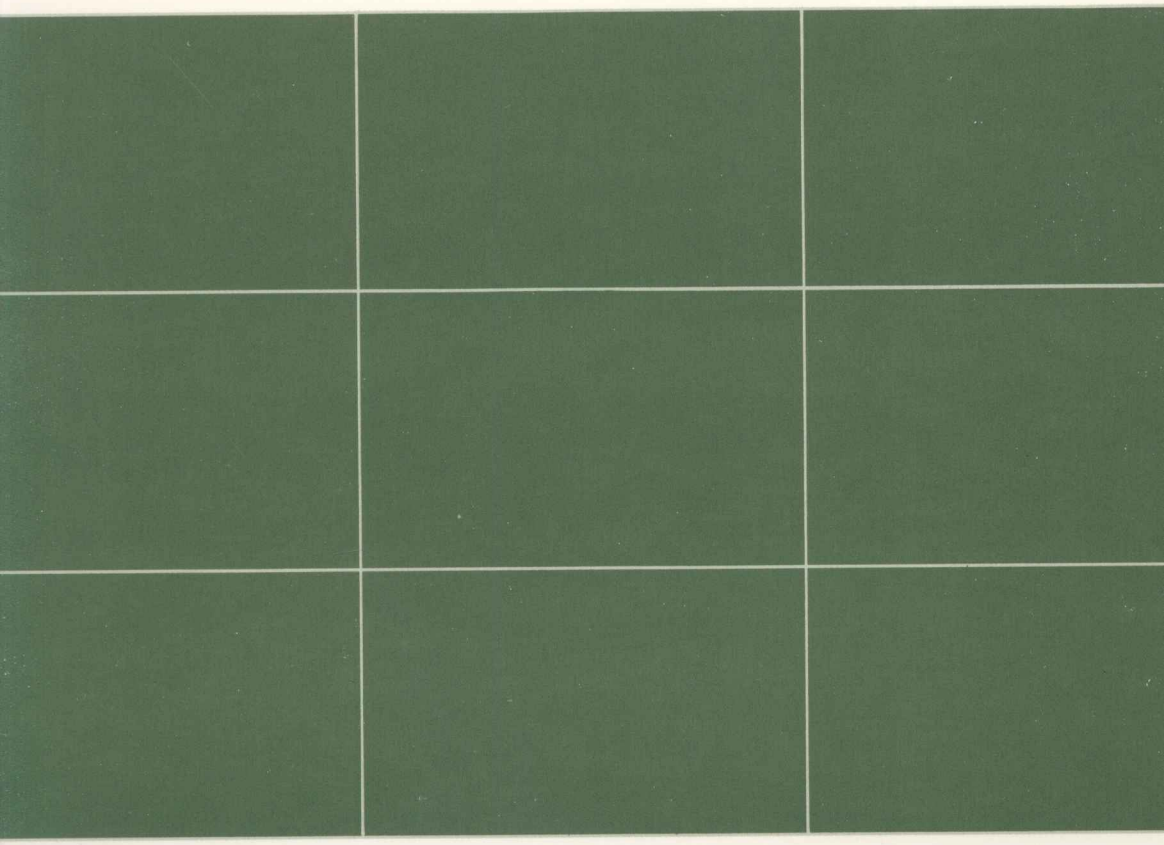
A Land Policy Study

Edited by

Tongroj Onchan



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The Institute was created under the initiative of the National Economic and Social Development Board (NESDB) and was founded in 1984 when Prime Ministers Prem Tinsulanonda of Thailand and Pierre Elliott Trudeau of Canada presided at the signing of the CIDA aid agreement, which provided the necessary start-up funding for the Institute.

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Foreword

This study marks one of the first attempts to provide a comprehensive analysis and review of land policy issues in Thailand. In an agriculturally-based country, conservation of land and forests is both fundamental and vital for sustaining economic and social development. Acknowledging the importance of this issue, the policy recommendations arising from this research were adopted by the Cabinet on September 1, 1987, in order to be integrated into national policy strategies.

This research is part of a series of studies focusing on the management of Thailand's natural resources that have been undertaken by the Thailand Development Research Institute. Other related studies cover the potential of economic forests and an evaluation of land reform policy. By publishing and disseminating reliable reports based on these studies, TDRI's Natural Resources and Environment Program (NRE) hopes to generate wide discussion at both the national and international levels regarding appropriate policies for managing Thailand's rich—yet limited—natural resources.

Dhira Phantumvanit
Director
Natural Resources and Environment Program
Thailand Development Research Institute
March, 1990

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Executive Summary

A Land Policy Study

During the past two decades, the multiple problems surrounding the issue of land—the availability, use, classification and development of land; the problems of tenure and titling; and the administration of and available information about land—have reached critical proportions in Thailand. If left unsolved, these problems will lead to serious political, economic and social disruptions. Thus, the country urgently requires a coherent national land policy.

Diverse uses of land are carried out to meet certain economic, social or political objectives, and it is not possible to formulate a single land policy that would encompass all of these objectives. Thus, a land policy should be divided into four distinct (though frequently interrelated) categories, which establish policies for attaining economic and social objectives, as well as objectives related to conservation and national security.

LAND POLICY FOR ECONOMIC BENEFITS

For economic purposes, land can be divided into areas outside forests and areas within forests. Relevant policies for land outside forest areas include: land rights (such as title deeds to landholders); land taxes (such as the introduction of a progressive land tax); agricultural zoning; farm development strategies; soil conservation; and urban land use.

Regarding the country's forests, 40 percent of the country's total land area must be reserved as forest land, with 25 percent of this reserved area designated as commercial forest land. The private sector should be encouraged to participate in the development of commercial forests. Other issues include the degazettement of national forest areas that have evolved into large communities, and the development of coastal forest areas through zoning.

LAND POLICY FOR SOCIAL BENEFITS

At least 2.5 million families (representing about 12 million people) have land problems associated with their livelihood. They include 1 million families living in forest reserve areas, 1 million tenant families, and 500,000 landless families. A number of government agencies—The Agricultural Land Reform Office, the Public Welfare Department, the Cooperatives Promotion Department,

and the Royal Forestry Department—are involved in distributing land to these people. However, the distribution process has achieved limited success and should be accelerated. Moreover, the agencies responsible for distribution need to coordinate their efforts regarding issues such as land rights, infrastructure development, and farm size.

LAND POLICY FOR THE PURPOSE OF CONSERVATION

Forestry policy has determined that 15 percent of the country's total land area (about 48 million rai) must be allocated for conserved forest land. Headwater areas must be strictly protected, and reforestation should be accelerated. Additionally, a master plan for developing national park areas (about 16 million rai) should be prepared.

LAND POLICY FOR THE PURPOSE OF NATIONAL SECURITY

Part of the land area should be reserved for military activities and for settlements along the border that support national security.

We have established these four land policy designations according to each policy's primary objectives. However, this policy classification does not imply that each policy's objectives will benefit only one specific area. Its purpose is to gain a clear understanding of each policy area, particularly regarding its intended or specified objectives.

We have separately analyzed the hilltribe policy, since this issue cannot be classified under a single policy objective.

PROPOSED STRATEGY

Three strategies are proposed for meeting the stated objectives:

1. Improving Land Classification
2. Establishing a Land Information System
3. Restructuring Land Administration

The third strategy would require an intensive restructure of the existing system of land administration in Thailand. Recommendations include establishing a Bureau of Land Reform and a Ministry of Natural Resources.

บทคัดย่อ

ปัญหาที่ดิน

ในช่วงสองทศวรรษที่ผ่านมานี้ ปัญหาที่ดินที่สำคัญนั้นรวมถึงอุปทานหรือปริมาณที่ดินที่จะนำมาใช้ได้มีจำกัด การใช้ที่ดินยังไม่เหมาะสม สิ้นเปลือง และเสื่อมคุณภาพลงเรื่อย ๆ การจำแนกและการพัฒนาที่ดิน รวมทั้งการอนุรักษ์ดินและน้ำที่ยังจำกัดและขาดประสิทธิผล การถือครองที่ดินมีความรุนแรง โดยเฉพาะการเช่า การไร้ที่ทำกินและขนาดฟาร์มเล็ก รวมทั้งการขาดเอกสารกรรมสิทธิ์ที่ดิน ข้อมูลที่ดินกระจัดกระจายและขาดระบบ ทำให้เกิดความสับสนและยุ่งยากต่อการใช้และการบริหารงานที่ดินยังขาดประสิทธิภาพ ปัญหาเหล่านี้มีแนวโน้มที่รุนแรงมากขึ้น อันจะมีผลกระทบเป็นอย่างมากต่อการพัฒนาและความมั่นคงทางเศรษฐกิจ สังคม และการเมือง

นโยบายที่ดิน

เนื่องจากปัญหาด้านที่ดินค่อนข้างจะยุ่งยากสับสน และเกี่ยวพันกับหลายสิ่งหลายอย่าง การใช้ที่ดินอาจจะเป็นไปเพื่อวัตถุประสงค์อย่างหนึ่งหรือหลายอย่างได้ วัตถุประสงค์ดังกล่าวอาจจะเป็นได้ทั้งในด้านเศรษฐกิจ สังคม และการเมือง ดังนั้น การกำหนดนโยบายที่ดินอย่างหนึ่งเพื่อให้ได้มาซึ่งวัตถุประสงค์หลายอย่างนั้น ย่อมไม่สามารถจะทำได้อย่างมีประสิทธิภาพ จึงน่าจะแบ่งนโยบายออกโดยอาศัยวัตถุประสงค์เป็นหลัก ซึ่งสามารถแบ่งนโยบายที่ดินของประเทศออกได้เป็น 4 ประเภท ดังนี้

1. นโยบายที่ดินเพื่อเศรษฐกิจ สำหรับนโยบายประเภทนี้ เราอาจแบ่งที่ดินออกเป็น 2 ประเภท คือ ที่ดินที่เอกชนหรือที่ดินนอกเขตป่าไม้ และที่ดินในเขตป่าไม้ซึ่งเป็นที่ดินของรัฐ นโยบายเกี่ยวกับที่ดินเอกชนนั้น จะรวมถึงนโยบายเร่งรัดการออกเอกสารสิทธิ์ให้แก่เจ้าของที่ดิน นโยบายภาษีที่ดิน (การใช้ที่ดินแบบก้าวหน้า) นโยบายการกำหนดเขตเกษตร (เพื่อให้การใช้ที่ดินเหมาะสมยิ่งขึ้น) การกำหนดกลยุทธ์การพัฒนาเกษตรให้เป็นไปตามความเหมาะสมของพื้นที่ รวมทั้งการกำหนดบทบาทของภาคเอกชนและภาครัฐบาล การอนุรักษ์ดินและน้ำโดยใช้มาตรการที่เหมาะสม และนโยบายการใช้ที่ดินในเขตเมือง ส่วนที่ดินป่าไม้นั้น นโยบายป่าไม้แห่งชาติได้กำหนดไว้แล้วว่าจะต้องมีพื้นที่ป่าไม้ร้อยละ 40 ของเนื้อที่ทั้งหมดของประเทศ ในจำนวนดังกล่าวจะเป็นพื้นที่ป่าไม้เศรษฐกิจถึงร้อยละ 25 ซึ่งน่าจะเน้นบทบาทของเอกชนและกำหนดให้แน่ชัดถึงเขตป่าดังกล่าว นอกจากนั้น นโยบายอื่น ๆ จะรวมถึงการเพิกถอนพื้นที่ป่าสงวนแห่งชาติซึ่งได้กลายเป็นชุมชนแล้ว และนโยบายป่าชายเลนซึ่งควรจะกำหนดพื้นที่เพื่อการต่าง ๆ ที่ชัดเจนไว้ (เช่น เขตสงวน เขตอนุรักษ์ และเขตเศรษฐกิจ เป็นต้น)

2. นโยบายที่ดินเพื่อสังคม จากข้อมูลที่มีอยู่ชี้ว่าประชากร 2.5 ล้านครอบครัว มีปัญหาเกี่ยวกับที่ดินทำกิน ซึ่งรวมถึงผู้บุกรุกป่าสงวนแห่งชาติ (1 ล้านครอบครัว) ผู้เช่าที่ดิน (1 ล้านครอบครัว) และผู้ที่ไร้ที่ทำกินและเกือบไร้ที่ทำกิน (0.5 ล้านครอบครัว) นโยบายการจัดที่ดินทำกินจึงต้องเร่งรัดแก้ปัญหาดังกล่าว เพื่อให้ได้ผลยิ่งขึ้น เพราะเท่าที่ดำเนินการมาโดยหลายหน่วยงาน (เช่น สำนักงานการปฏิรูปที่ดินเพื่อเกษตรกรรม กรมประชาสงเคราะห์ และกรมส่งเสริมสหกรณ์) นั้น ยังทำได้จำกัด ในการจัดที่ดินโดยหลายหน่วยงานเหล่านี้ จำเป็นที่จะต้องให้มีรูปแบบที่ใกล้เคียงกัน ทั้งในด้านกรรมสิทธิ์ที่ดิน และการพัฒนาด้านวิสาหกิจพื้นฐานต่าง ๆ

3. นโยบายที่ดินเพื่อการอนุรักษ์ นโยบายป่าไม้แห่งชาติกำหนดไว้ว่า ร้อยละ 15 ของพื้นที่ป่าไม้ทั้งหมด (ร้อยละ 40) นั้น จะเป็นป่าอนุรักษ์ซึ่งหมายถึงเนื้อที่ 48 ล้านไร่ การพัฒนาต้นน้ำลำธารจึงจำเป็นจะต้องดำเนินการอย่างจริงจัง โดยเฉพาะด้านการปลูกป่า ซึ่งเท่าที่ผ่านมายังทำได้จำกัดมาก เพื่อการดำเนินงานที่ได้ผลยิ่งขึ้นในอนาคต สมควรที่จะจัดทำแผนแม่บทเพื่อพัฒนาพื้นที่อุทยานแห่งชาติ (16 ล้านไร่) ด้วย

4. นโยบายที่ดินเพื่อความมั่นคงแห่งชาติ เนื้อที่ส่วนหนึ่งของประเทศจะต้องกันไว้เพื่อกิจกรรมต่าง ๆ อันเกี่ยวข้องกับความมั่นคงของชาติ เช่น เพื่อการทหารและเพื่อการจัดตั้งนิคมในแถบชายแดน เป็นต้น

นโยบายอย่างหนึ่งซึ่งควรจะกำหนดไว้เป็นการเฉพาะ ก็คือ นโยบายชาวเขา ปัญหาของชาวเขาเกี่ยวพันกับหลายด้าน จึงไม่สามารถจัดไว้ในวัตถุประสงค์หนึ่งวัตถุประสงค์ใดอย่างชัดเจนได้ นโยบายนี้จะต้องกำหนดขึ้นอย่างระมัดระวัง นโยบายกว้าง ๆ ก็คือ การแบ่งชาวเขาออกเป็น 2 ประเภท ตามลักษณะการตั้งถิ่นฐานและการทำการเกษตรกลุ่มหนึ่งซึ่งอยู่เป็นที่อย่างถาวร น่าจะจัดที่ดินและชุมชนในที่เดิม โดยรัฐบาลอาจจะให้มีกิจกรรมการปลูกป่าและรักษาป่าด้วย ส่วนอีกกลุ่มหนึ่งที่ทำไร่เลื่อนลอยและอยู่ไม่เป็นหลักแหล่ง ควรจะทำการเคลื่อนย้ายและจัดที่ดินทำกินให้เป็นการถาวร

กลยุทธ์

เพื่อให้การดำเนินการตามนโยบายต่าง ๆ ดังกล่าวเป็นไปอย่างได้ผลมีมาตรการ 3 อย่าง ซึ่งจะต้องดำเนินการ คือ

1. การปรับปรุงด้านการจำแนกประเภทที่ดิน
2. การจัดตั้งระบบข้อมูลที่ดิน
3. การปรับโครงสร้างระบบการบริหารที่ดิน

มาตรการที่ 3 นั้น เกี่ยวข้องกับการปรับโครงสร้างที่สำคัญ เพื่อให้ระบบการบริหารงานที่ดินมีประสิทธิผลดียิ่งขึ้น ข้อเสนอที่สำคัญก็คือ การจัดตั้งคณะกรรมการทรัพยากรธรรมชาติแห่งชาติ การจัดตั้งทบวงการปฏิรูปที่ดินและกระทรวงทรัพยากรธรรมชาติ ซึ่งน่าจะได้พิจารณาดำเนินการอย่างจริงจัง

Chapter 1

Introduction

BACKGROUND

A central question in the economic development of a country is how well a society can produce and distribute goods and services. In countries where agriculture is still the center of economic activity, problems of efficiency and equity in the agricultural sector probably constitute the most important areas for policy making and research. This is particularly the case for Thailand, where growth with equity has been the major policy objective.

The agricultural sector usually lags behind other economic sectors in developing countries because a number of factors lead to slow and unstable agricultural growth. While the interaction among these factors varies among countries, people's relationship with the land, its control and use is perhaps the most essential factor affecting the allocation of resources and the distribution of income. In developing countries, land represents the principal form of wealth and political power. In fact, land tenure systems reflect class structures and relations. In turn, these structures impinge directly on decisions about production and consequently affect growth and distribution.

The development of agriculture involves improved productivity which, in turn, rests on the use of new technologies—fertilizer, new varieties of seed, insecticides, and irrigation. These new technologies require appropriate and adequate support systems and policies, such as farm credit, extension services, and marketing. However, the potential benefits of improved farm support systems can be vitiated by defective land tenure systems that inhibit the adoption of new technologies. Theoretically, land tenure systems will affect production incentives, production techniques, capital formation and investment, and farm productivity (Onchan, 1976). Hence, if the land tenure system is not appropriate, it must be changed so that the specified objectives of economic and social development can be attained. A number of measures can be used. One of these—which is rather radical in terms of action—is land reform, now a common practice in developing countries.

In Thailand, it is expected that problems related to land will become increasingly acute, as it is generally recognized that the limits of the nation's land frontiers are now being approached and that land resources have become increasingly scarce. Further, the shortage of land for agriculture could pose a serious problem, since the labor force in agriculture has been increasing at a rather high rate (over 2 percent per year during the past two decades). Some problems are as follows:

Thailand's total land area comprises about 320 million rai. Of this, 136 million rai are reserved for national forest, while the cultivated area constitutes 152 million rai. Due to the relatively high rate of population growth over the last two decades and the investment in new upland crop production in the 1950s and 1960s, encroachment on national forest reserves has been widespread, covering a total area of 43 million rai. It is also believed that most of the 30 million rai of prereserve area has already been cleared by squatters; further, it is estimated that at least one million households have settled in forest reserves without proper title to the land they occupy and cultivate.

