

FOREST REHABILITATION POLICY AND PRACTICE IN THAILAND

— Draft —

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Acronyms and abbreviations

CMU	Chiangmai University
DLD	Department of Land Development
DOLA	Department of Local Administration
FFKU	Faculty of Forestry Kasetsart University
FAO	Food and Agriculture Organization
FIO	Forest Industries Organization
ICRAF	International Center for Research in Agroforestry
IIED	International Institute for Environmental Development
IMPECT	Inter-Mountain People Education and Culture in Thailand
INGO	International Non-Government Organization
IRD	Institute for Research and Development
JICA	Japanese International Cooperation Agency
KU	Kasetsart University
KKU	Khonkaen University
LDI	Local Development Institute
MCC	Multiple Cropping Center
NDF	Northern Development Foundation
NESDP	National Economic and Social Development Plan
NGO	Non-Government Organization
OEPP	Office of Environmental Planning and Policy
ONCB	Office of Narcotic Control Board
PAS	Protected Area System
PTT	Petroleum Thai Authority

RECOFTC	Regional Community Forestry Training Center
RFD	The Royal Forest Department
SRI	Social Research Institute
TAO	Tambol Administrative Organization
TDRI	Thailand Development and Research Institute
TEI	Thailand Environment Institute
TFSMP	Thailand Forestry Sector Master Plan
UN	United Nations
UNDP	United Nation Development Programme
USAID	United States Agency for International Development
WSC	Watershed Classification

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To all of those who contributed, sincere thanks. It is hoped that the material in this publication and the discussions and dialogue that took place during data collection will contribute to a better understanding of the processes leading to deforestation and forest degradation in Thailand. The hope is that the country can move towards a situation where the remnant forests are being managed sustainably and the degraded forests are rehabilitated to provide a range of goods and services of benefit for the whole of society.

GLOSSARY

Degradation:	a loss of forest structure, productivity and native species diversity. A degraded site might still contain trees (ie. a degraded site is not necessarily deforested) but it has lost at least some of its former ecological integrity.
Reclamation:	to recover productivity at a degraded site using mostly exotic tree species. The original biodiversity is not recovered although the protective function and many of the original ecological services may be re-established.
Reforestation:	the re-establishment of trees and understorey plants at a site previously occupied by forest cover.
Rehabilitation:	to re-establish the productivity and some, but not necessarily all, of the plant and animal species thought to be originally present at a site. For ecological or economic reasons the new forest might also include species not originally present at the site. The protective function and many of the ecological services of the original forest may be re-established.
Restoration:	to re-establish the presumed structure, productivity and species diversity of the forest originally present at a site. The ecological processes and functions of the restored forest will closely match those of the original forest.

1. EXECUTIVE SUMMARY

Thailand, along with most countries in the region, has experienced a substantial loss of forest during the past half century. Forest cover was reduced from 53% in 1961 to 25% in 1998, and deforestation was occurring at a rate of about 300,000 ha per year in the first half of the 1990s (about 2.6% per year). All forest types in all regions of the country have been affected. There are many reasons for the loss of forest and the associated degradation of the remaining forests. Thailand has an expanding population and has undergone rapid economic development during the past few decades. This combination of factors has put enormous pressure on all natural resources, and government policy has encouraged the expansion of agriculture and a move towards cash cropping.

Chief among the direct causes of deforestation are:

- i. Encroachment into reserved forest for permanent cultivation;
- ii. Poorly controlled concessionaire logging operations;
- iii. Shifting cultivation;
- iv. Harvesting of wood fuel;
- v. Illegal logging of teak and other forests;
- vi. Infrastructure development.

In many cases these direct causes are the visible side of more pervasive underlying causes. The most important of these is the unclear and ambiguous tenure of the estimated one million farm households (a fifth of the total population) who are residing in reserved forest. Lack of security of access and use rights (tenure) of these people acts as a disincentive for them to invest in long term resource management. It also puts them in a position of conflict with the staff of the RFD who view them as illegal encroachers.

Past attempts by the RFD to rehabilitate degraded reserved forest lands have had little success as they have been thwarted by the overwhelming constraint posed by the problem of people residing in the forests and using forest resources "illegally". Attempts to force solutions by top down interventions have generally failed. Plantations established under these circumstances have a very low initial survival rate (partly because of technical shortcomings) and rarely survive long term due to encroachment and loss by fire. Local people feel disenfranchised from the process even when they are employed as wage labour for planting and protecting forest plantations.

Local communities have demonstrated that they can take effective action to halt and reverse forest loss and degradation (even within reserved forests) if they feel that they will reap the benefits of their endeavours.

Policy is now evolving towards developing a partnership between the government and local communities that can ensure that government policy objectives and the development aspirations of local people can both be achieved. The statements in the 1997 Constitution relating to the rights of local communities to use and manage natural resources and the environment give legitimacy to attempts to devolve authority and responsibility for forest management to local levels. Several versions of a Community Forestry Bill are presently under consideration, and if an effective version is passed, it will provide one practical mechanism to progress this partnership. However, this transition to more participatory forms of management is strongly resisted in some quarters.

A major consequence of these changes is the need to define a new role and a new culture for the RFD. The role of many parts of the organisation during most of this century has revolved around overseeing the commercial exploitation of the country's forests by private concessionaires. That role came to an end in 1989, when Parliament cancelled logging concessions in forest reserves. The challenge for the future is to define a new role based on a partnership with civil society and focused on rehabilitation of the degraded forest landscape and conservation of the remnant forests. This new role, with its emphasis on the active participation of different stakeholder groups in forest management planning and implementation, is likely to require a major cultural adjustment within the Department.

2. INTRODUCTION

2.1 Purpose of the study and methodology used

The objectives of this study are to assess forest rehabilitation policies and practices in Thailand focusing on the following issues:

- The status of forests in the country

- Policies and laws related to forestry and land use in general
- Policies and laws related to forest rehabilitation
- Technical approaches to forest rehabilitation
- Lessons learned from past experiences
- Institutional / policy constraints to rehabilitating degraded forest land

Information gathering was based primarily on reviews of literature from libraries of both government and non-government agencies in Thailand. These included: ICRAF, Chiang Mai University (CMU), Northern Development Foundation (NDF), IMPECT Association in Thailand, Social Research Institute (SRI)/CMU, Multiple Cropping System (MCC)/CMU, Khon Kaen University (KKU), Research and Development Institute (IRD)/KKU, Kasetsart University (KU), Faculty of Forestry /Kasetsart University (FFKU), RECOFTC, The Royal Forest Department (RFD), Thailand Environment Institute (TEI), Local Development Institute (LDI), FAO and the UN.

In addition, personal consultations and interviews were conducted with key officials of the Royal Forest Department (particularly staff of the Watershed Management Division)

2.2 General background on Thailand

Thailand has a land area of 514,000 sq km (51 million ha) and in 1996 had a population exceeding 60 million with a growth rate of 1.5% per annum. The economy is diversified with manufacturing, service industries and agricultural production being the three principle sectors. In 1997, 51% of the workforce was employed in agricultural based occupations (National Statistical Office 1997). The country is urbanising rapidly; in 1965, only 13 % of the total population lived in urban areas whereas by 1990, the figure had increased to 23 %. The population density in 1990 was 107 persons per sq km overall, and 275 persons per sq km of cultivated land (Warr 1993). The population consists of approximately 75 % Thai, 14 % Chinese and 11 % of other ethnic groups. Thailand is bordered by Malaysia, Myanmar, Lao PDR and Cambodia.

Between 1960 and 1993, Thailand's forest cover diminished from 50 % of the total land area to about 26 %. The most rapid forest loss occurred during the mid to late 1970s and early 1980s. Between 1976 and 1982, the annual deforestation rate reached 3.85 %, which was then the highest among tropical countries worldwide.

3. TERMINOLOGICAL CONFUSION—RESTORATION, REHABILITATION OR RECLAMATION

While some degraded ecosystems are able to recover naturally, many are not, because of some limitation. Even at sites where natural recovery is taking place, the process may be slow. This increases the chance of further disturbances recurring and degrading the site once more. Human intervention may be needed to either initiate the recovery process or to accelerate the rate at which it proceeds.

