 1A – areas of protection forest and headwater source areas usually at higher elevation with very steep slopes. These areas should remain under permanent forest cover. Class 1B areas have similar physical features and environment but portions of the area have been cleared for villages and agricultural use. Cleared areas require special soil erosion protection measures and where possible should be replanted to forest or maintained under permanent agroforestry.

WSC2: Class 2 – areas of protection and/or commercial forest (usually commercial forest). Usually at higher elevations with steep slopes. Landforms are less erosive than WSC 1A or 1B. Areas may be used for grazing or cultivated with certain crops grown with erosion protection measures.

WSC3: Class 3 – areas of uplands with moderate to steep slopes and less erosive landforms. The areas may be used for commercial forests, grazing, fruit trees, or certain agricultural crops with a need for soil conservation measures.

WSC4: Class 4 – areas of gently sloping lands suitable for row crops, fruit trees, and grazing with a moderate need for soil conservation measures.

WSC5: Class 5 – gentle to flat areas used for paddy fields or other agricultural uses with few restrictions.

Note: The numerical watershed classes above were agreed upon by the Watershed Classification Committee.