- Land ownership security outside of forest reserves is also a serious problem. Indeed, in 1985 only about 17 percent of the total private land had title deeds (N.S.4). This constitutes an important obstacle to farm investment and rural development (Gershon et al. 1986).
- Problems of tenancy and landlessness have been increasing in recent years and are expected to become more widespread with the intensification of agriculture. This is already quite evident in Central Thailand and the upper North.
- Soil erosion and degradation have been severe and extensive due to: (1) the uncontrolled expansion of agriculture into watershed areas and marginal lands; and (2) discouragement of land improvement arising from insecure ownership, the lack of land use planning and management, inadequate water control, and shifting cultivation.
- Up to now, there has been no coherent land policy; instead, there has been a proliferation of government agencies involved in land policy making. At present, there are at least 24 government agencies involved in land issues and several land committees with overlapping responsibilities. Several different laws on land must be encountered, including revolutionary orders, various cabinet resolutions, and several ministerial decrees.

If left unsolved, these problems will have serious political, economic, and social consequences. A coherent national land policy is urgently needed—one that would include efficient land administration procedures; a set of land laws; regulations and policy guidelines for optimal land use; land rights and titles; soil and water conservation and development; and land reform measures. Such a national policy should be supported by an efficient information system possessing an inventory of Thailand's land and soil resources. Systematic and regular monitoring of changes in land use, ownership, and productivity are a necessary concomitant to such a policy direction.

OBJECTIVES OF LAND POLICY

Land policy is an integral part of the national economic and social policy and must therefore be congruent with national policy objectives. Generally, all objectives should converge toward one end—the improvement of general economic and social welfare. Two of the primary goals of any economic policy are: (1) maximizing the social product over time; and (2) optimizing income distribution among people. Moreover, Thailand's land policy objectives should include attaining:

- Maximum efficiency in the use of land resources
- Optimum distribution of income
- Maximum economic and social security
- Conservation of natural resources and the environment

THE SCOPE OF LAND POLICY

Land policies are social control measures designed to improve the use of land resources and the conditions of property rights under which people work and live on the land. Therefore the primary problems addressed by land policy concern two areas:

1. Land use, conservation, and development
2. Land tenure

This land policy study broadly covers these two land problem areas.

Land use involves the demand for and the supply of land. Since the aggregate supply of land is limited and fixed, the expansion of the land area under use will also be limited. Hence, land must be used wisely and efficiently. Since land can be exploited and soil degraded, the conservation of soil and watershed areas is important for future use. Land and forest resources are closely related. Therefore, the policy on forests must also be examined.

Land tenure is a rather broad issue. In general, it concerns the rights over the land used by people. One aspect of land tenure in Thailand that is of interest is the lack of both public and private land ownership security. The lack of ownership security affects farm productivity and income distribution; further, problems of tenancy and landlessness are serious and tend to worsen over time. Thus, allocating or distributing land is a necessary step in national development and is generally carried out under government land reform and land settlement programs. Land use and land tenure are emphasized in this study; however, the question of changing land administration practices (which is necessary if land policies are to be effectively implemented) is also addressed. Finally, in policy formulation and implementation, a good land information system is also required, and this, too, is carefully considered here.

OBJECTIVES

This Land Policy Study had three main objectives:

1. To document and analyze Thailand's current land problems.
2. To formulate and recommend a national policy on land use, land development, land titling, land reform, and land administration, along with a supportive information system.
3. To propose strategies for carrying out the recommended national land policy.

METHODOLOGY

Problems related to land resources are numerous and very complex because land is inexorably linked to other natural resources, especially forests and water. It was therefore necessary to emphasize only those important land issues that are of particular policy interest in the short run and in the long run.

The project was divided into five subprojects, organized as follows:

Study Team I:	Land Use, Forestry, Land Classification and Conservation
Study Team II:	Land Tenure (Rights and Land Titles)
Study Team III:	Land Reform and Land Allocation
Study Team IV:	Land Administration
Study Team V:	Land Information System

Due to differences in the nature of the problems studied (some concerned the physical nature of the land, while others concerned legal aspects), specialists in different fields were employed. During the course of the study, researchers had ample opportunity to share their experiences and viewpoints, which contributed to further insight about land problems and policies.

The data came mainly from secondary sources, although primary data were also collected through interviewing appropriate officials and others in Bangkok and in specific provinces. Information exchanged at the meetings and workshops held during the study period also provided useful evidence for formulating the land policy approach proposed here.

To provide an overview of the agricultural economy and an indication of some of the important problems land reform faces, we first discuss Thailand's agrarian structure and agricultural economy. The results of the subproject studies follow, with one chapter devoted to each subproject. A land policy for Thailand is proposed in the concluding chapter.

It should be noted that the reports for the "Land Policy Study" were divided into a main report and nine volumes of supplementary reports. The results presented in this policy study are drawn from the supplementary reports of the sub- projects. Details on certain matters not given here can be found in the project working papers (See references). Finally, the published and unpublished data used in this study came from various sources. Much of it came from the Office of Agricultural Economics, the Royal Forestry Department, the Land Development Department, the Agricultural Land Reform Office and the Lands Department. In addition, the views of participants at the seminars, meetings and interviews with policy makers and land administrators were also extremely useful in preparing this book.

Chapter 2

The Agrarian Structure and Agricultural Economy of Thailand

INTRODUCTION

Compared with other developing countries, Thailand's economic growth over the past two decades has been rather high. In 1985 the average per capita income was about 132 percent higher than it was in 1965, an average growth rate of 4.3 percent per year. The rate of economic growth started to slow down in the 1980s and was below the target of the Fifth National Economic and Social Development Plan. Though there are some indications that more rapid economic expansion could be expected, it will still be less than what was experienced during the period of the First through the Fourth Plans.

During the latter period from the mid-1960s to the late 1970s, the agricultural sector grew at a satisfactory rate (4.3 percent from 1971 to 1980). In the same period, however, the industrial and service sectors had a much higher rate of growth—9.3 percent and 7.3 percent. Since 1982, the agricultural sector has grown at a rather low rate and has fluctuated: it was 1 percent in 1982 and 2.2 percent in 1986. In fact, the growth rate for livestock and fisheries has been higher than for crops during the past few years (table 2.1). The most significant factor contributing to the high growth of agriculture in earlier periods was the rapid expansion of cultivated areas. In later periods, however, the expansion of the land area has been limited, and the prices of major crops have continued to decrease. This has affected production incentive and agricultural income as well.

There has also been considerable structural change in the Thai economy. Over the past decade, national income from agriculture dropped from about 30 percent of the GNP to less than 20 percent, and the industrial and service sectors have increased in importance. Moreover, it is expected that the industrial sector's share will soon be greater than agriculture's, and that Thailand will become one of the Newly Industrialized Countries (NICs). Notwithstanding this clear indication of the Thai economy's present very satisfactory performance, about two-thirds of the total population is still dependent on agriculture—which implies low labor productivity and low income.

Table 2.1 Growth of Production and Income, 1971-1986 (Annual Growth Rates, 1972 Prices)

	1971-80	1981	1982	1983	1984	1985	1986
Agriculture	4.3	6.8	1.0	3.8	4.1	3.8	2.2
Crops	4.5	8.0	2.4	3.4	3.3	3.6	1.4
Livestock	6.1	5.4	4.2	4.4	6.0	4.6	3.5
Fisheries	2.8	8.0	-11.2	9.1	4.0	5.8	4.1
Forestry	1.9	-12.7	-7.4	-1.9	15.7	0.0	13.3
Industry	9.3	3.8	3.0	6.7	8.3	4.4	5.0
Mining	7.0	-3.3	-4.2	-0.4	13.4	8.0	5.6
Manufacturing	10.1	6.4	4.4	7.3	6.8	2.3	4.7
Construction	7.1	-6.5	-2.6	5.5	6.3	2.4	-0.6
Public Utilities	13.1	13.8	6.7	8.8	11.7	11.0	8.8
Service	7.3	7.7	6.4	6.4	5.3	5.5	5.5
Gross Domestic Product	6.9	6.3	4.1	5.8	6.0	4.1	4.3
Gross Domestic Income	6.5	3.8	2.9	7.4	5.3		
Gross National Income	6.3	2.3	2.4	8.1	4.6		

Source: World Bank (1986)

Another well-known fact about Thai agriculture is that the farmers' income is very low compared to that of non-farmers. In 1983 the per capita income of farmers was only one-seventh of the income of non-farm workers, and this trend has not improved. The problems of income distribution between regions, economic sectors, and urban and rural areas has become more serious. During the period of planned development, poverty declined substantially—from over 50 percent to about 25 percent—yet poverty is still a serious problem affecting certain groups of people—especially, landless workers, tenants, and small farmers. The income gap between urban and rural people must be overcome. If allowed to widen further, it will affect economic growth as well as social and political security. (Rural poverty, usually related to the country's agrarian structure, is discussed in the next section.)

AGRARIAN STRUCTURE

Thailand's agricultural growth and income distribution are affected by its agrarian structure, which has never been in a form that facilitates the optimum allocation of land resources because it is not flexible enough to adjust to changing technology and market environments. Further, the agrarian structure has contributed to increasing poor income distribution. Some of the major aspects of the Thai agrarian structure are described below.

Distribution of Landholdings

Concentration of landholdings is a serious problem in the agrarian structure; the data in table 2.2 and figure 2.1 indicate that this problem has gradually worsened. In 1966, 18.6 percent of the smallest-sized farm households (landholdings of less than 5.9 rai) owned only 2.6 percent of the total land area; in 1978, 15.9 percent of these households owned only 2.3 percent of the total land area. At the same time, large farmers, (those whose landholdings were more than 60 rai) constituted only 5.4 of the total number of farm households in 1966 and 6.3 percent in 1978; yet these large farmers owned 22.2 percent and 24.3 percent of the total land area. This indicates that the proportion of small farm households has declined both in number and area while that of large farms has increased. The data for 1978 and 1983 also indicate that the rather unequal distribution of landholdings has become increasingly unequal (table 2.3).

In the case of public land, distribution of landholdings among squatters is also very unequal. In 26 provinces, 24 percent of those with small holdings of less than 10 rai held only 4 percent of the total land area; while 3 percent of those with large holdings of over 100 rai held 17 percent of the total land area (table 2.4 and figure 2.2).

This information very clearly shows that the distribution of landholdings is a problem on both private and public lands—a situation of particular interest to those concerned with land allocation and land tenure programs.

Farm Size and Number of Farms

Since land is limited and since population growth has been rather high, farm size should be gradually declining. However, this is not the case in Thailand. Over the past two decades, more land has been put into farm production, at the expense of the forests. In fact, from the 1960s to the late 1970s the growth rate of cultivated land was higher than the growth rate of the population. This helps to explain why the nation's average farm size has not been decreasing, as was generally believed.

Table 2.2 Distribution of Landholdings, 1966, 1978

	% of Owners		% of Area Owned	
Size of Holding	1966	1978	1966	1978
Less than 5.9	18.60	15.90	2.60	2.30
6 - 14.9	29.40	27.40	13.00	11.40
15 - 29.9	27.50	29.00	16.50	25.70
30 - 44.9	13.10	11.50	21.60	16.30
45 - 59.9	6.00	9.90	14.10	20.00
Over 60	5.40	6.30	22.20	24.30
Total	100.00	100.00	90.00	100.00

Source: National Statistical Office

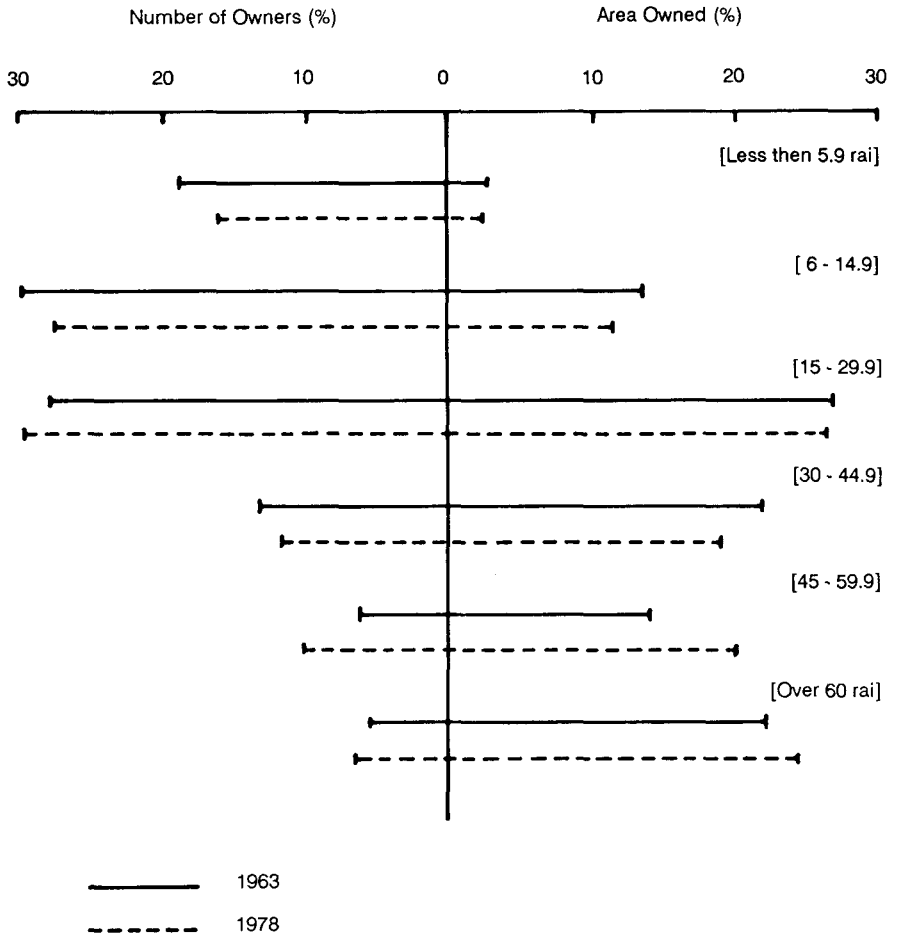


Figure 2.1 Distribution of Landholdings, 1966, 1978

Source: Data from table 2.2

Indeed, from 1953 to 1983, farm size remained almost constant (table 2.5), and regional level data show the same pattern.[1]

Figures on the land-person ratio—which has been rather constant or has grown in recent years—supports this fact. For example, if the ratio is computed by using agricultural land and farm population, an increase appears in farm land per capita from 1964 to 1983 (table 2.6).

However, the problem of farm size appears to be serious in certain areas, particularly in the Upper North. Many provinces (namely, Chiang Mai, Phrae, Lampang, Lamphun, and Mae Hong Son) have an average farm size of less than 10 rai per household, and the census data from the National Statistical Office

Table 2.3 Distribution of Landholdings, 1978, 1983

Size of Holding	% of Owners		% of Area Owned	
	1966	1978	1966	1978
Less than 5.9	14.90	14.70	2.50	2.60
6 - 9.9	12.20	12.30	4.00	4.20
10 - 39.9	56.50	57.80	50.70	54.00
Over 40	16.40	15.20	42.90	39.20
Total	100.00	100.00	100.10	100.00

Source: National Statistical Office (1978 and 1983)

Table 2.4 Distribution of Landholdings in Public Lands in 26 Provinces, 1977-1979

Size of Holding (rai)	No. of Owners	%	Area Owned	%
Less than 10	12,283	23.55	72,102	4.44
10 - 20	11,530	22.11	157,717	9.72
20 - 30	10,034	19.24	255,255	15.72
30 - 40	5,491	10.53	194,743	12.00
40 - 50	5,089	9.76	238,226	14.68
50 - 100	6,080	11.66	424,970	26.18
Over 60	1,641	3.15	280,310	17.27
Total	52,148	100.00	1,623,323	100.00

Source: Agricultural Land Reform Office

reveals that over 50 percent of the farms in these provinces are less than 6 rai. Moreover, there are a significant number of farms that are even smaller (table 2.7).

Another contributing factor to the problem of farm size is land fragmentation, which is a result of the inheritance system and widespread encroachment on public lands. It appears that many farmers hold more than two plots of land (Onchan et al. 1986). This could render the data on farm size (which has shown a rather constant situation) to be misleading. In fact, the average size of each plot was found to be very small. This has important implications in terms of farm production systems and efficiency (Onchan 1981).

From 1953 to 1983 the number of farms increased from 2.4 million to 4.7 million (table 2.5). The farm population also increased considerably, from 24 million to 34 million during 1964 to 1983. However, the proportion of farm population to the total population has declined—from over 80 percent to 65

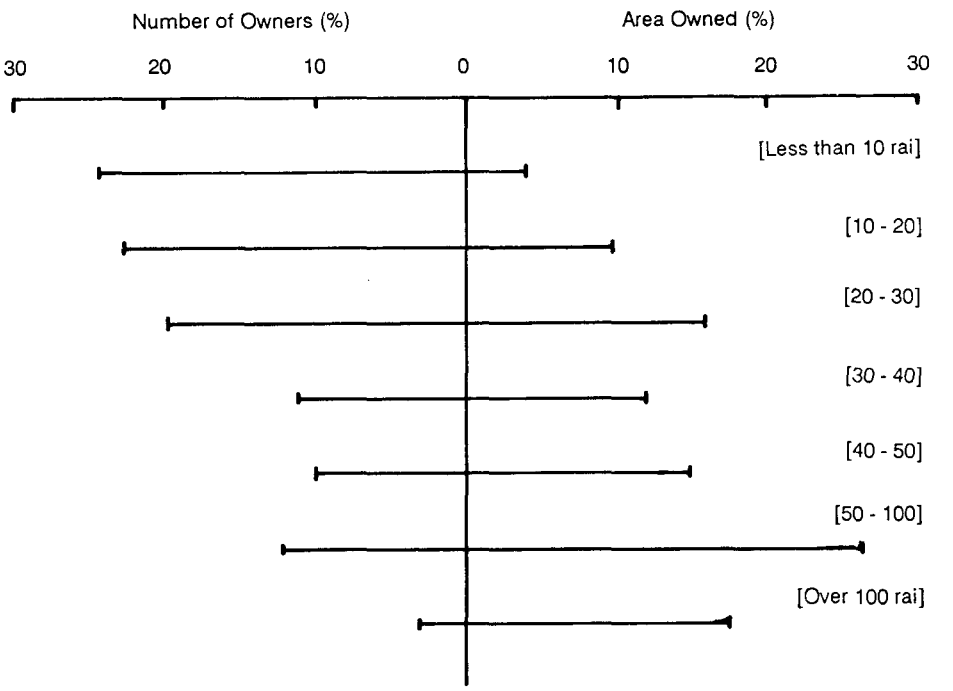


Figure 2.2 Distribution of Landholdings, 1978, 1983

Source: Data from table 2.3

percent—during the past two decades (Office of Agricultural Economics 1964-1985/6). This data indicate that the Thai population and its economy are still greatly dependent on agriculture and apparently will remain so in the foreseeable future.