A variety of approaches might be used. These range from those where the objective is to restore the original ecosystem and recover the former biodiversity through to those where the aim is simply to use the site for some productive purpose such as agriculture or forestry. The different approaches have fostered a confused terminology. In this report a particular distinction is made between restoration, rehabilitation and reclamation.

- *Restoration* is used only for those situations where the intent is to recreate an ecosystem as close as possible to that which originally existed at the site.
- *Rehabilitation*, on the other hand, is used where, for ecological or commercial reasons, it has been necessary to include exotic species in the new succession. This might be because only exotic species such as *Acacia* can tolerate the soils now present at the degraded site and are necessary as nurse species to facilitate the entry of the original native species. Or it may be that commercial imperatives demand certain agricultural or timber species be included to justify the rehabilitation effort.
- *Reclamation* is used for those situations where no native species are used at all. In such cases there may be no direct benefits to regional biodiversity but there may be major social advantages or benefits such as improved watershed protection. The approaches differ in the extent to which they enable the original biodiversity to be regained. The approaches are similar, however, in that they all seek to establish a prescribed and stable new land use. (Excerpt from Lamb, 1999.)

4. PATTERNS OF LAND USE AND LAND OWNERSHIP

Thailand is well endowed with cultivable land covering about 65% of the land area (Mingsarn et al. 1995). This includes:

13.5 million ha suitable for paddy,

10.8 million ha suitable for upland crops, and

2.6 million ha suitable for perennial crops.

Forests occupy about 11.6 million ha, or about 23% of the total land area (FAO 1997). The general trend over the past few decades has been that the area of agricultural land has expanded at the expense of the forest. Table 1 shows the distribution of land uses by different regions in the country. It is evident that all regions in the country have reasonable areas of both agricultural land and forests, with the north being the most heavily forested. It should be noted that different sources give different estimates of areas under various types of land use. These variations are caused partly by the use of different techniques and different standards for defining forest and non forest land. In addition, much of the aerial photo data base is quite old, so even if estimates are precise, they may not represent the present day reality. However, they give useful comparative data.

Table 1. Land use by regions in 1991

LAND USE	AREA (000 ha)					%
	North	North-east	Central	South	Thailand	
Forest	9,392	2,624	3,232	2,384	17,632	34.4
Forest in good condition	7,712	-	-	-	-	-
Forest in need of improvement (degraded)	1,680	-	-	-	-	-
Non-forest	7,568	14,256	7,152	4,688	33,664	65.5
Tree crops	8	9.6	912	3,376	4464	8.7
Non-tree crops (incl paddy)	6,736	11,840	5,392	784	24768	48.3
Grassland/idle	0	64	32	16	112	0.2
Aqua-culture	0	0	96	32	128	0.2
Residential/urban land	32	32	160	48	274	0.5
Rangeland and scrubland	480	1,776	368	192	2816	5.5
Mines, wetland, waterways	240	448	192	240	1120	2.2
Total	16,960	16,880	10,384	7,072	51,296	100

Source: Forest statistics of Thailand and DLD 1990 land use maps.

During the past few decades farmers have been encouraged to move from subsistence agriculture to more market oriented cash crops, which has required an expansion of the agricultural land base. The government has also had a policy of leasing "degraded forest lands" to the private sector for the establishment of plantation crops such as oil palms, eucalypts and for large scale shrimp farming. Some of the resulting large agribusinesses forced people off their land so that they had to seek new farming land, which generally meant they were obliged to move into the forest and clear more land. These economic factors operating outside the forest sector have been major drivers of forest clearance. The northern region, which has traditionally been an area dominated by shifting cultivation, has witnessed a significant shift towards more sedentary agricultural practices, with an emphasis on cash crops (in some cases as a replacement for opium).

Despite relative land abundance, land ownership lacks clarity for many farmers. As many as a million farm households or a fifth of the total population, are technically squatters on forest reserves as their farms are located on lands belonging to the RFD (Siamwalla *et al.* 1993). Even outside the reserve area, at least 30 % of farmers have not been able to obtain sufficiently clear land titles to use their lands as collateral. The

implications of this lack of clarity of land ownership are two-fold. First, with such a large number of people occupying forest reserve land, the RFD has great difficulty in developing and implementing policies for sustainable forest and conservation management. Second, because farmers do not have guaranteed tenure and they can not use their land as collateral, they are unwilling or unable to make investments in the land or equipment. This in turn affects the potential to manage the land (both agricultural land and forest) productively. A further point is that the ambiguous situation has led to a rise in tension between farmers and the government in general and the RFD in particular. This adds to the difficulties in resolving the dilemma.

In 1993, 5.52 million ha of reserved forest land were passed to the Office of Land Reform for redistribution to farmers under the "Sor-Por-Kor 4-01" programme. However, distortions occurred in the process of land distribution and influential non farmers were able to acquire large areas of land. The resulting scandal had major political ramifications.

When protected areas were declared during the past 30 years, the people who resided within the boundaries became "illegal squatters", irrespective of their length of residence. This has caused considerable conflict. Forced resettlement has been attempted in many situations, but has not worked well. The people affected were not consulted during planning for resettlement, and the programmes largely failed. Productive forests outside the protected areas were cleared to make room for new settlements, but most of the resettled people returned to their old farms inside the newly created protected areas.

5. FORESTS IN THAILAND

5.1 General

The country has two main forest types, broadleaved closed canopy (evergreen) and broadleaved open canopy (deciduous) – see Table 2 for details of area covered by different forest types.

Broadleaved closed canopy forests cover some 36% of the total forested area. Small but important areas of bamboo, coniferous forests and mangroves also occur.

Broadleaved open canopy forests cover 54% of the forest area and include:

- Mixed deciduous forest with and without teak
- Dry dipterocarp forest, and
- Savannas

Table 2. Area and type of forest in Thailand (1990)

FOREST TYPE	AREA (000 ha)	% OF TOTAL FOREST AREA
Broadleaved closed forest	5,020	35.7
Bamboo	800	5.7
Coniferous	150	1.1
Mangrove	570	4.0
Broadleaved open canopy forest	7,530	53.5
Total	14,070	100.0

Source: Collins, *et al.* (1990)

5.2 Status of forests

The Office of Agriculture Economics reported that the forest cover of Thailand in 1910 was 35.9 million ha, or 70% of the land area. In the intervening decades the forest area has declined to the present 26% coverage.

Much of the loss has taken place since the 1960s, during which time the forest area has halved (Tables 3 and 4).

The biggest percent loss of forest was in the North-east Region with a reduction from 7.1 million ha in 1961 to 2.1 million ha in 1998. At the end of the 1960s, 70 % of the north of the country was covered with forest. However, by the 1990s, two thirds of the forested area above a thousand metres in elevation had been modified by shifting cultivation by ethnic Thai and hill tribe people. In addition, a large percentage of forest in the north had been heavily logged or burned and as a result has been converted to savanna woodlands and open grassland (SOURCE????).

An international meeting on mangrove ecology held in 1996 noted that Thailand was listed as number one among 10 countries where mangrove forests have been reduced to a critical level. At that time, only 160,000 ha of mangrove forest remained, 50% of the total area 30 years ago. Satellite photographs showed that in the Central region, mangrove forests were reduced from 312,000 ha in 1979 to only 53,000 ha in 1993. Cabinet passed a resolution in 1996 revoking concessions in the mangrove forest. However, it is not yet clear whether this decision will solve problems of mangrove destruction as they may be due in large part to illegal encroachment for prawn farming, resorts and other uses.

Table 3. Changes in forest cover in Thailand from 1961 to 1998.

YEAR	FOREST AREA	% of TOTAL LAND AREA
1961	27,363	53.3
1973	22,121	43.2
1976	19,842	38.7
1978	17,522	34.1
1982	15,622	30.5
1985	15,087	29.4
1988	14,380	28.0
1989	14,342	27.9
1990	14,111	27.5
1991	13,670	26.6
1993	13,552	26.0
1995	13,148	25.6
1998	13,038	25.4

Source: Charupatt (1998)

Table 4. Changes in forest area in Thailand between 1961 and 1998 for each region.