Tenancy

In the early 1970s the farm tenancy problem became of special concern to those who believed that the situation was quite serious. In fact, many farm leaders organized protests about this issue, demanding that the government take strong action. Farm tenancy was a prominent issue during the student uprisings. Major political parties and many politicians supported land reform as a solution to the tenancy problem, and in 1975 the government implemented a land reform program, focusing first on the Central Plain, where the situation was viewed to be serious.

Table 2.5 Farm Size in Thailand, 1953-1984

Unit: Rai

Year	Northern		North		Central		South		Whole Kingdom	
	No. of Farms	Farm Size	No. of Farms	Farm Size	No. of Farms	Farm Size	No. of Farms	Farm Size	No. of Farms	Farm Size
1953	993,504	27.4	357,605	9.6	776,124	30.7	264,368	26.1	2,397,735	25.6
1975	1,675,650	28.3	1,054,521	22.7	826,505	33.3	563,370	23.5	4,120,046	27.2
1976	1,705,145	28.6	1,064,341	21.6	843,932	33.3	573,291	23.2	4,186,709	27.0
1977	1,740,386	27.7	1,117,175	21.1	867,978	32.9	587,752	22.8	4,313,291	26.4
1978	1,754,760	28.1	1,147,130	21.3	868,463	33.7	607,260	22.2	4,377,613	26.6
1979	1,772,033	28.0	1,137,153	22.1	881,156	33.2	615,577	22.2	4,405,919	26.7
1980	1,786,465	28.0	1,162,618	22.4	891,620	32.6	626,844	22.0	4,467,547	26.6
1981	1,840,184	28.1	1,181,594	22.6	887,930	32.3	622,643	22.9	4,532,351	26.8
1982	1,945,713	27.2	1,236,449	22.3	878,827	32.8	624,466	23.0	4,685,455	26.4
1983	1,944,263	27.4	1,253,521	22.2	879,974	32.6	635,291	22.6	4,713,049	26.3
1984	1,975,599	27.4	1,256,666	22.6	876,080	32.7	632,089	22.6	4,740,434	26.6

Source: Office of Agricultural Economics (1953, 1976/77, 1984/85 and 1985/86)

Table 2.6 Land-man Ratios in Thailand 1964, 1971, 1978 and 1983

Region	1964			1971			1978			1983		
	A	B	C	A	B	C	A	B	C	A	B	C
North	0.69	0.79	16.59	2.29	2.81	13.52	2.61	3.39	11.36	2.77	3.61	10.51
Northeast	2.27	2.23	10.66	3.46	3.74	8.52	3.18	3.87	6.81	3.09	3.89	6.13
Central	3.60	6.70	6.75	1.87	3.78	5.40	1.98	4.35	4.39	1.79	3.78	4.05
South	3.60	4.33	12.16	2.60	3.32	9.72	2.41	3.29	7.91	2.33	3.17	7.17
Whole Kingdom	2.52	3.12	10.85	2.58	3.48	8.71	2.58	3.79	7.09	2.51	3.70	6.48

Land-Man Ratio:

$$A = \frac{\text{Agricultural Land}}{\text{Total Population}}$$

$$B = \frac{\text{Agricultural Land}}{\text{Agricultural Population}}$$

$$C = \frac{\text{Total Land Area}}{\text{Total Population}}$$

Source: Computed from the Office of Agricultural Economics

Table 2.7 Farm Size in Upper North, 1981-1984

Unit : Rai

Province	1981	1982	1983	1984
Chiang Mai	9.1	8.9	8.6	8.6
Chiang Rai	16.4	15.4	15.5	15.5
Lampang	8.4	9.3	9.6	9.9
Lamphun	8.7	8.8	8.5	8.3
Mae Hong Son	6.8	8.4	7.9	8.3
Nan	10.1	11	11.4	11
Phayao	14.2	13.7	13.4	14.8
Phare	8.8	9.8	9.8	9.7

Source: Office of Agricultural Economics (1981-1984)

However, data on this issue indicate that at the aggregate level, tenancy is not a serious problem and in fact has not worsened over time. In 1973 rented area accounted for only 14 percent of total agricultural area and in 1984, 14 percent. (table 2.8). However, at the regional level, tenancy does appear to be rather serious. In the Central Plain rented land constituted 29 percent in 1973 and 25 percent in 1984. The North also has a less serious problem; however, in terms of the number of rented farms, the problem appears to be more serious. In 1984, of the total number of farms in the Central Plain rentals accounted for 25 percent, or about 800,000 families.[2]

In summary, the available data—particularly in recent years—does not clearly show nationwide tenancy trends. Data from the micro studies in the Upper North and Lower Central Plain indicate serious tenancy problems, both in terms of number of tenants and contractual arrangements, such as rental rates (Onchan 1978).

Table 2.8 Landholding and Rented Area by Region, 1973, 1984

Unit: Million

Region	1973			1984		
	Holding Area	Rented Area	% of Rented Area	Holding Area	Rented Area	% of Rented Area
Central	27.27	7.98	29.27	28.60	7.11	24.86
North	23.19	3.65	15.74	28.35	4.25	14.99
South	13.68	0.61	4.42	14.29	0.51	3.56
Northeast	48.80	1.59	3.27	54.08	2.09	3.87
Whole Kingdom	112.94	13.83	52.7	125.32	13.96	47.28

Source: Ministry of Agriculture and Cooperatives (1973, 1984)

Land Rights

Legal land documents are usually issued by the Department of Lands. They include: N.S.4 (Title deeds); N.S.3; and S.K.1. Other types of land documents that implement land allocation programs, such as the Agricultural Land Reform Office (ALRO), the Public Welfare Department, and the Cooperative Promotion Department, are also issued by government agencies. However, only N.S.4, N.S.3, and N.S. 3K are acceptable to financial institutions as collateral for loans.

Up to now, the Department of Lands has issued N.S.4 deeds for only 15 percent of the all private land; thus, a large amount of private land is not properly documented. This includes over 40 million rai of encroached forest reserve (or 70 million rai if pre-reserved forest is included). The lack of land ownership security (i.e., N.S.4 and N.S.3 documents) has substantially affected agricultural development in Thailand (Feder et al. 1986).

In rural areas very few farmers have N.S.4. deeds. To obtain an N.S.4 or an N.S.3, the farmer must cover the cost incurred and pay the fees. Though the cost may not be very high, poorer farmers usually have more trouble meeting the expenses than their wealthier counterparts. Furthermore, those farmers who manage to obtain an N.S.4 or an N.S.3 will be in a better position to qualify for cheap credit from credit institutions, both public and private.

Landlessness

The problem of landlessness has been of interest to the government for over 40 years, evident by the land allocation program initiated long ago to solve it. However, there has been relatively little effort made to analyze the problem, and research on the issue is recent and limited.

Results of the survey on landlessness conducted by ALRO in 51 provinces reveal that about 10 percent of farmers are landless; eleven percent own less than 5 rai and are considered near-landless; and small farmers who own 5-10 rai constitute about 12 percent of the total (table 2.9). Landlessness does appear to be a problem in agricultural development. It is relatively more serious in the Upper North, where the proportion of the landless and near-landless constitute an alarming 45 percent of all farmers.

Table 2.9 Landlessness in 51 Provinces, 1984

Type of Farmers	No. of Households	%
Landless	362,702	9.56
Less than 5 rai	424,179	11.18
5-10 rai	457,199	12.05
Over 10 rai	2,548,606	67.20
Total	3,792,686	100.00

Source: Agricultural Land Reform Office (1986)

PRODUCTION, MARKETING, AND FOREIGN TRADE

Production

As mentioned earlier, the rate of agricultural growth has slowed in recent years. One of the contributing factors to slower growth has been the decline in the prices of the major farm commodities—rice, sugar, cassava, and corn—a problem that is likely to continue in the near future.

Agriculture in Thailand has been greatly diversified since the 1950s, with field crops becoming increasingly important. However, the Thai economy still appears dependent on too few farm commodities. Thus, greater agricultural diversification is being promoted with new commodities that have good market potential and prices. Promoting these new commodities is a clear objective of the current Sixth Plan (1987-1991).

In general, Thai agriculture still uses traditional techniques; however, new technology—particularly the use of mechanical equipment—has been increasing. The use of new inputs (such as fertilizer, insecticides and new varieties of seed) has been quite limited, partly because the rice price is relatively low compared to the fertilizer price. As a result, Thailand's rice yield is the lowest among the major rice producing countries (World Bank, 1981). Thailand has been able to significantly increase farm production during the past two decades—particularly of corn, cassava, and sugar cane (table 2.10)—because of large expansion of the cultivated area.

Agricultural productivity is therefore generally low, and yield fluctuations are serious. From 1959 to 1977 the growth rates in yield per rai were even negative for many crops. And although land productivity has improved in recent years (tables 2.10, 2.11), yields are still low, and further improvement is urgently needed.

Table 2.10 Rate of Growth of Planted Area, Production and Yield Per Rai of Major Crops, 1959-1984

Unit: Rate of Growth*

Crops	1959-1970			1970-1977			1977-1984		
	Planted Area	Produc-tion	Yield Per Rai	Planted Area	Produc-tion	Yield Per Rai	Planted Area	Produc-tion	Yield Per Rai
Rice	2.1	2.8	0.7	2.1	-0.3	-2.4	0.6	3.5	2.9
Corn	11.8	14.3	2.5	5.6	2.6	-3.0	5.0	9.5	4.4
Cassava	9.5	8.0	-1.4	20.2	13.5	-6.7	6.6	7.0	0.4
Sugarcane	0.2	2.2	2.0	22.3	40.4	-1.9	1.8	6.0	4.2
Cotton	3.6	3.2	-0.4	2.8	6.6	3.8	0.9	4.1	3.2
Mung Bean	16.7	12.8	-4.0	7.2	1.0	-6.2	3.0	5.6	2.6
Soybean	9.7	7.6	-2.2	12.7	11.5	-1.2	2.7	9.2	6.5

Note: *Trend rate of growth is estimated by : $\log Y = a + bt$

Source: Calculated from the data of the Office of Agricultural Economics

Table 2.11 Yield Per Rai of Major Crops, 1972-1984

Year	Rice	Corn	Cassava	Sugarcane	Mung Beans	Soy beans
1972	261.52	211.04	3,380.68	8,396.29	148.36	137.90
1973	276.44	326.13	2,080.00	8,201.93	131.14	135.95
1974	260.28	322.62	2,180.35	7,540.27	145.32	134.23
1975	264.67	349.15	2,318.32	8,147.91	117.97	154.30
1976	268.86	333.17	2,236.92	8,367.12	89.62	178.88
1977	230.71	222.59	2,246.36	5,348.96	76.09	100.57
1978	260.33	322.25	2,101.67	6,427.75	98.17	157.29
1979	257.54	300.45	2,281.38	4,698.00	94.52	150.36
1980	270.82	334.60	2,234.76	6,783.05	93.36	126.90
1981	279.44	352.12	2,302.36	7,829.92	93.31	165.03
1982	263.04	286.07	2,220.42	6,696.02	92.70	145.79
1983	291.54	336.62	2,276.20	6,619.25	95.43	177.62
1984	298.28	372.17	1,087.00	7,317.46	107.43	196.76

Source: Office of Agricultural Economics (1972/73-1984/85)

Marketing

Marketing activities (for both input and output) are mostly carried out by the private sector. The government is strongly interested in assuring that free trade is practiced and promoted. So far, agricultural product marketing systems are quite efficient, dynamic, and competitive. Even though the general complaint is that marketing is inefficient and that farmers are exploited by middlemen, careful study has not borne out this contention (Department of Business Economics 1984).

For both economic and political reasons, the Thai government has long implemented marketing and price policies and has intervened in the market. The most important marketing organizations are the Marketing Organization for Farmers (MOR) and the Public Warehouse Organization (PWO). Price support and price guarantee schemes have also been implemented, but with little success. At present, in an attempt to raise the farm gate price for rice, the government is providing cheap credit to rice millers and private marketing organizations (including agricultural cooperatives) for the purchase of paddy from farmers. The increase in the amount purchased is expected to raise the demand and hence the paddy price. However, in spite of these interventions, the private sector still controls the marketing system.

Agricultural cooperatives have been providing marketing services for over 60 years. They have been closely supervised and supported by the government but have not been very successful. Their services are still rather limited, and their impact on the structure and performance of the marketing system has been quite insignificant.

Foreign Trade

Although agricultural products constitute a major portion of Thailand's exports, the share of agricultural products has declined steadily over the past two decades. Agricultural exports consituted about 90 percent of the total export value in 1950. In recent years they have fallen to about 60 percent.

Agricultural exports have also been greatly diversified. The value of rice and rubber exports has declined from 80 percent to about 40 percent during the past 30 years. Other commodities such as sugar, corn, cassava, and pineapple have increased their share. The share of exported wood products declined from 5 percent to 1 percent, while fishery products increased from 1 percent to 5 percent.

Farm product imports are not very significant, since Thailand can produce enough food for its own population. Imported farm items include wheat and dairy products.

One of the most controversial and longstanding Thai government polices was the rice premium. Those who objected to the collection of the premium—a form of export tax—usually argued that it would depress farm prices, was unfair to rice farmers, and made Thai rice less competitive in the world market. Those who supported it—particularly the government—argued that it contributed to price stability and food security and was an important source of revenue. However, due to the decline in the rice price in the world market and the need to dispose of the rice surplus within the country, the premium was abolished this year.

Presently, export policy is receiving special attention from the government. Thailand is beginning to face problems with the markets and prices for all of its major products—including corn, which used to enjoy market and price stability. An export subsidy is being considered; an export credit guarantee scheme is another suggested measure. This issue of foreign trade is of great concern to the Thai government since it is very important to the development of the agricultural economy.

INCOME, INCOME DISTRIBUTION, AND POVERTY

As mentioned earlier, farm income is very low compared to incomes for non-farm occupations. Regional income disparities are also serious, particularly in the North and Northeast; farmers in the latter region have the lowest income in the nation. In fact, the average income of a Northeastern farmer was only 37 percent of that of a Central Plain farmer, and only 57 percent of the national average. Therefore, income distribution within the farm sector is still rather unequal (table 2.12).

The income gap between the farm and non-farm sectors has been gradually widening. From 1980 to 1984, the incomes of both groups increased, from 5,445 baht to 5,912 baht for the farm population and from 32,346 baht to 43,284 baht for the non-farm population (Office of Agricultural Economics 1985). However, while the income increase for the non-farm population was rather steady, farm population income fluctuated in certain years. Obviously, income instability has been a problem in the farm sector.

Available data indicate that household income distribution in Thailand is quite unequal and, indeed, has gradually worsened. In 1963 and 1972, the poorest group—the bottom 20 percent—received only 2.9 percent and 2.4 percent of the

Table 2.12 Per Capita Income of Agricultural Population by Region, 1979-1983

Unit: Baht

Year	Northeast	North	Central	South	Average
1979	2,769	4,874	7,036	6,496	4,696
1980	3,221	5,444	8,355	7,499	5,445
1981	3,068	6,207	9,528	7,104	5,773
1982	3,047	6,003	9,421	7,421	6,159
1983*	3,500	6,309	9,335	8,689	6,958
Rate of Growth	4.22	6.33	1.07	5.88	6.14

Note: *Primary Data

Source: Office of Agricultural Economics (1985)

total income. The richest group—the top 20 percent—got 59.5 percent and 64.4 percent. Clearly, the poor are getting poorer while the rich are getting richer (Krongkaew 1980). The Gini Coefficient was .45 in 1975/76 compared with .473 in 1981, an average increase of 4.9 percent per year. The disparity worsened in the rural areas (Krongkaew and Tinnakorn 1985).

Poverty was considerably alleviated from 1975/76 to 1981, declining from 31.7 percent to 23.9 percent of the total population. The poor live in the rural areas, have large families, small farms, and low education (Krongkaew and Tinnakorn 1985).

In analyzing the structure of rural income, it is important to note that off-farm income is very important, particularly in the poor regions of the Northeast and the North, and among the landless and near-landless (Onchan and Chalamwong 1979). Furthermore, the proportion of off-farm income has gradually increased from 46 percent, to 55 percent, to 59 percent in 1971/72, 1975/76, and 1982/83, respectively (table 2.13). In the Northeast, the proportion increased from 48 percent, to 66 percent, to 69 percent in the same years. This clearly shows the importance of promoting non-farm enterprises in rural areas to provide employment and income for the rural poor. It should be an important part of the process of rural development.

AGRICULTURAL AND LAND TAXES

Because agricultural taxation has an impact on agrarian structure, farm productivity, and income, it is briefly reviewed here.

It is generally known that an indirect agricultural tax is much more important than a direct tax. Export taxes are a good example of an indirect tax, while income and land taxes are direct taxes. Direct taxes have not been significant in Thailand, but since the land tax has a direct bearing on land policy, special attention is given to it.

Table 2.13 Net Cash Family Income of Farm Households by Region, 1971/72, 1975/76 and 1982/83

Region	1971/72			1975/76			1982/83		
	Net Cash Farm Income	Net Cash Non-Farm Income	Total	Net Cash Farm Income	Net Cash Non-Farm Income	Total	Net Cash Farm Income	Net Cash Non-Farm Income	Total
North-east	1,674.9 (51.5)	1,578.7 (48.5)	3,253.6 (100.0)	2,062.2 (34.0)	4,005.5 (66.0)	6,067.7 (100.0)	5,746.6 (31.4)	12,529.3 (68.6)	18,275.9 (100.0)
North	2,102.8 (56.3)	1,631.8 (43.7)	3,734.6 (100.0)	4,717.4 (50.7)	4,577.2 (49.3)	9,294.6 (100.0)	10,607.2 (48.1)	11,450.9 (51.9)	22,058.1 (100.0)
Central Plain	5,688.5 (66.1)	3,625.5 (38.9)	9,314.0 (105.0)	7,361.4 (54.5)	6,138.9 (45.5)	13,500.3 (100.0)	17,194.3 (52.1)	15,829.4 (47.9)	33,023.7 (100.0)
South	1,621.4 (40.2)	2,411.9 (59.8)	4,033.3 (100.0)	5,175.5 (44.8)	6,386.0 (55.2)	11,561.5 (100.0)	11,403.1 (35.2)	20,989.3 (64.8)	32,392.4 (100.0)
Average	2,268.1 (53.9)	1,943.1 (46.1)	4,211.2 (100.0)	4,232.2 (44.6)	5,261.7 (55.4)	9,493.9 (100.0)	9,821.4 (41.3)	13,961.9 (58.7)	23,783.3 (100.0)

Remark: Calculated from the data of the Ministry of Agriculture. Non-cash and input incomes are excluded.