REGION	LAND AREA (000 ha)	FOREST AREA (000 ha)			
		1961		1998	
		Area (000ha)	%	Area	%
Northern	16,964	11,628	68.5	7,306	43.1
North-east	16,885	7,090	42.0	2,098	12.4
East	3,650	2,116	58.0	1,551	20.6

Central	6,740	3,566	52.9	1,605	23.8
South	7,072	2,963	41.9	1,213	17.1
Total	51,311	27,363	53.3	12,972	25.3

Source: Charupatt (1998)

Estimates from FAO (1997) indicate that between 1990 and 1995, 329,000 ha of forest were being lost each year. This equates to an annual rate of forest loss of 2.6%. Most of the remaining forests have been heavily logged and little attention has been paid to regeneration. Hammond (1997) reported that productive hardwood forests had been reduced from four million ha in 1980 to half a million ha in 1990.

The land cover in Thailand is divided into several categories. In the Conservation Zone (Zone C) it is estimated that about 898,000 ha are in need of rehabilitation, while in the forest reserves (Zone E) it is estimated that about 1,408,000 ha are in need of rehabilitation (S. Sukwong pers.com.). Thus, the total area with the immediate potential for rehabilitation is about 2,306,000 ha.

5.3 Administrative arrangements for forest management

The Royal Forest Department (RFD), within the Ministry of Agriculture and Cooperatives, has the mandate for forest management in all reserved forests. The Department consists of six divisions, seven offices and one unit at the central administration level, and 21 regional forest offices (centrally administered). At the provincial administration level, there are 76 provincial forest offices and more than 600 district forest offices. The central division consists of the Office of the Secretary, Financial Division, Personnel Division, Permission Division, Legal Affairs Division, Planning Division and Training Division, Regional Forest Office, Natural Resources Conservation Office, Information Office, Reforestation Office, Forest Research Office, Forest Protection Office and Internal Audit Unit.

RFD's legal mandate with respect to forest resources is comprehensive. It includes forest resources surveys, planning activities, enforcement of forest laws, issuance of permits and control of logging concessions, study and protection of watershed areas, study and promotion of forest products, determination of wildlife sanctuaries and recreation areas, planning forest plantation programmes, issuance of permits for use of land in forest reserve areas and the survey and allocation of land for forest villages.

In 1992, the National Reserved Forest was divided into three categories:

- i. Conservation Forest (14.08 million ha)
- ii. Economic Forest (8.32 million ha)
- iii. Agricultural land (1.42 million ha)

The creation of a special category of Conservation Forest was recognition of the changing emphasis the nation was giving to forest management objectives. Likewise, the allocation of agricultural land from the forest estate acknowledged the reality that much forest land had, in fact, been used for agricultural purposes for long periods (often many generations) and should be allocated to farmers.

In addition to the formal forest categories, there are reported to be 400 community forests in eight provinces (Chiang Mai, Chiang Rai, Lampang, Lamphun, Phayao, Mae Hong Song, Nan and Phrae) in upper northern Thailand covering about 304,000 ha (Anchalee 1995). The management arrangements for these community forests are locally negotiated and informal, and examples exist in both Conservation and Economic forests. They represent a tacit acknowledgment by the RFD of the legitimacy and effectiveness of community management of forests, even though there is no legislative backing or procedural system for this form of forest management.

5.4 Biodiversity conservation and forest management

Thailand lies at the crossroads of South East Asia and the Pacific, and thus, relative to the size of the country, has a particularly rich biodiversity derived from both mainland Asia and the Sundaic region to the south. There are suggestions that the country contains approximately six percent of all vascular plants in the world (McQuistan 1999). In response to the threats to this biological heritage, the RFD established the first protected area (Khao Yai) in 1960. Since then, expansion of the protected area system has continued and today, almost eight million ha (16% of the country's land area) is included in the protected area system. Thailand now has a substantial area of its forest included in a protected area system, with 54 wildlife sanctuaries, 86 national parks and 45 non-hunting areas. However, recent analyses suggest that substantial gaps in coverage still exist (A. Ingles, pers. com.) In addition, effective management of the reserves is problematic because of the pressure on the resources by various groups including forest dwellers (often considered to be "illegal encroachers") and illegal loggers.

Many people live inside reserve boundaries (and in some cases have done so for many generations). This technically puts them into the category of illegal encroachers, and they are subject to eviction. Consequently there are very tense relations between local people and RFD staff. Many development NGOs and local religious figures have taken up the cause of the local people and promoted the idea that protected areas are anti-people. In extreme cases whole villagers have been forcibly removed from protected areas by the military and resettled elsewhere. However, this action has been strongly resisted by the people directly affected and various supporters among the NGO and religious communities.

Little attention has been paid to the question of biodiversity conservation in land use categories outside protected areas, but this is becoming an increasingly important topic for both policy debate and practical consideration.

5.5 Causes and consequences of deforestation and forest degradation

Numerous factors that contribute to deforestation have already been discussed. Generally accepted causes of deforestation and forest degradation relate to population growth, extension of permanent and shifting cultivation, poorly planned and managed concessionaire logging and illegal logging. The Government has encouraged the commercialisation of the agricultural sector. This has brought substantial economic benefits, but it has been at the cost of forest cover. The RFD has attempted to contain this loss by curtailing forest encroachment, particularly by small holders. A major difficulty has been lack of policy and planning coordination between the various sectors. The forest sector has attempted to make and enforce regulations that apply to forest land (as is their mandate). Similarly, the agricultural sector encourages agricultural expansion and the move to cash cropping. However, much agricultural land is within forest reserves, so there are overlapping mandates and policies. The lack of effective coordination mechanisms has been a constraint to developing overall approaches to land use planning. In addition, rising demands for fuel wood, charcoal and other wood products have accelerated deforestation. It is difficult to separate the overall impact of legal and illegal logging from population growth and agricultural expansion. A key reason for the exploitation of forests in Thailand is that they have been a major source of foreign exchange and government revenue for many years. In many situations, the original destruction was carried out by people in middle to high socio-economic positions, living far from the forests, through direct cutting or by encouraging farmers to clear lands.

Rerkasem (1995) noted that there were both internal and external forces causing rapid changes in the mountainous areas of northern Thailand. These can be summarised as:

Internal factors

- Increased population
- Farmers felt the need to increase productivity and to improve the stability of their production

External factors (related to government policy)

- The effect of nationalisation and integration policy implemented by the Department of Local Administration
- Enforcement of forest and watershed conservation and afforestation schemes by the RFD
- Strict law enforcement on illicit opium cultivation by the ONCB
- Improved access and transportation.

Large scale logging, both legal and illegal, has contributed to degradation of the country's forests both directly and indirectly. In a direct sense, over-exploitation of forests has often left them in a condition which puts their

long term sustainable use in jeopardy. Indirectly, construction of access roads through forests has often provided access for the subsequent movement into the forest of people seeking new agricultural land. The RFD has had difficulty in exercising effective control over legal logging operations, and in curtailing illegal logging, even in national parks. In addition, little attention has been paid to regenerating the logged forests. Figure 1 shows the various factors that contribute to on-going forest degradation and loss.

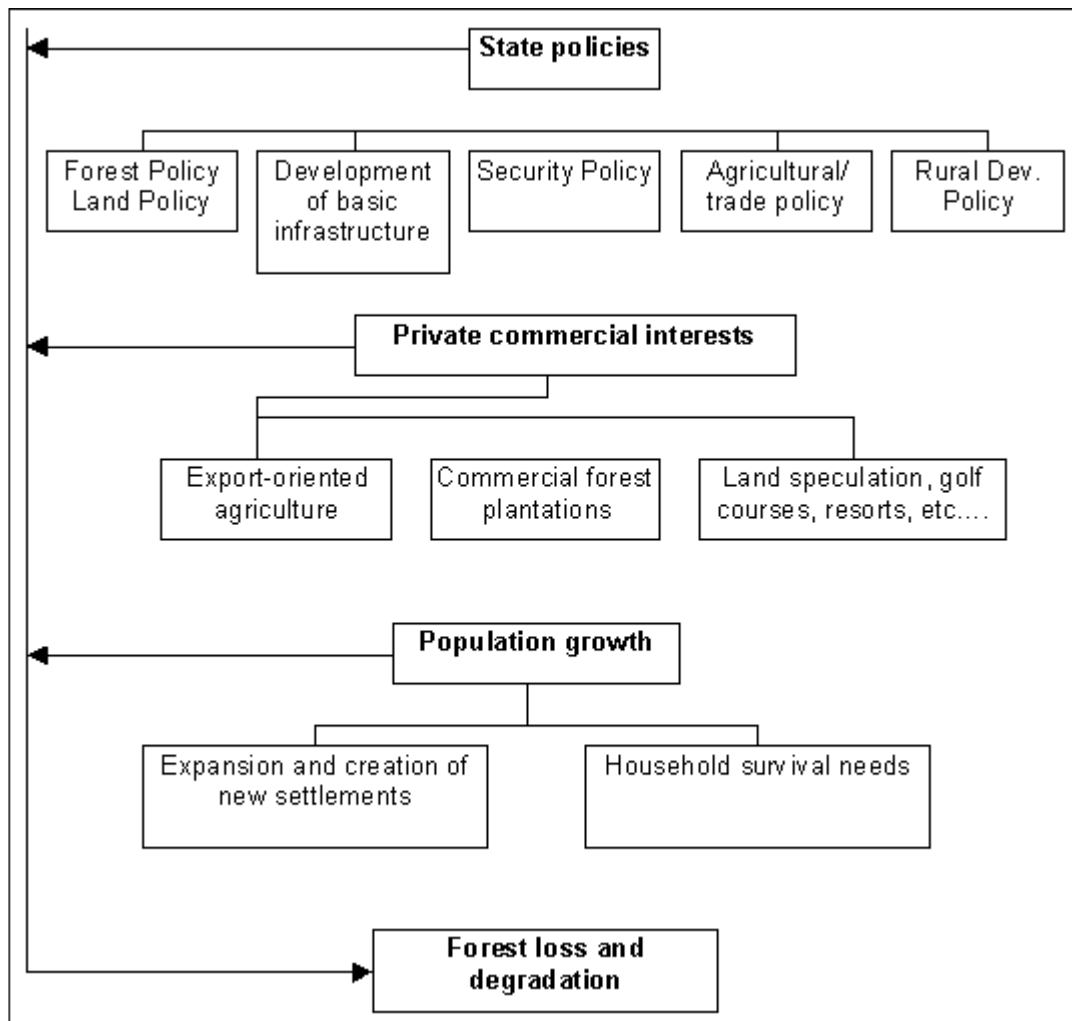
The most obvious consequence of forest loss and degradation is the loss of biodiversity. Thailand's rich reserves of biodiversity have been severely degraded, particularly during recent decades. However, the extent of the loss is not clear. Also of importance is the loss of environmental services, such as watershed functions and carbon sequestration. Quantification of these services is even more difficult to determine. There is also a widely held view that the loss of forest cover has impacted adversely on water supplies in Thailand's major river systems (Box 1). Even though the weight of scientific evidence does not support these views, they have become part of the local belief system.

Box 1. Reported adverse impact of deforestation on river flow

The Director General of the RFD, Mr. Plodprasop Suraswadi, recently stated that the level of the Chao Phraya River, the central region's lifeline, could fall drastically over the next seven years unless there is a quick end to deforestation in upstream watershed areas (The Nation 20-8-99). Before 1993, the volume of the river was recorded at 4.925 billion cubic meters. At present, it is only 2.391 billion cubic meters and could decrease by 96 % to some 180 million cubic meters by the year of 2006 if deforestation continues at its current rate. The widespread destruction of the watershed forest upstream from the Nan River that supplies the Chao Phraya River, could deplete that river's flow from 11 billion cubic meters at present to 6.685 billion cubic meters in the next seven years. At least 480,000 ha of the total 1,280,000 ha of forest have been affected by deforestation. Deforestation from the Yom River, another feeder of the Chao Phraya River, could also bring its current volume of 3.65 billion cubic meters down to 2.072 billion cubic meters by the year of 2006.

As well as the direct and indirect impacts of deforestation on the ecosystem, forest degradation also degrades the life of people living in and adjacent to forests. This gives added emphasis to the sentiments expressed in the proposed community forestry legislation that effectively managed community forests will contribute to the national interest by improving the quality of life of forest dwellers.

Figure 1. The interaction between key factors that contribute to forest loss and degradation. (Source: RFD 1993)



6. BRIEF HISTORY OF FORESTRY IN THAILAND

In summary, the history of Thai forestry can be divided into four stages:

- i. Mid-1890s to early 1930s. This is referred to as the stage of exploitation with the RFD being established in 1892 to regulate forest exploitation, particularly in the northern teak forests. During this time, commercial logging commenced.
- ii. 1930s to early 1960s. This stage is called the forest exploitation and management period when logging became an important economic activity. During this time, the Forest Industries Organisation (FIO) was established.
- iii. 1960s to 1980s. This is the stage when forest exploitation peaked and declined. During this period, export-oriented agriculture expanded rapidly, and national economic development gained momentum. Forest management was also introduced but achieved only limited success.
- iv. Late 1980s to the present. The forest declined to a point where the nation decided that the remaining forest should be kept for conservation rather than further exploitation.

Timber from Thailand, particularly teak, has long been a valuable export commodity on the world market. Records show that in 1927 there were 32 forest concessions in force, mainly operated by European companies, and that these yielded one and a half million teak trees (Tai-Usa 1992).

For more than a century Thai forestry operated in the form of a partnership aimed at producing commercial timber. The first partnership was between the feudal chiefs and logging concessionaires in the 1880s. However, it soon became evident that exploitation was not well controlled, and King Rama V established the Royal Forest Department in 1892 to exercise some control. This started the second partnership, between the State and logging concessionaires. The RFD was mandated to oversee timber harvesting and regularise tax revenues. Perhaps the most far reaching change was the vesting of all forest land in the King. During more recent times the Department has been involved in establishing a regulatory framework to define forest management procedures and practices, with the aim of ensuring that the forest was managed sustainably. However, in reality, the industry maintained the major control over forest operations, with the result that the

forests were rapidly over cut and degraded.

Forest conservation became a more explicit part of management in the 1960s with the establishment of the first National Park. This marked the beginning of an era where conservation and protective functions of the forests began to assume greater significance. This era culminated in some respects with the issuance of a Royal Decree in January 1989 terminating timber concessions in the uplands. This was in response to severe flooding and consequent loss of life that were presumed to be linked to industrial timber harvesting. Strong public pressure played a significant role in influencing these official actions, and demonstrated the increasingly powerful role being played by civil society in national resource management decision making.

A fundamental problem with both the partnerships described above, was that the large number of people who lived in and around the forests, and who depended on the forests for subsistence and other purposes, were largely excluded from participation. Local people were alienated from the process and were considered to be illegal encroachers. During the past 20 years the relationship between the RFD and the citizens of Thailand could be characterised as divisive - "...strong links to an authoritative establishment and arbitrary enforcement of laws have resulted in alienation of the populace and NGOs by RFD" (IUCN 1996: 15).

The Government has embarked on a series of initiatives to encourage protection of the remaining forests and to encourage private sector involvement in the development of plantations. Several groups have become involved in establishing fast growing species, generally eucalypts, to meet pulpwood demands. However, results to date seem to be qualified.

Natural forests have declined dramatically in both area and quality throughout this century, and it has become clear that other forms of partnership will be necessary if forest degradation is to be halted and reversed. At the present time there is vigorous debate within the bureaucracy and civil society about the nature of the partnership needed to ensure that Thailand's forests are managed in a sustainable and equitable fashion.