Source: Office of Agricultural Economics (1979/80, 1984/85)

For many years, land taxes have been of interest to the government and the people concerned. Those who support such taxes believe that they would bring revenue to the government, raise the efficiency of land use, and improve social justice. Indeed, a progressive land tax similar to the income tax has been proposed. However, not much progress has been made to establish such a tax.

Under the existing system, tax revenues from land and buildings are used for local activities. They are also collected by the district office of the Local Government Department, Ministry of the Interior. The "medium price" of land is used in the valuation of property. For tax purposes, prices are divided into 43 levels, from less than 200 baht per rai to over 50,000 baht per rai. The tax rate ranges from a low of .50 baht per rai to 400 baht per rai. It is even higher when the land price is over 500,000 baht.

In fact, under the present system, land taxes are found to be regressive. The tax paid for land of 500,000 baht per rai is only 0.1 percent of the land price, but land costing 1,000-1,200 baht per rai has a tax of 0.5 percent.

Thai farmers pay an insignificant amount of land tax. In 1983/84, the average amount of land tax per family was 81 baht, but this constituted 4 percent of the total net farm income of farm households (table 2.14).

Table 2.14 Land Tax Paid by Farm Households by Region

Unit: Baht/Household

Region	1976/77	1978/79	1980/81	1982/83
Northeast	49.95	74.04	69.25	74.38
North	50.77	67.64	66.72	68.82
Central	126.78	114.24	109.62	115.75
South	67.66	95.34	84.82	80.4
Average	67.17	83.02	78.83	81.09

Source: Office of Agricultural Economics (1976/77 - 1984/85)

The careful design and implementation of a progressive land tax according to specified objectives will contribute to its success. In this regard, farm size classification and valuation of land are two important factors that can have an impact on resource allocation and income distribution. An example of tax rates that can be used are: 5 percent, 15 percent, 20 percent, 30 percent, 50 percent, and 80 percent. It is important that small and/or average size farms not be adversely affected by the progressive land tax rates (see details in Pipatseritham 1974).

Finally, the problem of lands left idle for speculative purposes can be solved by means of land taxation. This type of land should be taxed at a high rate because the owners will then be encouraged to use the land. In Thailand, idle land constitutes a significant portion of the total land in both urban and rural areas. Very low land tax rates have resulted in the holding of land for speculation. This has caused widespread land speculation, something which is of great concern to policy makers.

Chapter 3

Land Classification Policy

INTRODUCTION

Land is a scare resource that should be used efficiently and wisely. Land use is determined by a number of physical, economic, and social factors. While all of these factors are important, the nature and characteristics of the land or soil is one of the most important factors for determining the type of farm that can flourish on it. For example, one type of soil might be more suitable for rice than cassava. Hence, soil surveying and classification is closely related to land use.

Land and soil connote different meanings to different people. In general, however, land refers to the surface of the earth, including mountains, swamps, rivers, deserts, islands, and beaches. Soil is a natural feature of the earth's surface. It supports the growth of plants. It comprises mineral and biological materials and has many layers, all of them interrelated.

PRINCIPLES OF LAND CLASSIFICATION

Land classification is the process of assessing the land's suitability for use in various activities. There are three major steps involved:

1. A study of present land characteristics. These studies include a soil survey, a land-use survey, and a study of various problems caused by land use.
2. A study of how land should be used. This involves land capability classification or land suitability classification for various activities.
3. Defining the land use for various activities based on physical characteristics of the land, considering economic, social, and environmental factors. This step is called "land evaluation." It is considered the most important part of the land-use planning process and comprises a number of components.

LAND CLASSIFICATION POLICY: PAST AND PRESENT

National Economic and Social Development Plans

The need for land classification has been recognized since the First Plan (1961-1966), which explicitly addressed this issue. During the second period of the First Plan (1964-1966), land classification was to be accelerated, and soil surveying and mapping were also to be implemented. During the Second Plan (1967-1971), land capability classification was implemented and was to be completed for the whole country by 1988. In the Third Plan (1972-1976), land classification was emphasized and was to accomplish the task of finding out the total area suitable for agriculture. A soil survey was also made of irrigated areas in the Central Plain. A land-use survey was also conducted for use as a basis for agricultural development planning.

In the Fourth Plan (1977-1981), the Department of Land Development was to conduct surveys to collect data on economic, social, and environmental situations to assist in land-use planning. This planning was to start in the North and Northeast. Classification was also carried out in forest areas that might be opened for use. Three departments (Lands, Land Development, and Royal Forestry) were responsible for the project.

In the Fifth Plan (1982-1986), the land-use survey was to be accelerated so that the results could be used in the formulation of land-use policy. It also included a survey of encroached forest areas, which would be allocated to the people under the forestry village program if found to be suitable for agriculture.

In the current Sixth Plan (1987-1991), emphasis is still on land development, land use, and land evaluation. The objective is to attain efficient use of land resources.

The Land Allocation Committee

The Land Allocation Committee recognizes the importance of soil surveying, land classification, and land-use planning.[5] It has stated clearly that before a land allocation program can be undertaken, the Department of Land Development must conduct a soil survey, carry out the land classification, and then practice land-use planning.

The 1983 Land Development Act

The establishment of the Department of Land Development (DLD) in 1963 resulted in its being given land classification activities from the Department of Lands (DOL) and soil surveying activities from the Rice Department. The Land Development Act defines the duty of the Land Development Department as follows:

> The Land Development Department is responsible for soil survey and analysis to assess its natural fertility and feasibility, land classification, land development, land census or land economic assessment. These are to be carried out under the provision of this Act.

This definition shows that the government has a clear policy on land classification by means of a soil survey, land capability classification, and land-use planning to form a basis for the continuing economic and social development of the country.

LAND CLASSIFICATION IN THAILAND

Land classification activities have been undertaken, and some improvements have been made by using new and improved technology. Since 1961, land classification can be divided into five types as follows:

Broad Land-Use Classification

This type of classification was started in 1961 by the Department of Lands and was later transferred to the Department of Land Development. It was a very broad classification scheme dividing the total land area into two categories: forest area and agricultural area. This classification was made in accordance with the policy of the First Plan. Under this classification, 162.2 million rai of land were to be preserved as forest area.

Land Reclassification

The past two decades have witnessed a tremendous change in land use. National forest reserves and the prereserve forest areas have been widely encroached upon and used for agricultural purposes. However, the government held to its policy of preserving 50 percent of the total land area under forest. In 1982, the cabinet approved the Land Use and Land Rights Policy proposed by the National Rural Development Committee. The policy called for land reclassification, and work was begun in 1983 by the Ministry of Agriculture and Cooperatives and related agencies. The Department of Land Development (DLD) conducted a survey of prereserve forests—covering about 20 million rai—whose purpose was to identify areas suitable for agriculture. These areas will be degazetted and used for agricultural purposes. Those lands unsuitable for agriculture will be proclaimed national forest reserves. Then DLD will conduct a survey of the encroached national forest reserves. This land classification approach uses detailed data on soil, land use, land tenure, and socioeconomic conditions from the survey.

Land Capability Classification

Classifying land capability is the step after surveying the soil. The classification interprets the data from the soil survey (which began in 1964 and is now completed for the whole country) and identifies areas suitable for agriculture and their limitations, and groups the soils that have similar characteristics. Two land classification systems are used:

1. Land classification for field crops, eight classes.
2. Land classification for rice, also eight classes.

Land Suitability Classification for Economic Crops

Classifying land suitability is carried out at the same time as the soil survey report and provides details on crop suitability for each soil series. It is more detailed than a land capability classification. Suitability classifications have already been done for many crops such as rice, field crops, fruit trees, rubber, coconut, and pasture.

Land Evaluation

The Department of Land Development began to do land evaluation in 1983 using the system developed by FAO for land-use planning. Land evaluation includes the following types:

1. Land evaluation for rain-fed agriculture
2. Land evaluation for irrigated agriculture
3. Land evaluation for forestry
4. Land evaluation for livestock

RESULTS OF LAND CLASSIFICATION

Soil Survey and Classification in Thailand

Various agencies under the Ministry of Agriculture started soil surveying and classification in 1936. As already mentioned, when the Department of Land Development (DLD) was set up in 1963, the work was transferred to the DLD.

A soil map was first published in 1953 by Dr. R. L. Pendleton, an adviser to the Ministry. He used a scale of 1:2,500,000 and the unit of soil in the map was the "soil series." The map was rather limited in detail for each soil series.

A second soil map was produced in 1968 by Moorman and Rojanasoonthorn (1968) using a scale of 1:1,250,000. Soil classification was based on a method developed by Dudal and Moorman (1964) which was widely used in Southeast Asian countries. The soil unit used was the "great soil group."

Since 1970 the Soil Survey Division of the Department of Land Development has been using a new soil classification (the U.S. Soil Taxonomy) in soil surveying and classification. The new system provides a clearer definition of each soil group. The Department of Land Development published the nation's third soil map in 1979, using the "great soil group" as the soil unit for mapping.

In addition, the Department of Land Development has published various soil maps at larger scales, such as a regional soil map on a 1:500,000 scale; one at the provincial level on a 1:100,000 scale; and scales of from 1:10,000 to 1:20,000 at the project and farm levels.

DLD has also carried out detailed reconnaissance soil surveys of each province in the country and has published provincial soil maps on a scale of 1:100,000 for 58 provinces. Maps for the other 15 provinces are in the process of being published. The soil unit used for mapping was the "soil series." At present, a semi-detailed survey is being carried out for accelerated projects in certain areas in the country.

DLD soil surveys have been collecting data since 1963, and they have been widely used by those involved in development and planning. In 1973, DLD

undertook land use planning in many provinces, using data from soil surveys and land and suitability classifications. A land-use map on a scale of 1:250,000 was also produced. At present, such maps have been prepared and completed for over 30 provinces.

With advances in soil science and technology, DLD has been able to improve the accuracy and the efficiency of its data interpretation. In 1983 it started using the method developed by FAO for land evaluation, another important step in land use planning. In 1985 DLD also introduced a computerized land evaluation system developed by Cornell University to improve its land evaluation program.

The results of DLD's soil survey are shown in table 3.1, and one can see that soil has been classified into ten series. The soil survey, findings on soil suitability for agriculture are presented (table 3.2). They include the following:

- The area suitable for field crops is 67.7 million, or 21 percent of the total area.
- The area suitable for paddy is 84.5 million rai, or 26 percent of the total area.
- The area suitable for tree crops in areas with heavy rainfall is 16.4 million rai, or 5 percent of the total area.
- The area presently unsuitable for economic crops but potentially useful with some development is 49.8 million rai, or 15.5 percent of the total area.
- The area unsuitable for agriculture is 99.8 million rai, or 31 percent of the total area.

Table 3.1 Soil Classification in Thailand

Series	Area	
	Rai	%
Entisols	10,537,500	3.29
Vertisols	2,597,500	0.81
Inceptisols	30,158,125	9.40
Mollisols	3,751,875	1.17
Spodosols	384,375	0.12
Alfisols	29,369,375	9.16
Ultisols	135,120,000	42.13
Oxisols	95,625	0.03
Histosols	448,750	0.14
Unclassified*	108,233,750	33.75
Total	320,696,875	100.00

Note: * Including slope complex, water, etc.

Source: Department of Land Development

Table 3.2 Land Suitability for Agriculture

Unit : Rai

Item	North	Northeast	Central	East	South	Total
Area suitability for upland crops	20,036,318	30,694,340	11,485,471	5,306,758	160,642	67,683,529
Area suitability for paddy	16,434,526	40,520,643	14,873,477	5,583,579	7,057,075	84,469,300
No limitation	16,434,526	39,054,014	9,904,130	5,111,964	7,057,075	77,561,709
Acid sulfate soil	0	0	4,732,250	471,615	0	5,203,865
Saline soil	0	1,466,629	237,097	0	0	1,703,726
Area suitable for perennial crops	0	0	702,428	960,385	14,696,993	16,359,806
Area generally unsuitable for economic crops but suitable for cultivating special crops if appropriate measures are taken	14,724,446	21,250,255	3,355,121	5,564,453	4,933,812	49,828,087
Area unsuitable for agriculture	54,241,443	12,092,402	12,845,747	3,988,102	16,707,570	99,875,264
Water body	590,947	976,323	188,259	84,535	640,900	2,480,964
Grand Total	106,027,680	105,533,963	43,450,503	21,487,812	44,196,992	320,696,950

Source: Department of Land Development

The Survey and Data Collected on Land Use

Since land-use data forms a basis for the analysis of agricultural development projects, surveying land use is quite important. At present, there are a number of government agencies carrying out the surveying function. They include the Department of Land Development, the Department of Lands, the Office of Agricultural Economics, the City Planning Office and the Royal Forestry Department. However, these agencies can be divided into five primary survey methods:

- The interview is used by various agencies that study the socioeconomic conditions of farmers involved in development projects, usually relating to agriculture. Their accuracy largely depends on the interviewers and the respondents.
- A survey utilizing area frame sampling uses maps, aerial photos, and the interview to study cultivated area, landholdings, and production. This approach is used mainly by the Office of Agricultural Economics.

- LANDSAT imagery interpretation and field observation are used in classifying land-use areas for various purposes and involve the interpretation of LANDSAT imagery and ground surveying (for checking). This approach is widely used by the Department of Land Development and the Royal Forestry Department. At present, there is still the problem of lack of detail, since the scale used is rather large (1:250,000).
- Aerial photo interpretation and field observation are used for land-use classification and usually provide more accurate data than the LANDSAT imagery interpretation.
- Registration usually takes place after the cadastral survey is completed. For example, community land, national forest reserves, and national parks are registered.

Of all the above methods, aerial photography and LANDSAT imagery have become the most important in recent surveys. Each of these techniques is briefly described below.

Aerial photography for use in making maps was introduced in Thailand in 1930 and has been widely practiced since then. For example, in 1972-1979, aerial photography was used for the project on the issuance of the N.S.3-K form by the Department of Lands; in 1983-1985, it was used for the land reclassification of forest areas; and its latest use was in 1985-1986 for the accelerated land titling project by the Department of Lands.

Thailand joined the US Satellite Resource Survey in 1971, and it installed a Satellite Relay Station in 1982. LANDSAT imagery has been used for land use and forestry surveys since 1973.

In comparing these two survey methods, it is clear that LANDSAT imagery has time and cost advantages over aerial photography (table 3.3). However, in terms of accuracy, the latter method appears better. Moreover, aerial photographs are particularly suitable for certain tasks such as land titling, surveying for which is being done by the Department of Lands.

Table 3.3 Costs of Survey by Landsat and Aerial Photography

Item	Landsat	Aerial Photo
Number of Photos Used	13	3,652
Period of Field Work (days)	90	210
Manpower Used (persons)	4	20
Total Expenses (baht)	52,300	322,020
Survey Expense Per Rai (baht)	0.00049	0.00304

Source: Department of Land Development

Problems Encountered in the Survey

- Differences in Results. The five survey methods give different results simply because of the very nature of the methods used. This certainly causes problems in using the data.
- Out-of-Date Aerial Photographs. Though aerial photographs give accurate data, the cost is very high. Also, it usually takes a long time (2-3 years or more) to complete a project; thus, the data have become old. Nor does such a project usually cover the whole country. Currently, there three sets of aerial photographs: The first were taken in 1966-1969; the second, for the N.S.3-K project, in 1972-1979; and the latest, for forest areas only, in 1983-1985. Finally, the Land Titling Project of the Department of Lands is now using aerial photographs which have been taken since the inception of the project in 1985.
- LANDSAT Imagery Interpretation. The main problem with LANDSAT is the lack of equipment and qualified personnel since it is necessary to use a computer for accurate interpretation. Also, the scale used is still too large to get the necessary details; however there have been recent improvements in this type of technology which should be brought to Thailand.

Present Land Use

As previously mentioned, the data on land use have been collected by various agencies using different methods. The results are therefore rather different. In this study, we used forestry and agricultural land-use maps along with ground checks. The data on land use for 1985 are as follows:

• National Forest Reserve	136,223,169	rai
– Forested Area	92,392,551	rai
– Encroached Area	43,843,618	rai
• Agricultural Land[4]	152,041,555	rai
– Rice	84,250,816	rai
– Field Crops	51,411,432	rai
– Horticulture	101,262	rai
– Rubber	10,541,957	rai
– Oil Palm	386,421	rai
– Other Tree Crops	5,349,667	rai
• Residential Land[5]	2,736,585	rai
• Water Bodies	3,059,256	rai
• Other	26,623,385	rai

The latest data also indicates that the area of encroached forest land is 43.8 million rai. This indicates a substantial increase of forest depletion, which was reported to be 33 million rai in 1982 (Land Use and Land Rights Policy 1982). Agricultural land also increased to 152 million rai.

Changes in Land Use

Land use is a dynamic process that changes over time due to a number of factors, including increasing population, changes in cropping systems, and technology. It is well known that prior to the mid-1950s, agriculture in Thailand was characterized by monocropping, with rice as the only major crop. Indeed, in 1960 rice took almost 60 percent of the total cultivated area, compared to 12 percent and 16 percent for upland and tree crops. At that time forests covered almost 60 percent of Thailand's land area. During the period of 1960-1984, rice remained the predominant crop. Its share of acreage of the total caltivated land increased to 63.5 percent in 1975, then dropped slightly to 61.8 percent in 1980, and to 59.6 percent in 1984. Upland crops gained substantially in terms of cultivated area, increasing from 7.5 million rai in 1960 to 29.2 million rai in 1984. In terms of proportion, upland crops increased from 12 percent to 23 percent during this period. Tree crops (including fruit trees) dropped sharply during 1960 and 1975, then increased slightly in later years. Forest land changed drastically, however, decreasing from 189.5 million rai (58.5 percent of the total area) to only 93.2 million rai (29.5 percent) between 1960 and 1984. Obviously, the great expansion of cultivated land during the period has been made possible by the tremendous reduction in the forest area (table 3.4).

On a regional basis, a remarkable change in land use during the past decade is observed in field crops in all regions, except in the South, where fruit trees and tree crops are most important. Forest lands were heavily encroached upon in the Northeast, and farm size remained rather stable over the last ten years (Office of Agricultural Economics 1975/76, 1984/85).

Table 3.4 Trends in the Use of Cultivated Land

Item	1960		1975		1980		1984	
	'000 Rai	%	'000 Rai	%	'000 Rai	%	'000 Rai	%
Total Cultivated Land	62,980	19.64	112,211	34.99	119,000	37.11	125,757	39.21
Rice	37,106	11.57	71,239	22.21	73,563	22.94	74,913	23.36
Upland crops	7,449	2.32	19,953	6.22	25,758	8.03	29,169	9.10
Tree crops[1]	9,739	3.04	10,413	3.25	11,142	3.47	12,378	3.86
Perennial crops	8,686	2.71	10,606	3.31	8,537	2.66	9,297	2.90
Forest Land[2]	87,526	58.47	130,762	40.77	103,419	32.25	94,696	29.53
Other[3]	70,192	21.89	77,725	24.24	98,279	30.65	100,245	31.26
Whole Country	320,698[4]	100.00	320,698	100.00	320,698	100.00	320,698	100.00

Note:
1. Including para rubber, oil palm and horticulture
2. Forest Department, 1985
3. Including grazing land
4. This is an adjusted number so that it will be consistent with that of later years. It was, in fact, reported to be 321,250,000 rai in 1960

Source: Office of Agricultural Economics (1960, 1975 and 1984)

PROBLEM OF LAND CLASSIFICATION

Major problems of land classification involve the following:

Accuracy of Land Classification Maps

During the early period land classification maps lacked clarity, particularly regarding the boundaries between forest and agricultural land—due to the use of geographical maps with 1:50,000 scale in determining boundaries. Errors have caused problems between the Royal Forestry Department and the Department of Lands. If aerial photographs had been used from the outset, the problems would have been minimized.

Aerial Photographs

There are two problems with aerial photographs. One involves scale and the other, out-of-date photographs. The use of old photographs on a small scale does not give enough detail on current land use.

Government Control

For many years, the government has tried to reserve land for certain purposes such as forestry. However, as already pointed out, many forest reserve areas have been destroyed. The enforcement of law and the protection of forests have been completely ineffective. Another dimension of the problem is the fact that the 40 million rai of encroached forest land where farming has been practiced for decades—is actually suitable for agriculture. However, the government is unwilling to give up, or degazette the land. Hence, this type of land is still considered forest area and is under the control of the government. If the land were allocated to the farmers with appropriate land rights, it could be used more efficiently.

Land Use Planning and Practices

After land classification and land-use planning have been completed, it will benefit society only if the plans are put into practice. This realization has not taken place in Thailand. Moreover, certain areas that are not suitable for agriculture have been assigned to the land allocation program. An extreme case involves the hilltribes.

Clearly, problems relating to the hilltribes are complex and multidimensional—social, political, and economic—and they involve national security as well. It is well known that due to their way of life and their practice of shifting cultivation, hilltribes have caused tremendous damage to forest and watershed resources. Past government efforts to deal with the problem have been rather disappointing. As the hilltribe population increases and deforestation in the highlands expands, the problem will intensify. A clear policy on this issue is therefore needed.[6]

Finally, it is important to note that the Department of Land Development is responsible for preparing plans for efficient land use. However, it does not have any power to implement these plans. This dilemma should particularly interest the policy makers concerned.

Time Requirements

- Land classification is a continuous system that takes a great deal of time to complete. Unfortunately, the time allotted to carry out projects is usually very limited, which leads to delays in producing results and creates problems for potential users.
- Because of the time-consuming nature of the work, results usually come out late and are sometimes not very useful because changes in land use might have already occurred by the time the results are known.

THE PROPOSED POLICY ON LAND CLASSIFICATION

Land classification should be carried out with accuracy and efficiency if it is to be useful for land-use planning. The policy on this should be as follows:

- The government should support the survey's collection of data on all aspects of land resources on a continuing basis so that the data will remain consistent with the changing situation. Data will be collected by using an appropriate system.
- The government should support land evaluation for various activities by using acceptable and appropriate methods.
- The government will provide the support for aerial photographing every five years or during every National Plan. This will be done nationwide in the shortest time possible so that it can be used effectively during every period of development.
- The government should support the use of LANDSAT technology, including the provision of the necessary equipment and a clear division of responsibility among the agencies concerned.
- The use of land for any activity must be consistent with land capability. Areas with a slope of over 35 percent should be strictly reserved for forest areas.
- The government should support land use planning at all levels so that land is used wisely and efficiently.
- The government should support land-use planning so that it will actually be put into practice. This can be done by means of promotion or by providing incentives or services, except when failure to practice the designated plan will cause serious damage to the land. In that case, there should be strict enforcement through laws or regulations.

Chapter 4

Policy On Soil And Water Conservation

INTRODUCTION

Although land is considered a renewable resource, if not used properly, soil fertility can be completely lost, and the land might no longer be productive. In fact, the fertility of natural soil exists within the top layer only and is merely a few centimeters thick. This topsoil contains plant nutrients and organic matter of a quality suitable for the growth and production of crops.

In most tropical countries, including Thailand, soils are usually old, highly weathered, and excessively leached by the high intensity of rainfall during the short monsoon periods. Removing protective forest vegetation exposes structurally unstable soil to the driving force of rains; this results in accelerated soil erosion, especially of the fertile topsoil. Careless land use (which allows rainwater to erode and detatch soil particles and carry the soil to the lowlands) causes decreasing agricultural yields. Sediment soon fills up waterways and reservoirs.

Good soil and water conservation practices involve the wise use of land resources, with soil material being prevented from moving—particularly topsoil, which is essential to the cultivation of crops. Also, it is necessary, to the extent possible, to keep rainwater where it falls in order to protect the soil particles and organic matter from being leached by runoff water.

Soil and water are the two most important factors for plant growth. Therefore, it is necessary to conserve them through good soil and water conservation practices. In fact, there is water in all types of soil, but not all soil water is available to plants; however, if the soil-water ratio is suitable and climatic conditions are favorable, efficient plant growth will occur.

Thailand's population has been increasing at a rather high rate, but its total amount of land is fixed and limited. An increased population inevitably requires land for many purposes. However, even though the amount of land is limited, with proper management (through land-use planning and soil and water conservation), even a limited land mass can be used efficiently and permanently in order to adequately provide the goods and services required by the ever-increasing population.

Soil and water conservation practices must be integrated into other natural resource management areas. Forestry and watersheds are two such areas. It is particularly necessary to protect the mountain/highland watershed areas in order to prevent soil erosion and erosion's negative effects downstream. Efficient watershed management results in good water yields, a sufficient water supply, high water quality, regular flow and the control of soil quality in the watershed areas.

Although soil, water and forestry conservation practices have been employed in Thailand for many years by the departments of Land Development and Forestry, there is no national soil and water conservation policy. Therefore, there is no conceptual framework, no generally accepted methodology, and consequently, no cooperation among government agencies and farmers. Past soil and water conservation practices have been complicated and costly, and appropriate measures for specific local areas have not been found. Therefore, it is necessary to formulate an efficient national policy on soil and water conservation.

SOIL DEGRADATION

Soil degradation is caused by many factors, but the most important is soil erosion that occurs either geologically or is accelerated when people and animals are involved in changing how the land is used.

In Thailand research on soil loss through water erosion has been conducted for at least twenty years. Plots have been established to study the effects of soils, slopes and crops on runoff and erosion. The Land Development Department (the agency responsible for soil and water conservation), is giving more attention to research in this area, including how to improve research techniques and data analyses.

In Thailand soil loss is divided into five groups—from very slight to very severe. table 4.1 indicates that moderate to very severe soil loss has occurred on approximately 107 million rai of land, especially in the upland and highland areas.

Another study on soil loss resulting from different land uses in the northeastern changwats of Sakon Nakhon and Kalasin (Pairin et al. 1982) showed the following:

Land Use	Soil Loss (Tons Per Hectare Per Year)	
	Sakon Nakhon	Kalasin
Shifting cultivation area	15.48	16.44
Bare soil	24.76	20.87
Forest	2.38	4.48

In a soil loss experiment in Changwat Nan (Peugrai and Marston 1982), no water conservation practices were employed, and soil loss was measured on a five percent slope used for upland crops. Results showed loss to be about 26.82 ton/rai. A study on soil loss in the Ping and Wang Basins (Chomchan and Panichapong 1986) indicated that the rate of soil loss there was 2-10 ton/rai/year, which is double the loss in contour cultivation areas.

Table 4.1 Soil Erosion Problem by Type of Land Use, 1981

Erosion Status	Estimated Soil Loss (T/Rai/Yr)	Area (Mil rai)	%	Land Use Type
Very low	0.01-1.00	118.70	36.00	forest and paddy field
Low	1.01-5.00	90.28	28.10	forest, orchard, rubber and paddy
Moderate	5.01-20	25.91	8.07	rubber, orchard, upland crop and forest
Severe	20.01-100.00	42.62	13.27	rubber, orchard, upland crop, forest and shifting cultivation
Very severe	100.01-966.65	39.16	12.19	upland crop, forest, and shifting cultivation
Others	4.56		0.23	fish and shrimp ponds, mangrove swamp and beach

Source: Department of Land Development

It is also quite evident that the high rate of deforestation over the past two decades has increased the annual rate of soil erosion and the high sedimentation rate in reservoirs. Clearly, the severity of the soil erosion problem requires a prompt solution. However, soil erosion has been largely overlooked by the agencies concerned; in fact, the present soil and water conservation program covers a very limited area. Further, it is incapable of solving existing soil erosion problems.

PAST AND PRESENT SOIL AND WATER CONSERVATION POLICY

The government has maintained an overall policy on soil and water conservation as well as indirect supportive policies for some time. These policies are included in the National Economic and Social Development Plan, land laws, forest laws and cabinet resolutions.

National Economic and Social Development Plans

A soil and water conservation policy has been indicated continuously since the First Plan:

- **The First Plan, Second Phase** (1964-1966) indicated that the government would carry out a program on natural resource development—especially on land, forest, and water resources—in order to use these resources more productively and economically. Some consideration was given to conservation. The plan also included surveying for land classification and soil fertility. Soil conservation and water conservation were put under the responsibility of the Department of Land Development.

- **The Second Plan** indicated that two land development centers would be established annually in the appropriate provinces to work closely with relevant agencies on problems of watershed management.
- **The Third Plan** described how the program on natural resource conservation was to be carried out for the sake of efficient future agricultural activities.
- **The Fourth Plan** emphasized the problem of natural resource utilization, including environmental deterioration, and called for the extension of the Department of Land Development's soil and water conservation project, expanding the project to include soil improvement. The Plan also gives first priority to the reforestation of the watershed areas.
- **The Fifth Plan** emphasized maximum economic return from land, water and forest resources. It called for the protection of deteriorating natural resources by means of conservation measures and included the "special problems" approach to soil improvement (saline soil in the Northeast) and fast-growing tree plantations for use as fuel wood and for preventing soil erosion.
- **The Sixth Plan** focused on systematic natural resource development with consideration given to conservation. The Plan also pays attention to watershed classification and land reclassification.

Laws

There are many laws that indicate the government's intention to conserve lands, forests and other natural resources. They include:

- The National Park Act, BE 2504
- The National Reserve Forest Act, BE 2507
- The Improvement and Conservation of National Environmental Quality Act, BE 2518
- The Land Development Act, BE 2526

Of these laws, the Land Development Act, BE 2526 presents the clearest government policy position on soil and water conservation. It assigns the preparation and establishment of soil and water conservation measures in any area of the country to the Land Development Committee.

Cabinet Resolutions and Government Policy

Many cabinet resolutions and government policies on soil and water conservation have been enacted. They include:

- Watershed management
- Watershed classification
- Guidelines for implementing natural resource and environmental conservation for each ministry and department
- Closing forests for resource conservation
- National policy and guidelines on environmental development
- Policy on land use and land rights
- National forest policy

After analyzing these resolutions and policies, we can conclude that for the past two decades, the government has recognized the problems of natural resources deterioration—especially of land and forests. There are also policies dealing both directly and indirectly with soil and water conservation.

Finally, it should be noted that in the past ten years, many seminars and research studies on soil and water conservation have been held. The views and recommendations evolving from these activities have provided useful concepts for the soil and water conservation development program. Among the studies conducted, the work of The Thai University Research Association (TURA, 1980) and The Asian Institute of Technology (AIT, 1983) are worthy of mention. Support seminars and research studies have indicated that natural resources deterioration is very severe and requires urgent attention. They also stated that effective conservation measures are necessary, as is the formulation of a national policy on soil and water conservation that clearly specifies both a direction and an overall goal.

PROGRESS OF THE SOIL AND WATER CONSERVATION PROGRAM

Responsible Agencies

The principal responsible agencies for soil and water conservation are the departments of Land Development and Forestry. The Royal Forestry Department implements its projects only on public lands, particularly in watershed areas. However, the Land Development Department implements projects for both public and private lands. There are a number of other responsible agencies that support these two departments in implementing soil and water conservation programs. They include the following:

- Principal Agencies
  - Land Development Department
  - Royal Forestry Department
- Supporting Agencies
  - Office of the Rubber Replanting Aid Fund
  - Department of Public Welfare
  - Agricultural Land Reform Office
  - Department of Agricultural Extension
  - State universities

Details of the soil and water conservation programs of the principal agencies—the Land Development and Royal Forestry Departments—are briefly described below.

The Land Development Department (LDD)

According to the Land Development Act, the Land Development Department has the duty to survey and analyze the land and soil in order to: determine its fertility, land classification and suitability for utilization and development; prepare

land censuses; and to conduct economic surveys of the land. The Soil and Water Conservation Division is responsible for LDD soil and water conservation activities. Also, 12 Regional Land Development Offices and 53 Land Development Stations take part in the soil and water conservation program.

In the fiscal year 1984, the Soil and Water Conservation Division had 146 officers and together, the 12 Regional Land Development Offices had 888 officers. Hence, there were 1,034 officers working on the LDD's soil and water conservation program.

In 1984 the operating budgets for the LDD's soil and water conservation programs were as follows:

- Soil and Water Conservation Project—155,997,043 baht.
- Soil Erosion Prevention in the Northern Thailand Project—19,490,242 baht.
- Soil and water conservation promotion activities—7,966,874 baht.

The operating budget for the soil and water conservation project was the highest for all LDD projects. However, given the extent of the country's soil and water problem, the budget is quite limited.

Royal Forestry Department (RFD)

The RFD comprises 13 divisions, 21 Regional Forest Offices, 72 Provincial Forest Offices and 670 Amphur Forest Offices. The RFD's forest conservation program is one of its major undertakings. In 1984 about 60 percent of the annual budget (or 848,762730 baht) was allocated to the forest conservation program, which included the following activities or projects:

National Parks	112,030,700	baht
Wildlife Preservation and Protection	100,983,000	baht
Forest gazettement	46,189,200	baht
Reforestation	118,600,000	baht
Forest maintenance	252,852,830	baht
Forest protection	11,421,600	baht
Mae Sa project	40,489,800	baht

Work Accomplishments

The Land Development Department (LDD)

Since 1963 the LDD has carried out its soil and water conservation programs without interruption, including research, experiments, demonstrations and technology transfer. Most LDD development projects also include soil and water conservation activities. However, the LDD soil and water conservation program has covered only a very small portion of the total problem area of soil erosion. While the problem area covers about 107 million rai, by the end of 1984, only 1.9 million rai had been completely surveyed and had a designated soil and water conservation system (table 4.2). Techniques for soil and water conservation had been extended to about 1.9 million farm households; public relations involved about .8 million farm households; and altogether the program covered about 2 million households—about 42 percent of the total farm households in the country.

It should be noted that soil and water conservation is the main task of most of LDD's development projects—such as the Northern Agricultural Development Project, the Mae Cham Watershed Development Project and the Hilltribe Land Development Project.

Royal Forestry Department (RFD)

Reforestation

Reforestation programs began to be implemented in Thailand in 1906, when teak was planted in Phrae Province. The First Development Plan (1961-1966) included reforestation as one of its efforts and designed it as a continuous program. However, by the end of 1984 the total area reforested by the RFD was only about 2.4 million rai—clearly very limited progress. Another reforestation project was completed by a concession following an agreement made with the RFD; under this program, about 700,000 rai was reported reforested. Lastly, about 186,000 rai has been reforested by the private sector, including farmers. Thus, at the end of 1984 the total land area that had been reforested was about 3.2 million rai. This is a very small area when compared with the total need for reforestation.

Watershed Development

The Watershed Management Division of the RFD is responsible for implementing soil and water conservation projects, especially in watershed areas. It carries out surveys, research, extension, technology transfer and watershed development activities. The Watershed Management Division has 304 officers, 217 employees and 246 Field Units (many of them Watershed Development Units, which include 81 units). The work done from 1965-1985 was as follows:

Reforestation for watershed rehabilitation	661,334	rai
Reforestation for fuel wood	34,170	rai
Watershed survey	29	areas
Hilltribe village	11	villages
Conservation farming extension	24	sites

The data show that even after twenty years of implementing RFD soil and water conservation programs, only a small proportion of the watershed area has been developed. In summary, the LDD and RFD contributions to the soil and water program have been rather limited in terms of area covered. Nevertheless, there has been some transfer of research results to farmers. However, a great deal of work remains to be done.

PRESENT SOIL AND WATER CONSERVATION MEASURES

The soil and water conservation measures presently being implemented can be divided into mechanical and agronomic measures. They function in different ways to prevent soil erosion and run-off as follows:

Table 4.2 Results of Soil and Water Conservation Program, Department of Land Development, 1963 - 1984

Activity	Unit	1963-1976
1. Research on Watershed Management	Project	0.00
2. Research on Soil and Water Conservation, Soil improvement		251.00
3. Soil and Water Conservation Demonstration	Rai	0.00
4. Cover Crops Production for soil and Conservation Project	Rai	0.00
5. Training of Government Officers and Farmer Leaders	Person	0.00
6. Technology Transfer to the Farmers	Person	786,710.00
7. Compost Production Demonstration	Ton	0.00
8. Soil and Water Conservation Structures Construction	Km.	1,062.90
9. Design Soil and Water Conservation System	Rai	0.00

Source: Department of Land Development

- Mulching: The surface soil is covered with stubble or industrial residue, such as sugar cane residue from sugar mills. Mulching is a cheap method and is easily practiced. It can be applied to every type of land surface in combination with other methods.
- Cover Cropping: Cover crops, including legumes and grass, are easily grown at low cost.
- Crop Rotation: Two or more crops are grown in rotation on the same area. This is an easy method. It requires little investment, but the crops selected for the area should correspond to the local market demand.
- Contour Cultivation: Soil is ploughed along a contour line. This can be done by tractor or by an animal-drawn plow in areas that are rather smooth and gently sloping.
- Ridge-Type Terrace Construction: Earthen banks are constructed across the slope in order to shorten and divide the length of the slope into different sections. This method is applied in areas with a slope of not more than 15 percent.