Mingsarn *et al.* (1995) reported that the perception of environmental degradation by many of the Thai conservation NGOs (generally urban based) is similar to that of the government and academics. Deforestation, water use, urban and industrial pollution are all priority issues for these NGOs as they are for government agencies. However, the two groups have different views on the possible causes of these problems and on the approaches needed to solve them. Conservation NGOs have focused on forest conservation as one of their major concerns. They also attempt to draw the government's attention to the negative impacts of infrastructure development such as dam construction on forest and watershed ecology as well as on the forced eviction of rural communities from forest reserves.

Meanwhile, development NGOs tend to emphasise community forestry as a potential answer to forest conservation problems and as an important tool to achieve sustainable land use and rural development (Mingsarn *et al.* 1995). Some NGOs have strongly resisted commercial plantation schemes while the government sees commercial plantations as part of the solution to address the shortage of industrial wood products caused by deforestation and forest degradation.

7. EVOLUTION OF FOREST POLICY

A series of Royal Orders, Decrees and Acts of Parliament have been used to define forest policy, with the focus changing as the priorities for forest management changed. The following time line gives an historical perspective of the Thai forestry legislation.

- 1874, a Royal order was issued to collect tax on the export of timber;
- 1897, a Royal Order was issued to regulate cutting in teak forests;
- 1913, the Forest Conservation Act was passed during the time of King Rama VI;
- 1938, the Forest Protection and Reservation Act was passed to categorise forest as protected forest or reserved forest;
- 1941, the Forest Act was passed, which provided the most comprehensive coverage of forest law. It has been amended several times, but remains the basis of forest law. It regulates forestry related activities on all lands that are not under private ownership and prohibits the felling of certain species of trees whether they are on private or public lands;
- 1964, the National Reserve Forest Act was passed with the intention of slowing deforestation by including forest into the National Forest Reserves system. A target was established to set aside 50% of the country's land area as forest;
- 1960, the Wildlife Protection and Preservation Act was passed;

- 1961, the National Park Act was passed;
- 1975, the Enhancement and Conservation of Environment Quality Act was passed;
- 1992, the Forest Plantation Act was passed.

There are other major pieces of legislation that impinge on the forest sector. The most important of these are:

- Land resources: The land code of 1954 is a major law governing the acquisition of land by private individuals, the acquisition of land title deeds, legal procedures regarding land rights, etc;
- The Agricultural Land Consolidation Act of 1974 is intended to provide land development for agricultural purposes through the consolidation of multiple parcels of land;
- The Agricultural Land Reform Act of 1975 is concerned with the allocation of state-held land (which the state had purchased) to agricultural workers or to those who intend to pursue agricultural occupation;
- The Land Development Act of 1983 authorises the committee on land development and the Department of Land Development to undertake any activity related to improving the efficiency or quality of land including soil and water conservation.

A National Forest Policy was drawn up and adopted by cabinet in 1985 in an attempt to unify forest policy in the country and to place forestry within the context of overall national development. The process of preparing the policy was thorough and detailed, with extensive public hearings and input. Reforestation and afforestation were seen as important initiatives to supply future wood needs. This part of the policy encouraged the private sector to become involved in tree planting projects for both domestic and export supply. Emphasis was placed on a partnership with the private sector. However, the private sector was interpreted to mean concessionaires and business people rather than rural people.

Although the forest policy was adopted by cabinet in 1985, it is widely considered that it did not give adequate attention to three crucial areas (REFERENCE). These are:

- Deforestation, with all its negative impacts, continued because its root causes were not addressed.
- The Kingdom's household and industrial wood demand was not met in a sustainable manner.
- The conflict over forest land use by many "illegal" occupants of state forest land remained unresolved, thereby accelerating land degradation and maintaining social tension.

Since 1985 forest policy has been overtaken by events that have dictated shifts in policy directions. The 1989 cancellation of logging concessions in natural forests was partly in response to the fact that forest administration had lost effective control over logging. This was also interpreted as a signal that forest conservation and protection were more important to the Kingdom than industrial wood production. The cancellation was made permanent in 1992 and state forest administration has moved from wood harvesting to conservation forestry. The 7th Five-Year Plan (1992–1996) proposed that 25% of the Kingdom should be protected as conservation forest (i.e. virtually all of the remaining forest).

In the early 1990s another major forest policy planning exercise was commenced. The Thai Forest Sector Master Plan was a wide ranging exercise but was largely driven by outside technical experts, and seems to have had little national ownership. In addition, the process and outcomes have been severely criticised by NGOs (both inside and outside the country) on three basic counts (IUCN 1996):

- The plan did not pay sufficient attention to broader sectoral issues;
- The plan was not sufficiently attuned to changing societal interests in forest management, particularly the shift from an emphasis on exploitation to one on conservation;
- The process used to develop policy positions was too technically driven and lacked effective participation of key stakeholders.

As a result of these shortcomings the plan has never been implemented.

To address deforestation problems, RFD has been working with different programmes in land settlement, agro-forestry, reforestation and land entitlements in reserve forest areas. These activities are supplemented by other site-specific projects in watershed conservation in highland agriculture, mini-watershed development, and village woodlot programmes. The main objectives of these programmes are to:

- i. encourage tree planting on large to medium scales;
- ii. increase forest plantation areas to compensate for the loss of national forest land;
- iii. organise forest and forest margin populations to include appropriate agricultural technology;
- iv. increase the domestic production for the improvement of the people's living condition.

The reforestation programme of RFD seeks to solve the problem of timber shortages, degradation of forest land, and help to address rural poverty (RFD 1984). The programme has the following main objectives:

- i. *Economic*. Planting forest for economic benefit to produce income in various ways such as from logs, fuel wood, posts or wood pulp.
- ii. *Conservation*. Planting forest for protection means that there is no direct economic return but instead watershed areas are protected and soil erosion is prevented.
- iii. *Social*. Planting forests can give direct and indirect social benefits especially in rural areas where people's lives are bound to the forest. This is based on the assumption that if people in or nearby the forest areas have secure work and income besides having land to farm, then the problems of forest destruction will be gradually reduced.

Responsibilities for reforestation within RFD are shared by a number of its divisions:

- *Silviculture Division*: responsible for teak plantation, planting of important non-teak hardwood species, establishment of nurseries.
- *National Forest Land Management Division*: responsible for planting degraded national forest reserves and establishing forest villages.
- *Watershed Management Division*: responsible for restoration of watershed areas, implementation of the village woodlot programme for the hill tribes and protecting natural forest in watershed areas (RFD 1987).

NGOs play an important role in Thai society, and many of them are actively involved in rehabilitation activities, often as part of a wider agenda. NGOs include people's organisations, temples and schools. The forestry related concerns of this sector are mainly:

- Social action involving community forestry
- Advocacy of local people's rights
- Conservation and improvement of the environment

The 8th NSED Five Year Plan (1996-2001) outlines proposed activities for the forest sector and is probably the best indicator of the current focus of policy. A summary of relevant sections covers:

Private and Land Reform Lands

- i. Encourage people's participation in reforestation & forest management
- ii. "Economic zone": support loans and crop insurance for "reforestation" with fast growing species on 800,000 ha
- iii. Support the private sector to develop forest plantations on 160,000 ha

Conservation Forest

- i. Continue and extend demarcation of boundaries
- ii. Buffer zones: promote management by community forestry
- iii. Provide loans for farmers in buffer zones to develop agroforestry

It is clear that participation of local communities is seen as a major method of implementing policy and of ensuring sustainability. There is also a strong emphasis on activities aimed at rehabilitating degraded forests. This focus is reinforced in the implementation guidelines for the 8th Plan (1996-2001), which emphasise:

- i. Protection of the remaining forest
- ii. Forest rehabilitation and promotion of reforestation
- iii. Administration and research development

The growing interest in community involvement in forest management led to the drafting of a Community Forestry Bill in 1996. However, there is considerable opposition from various sections of society to allowing communities to live in and use forests, and the Bill has so far failed to pass through Parliament.