Table 4.2

1977-1981	1982	1983	1984	Total
364.00	5.00	5.00	50.00	424.00
387.00	140.00	129.00	127.00	1,034.00
33,927.00	5,421.00	6,271.00	5,049.00	50,668.00
18,167.00	3,487.00	3,551.40	2,276.00	27,481.40
0.00	0.00	0.00	15,260.00	15,260.00
233,880.00	75,655.00	73,359.00	80,334.00	1,249,938.00
193.83	0.00	0.00	310.60	504.43
0.00	1,251.30	1,315.70	976.08	4,605.98
0.00	529,472.00	700,000.00	700,000.00	1,929,472.00

- Channel-Type Terrace Construction: A broad-based bank with a channel along the side is constructed along the contour line. This can be done by digging the channel and putting the earth alongside the channel at the lower level.
- Hillside Ditch: Ditches are constructed across the slope to divide the length of the slope into different sections and to divert the runoff water into a waterway.
- Bench Terracing: Bench terraces are constructed across the slope in highly sloping areas. This is a high cost approach, as it requires construction and maintenance.
- Waterways: Waterways are constructed to discharge the runoff water (from contour banks, earth banks, bench terraces or hillside ditches) into farm ponds or other prepared areas.

Studies have been made of soil and water conservation projects carried out by successive past governments or through foreign assistance. Apparently in the past, the idea of soil and water conservation planning emphasized the use of mechanical measures, such as the construction of terraces, hillside ditches and waterways. This

has made the cost of conservation very high (table 4.3). Agronomic measures, such as the extension of appropriate cropping systems to prevent soil erosion, were generally overlooked. In fact, only a few projects included agronomic measures.

The idea of transferring technology through various demonstration methods has been used intermittently. In the early phase of the Fifth Plan, technology was transferred directly to farmers. Training courses were given to farmer leaders, or farmer meetings were held, in which applying agronomic measures in combination with mechanical measures was recommended for soil and water conservation. The farmers were more motivated to participate in the project if they were involved in establishing a demonstration village for soil and water conservation. This method was carried out by the Department of Land Development, for example.

SOIL AND WATER CONSERVATION RESEARCH

Three types of soil and water conservation research are necessary. What each type entails is briefly outlined below:

- Crop Management Research involves the selection of cover crops and grass varieties that are suitable for given regions.
- Water Management Research includes dripping irrigation for fruit trees and ditch irrigation for various crops. Very little research has been carried out in this area.
- Soil Management Research involves determining soil loss from various management practices. This area has been well studied.

Table 4.3 Cost Per Unit of Operation of Each Type of Activity of Soil and Water Conservation

Activity	Expense			
	Operation	Supplies	Wage	Total
Training of Officials (Person)	1,963	137		2,100
Training of Farmer-leaders (Person)	350	50		400
Meeting/Training of Farmers (Person)	6.5	6.5		13
Demonstration (Plot: Size 30-50 Rai)	10,100	11,700		21,800
Construction of Soil Erosion Protection				
- Mainly Use Machines (Km.)	5,500	12,200	545.5	18,247.5
- Mainly Use Labor (Km.)	3,900	1,200	8,182.5	13,282.5
Production of Seeds (Rai)	100	500	2,182	2,872
Purchase of Seed from Farmers (Kg.)				50
Acquisition of Seeding for Soil Erosion Protection (Tree)				1.5

Source: Department of Land Development

Research in the above three areas has mostly been carried out at land development stations rather than on individual farms. Thus, the results could not be effectively applied and transferred to farmers. Also, the results of this research do not support one another, due to the lack of experimental coordination. Moreover, farmers do not accept the various approaches to soil and water conservation obtained through this research because they are not economically feasible. For example, crops recommended to farmers to prevent soil erosion are not in market demand. Such oversights make the results of this research unattractive and of little use to farmers.

THE CAUSES OF PROBLEMS IN PROJECT IMPLEMENTATION

Problems Caused by the Bureaucracy

- Even though the government has implemented direct and indirect policies on soil and water conservation for over two decades, these policies have neither clearly defined the area to be covered nor have they indicated the way in which projects should be carried out by the agencies involved.
- There is often no coordination between projects formulated by individual agencies. For example, projects on soil and water conservation for both the lower and the upper parts of a catchment area should be carried out simultaneously. This is because the project for the lower part of the catchment would obviously not succeed if a project for the upper part was not carried out.
- There are no soil and water conservation measures recommended to farmers that they can easily practice.
- The agronomic measures recommended to farmers are not compatible with their existing cropping systems.
- Most soil and water conservation projects are concerned with demonstrating or emphasizing the construction of earth structures requiring a relatively large investment of capital.
- There is a lack of project continuity and financial support which creates problems of maintenance.
- Soil and water conservation are perceived by farmers as a kind of aid. And as no repayment is required of farmers, they are frequently unwilling to be responsible for the maintenance of earthen structures after a project has been finished. They assume that the project is the government's responsibility.
- Soil and water conservation research emphasizes the study of physical features without considering economic and social factors. As a result, the technology used in research is usually too high to be appropriate for farmers.

Problems of the Farmers

- Farmers cannot afford to practice soil and water conservation techniques because such practices require more labor costs and farm materials than are usually spent. Land preparation, fertilizer, seed and living expenses are considered of more importance than conserving soil and water, which does not appear urgent.

- Some farmers cannot visualize the future impact of soil degradation. They lack a long-term perspective, which causes them to ignore the necessity for soil and water conservation. They do not understand that sooner or later, soil loss will have a negative impact on both their land and their society.
- Most of the land area occupied by farmers is too small to allow extensive mechanical soil and water conservation practices. Consequently, they are afraid to lose any cultivated land area.
- Farmers still expect to find new land to substitute for their old unproductive land.

Problems Caused by the Project Design

- Most soil and water conservation measures incur higher production costs even when the easiest methods are selected. For example, preparing land for growing crops along contour lines between contour banks requires more time and care. This is inconvenient to the person who operates the machinery. The farmer is likely to be refused by the hired tillage operator because contour plowing requires more time and increases the cost by about 5-7 percent.
- Practicing soil and water conservation does not immediately and dramatically increase yields. Therefore, farmers are not motivated to be conservationists. They would prefer to invest in chemical fertilizer and high yield varieties as profits are more immediate.

RECOMMENDATIONS

Future Soil and Water Conservation Projects

Future soil and water conservation projects can be divided into the three follow types:

Type 1: Projects carried out by government agencies on state land.
Type 2: Projects implemented by the government with farmer participation or in which the government provides a service to farmers on both state and private land.
Type 3: Projects implemented by the private sector on private land.

Problem Analysis for Project Formulation

Among the three project types above, designing types 2 and 3 requires investigation and analysis of existing problems in the three areas discussed below:

- An analysis of national policy and the National Economic and Social Development Plan would require studying existing problems and the policy trends for water and soil conservation. These include: financial problems; the policy of public service instead of individual service; participation of the private sector; emphasis on crop change; and transfer of technology to farmers, allowing various choices in order to improve their land-use efficiency and to avoid increasing the agricultural land area.

- Economic and social analyses include age and education of the farmers; labor and employment in farm households; land tenure; area of existing agricultural land; income and expenditures; farmers' experience with soil and water conservation projects; and their attitudes toward such projects.
- Analysis of farmers' adoption practices would involve determining farmer preferences. Since there are many methods used to conserve soil and water, knowing why farmers adopt a particular method and knowing which method farmers prefer are essential for project formulation and planning.

FUTURE POLICY ON SOIL AND WATER CONSERVATION

The government must prevent the deterioration of national land resources by setting up a national soil and water conservation project, to be carried out by the government with the partial participation of farmers. The various methods used to prevent soil erosion should be characterized by low cost, ease of practice by the farmer, and compatibility with the cropping system used by the farmer.

The design of each subproject should cover the whole catchment area and would be carried out in accordance with the land-use plan for each catchment.

A POLICY FRAMEWORK FOR SOIL AND WATER CONSERVATION

The following proposed policy framework for soil and water conservation consists of four aspects that support the development of future national policy:

1. *Research.* A variety of studies will seek practical, low-cost methods of soil and water conservation that are appropriate to the topographic, economic and social conditions of each region. The seriousness of land degradation problems throughout the country must also be investigated. This problem is urgent.
2. *Transfer of Technology.* The transfer of soil and water conservation technology should take place in the long and short terms. This includes dissemination of knowledge, public relations, formal and informal education, training government officers and farmer leaders, and organizing and holding farmer meetings, demonstrations and conferences.
3. *Public Service.* In areas that have deteriorated beyond the ability of farmers or farm groups to rehabilitate them, the government must help by providing some of the materials necessary for soil conservation. These include: material for cover cropping; tree seedlings; and funds, for example.
4. *Enforcement of Laws and Regulations.* The government must urge the agencies involved to carry out the project by enforcing laws and regulations such as those on watershed classification, land-use plans, national forest policy, and the other laws that would support the national soil and water conservation project.

Chapter 5

Forest Land Policy

Thailand has both inland and mangrove forests. As their characteristics and uses differ, this study investigated both, since it is also probable that details of policy on them would differ.

GENERAL FOREST POLICY[7]

The Forest Situation in Thailand

Thailand is located in the tropical zone, and the country is covered by two main types of tropical forest—deciduous and evergreen. Deciduous forests are identified as mixed deciduous and dry-dipterocarp forests, while evergreen forests includes moist evergreen, pine, mangrove and tropical rain forests. The Royal Forestry Department reports that originally, 70.8 percent of Thailand was covered in deciduous forest; the other 29.2 percent was evergreen. These forests were all valuable economically as well as attractive. Timber has been commercially harvested in them for centuries and as a result, there has been tremendous decline in the forest cover.

In 1972 the Food and Agriculture Organization of the UN (FAO) reported that in the period of 1967-1970 Thailand's total forest area was 270,200 square kilometers (km^2), including growing stock of about 1,289 million cubic meters (m^3) with an annual increase of 27.5 million m^3 per year. It was estimated in 1985 that the growing stock had declined to only 877 million m^3. This annual increase is only 17.46 million m^3 annually compared with an annual demand of 88 million m^3 for fuelwood, poles, lumber, plywood, pulp, paper and other items.

Deforestation is widespread and serious. The forest area depletion rate was discovered to be 3.9 million rai annually from 1938 to 1985 and was highest—7.2 million rai per year—from 1976 to 1978. However, since 1978 the depletion rate has tended to decline—2.9 million rai per year from 1978 to 1982 and 1.6 million rai from 1982 to 1985 (table 5.1). Reasons for this decrease might be that the remaining forest area is less fertile and unsuitable for agriculture, and/or that protective measures have been strengthened.

It is currently estimated that the forest area comprises 49.59 percent (52,578,750 rai) in the North; 25.56 percent (10,767,500 rai) in the Central Plain; 21.90 percent (9,678,125 rai) in the South; 21.89 percent (4,993,899 rai) in the East;

Table 5.1 Forest Area in Thailand, 1938 -1985

Year	Forest Area		Decreasing Rate (Mil Rai/Year)	Population (Mil)
	Mil Rai	% of total Country Area		
1938	230.90	72.00	-	15
1947	224.49	70.00	0.7	18
1954	192.42	60.00	4.6	20
1961	171.03	53.33	3.1	30
1973	138.57	43.21	2.7	40
1976	124.01	38.67	4.9	45
1978	109.52	34.15	7.2	48
1982	97.88	30.52	2.9	50
1985	93.16	29.05	1.6	52
Average	-	-	3.9	-

Note: (1) 1938, 1947 and 1954 data were obtained from secondary sources and interviews.
(2) 1961 data were derived from aerial photographs.
(3) 1973 through 1985 data were derived from LANDSAT imagery.
(4) Decreasing rate of 3.9 million rai per year was calculated from the data from 1961 to 1985.

Source: Klankamsorn and Charuppat (1983) and Royal Forestry Department (1986)

and 14.35 percent (15,140,000 rai) in the Northeast. Thus, 29.05 percent (93,158,274 rai) of the country is covered by forests. Among the main causes of forest depletion are slash and burn activities, enlarging cultivated areas, illegal timber harvesting, forest fires, wood craft industries and other forms of forest mismanagement. Although reforestation has been ongoing for 80 years, its overall impact has been rather smal—only 3 million rai for the entire country (table 5.1).

PAST FORESTRY POLICIES

Policies and Implementation

Forestry activity began in previous centuries when teak was harvested in Chiang Mai, Lamphun, Lampang, Phrae and Nan by the feudal chiefs who owned the forests. According to their property rights, they were able to sell concessions to exploit the teak forests, without any concern for the resulting forest deterioration. In 1896, on the recommendation of Mr. S. Slade, an Englishman from India, The Royal Forestry Department was established. Mr. Slade was appointed by the Thai Government as the first Director General of this department, and the forest policies proposed by him included the following:

- The forests must belong to the nation, for the sake of everybody in Thailand,
- Establishment of an organization (Royal Forestry Department) for controlling the use of forests in such a way that they will benefit everybody in the nation forever.
- Enactment of laws for controlling forest activity, protecting forests from all kinds of destruction, and collecting fees.
- Creating an enlightened forestry service by sending foresters for at least six months' study abroad.
- Regarding concessions, emphasis should be on forest conservation rather than on forest maintenance.
- Fees should be collected by the Royal Forestry Department rather than by local influential persons.
- By right, the government should own all forest lands.
- Teak should not be freely used. The substitution of other kinds of wood for teak should be promoted.
- Lumber harvests should not exceed the annual increment of growing stock.

Three important policies are among those first proposed by Mr. S. Slade: First, the transfer of forest rights from local strongmen to the government; second, the creation of a forestry service; and third, the enactment of forest laws and regulations. The policies proposed by Mr. S. Slade were the first in which technical aspects came into consideration. On September 18, 1986 the government of Thailand, with the permission of King Rama V, established the Royal Forestry Department (RFD). Following its establishment, many laws were enacted, but until 1932 the policies were mostly in line with those proposed by Mr. S. Slade. A few policies—especially concerning timber harvesting and payments to the Crown—were added.

After the RFD was established, many forest acts were aimed at the problem of excessive, unregulated teak harvesting (for example, the 1938 Forest Reserve Act, which was later replaced by the 1964 National Park Act). In general, these acts were theoretically sound but unrealistic in practice. Aside from these policies, selective harvesting was adopted soon after the RFD was established, and it is still now practiced. Reforestation was initiated in 1906 and was widely practiced by 1910. However, up to the present time, the area reforested under this policy has only been about 3 million rai (table 5.2).

Although forest policies were not clear in the past, they were included in all National Economic and Social Development Plans, which mentioned plans and work involving administrative matters, protecting the forest, timber harvesting, reforestation or forest conservation. An analysis of past forest policies indicates that:

- The government should not have completely taken over forest areas from local strongmen. If forest areas had remained private property, they might have received better care and attention than they now receive.
- Selective harvesting should not be used, as it gives excessive importance to ecological issues while giving inadequate care to socioeconomic issues. Selective harvesting should be employed only in some areas. Other approaches should also be tried.

Table 5.2 Reforestation Area from 1906 to 1984

Year	Reforestation		Purposes of Reforestation (Rai)		
	Area (Rai)	Forestry Plantation	Watershed	Rehabilitation	Concession Agreement
1906-1960	50,984	50,984	-	-	-
1961-1979	1,546,467	709,185	282,300	277,645	277,337
1980	508,727	252,473	80,500	98,960	86,794
1981	328,499	94,710	73,800	90,884	70,105
1982	202,403	56,280	35,000	30,600	80,523
1983	201,587	56,095	35,000	30,100	80,392
1984	202,981	56,450	31,075	32,575	82,281
Total	3,041,648	1,276,177	537,675	560,764	677,432

Note: (1) In 1984 fiscal year, reforestation cost was 1,000 baht/rai and maintenance cost was 150 baht/rai
(2) Reforestation during 1906-1960 was only for the purpose of forestry plantation

Source: Royal Forestry Department

- The private sector should be involved in reforestation in order to quicken the process.
- The private sector should be allowed to make use of forest land and to participate in forest protection.

Recommendations for Solving Forestry Problems

The study of past forestry policies shows some policy or implementation weaknesses that have contributed to today's forest problems. In order to solve or alleviate these problems, it is recommended that:

- Forest areas must be clearly designated, with area designations based on technical, political, economic and administrative reasons.
- After forest areas have been clearly delineated, the government must declare which of them are true forest areas, agricultural areas, urban areas or industrial areas. The criteria should be based on height, slope, topography, soil type, climate and other factors.
- In order to develop and manage forest areas effectively, the government must indicate which forest areas are under government responsibility and which are under private responsibility.
- Not only the government and government enterprises, but also the private sector should be involved in forest utilization and management.
- The body of existing forest research is inadequate; studies are not as systematic as they should be. Thus, a National Forest Research Institute should be established to oversee forest research efforts.

- Forest extension programs have not been effective and continuous. A Division of Forest Extension and Public Relations should be established. Moreover, forest management concepts should be introduced to forestry studies in schools, colleges and universities and to the public.
- Existing forest laws are obsolete. They should be revised and/or amended.
- As situations change, the organization and administration of the RFD should be improved and reorganized as well.

Aside from the above recommendations, forest policy should also incorporate the following :

- Wood exports and imports
- New technology in forest resource development
- Urban layout policy[8]
- Changes in harvesting system for some types of timber and in some locations.

PRESENT FOREST POLICY

1985 National Forest Policy

Due to the inappropriateness of previous policy content and implementation, it became clear that a national forest policy should be formulated. The government has created a National Forest Policy Committee chaired by the Deputy Prime Minister (Mr. Pichai Rattakul). The members of the committee include the ministers of Agriculture and Cooperatives, the Interior, Communications, Science, Technology and Energy, as well as other members from related government offices and from the private sector. The total number of committee members is 20, and the RFD Director General served as committee secretary. In 1985 this committee prepared a new National Forest Policy, which was approved by the government. The details are:

- The objective of long-term forest management and development measures is to produce maximum social, economic, environmental and security benefits for the nation. These measures must emphasize cooperation among agencies concerned with forests and other natural resources.
- The roles and responsibilities of both the government and the private sector in the management and development of forest resources must be strengthened.
- Forest administration procedures should be improved and made flexible so that they can adapt to the changing quantity, quality, and situation of forests and the environment.
- Forest areas must comprise at least 40 percent of the total area of the country. This forest area is classified as conservation forest area protected for the sake of the environment, soil, water, plants, and wildlife; for flood and soil erosion protection; and for study, research, and recreation areas. This conservation forest area will comprise 15 percent of the total area of the country. Commercial forest areas will comprise the other 25 percent of the nation's total area. It will be the nation's primary source of wood and other forest products.