The new Constitution of Thailand (1997) also places considerable emphasis on the rights of rural people in participating actively in the management and use of natural resources. Key clauses in the Constitution are:

Section 3: Rights and freedom of the Thai people

Clause No. 46: Communities shall have the right to preserve and restore the traditional culture, knowledge and local fine arts of their local community and of the nation, and participate in the management, maintenance, preservation and utilisation of natural resources and the environment in a balanced way as provided by law.

Clause No. 56: The human right to participate with the state and community for maintenance and utilisation of natural resources and biodiversity and protect and promote the quality of environment for better living and better quality of life. This right must be covered by law.

Section 5: Basic policy guideline for the state

Clause No. 79: 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 development principles.

These principles enshrined in the Constitution give the clearest indication to date of the direction that future resource management is likely to take, and may provide an added stimulus to passing a Community Forestry Bill.

8. EXPERIENCES IN REHABILITATION OF DEGRADED FOREST LAND

8.1 Approaches to forest rehabilitation

The first reforestation trial in Thailand was initiated in 1916 in Phrae Province by using direct seeding, although there seem to be no records of the results. Larger scale efforts date from the 1960s and have been concentrated on degraded forest land both inside and outside conservation forests. The major objective of activities outside conservation forests has been to produce an industrial crop for the wood processing industry. Activities inside conservation forests have aimed primarily at rehabilitating the protective function of the forest. Table 4 indicates the increasing emphasis on reforestation activities in the RFD after the 1960s.

Table 5. Area of land reforested during different periods of the National Social, Economic and Development Plan (NSED).

NSED	PERIOD	AREA PLANTED (ha)
Before NSED		8,754
1 st NSED	1961-66	12,409
2 nd NSED	1966-71	25,965
3 rd NSED	1971-76	57,788
4 th NSED	1976-81	305,691
5 th NSED	1981-86	210,072
Total		620,679

The emphasis in many of the reforestation programmes of RFD has been to create "protective" forest cover for watershed protection. However, because of the view of RFD staff about the legitimacy of people residing inside forest reserves, local people's needs are not considered in most of these programmes, regardless of how important the forest is to supporting local livelihoods. Consequently, many activities (particularly in the past) tended to be very top down in planning and implementation and excluded local people from any meaningful role. In addition, most reforestation projects use monocultures, particularly pines, in watershed areas, and these have limited value for local people. Eucalypts have also been promoted throughout the country for industrial plantations and in some cases as agro forestry crops. These also have limited value to local people.

Table 6. Major RFD plantation establishment programmes for

the 41 year period 1956 to 1997.

OBJECTIVE	AREA (ha)	DISTANCE (km)
Conservation forest with major activities:	1,148,807	
1. Planted in conservation forest such as	164,932	
1.1 Conservation forest /conservation mangrove forest	277,313	
1.2 Watershed area		
2. Planted under H.M. The King's celebration project	226,562	
Planted in economic forest	953,297	
1. Community forestry development	26,040	
1.1 Community forestry	288	
1.2 Buffer zone	5,536	
1.3 Multipurpose trees planted for home consumption	379,345	
2. Economic forest		
3. Project for adjustment of production system	149,958	
4. Project for replantation demonstration	5,584	
4.1 Reforestation demonstration	287,697	
4.2 Distribution		
5. Golden Jubilee Project	98,849	
5.1 Planted in government office and public land		733,774
5.2 planted on both side of the road		
Total	2,102,104	733,774

Source:???

In 1996, the Northern Farmer Network in the eight provinces of upper northern Thailand made plans to initiate forest rehabilitation and forest protection which they called the "50 million tree ordination". About 100 community forests have been selected as sites for planting 50 million trees under this programme, covering an area of 25,600 ha. It is too early to judge the effectiveness of this initiative.

In the 1993 change of government policy on reforestation, emphasis was directed towards supporting farmers to plant trees on their own land. This programme aimed to reduce the conflict with local people over land use rights, to reduce forest encroachment and to increase the production of economically useful trees. The programme provided cash incentives for up to five years for farmers to plant and protect trees. The total incentive amounted to 3,000 Baht/rai/5 years. However, uncertainties over the allocation of benefits from the forest limited the interest of farmers in the scheme. It seems to have been viewed by farmers as a wage labour scheme to plant trees for the government (REFERENCE).

In 1994 a major reforestation programme was activated in recognition of the Royal Golden Jubilee. Targets set for reforestation in each region were: North, 531,286 ha (65.4%); North east, 159,838 ha (19.7%); Central, 83,704 ha (10.30%) and South, 38,036 ha (4.7%). As with many other similar programmes, the major emphasis was directed to the Northern region.

Promising approaches have been developed by the Forest Restoration Research Unit at Chiang Mai University to rehabilitate degraded forest ecosystems by using strategic plantings of natural species (Elliott *et al.* 1998). Emphasis is given to careful matching of species to the site, producing robust seedlings and working in partnership with local communities. Examples are given of using low density "framework" plantings to minimise costs while maximising impact. The approach is useful in degraded watersheds and protected areas where increasing biodiversity and improving environmental services are important considerations.

8.2 Industrial plantations

In 1967, the private sector became involved in reforestation programmes, primarily to provide raw material for industry. Legislation was approved in January 1983 enabling the private sector to invest in forest plantations on degraded national forest reserves and private lands. This Act also allows the export of wood harvested from private plantations. Planting rent periods vary from 5 to 30 years. The area of plantation established by various public and private groups up to 1987 is shown in Table 7.

(IS THERE MORE RECENT DATA THAN THIS??)

Table 7. Area of plantations established by different public and private agencies up to 1987.

AGENCY	SPECIES PLANTED (ha)		TOTAL (ha)
	Teak	Others	
RFD	123,552	436,873	560,425
FIO	37,144	26,476	63,620
Thai Plywood Co. Ltd.	1,829	4,999	6,828
Other private sectors	0	40,080	40,080
Total	162,525	508,428	670,954

Source: ???

Much of the focus of the FIO activities was on tree planting associated with forest village projects, particularly in the northern region. Up to 1993, about 72,051 ha had been established. Two basic approaches are taken to reforestation within this programme:

- i. Support for farmers to grow trees themselves;
- ii. Tree planting around villages using fast growing species.

Table 8. Private sector targets for reforestation programmes.

Company	Year of establishment	Annual Planting Programme (ha.)	
		Annual	Target
Thai Plywood	1967	800	16,000
Forest Industry Organisation	1968	800-1,600	800,000
Siam Pulp & Paper	1987	Not fixed	Not fixed
Siam Forestry	1993	32,000	136,000
Forestry Asia	1994	800	24,000

Western Farm	1998	Nursery	Nursery
Asia Tech.	1994	16,000	48,000

Source:???

It is not clear how much of the targeted planting has been achieved.

Table 9. Priority species for private company plantation establishment

COMPANY	PRIORITY SPECIES		
	1 st	2 nd	3 rd
Thai Plywood	Teak	Eucalyptus	Acacia
Forest Industry Organisation	Teak	Eucalyptus	Rubber
Siam Pulp and Paper	Eucalyptus	-	-
Siam Forestry	Eucalyptus	-	-
Forestry Asia	Eucalyptus	Pterocarpus	Teak
Western Farm	Teak	Eucalyptus	-
Asia Tech	Eucalyptus	Acacia	Pine

Source:???

8.3 Forest rehabilitation in highland watershed areas

Watershed management became a priority for the RFD in the early 1950s. Public relations work was begun through print and broadcast media to inform people about the damage to soil and water resources caused by frequent fires. At about the same time rehabilitation of denuded watersheds was commenced in the northern region by means of reforestation. A number of RFD stations were established in the north and north east of the country for headwater protection and rehabilitation. Rehabilitation by reforestation continued on the assumption that only forests can provide ideal hydrological conditions. The watershed management activities were mainly agency-oriented and were focused on technical interventions.

In 1970, the RFD began to realise the difficulty of trying to stop deforestation and resource degradation without at the same time addressing economic development of the people living in the watersheds. Subsequent approaches focused on economic growth and improvement of living conditions of the farmers, improvement of the environment by seeking alternatives to slash-and-burn agriculture, fostering market oriented agriculture and reforestation. However, it was found that success in introducing alternative livelihood strategies was seriously constrained by an inability to provide farmers with secure land tenure.

From 1965 to 1996, the RFD through its Watershed Management Division rehabilitated 211,231 ha of forest primarily through reforestation activities, and mainly in the Northern region. The forest rehabilitated in each region is shown in Table 8.

Table 10. Area of forest rehabilitated by the Watershed Management Division between 1965 and 1996.

REGION	AREA (ha)
North	153,623

Central	18,028
North east	37,029
South	2,550
Total	211,230

Source:???

All highland communities are directly affected by national forest policy and its implementation. As all mountain lands essentially "belong" to the RFD, the highland villager's rights to use land can be revoked by a forestry officer at any time. At the village level, this policy translates into an enforcement of land use restrictions without redress to any social and economic assistance. An example of how the insecurity of tenure can have a devastating effect on people's lives comes from the experience of the Lahu village of Lo Pa Krai, north of Chiang Mai. Their village land was classified for economic development, and a large tract of this land in the area was awarded by the RFD in Bangkok to the Forestry Industry Organisation (FIO), a government owned company mandated to develop eucalypt plantations. This action essentially disenfranchised the local villagers from their traditional lands, and they were without redress (REFERENCE??).

However, the approach of the RFD to watershed management has evolved over the years as experience has been gained. Table 9 summarises the major policy and practical shifts that have taken place in the past four decades.

Table 11. Evolution of watershed management policy in Thailand

PERIOD	POLICY FOCUS	MAJOR ACTIVITIES
1976-1980	Watershed rehabilitation	Reforestation of abandon swidden area; relocations of hill tribe villages and improvement of quality of life.
1980-1990	Integrated watershed management	Land use planning, soil and water conservation measures, forest fire control and promotion of agricultural extension.
1990-1999	Participatory watershed management	Local peoples participation, village committee, watershed network, rules and regulations.
2000-	Watersheds for the people	

Source:???

8.4 Local experiences in forest rehabilitation

The experience of most small farmers in government or company sponsored reforestation activities is confined largely to the use of eucalypts, and the majority believes that eucalypts have negative environmental impacts. These include competition with other crops, reduction in soil moisture and lowering of water tables in the vicinity of eucalypt plantations. However, these farmers feel that land used for eucalypt planting can still be utilised for other crops after the stumps are removed. However, they do not think that eucalypts will help to improve the soil, climate and water conditions. They tend to see the adverse effect of eucalypts and therefore, they want the government to promote other tree species in reforestation projects. Local people perceive eucalypts as having economic benefits rather than ecological ones and complain that such economic benefits tend to go to companies and more wealthy farmers rather than to them. Appendix 2 shows the results of a questionnaire survey of small farmers on their perceptions of the economic and environmental impacts the effects of eucalypt plantations.

In one district in north eastern Thailand near the border with Cambodia, the local people's struggle against

eucalypts has become a symbol of what can be achieved when people in the community work together for their rights. For almost 10 years, the villagers of Nong Yak and neighbouring communities in Surin province, have engaged in a struggle to reclaim their land from eucalypts. This culminated two years ago, when the local people began cutting down and uprooting the eucalypts on their land. Not only have they regained the rights to manage their land following a cabinet resolution, but they have also received compensation from the government, and have established community managed natural forest regeneration (REFERENCE???)

There are numerous examples of local communities developing and applying institutional arrangements to govern access and use of forests in the immediate vicinity of their villages. Derno and Warner (1994) report on an Akha village in Chiang Rai Province. The village was located in an area of degraded forest as it was on a major migration path from Burma. Resource degradation reached the stage of causing severe problems to the villagers. Firewood was in short supply and other forest products were not available. About 20 years ago the villagers instituted a set of rules and regulations to control access and use rights aimed at regenerating the natural forest while at the same time allowing controlled use of the resource. In the intervening period the forest has expanded from almost nothing to about 400 ha. A similar example in a different setting is given by Limchoowong and Pansri (1994).

8.5 Results of rehabilitation activities

Reforestation has aimed to increase the forest area by involving both the private and public sectors. However, the overall impact of reforestation over the last 80 years has been small, with only about 480,000 ha of new forest established across the whole country (*TONGPAN ET AL.* 1990). This contrasts with a deforested area of about 12.8 million ha and an annual rate of forest loss of more than 160,000 ha.

FAO (1988) noted that during the decade of the 1980s, the total area reforested was substantially less than that deforested in a single year. In 1984, only one percent of the land base had been replanted, and in 1985 only 10 % of the annual rate of natural forest destruction was being replanted (Sriburi 1987). As is the case in many countries, most reforestation programmes in Thailand are created to meet the future supplies of industry rather than the needs of rural people (Hurst 1987; Westoby 1989) and in some situations this has created tension between rural people and government officials.

Even the recent programme to encourage reforestation of some 0.8 million ha in honour of H.M. The King's Golden Jubilee has achieved only qualified success. Charabongse (1995) noted that targets set for the first two years of the initial three year programme were not achieved, with only about 11% of the target figure having been reached at well over the half-way point. As a result the programme is now being extended to 2002 (McQuistan 1999). Technical problems associated with the lack of achievement were considered to be:

- i. Seedlings for planting were not strong enough;
- ii. There was a lack of budget for continuous seedling production.

This result is consistent with the results of other rehabilitation programmes. In addition, it has been noted that the official figures given for plantation establishment targets are often much greater than the area actually planted. Official assessments have indicated that the survival rate for those trees that are planted is generally very low (as reported by the Office of State Budget and Auditing). This office evaluated 18 reforested sites in the northern region and 9 in the southern region. Three major problems were found to be:

- i. The RFD received only 63% of the budget they had requested.
- ii. The survival rate of tree seedlings in the field was only 44-61%. This was mainly due to high competition from weeds.
- iii. Forest areas that were established were encroached or damaged by local people and by forest fire.

It is evident that the area of effective forest that finally results from reforestation activities is likely to be only a small fraction of the area originally targeted for planting. It is equally clear that a critical assessment is needed of the various factors that contribute to such poor performance in order to draw lessons from the experiences of the past and improve practices in the future. This topic is taken up in later sections of this paper.

9. LESSONS LEARNED

Sabrungreong (DATE?) reported that the expected increase in forest area by government reforestation efforts

had achieved only limited success, primarily because of conflict over tenure. It seems clear that unless this conflict is resolved, then even the land already planted with trees by the government is likely to be encroached by farmers who will ultimately destroy the trees. Farmers perceive that they will receive little or no benefit from the tree planting activities, so they have little vested interest in affording the planted trees any protection. Indeed, their short term interests may well be served better if the trees were not there. To resolve this problem, it is vital to encourage local people to participate fully in planning and implementation of any rehabilitation programmes and to ensure that they are major beneficiaries of the activities.

For more than 10 years, the Watershed Management Division of RFD has gained experience in working with projects focusing on local participation in natural resource management and conservation. Chief among the constraints to achieving success have been:

- The rights of local people to use natural resources,
- The legitimacy of local institutions to make decisions about natural resources use, and
- The weakness of local institutions and organisations (REFERENCE??).

Chantanaparb and Wood (1986) summarised the problems and constraints encountered by the RFD in reforestation activities as:

- i. Government policy. The policy for natural resource management, especially land resources conveys a mixed image.
- ii. Budget. The establishment of plantations and their subsequent management require a large budget and a lot of time to get a return on the money, so it is necessary to have a budget commitment on a long-term basis rather than the traditional one-year basis.
- iii. Problems of current regulations. The procedure and process for planting is quite cumbersome. In many cases the delay in processing makes it impossible to carry out planting in the correct season.
- iv. Technical problems. These include the lack of know-how in planting some species, insufficient seeds for the planting season and lack of knowledge in producing seedling.
- v. Planting site. The sites normally available tend to have poor soil fertility, existing weed problems and "illegal" forest dwellers (the last is the most critical problem).
- vi. Hiring labour. This is an increasing problem in some areas because many people have their own occupations that pay better than getting daily wages from working in plantations.
- vii. Marketing problems. The private sector has little confidence that investing in forest plantations will provide a sound financial return.