- Both government and the private sector will develop forest areas to achieve set goals in such a way that both direct and indirect benefits can be continuously derived.
- More science and technology will be used to increase agricultural production efficiency so that forest depletion will decline.
- There should be complementary use of forest resources and other natural resources such as land, water, and minerals through cooperation among various government agencies, the private sector, and the local people. The government will set forest development policy as a part of its natural resource development policy, which will be included in the National Economic and Social Development Plans.
- There should be increased efficiency in timber production through improved forest management. Either selective or clear cutting timber harvesting systems are used. If clear cutting is practiced, reforestation should take place immediately.
- For the purposes of forest conservation and environmental protection, city planning and layouts must be improved, and forest areas clearly identified.
- A permanent National Forest Policy Board should be legally established. The responsibility of its appointed members is to set forest policy and control forest resource administration.
- The government should launch a campaign to educate and enlighten the public attitudes and to imbue the public with the necessary knowledge and skills toward forest resources. For example, the public must be made aware of the importance of forests to society and the dangers of deforestation.
- Reforestation in various parts of the country—either on government, local community, or private land—should be promoted.
- Forest-product-based industries, such as the pulp and paper industries, should be developed so that all wood parts are utilized. Moreover, substitution of wood with other materials should be promoted.
- Forest acts require revision to permit efficient forest conservation and utilization.
- A National Forest Research Institute should be established to conduct research on forests and to make use of the results.
- Reforestation in order to supply wood as an energy source should be promoted.
- Areas with a slope of 35 percent or more should be strictly declared forest land; land rights should not be given under these circumstances.
- Solutions to the problem of forest depletion through slash and burn farming, forest fires and enlarging the cultivated land area should be clearly identified along with measures and steps to be implemented.
- Incentives for private reforestation should be provided.
- Human resource planning should incorporate and be coordinated with natural resource utilization and conservation.

Improving the Administrative Structure

Since the 1985 National Forest Policy greatly differs from previous policy, it is necessary to improve the structure of the RFD. Without improvements, implementing new policy might not be feasible. The proposed new RFD structure is presented in figure 5.1. With this new structure, the RFD would comprise 19 divisions. As indicated, the Division of Public Relations and Extension and the National Forest Research Institute should be established.

Recommendations for Implementating the Forest Policy

In order that the 1985 National Forest Policy be effectively implemented, the following recommendations are proposed:

- Forest areas—whether conserved or commercial—must be clearly identified in order to protect the forests and the environment and to promote forest development, reforestation, recreation and timber harvesting.
- The RFD must be restructured, and the relationship between the RFD, other government agencies and the public/private sector should be strengthened.
- Forest laws and implementation measures must be revised.
- A network of forest information centers should be established to collect and disseminate all basic information.
- Cutting systems should be studied to find appropriate cropping systems to use in particular locations and situations.
- The direction and timing for the S.T.K. Program must be appropriately set.

MANGROVE FOREST LAND POLICY

The Importance of Mangrove Forests

The mangrove forest is one of the primary natural features of coastlines, and its importance to the human population is becoming better recognized. People—particularly those living in the coastal zone—depend upon mangrove trees for many purposes, including firewood, charcoal, timber and other minor products. The total annual wood production from mangroves is about 800,000 m^3 or 280,000 metric tons of charcoal, valued at 560 million baht. The significance of the mangrove forest in fishery production is also well recognized. Many commercially important kinds of fish, crabs, prawns and various kinds of molluscs use mangrove areas as nursery ground and shelter during the juvenile stages of their development. The potential of mangrove areas for aquaculture is gaining attention, owing to the increasing demand for protein food sources and declining marine fisheries yields. Moreover, as mangrove forests constitute an alluvial plain, they play an important role by protecting the land against tidal bores, cyclones, and soil erosion.

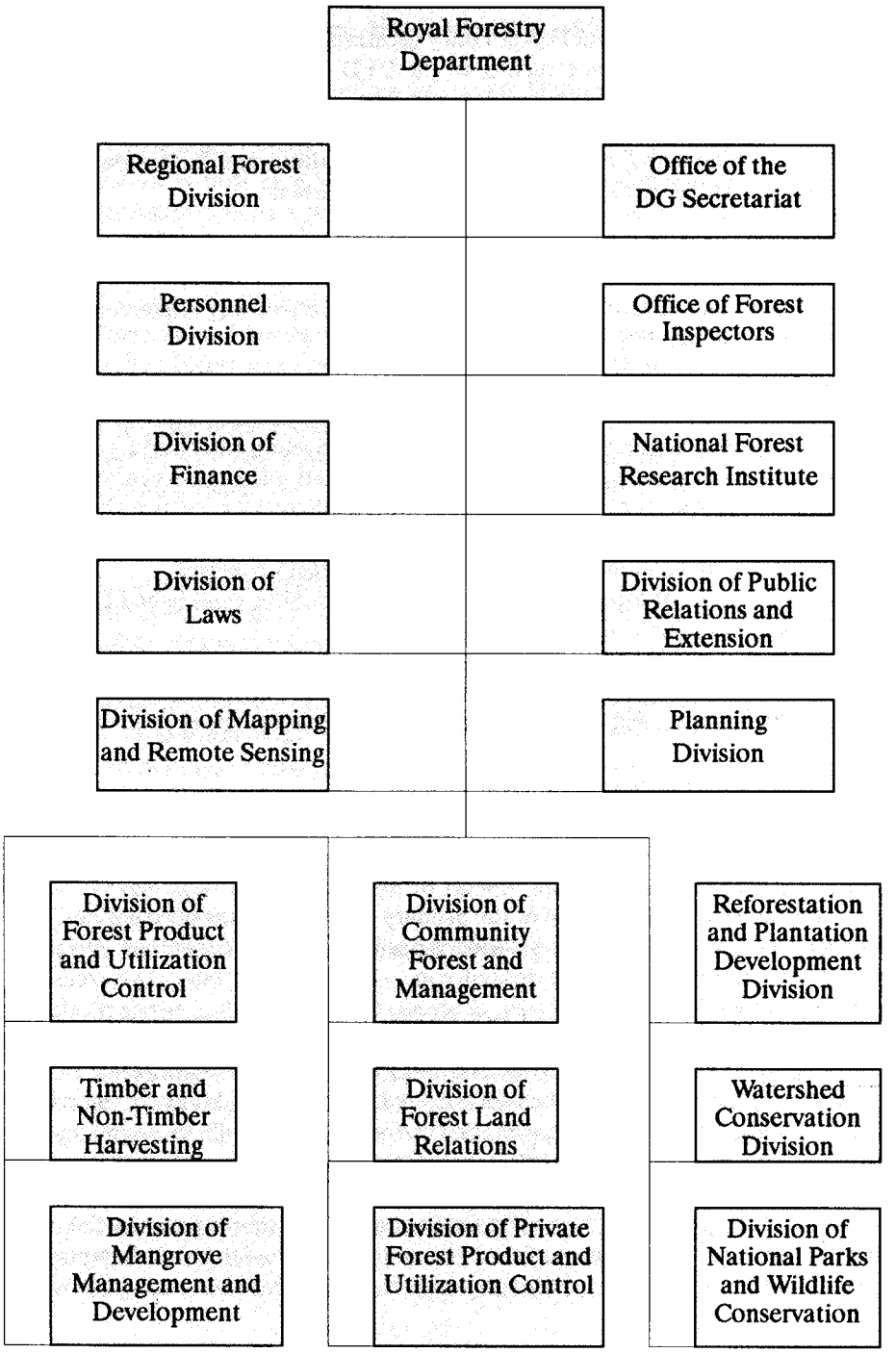


Figure 5.1 Proposed New Structure of Royal Forestry Department as for National Forest Policy in 1985

The Mangrove Forest Situation

Thailand's mangrove forests are presently under attack from various quarters. The high rate of population increase has increased the pressure for land; more land is required for habitation, agriculture, industry and urbanization. It is estimated that in 1961 mangrove forests covered an area of 2,299,375 rai; however, in 1985 the area had declined to only 1,679,335 rai (table 5.3).

Causes of Mangrove Forest Degradation

The degradation of mangrove forests is a function of many factors, including:

- Aquaculture. Scattered throughout all the provinces along the coastlines large mangrove forest areas have been converted to shrimp and fish farms.
- Agriculture. Conversion of mangrove forest areas to crop producing areas, even though crop yields are low as a result of soil salinity.
- Mining. Mining in mangrove forest areas has been widely practiced for decades, especially in Ranong, Phangnga and Phuket.
- Urbanization. As a result of urbanization, mangrove forest lands are used for village settings, schools and other similar settlement purposes.
- Harbors. Harbor construction in mangrove forest areas has been increasingly practiced, especially in the southern Region.
- Road and Electricity Transmission Lines. Roads have been constructed and electricity transmission lines have been installed in some mangrove forest areas. This amount has not been significant when compared to the use of mangrove areas for other purposes.
- Factory and Power Generation Houses. Mangrove forest areas in some provinces have been used for factory and power generating sites. However, most factories located in mangrove forest areas are fishery-based factories.
- Dredging. Although dredging does not actually occur in mangrove forest areas, it creates siltation problems for mangrove forests.
- Salt Pan. Mangrove forest areas have been widely used as salt pans, especially in Samut Sakorn and Samut Songkram.
- Overcutting. As demand for firewood and charcoal increases, an increasing amount of wood in mangrove forests is cut.

Table 5.3 Degradation of Mangrove Forests in Thailand from 1961 to 1985.

		Degradation Area		Degradation Rate	
Year	Mangrove Forest	Area (rai)	%	Area (rai)	%
1961	2,299,375	344,800	15.0	24,629	1.1
1975	1,954,575	158,900	8.1	39,725	2.0
1979	1,795,675	116,340	6.5	16,620	0.9
1985	1,679,335				
1961-1985	-	620,040	27.0	24,802	1.1

Source: Royal Forestry Department

Table 5.4 shows details on the conversion of mangrove areas to other uses. Aquaculture accounts for 38.3 percent of the total converted area, and this trend will continue unless effective measures are taken.

Problems and Effects of Mangrove Forest Land Use

As mentioned earlier, vast mangrove forest areas have been destroyed by various human activities—either intentionally or as a result of other activities. Each example of destruction has a common basis—policy decisions relating to economic development by both the government and the private sector. In each case, it appears that a decision that either ignored the value of the mangrove resource or that placed a significantly higher value on the alternative land or resource use has made. In essence, short-term exploitation for immediate economic benefit took precedence over the long-term generation of benefits that have both economic and natural value. In most cases, the full value of the mangrove resource should be taken into account so that this valuable resource can continue to produce a sustainable yield without destroying its ecosystem.

A National Policy and Plan for Mangrove Land Management

As previously stated, mangroves in Thailand have been used in various ways for many years. Conflicts among mangrove area users frequently occur because there has been no definite policy on mangrove land use. Users do not clearly understand the existing management policy on the utilization of mangrove areas and resources of the various institutions concerned. These problems have repeatedly led to severe destruction of the mangrove ecosystem. As mentioned

Table 5.4 Conversion of Mangrove Areas for Other Land Uses

Land use type	Area (Rai)			Percentage of the total area
	Prior 1980	Between 1980-1986	Total	
Aquaculture	162,725	74,734	237,459	38.3
Mining	5,787	28,279	34,066	5.5
Salt Pan	66,000	-	66,000	10.6
Others	269,188	13,327	282,515	45.6
- Agriculture		4,386		
- Urbanization		3,125		
- Harbour		2,684		
- Road and Transmission Line	1,467			
- Factory and Power Generation	1,135			
- Dredging		530		
Total	503,700	129,667	620,040	100.0

Source: Royal Forestry Department

earlier, approximately 30 percent of the total mangrove forest area has been destroyed or converted to other types of land use, resulting in several lamentable ecological and economic losses.

Realizing the importance of the mangrove ecosystem, avoiding conflicts among mangrove area users, and managing mangrove resources on a sustainable basis, national policy should be set as follows:

- Mangrove area management will be carried out on a sustainable basis using appropriate and effective measures in accordance with present ecological knowledge.
- When converting mangrove areas for other land uses, those activities that have a minimum impact upon the mangrove environment will be given priority.
- Use of mangrove areas will emphasize multiple sustained uses, rather than conversion to a single, exclusive use.
- Rehabilitating deteriorated mangrove areas and promoting the replantation of mangrove forests by both government and the private sector should be carried out.
- Research on the mangrove ecosystem should be carried out and research results and conservation practices disseminated to people at all levels—policy makers, planners, managers, users and concerned institutions.

To achieve these national policy and planning goals and objectives, the following important implementation guidelines should be considered:

Mangrove Land Use Zoning

Prior to mangrove land-use zoning, an actual map of the mangrove area should be made, using remote sensing and ground survey techniques. An ecological study and an environmental impact assessment are also necessary. The mangrove areas should be outlined in three important zones:

1. The Preservation Zone assures the protection of natural and relatively undisturbed plant communities. This zone will maintain species and genetic diversity and will provide areas for scientific research and education, recreation, and cultural interest. At the same time, it will provide shoreline protection, breeding grounds, and shelter for fish and shellfish.
2. The Conservation Zone will cover the mangrove area managed for sustained yield of forestry products.
3. The Development Zone will cover mangrove areas that have been degraded or denuded. If reforestation cannot be accomplished, this zone can be developed for aquaculture, agriculture, urban and industrial sites, or other purposes.

Principal Measures for Mangrove Land Use

- The use of mangrove areas for any development purpose—except wood exploitation with sustainable yields, will be allowed only in the development zone. If a development project is required, it can be conducted in a conservation zone but will not be allowed in a preservation zone.

- The use of a mangrove area for any development project requires that the project implementing agency submit a project proposal and an environmental impact assessment to the Office of the National Environment Board (ONEB) and National Mangrove Committee (NATMANCOM) for permission. If such use would have a severe adverse effect on the environment, the project will not be permitted without modifications to prevent such damage.
- The use of mangrove forest conservation zones for development projects requires that the strip of forest along the bank of the river or sea be kept as a "greenbelt" for environmental protection. The width of the greenbelt from river bank or sea will vary, depending on geographical conditions, tidal regimes, and the ecological importance of each forest area.
- Any development project concerned with the tidal regime and/or fresh water discharge of the mangrove ecosystem must operate without obstructing tidal flows. Otherwise, the environment and the productivity of flora and fauna in the mangrove and in the adjoining ecosystems will be adversely affected.
- Waste water and other wastes from any development project must be properly treated before being released into the mangrove ecosystem and must adhere to the standard of treatment set by the ONEB.
- The implementing agency of a project in a mangrove area should protect the forest near the project site from illegal cutting and other activities destructive to the forest.
- Any mangrove area project that is abandoned still requires the implementing agency to improve the area through reforestation. If this proves impossible, reforestation should be carried out in other denuded areas to compensate for the loss of mangrove area. All expenses for reforestation will be paid by the project implementing agency.
- In the case of wood exploitation, the concessionaires must operate logging systems under the laws, regulations and obligations issued by the RFD. If not, the penalties prescribed by law will be strictly enforced.
- The Cabinet Decisions of June 27, 1978, and August 19, 1980 must be followed by project implementing agencies for any development project in mangrove forests.
- The Royal Forestry Department (RFD) and the Office of the National Environment Board (ONEB) must periodically follow up all development activities carried out in mangrove areas. If any environmental problems occur, they can be promptly solved.
- Laws and regulations concerning the use of mangrove areas or resources must be strictly enforced.

Multiple Use Management System Approach

The use of mangrove areas should emphasize multiple, sustainable use, rather than coversion to a single, exclusive use. Figure 5.2 shows a multiple-use system for coastal areas. This figure can be summarized as follows:

Oyster and horse-mussel culture should be carried out in gently sloping tidal regime areas. Under appropriate conditions, plantation of mangrove forests should also take place. In the next area closest to the sea, cage and mussel culture

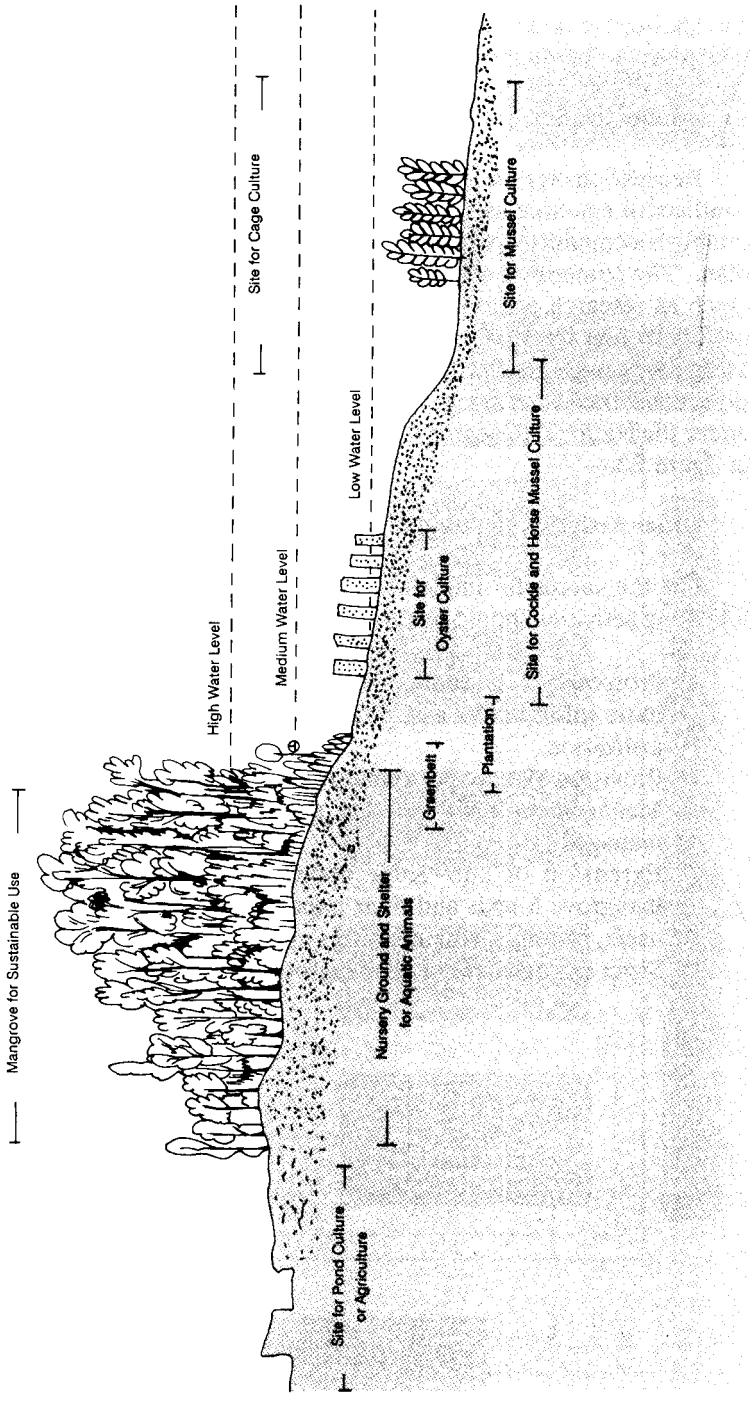


Figure 5.2 Multiple Use Management of Coastal Area

should take place. A greenbelt area should be between the mangrove forest and the oyster culture area. The mangrove forest itself will serve as a nursery ground and shelter for aquatic animals. Pond culture and agricultural activities should take place in inland areas only, outside the mangrove forest area.