Experience suggests that relying on hiring local labour for planting trees is not conducive to sustainable outcomes, as there is little sense of ownership of the forest by the local people. Consequently, they have little vested interest in carrying out long term protection of newly established plantations.

Based on past experiences, recommendations have been made aimed at improving watershed management interventions in the future (Apichart 1999). These are that:

- RFD should acknowledge and endorse traditional rules and regulations framed by local communities to conserve watersheds in their village areas.
- Forest and watershed management approaches should emphasise working in partnership with local people and third parties.
- Activities should focus on strengthening the capacity of local communities to manage their own natural resources.
- RFD officers should change their attitude towards forest conservation and try to encourage the active participation of local people.

From a broader policy perspective, the government believes that there are six major issues that need to be addressed (REFERENCE):

- i. Based on the 8th NSEDP, focus on people centred development, search for and encourage the use of local wisdom.
- ii. Focus on natural resources and environmental rehabilitation in both rural and urban areas with the participation of local people (including the promotion of community forestry).
- iii. Improve the administrative system by emphasising decentralisation of authority for resource management to local organisations.
- iv. Focus forestry operations on three areas:
 - Forest protection and conservation with emphasis on people's participation in watershed areas.

- Reforestation promotion, emphasising community and private management.
 - Administration and research, emphasising agro-forestry with people's participation.
- i. Develop a long-term plan for budgeting to support communities to develop community forests.
 - ii. Improvement or revision of necessary forest land, must be decreasing to match with TAO's decrees.
(THIS IS NOT CLEAR)

10. VISION FOR THE FUTURE

There is a strong interest in Thailand, both within the bureaucracy and civil society, to conserve a significant area of forest for future generations. The purpose is to ensure the provision of environmental services (particularly watershed protection) and biodiversity conservation. During the past several decades the area proposed for retention as forest has been steadily revised downwards from 40% in 1985 to 25% today. The downward revision has been in line with the steady decline in the total forest cover. The continuation of the ban on logging in natural forests indicates an on-going interest in the conservation of forest environmental goods and services over economic benefits from commercial logging. It is also clear that there is a strong desire to rehabilitate the large areas of degraded forest land that have resulted from various practices of the past.

An analysis of the various policy documents presented earlier in this paper indicates a recognition that the RFD, acting alone, cannot exercise sufficient control over forest land to enable it to manage the remnant forests sustainably, or to rehabilitate degraded forest lands. The Director General of the RFD, Mr Plodprasop Suraswedi, is reported as saying that the challenge is to: "...find a way to mingle the two (people and forests) with minimum impact (on the forest)" (Bangkok Post, 7-6-99).

Arising from the previous analyses, the key elements of a vision for the future of Thailand's forests seem to be:

- A stable area of forest of about 25% of the land area, mostly reserved within a protected area system.
- Degraded areas of forest rehabilitated to provide commercial and environmental goods and services.
- Community forests under the control of local communities to provide a wide range of economic and environmental goods and services.
- Industrial wood supplies being derived from industrial plantations, community and farm forests, managed to optimise economic goods and environmental services.
- Management of forest reserves being carried out in partnership with local communities, with an equitable sharing of costs and benefits.
- Integration of trees into farming systems throughout the country so that agroforestry can contribute to the provision of both economic and environmental goods and services.
- Integration of trees into urban areas to provide improved environmental benefits for urban dwellers.

A consequence of the vision postulated above is a substantial change in the role of the RFD. In simple terms, this could entail a change from a past role that emphasised policing and licensing functions to a future one that focuses on the facilitation of on-ground forest management in partnership with others.

11. CONCLUSIONS

A variety of direct and indirect factors has contributed to the massive degradation of Thailand's forests throughout this century. According to Anchalee (1995) the most important of the direct factors are:

- i. Encroachment into reserved forest for permanent cultivation;
- ii. Poorly controlled concessionaire logging operations;
- iii. Shifting cultivation;
- iv. Harvesting of wood fuel;
- v. Illegal logging of teak and other forests;
- vi. Infrastructure development.

A rapidly expanding population and rapid economic development have also contributed to the difficulties of containing forest destruction and degradation and carrying out effective rehabilitation.

One of the major indirect (underlying) factors contributing to forest destruction is the lack of interest by rural

communities in forest conservation and sustainable use. The reason for this seems to be linked to the lack of security of tenure over land, not necessarily "ownership" *per se*, but security of access and use rights.

The implicit assumption of past policy is that biodiversity conservation is being addressed by setting aside a network of different categories of protected areas. As a result, little attention is being paid to addressing biodiversity conservation in other land use categories. However, as deforestation and forest degradation continue to erode the biodiversity base of the country, it is becoming increasingly clear that the protected area system alone will not be sufficient to ensure that biodiversity is adequately conserved. Analyses in many countries have indicated that, while a well designed network of protected areas provides the essential backbone of conservation needs, attention should also be paid to a conservation agenda outside the protected areas (Kanowski *et al.* 1999). The introduction of biodiversity conservation as an element of rehabilitation activities is one way of doing this.

An inevitable conclusion of the material presented in this paper is that, without a fundamental revision of the relationship between the government and civil society (particularly rural communities) there will be a continuing decline in forest area and condition. This conclusion has been stated in various ways by many observers, and the policy evolution in the Watershed Conservation Division of the RFD suggests that there are signs that some parts of the Department are also moving in this direction.

The growing interest in legislating for recognition of community forests is another sign of the move towards greater devolution of forest management from central agency domination to more diverse forms. This move is underpinned by the new Constitution which makes clear statements regarding the rights of citizens to conserve and sustainably manage natural resources. The challenge for the future is for the bureaucracy to adapt to changing circumstances so that it can become a more effective partner and contribute to achieving a stable, productive and protective forest cover.

Perhaps the most fitting final comment for this paper is a quote from an address made by a former Prime Minister of Thailand and reported in the Bangkok Post in early November 1999. He is reported as saying that the needs of society will be best served in the long run by "...dynamic (government) agencies constantly reacting to the challenges of the future and not mired in the old ways of doing things. We need to try new programmes, listen to new voices, accept and plan for uncertainty. We need, in short, to invest in agency renewal that will look at different ways of doing things. ...the scale and pace of change will need to be far greater than anything that has ever been considered before. ... (Fundamental differences and concerns) must be brought out and discussed freely in public sessions...increased public involvement in decision-making is a right of all Thai people. The challenge now is to find appropriate ways of re-weaving the people into the fabric of societal decision-making". (Bangkok Post 4-11-99).

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13. APPENDICES

13.1 Appendix 1. Annual rate of forest loss in Thailand between 1961 and 1998

PERIOD	ANNUAL FOREST LOSS (ha)
1961-1972	435,530
1972-1975	776,933
1975-1977	1,159,649
1977-1981	465,600
1981-1984	191,128
1984-1987	235,422
1987-1988	38,649
1988-1990	335,931
1990-1992	157,225
1992-1994	103,424
1994-1998	58,759
1961-1998(37 years)	388,935

Source: Charupatt (1998)

13.2 Appendix 2. Perception of local people to eucalypt plantations, Chachoengsao Province, 1990

QUESTION	Eucalypt planters		Non-planters	
	Number	%	Number	%
1. Do eucalypts trees reduce the yield of adjacent crops?				
Yes	34	85	53	84
No	4	10	6	9
Do not know	2	5	4	6
Reason for answering yes:				
- They compete for water	20	59	35	66
- They compete for nutrient	4	12	6	11
- Do not know	10	29	12	23
2. Do you think that eucalypt trees use much more water than other crops?				
Yes	39	97	58	92
No	1	2	1	2
Do not know	-	-	4	6
3. Do you think that land will be usable for the planting of other crops after the eucalypt trees are removed?				
Yes	28	70.0	37	60.7

No	4	10.0	10	16.4
Do not know	8	20	14	23

Source: TDRI survey data