Administration

Because mangrove resources have been used by a number of institutions, conflicts of resource use have resulted. To solve this problem, it is necessary to establish a committee, whose task is to prepare a national mangrove management plan. The committee will also give advice on other activities in mangrove areas (such as research projects) and will function as a liaison and coordinator with nationally and internationally concerned institutions. This so-called "National Mangrove Committee" will be composed of an expert group from different institutions concerned with mangrove resource use. The committee will be established under the National Research Council of Thailand and its organization is displayed in figure 5.3.

Other Activities Relating to Mangrove Forest Land Use

For the successful implementation of mangrove forest land-use policy, the following activities should be carried out:

- Promotion of research on the mangrove forest ecosystem in order to gain basic information and provide measures for mangrove forest resource utilization.
- Provision of more personnel and instruments to a "Mangrove Forest Land Management Unit" so that mangrove forest lands will be effectively managed.
- Extension of knowledge about the conservation and utilization of mangrove forests and their importance to people at all levels, including users, planners, administrators and logicians.
- Strict enforcement of all mangrove forest laws and regulations.

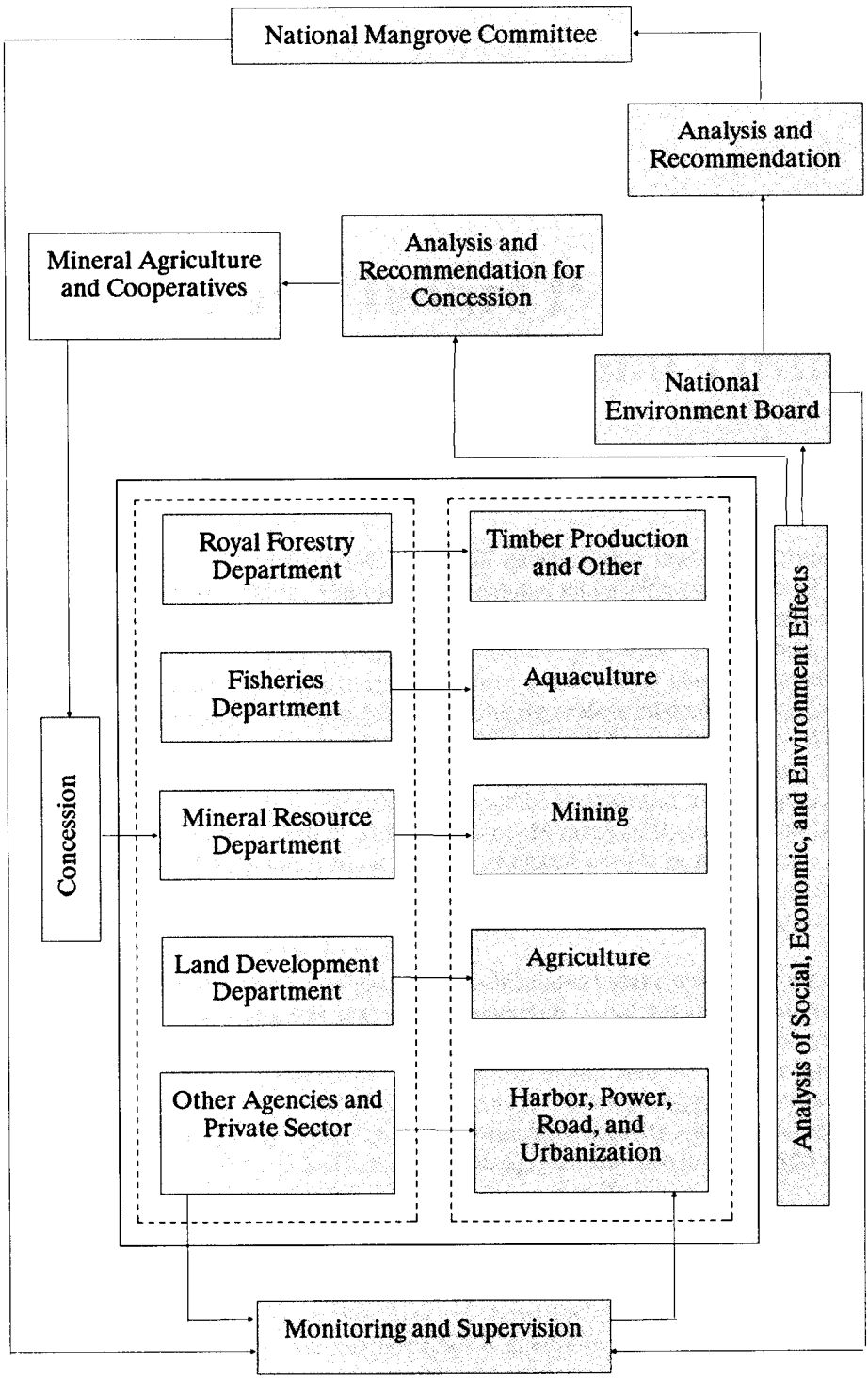


Figure 5.3 Mangrove Forest Land Use Organization

Chapter 6

Land Tenure Policy: Land Rights and Land Titling

INTRODUCTION

In discussing land tenure, the fundamental question that must be analyzed in detail concerns land rights. The nature, extent and underlying conditions of land rights are largely determined by the owners and holders of the land by means of basic and common laws, and by various rules and regulations. In Thailand, land rights are regulated by the government under a number of laws and, at times, through cabinet decisions. This has been done for reasons of convenience, but of confusion, and in order to avoid legal complications. When a certain law on land rights is to be applied in a given settlement area, all of the relevant by laws, rules and regulations must also be exercised. This can be a constraint to the implementing settlement agencies, and in Thailand there are many of them involved in the direct settlement of farmers, squatters and displaced people in rural areas. Differences in land rights embedded in land documents or land leases result in different social and economic implications. It is the issues surrounding land rights and land titling that need to be resolved.

It must be noted that land rights are closely related to land ownership security. Economic theory postulates that when ownership is not secure incentives for investment and improvement are diminished, since the benefit from future returns on such investments is uncertain. Insecure ownership also means that farmers cannot use their land as collateral for loans and therefore have only limited access to subsidized and cheap credit. Clearly, ownership security—having full rights over the land—will have a great impact on agricultural productivity and rural development (Feder et al., 1986).

The problem of land rights and ownership security has been well recognized in Thailand, and in 1985 the Department of Lands launched an ambitious program to speed up land titling. The department's objective is to provide title deeds to all landowners in the country within 20 years. Nevertheless, the issue of land rights is still more confusing and complex than is generally believed. As mentioned earlier, land rights are issued by a number of agencies in a variety of forms. They provide different rights and have different impacts on different groups of people.

This chapter reviews the land rights situation, analyzes government policies concerning land use and land rights, and then proposes new land rights and land titling policies.

A REVIEW OF LAND TENURE AND LAND RIGHTS

We can divide land into two domains—the private and the public. The two domains appear to be clearly delineated, but in fact, they are not. When the government distributes land to farmers, land itself is being transferred from the public land domain to the private land domain. However, actual transfers do not so readily take place. They depend on whether or not the recipients satisfy the conditions under which land ownership titles are provided. Usually, upon satisfactory completion of a set of conditions, a certain type of land document is issued to the landholder. Full ownership titles will be issued only when all conditions are met. This requires time; thus, the line between the private and the public land domain becomes blurred.

The Private Land Domain

There are about 160 million rai of private land for which land ownership documents can be issued. Tenure can be in the form of ownership and tenancy for this type of land. Tenants will have the right to use the land. They usually will have to pay rent, as agreed upon and stated in the contract (which may be in either written or oral form). Their rights on the land are therefore restricted; they cannot use the land as collateral for loans. As mentioned before, farm land tenancy is concentrated in the traditional rice-growing areas of the Central Plain and the North. Nationwide, tenancy is not serious compared with other developing Asian countries, and because of the concentration of tenancy, the 1975 Agricultural Land Reform Act requires land reform to be implemented only in selected districts called "Land Reform Areas." (Details on Land reform areas will be given in the next chapter.) However, it should be mentioned here that as of July 1986, there were 53 districts in the private domain (out of a total 113) under land reform.

Land reform in Thailand aims at distributing farmland to tenants and to small and landless farmers. By July 1986, about 300,000 rai of land had been purchased from absentee landowners. The main beneficiaries here are the former tenants. Land is being sold to them on a long-term installment basis. Upon completion of the installment plan, land ownership is transferred to the farmers. Any transfer thereafter has to meet approval from the Agricultural Land Reform Office (ALRO). The main reason is to prevent the land from being lost to nonfarmers. Thus, land rights among land-reform farmers fall short of full ownership rights. The majority of land-reform farmers are still tenants to ALRO, because, they find it difficult to meet the annual amortization payment under the hire-purchase scheme, due to low farm prices. Thus land rights for land reform tenant farmers appear to be more secure and more flexible than for ordinary tenants.

Regarding land titling for private land (under the Land Code 1954) the Department of Lands has issued land documents (N.S.4, N.S.3, N.S.3-K., N.S.2) for 13 million plots covering an area of 90 million rai (Department of Lands 1986). There are reportedly still about 53 million plots—about 30 percent of all private land—for which there are no legal documents.

Lands with N.S.4 or title deeds constitute only about 15 percent of all private land. In 1985 a total of 20.8 million rai had N.S.4s, compared to 61.7 million with N.S.3s and N.S.3-Ks, and 7.9 million with N.S.2s (Bai Chong, table 6.1). Clearly, land titling and/or land rights is still quite a serious problem.

The N.S.4 documents are usually found in urban areas and are concentrated in the Central Region. The poor region of the Northeast has a very low proportion of N.S.4s (Onchan 1985). Furthermore, the N.S.4 is almost nonexistent in farm areas. For example, in Nakorn Sawan Province in 1979, of the more than 14,000 plots of land, only two had N.S.4, covering an area of 62 rai (see table 6.2). Another study of other areas shows similar findings (Feder et al. 1986).

Table 6.1 Issuance of Land Documents by Department of Lands, 1985.

Unit: Rai

Region	N.S.2	N.S.3 and N.S.3K	N.S.4 (Title Deeds)
North	1,859,690	14,362,279	3,577,466
Northeast	3,996,470	32,221,738	2,132,298
Central	1,385,618	5,438,732	14,209,350
South	692,456	9,714,771	868,467
Total	7,934,234	61,737,520	20,787,581

Source: Department of Lands

Table 6.2 Issuance of Local Documents in Amphoe Nong Bua, Nakhon Sawan Province, 1979

Type of Document	Number of Plots	Area (rai)
N.S.4	2	62
N.S.3	4,253	111,240
N.S.3K	9,180	164,234
N.S.2	41	1,351
S.K.1	132	3,448
Tra Chong	23	686
Total		281,021

Source: Agricultural Land Reform Office

The Public Land Domain

In the public land domain, which covers no more than 202.5 million rai—mostly forest reserves—the squatter problem is the most outstanding phenomenon in recent development history. Only about 60 percent of the public land remains under forest cover. The remaining 40 percent (80 million rai) has at varying rates been turned into farmland. This has occurred for a variety of reasons—agricultural, commercialization, population pressure. In the early days, squatters' rights were never recognized, although land transfer was common and was accepted by farmers. When the problem reached critical proportions, squatters' rights were turned into preemptive rights and legalized. It is estimated that there are one million squatter families. Much of the squatted land is well developed, with agro-based services. Some lands have even changed into rural town centers. The government has adopted a number of policies and programs to solve the squatter problem, so far with limited success.

As will be discussed in the next chapter, many government agencies are involved in land allocation and development. However, the primary land settlement agencies are the Royal Forestry Department (RFD), the Agricultural Land Reform Office (ALRO), the Department of Public Welfare (DPW), and the Department of Cooperative Promotion (DCP). These agencies carry out their land settlement programs based on different laws; the land rights given to farmers differ accordingly. It is precisely the differences in land rights that must be solved. The provision of land rights to farmers and other rural dwellers has important social and economic implications for them. Transferability, inheritance rights, imposition of a rental fee, terms of lease or occupancy always cause confusion among all parties involved and are a bureaucratic nightmare to land agencies. Individual government departments appear to have different basic concepts, ideologies and approaches to accommodating squatter farmers. These are expressed, either explicitly or implicitly, in the provision of land rights.

For the purpose of clarification, some differences in land rights are shown in table 6.3. The RFD and ALRO issue their own version of land use or stewardship permits to farmers by using the Forest Reserves Act and the Agricultural Land Reform Act. The RFD has also sought and obtained issuance power from the Cabinet, when it deemed the Forest Reserves Act inadequate. The DPW and DCP have been empowered by the Land Allocation Act to settle farmers on arable public land. Under the Land Allocation Act, full ownership of land is given to farmers, provided that they have satisfied all conditions imposed. The Act is linked with the Land Code which is the basic land law. The Land Code also empowers the Department of Lands (DL) to distribute land to the landless and poor, who eventually become full landowners. The amount of land allocated to farmers varies according to the laws, as indicated in table 6.3. Transferability is usually restricted to inheritance rights only. At present, the RFD and ALRO, do not provide full ownership titles to settlers, for fear that land will sooner or later be lost to middlemen. The DL full ownership titles can be universally transferred, except in the case where land is obtained through the Land Allocation Act (five-year non-transferability) or through the Land Code (ten-year non-transferability). Only full ownership titles can be used as collateral against institutional loans.

Table 6.3 Issuance of Land Documents in Public Lands by Government Agencies, 1985

Agency	Type of Document	Number	Area (rai)
Department of Public Welfare	N.K.3	128,390	-
Department of Cooperative	K.S.N.3	-	265,073
Promotions	K.S.N.5	-	52,804
Department of Royal Forestry (July, 1986)	S.T.K.1	670,545	6,859,834
Agricultural Land Reform Office (June, 1986)	S.P.K.4-01*	17,967	361,200

Note: *Including S.P.K. 4-01 A)

Source: Data from various agencies concerned

The extent of land allocation by major departments (except the Department of Lands, due to difficulty in compilation) is given in table 6.4. Apparently, the RFD— which started the land allocation program only as recently as 1982—has achieved considerable progress. However, it provides land-use permits to squatters without any attempt to distribute to small and landless farmers. Unlike other departments, it does not provide basic infrastructural development facilities, From table 6.4, it is clear that land settlement so far is still inadequate to meet the needs of squatters. Under the present land reclassification project, more arable forest land is to be reclassified and distributed to farmers. Land distribution is being carried out by settlement agencies. Adjustments with regard to settlement procedures and, particularly, land rights need be made to achieve better coordination and integration.

PAST AND PRESENT POLICIES ON LAND RIGHTS

Policy on land rights is indicated or included in several land and land-related policies, laws and regulations, and in the National Economic and Social Development Plans.

In 1982 the policy on Land Use and Land Rights was approved by the cabinet, having been proposed by the National Rural Development Committee. In the same year, the National Land Allocation Committee formulated a National Land Policy. The National Forestry Policy was approved by the cabinet in 1985. The S.T.K. Program was implemented in 1982 to cope with the problem of massive forest encroachment. Other programs include those land reform and land settlement schemes that entail certain provisions regarding land rights, as already mentioned. Major laws include the 1954 Land Code, the 1978 Land Allocation Act, and the 1982 National Forest Reserve Act.

Table 6.4 Differences Among Various Land Documents

Type	Right to Transfer (Including Sell)	Restriction on Transfer	Maximum Period of Legal Protection	Period of Right for Preemption	Acceptance as Loan Collateral
Title Deeds (N.S.4)	Yes, Except Case of Non-transferable Restriction	5-10 Years	10 Years	10 Years	Yes
N.S.3	Yes, Except Case of Non-transferable Restriction	5-10 Years	1 Year	5 Years	Yes
N.K.3	No, Except through Inheritance or to Cooperatives	All the Time	None	None	No
K.S.N.3	No, Except through Inheritance or to Cooperatives	All the Time	None	None	No
S.T.K.1,2	No, Except through Inheritance	All the Time	None	None	No
S.P.K. 4-01	No, Except through Inheritance or to Farmer's Organizations or ALRO	All the Time	None	None	No

Policy as Indicated in the National Plans

In the First Plan (1961-1966), it was clearly stated that 50 percent of the country's total area would be forested. Suitable land for agriculture would be allocated to farmers, who would obtain full ownership rights. In the Third Plan (1972-1976), improving the land tenure system and provision of land rights to farmers were among the major policies relating to agriculture. In the Fourth Plan, forest protection received high priority. The government pledged to accelerate land reform and development activities. These policies continued to receive a great deal of attention during the Fifth Plan. Finally, in the Sixth Plan, which started in October, 1986, emphasis was placed on nationwide land titling and the acceleration of land-reform and land-allocation schemes. Land development and conservation also received much attention.

Policy on Land Use and Land Rights

The policy on land use and land rights provides a clear picture of present land-use problems, particularly those relating to forest reserves and prereserves. Of the forest reserves (123 million rai), over 30 million rai of land[9] that have been encroached upon must be classified. If it is found to be suitable for agriculture, the land will be placed under the S.T.K. Program of the Royal Forestry Department, the programs of other agencies such as the ALRO, or both. The policy also calls for the land classification of the prereserve areas of about 30 million rai. The areas that are suitable for agriculture will be allocated to farmers, who will be issued documents by the Department of Lands. Areas unsuitable for agriculture will be gazetted as national forest reserve. The general concept of the Policy on Land Use and Land Rights is depicted in figure 6.1.

Other Policies

As previously mentioned, the National Land Allocation Committee also prepared a National Land Policy. However, it has not been approved by the cabinet. Its content reflects some important current views and concepts of land tenure and land rights. In essence, it proposes that land titling be accelerated throughout the country, and that a ceiling on landholdings should be enforced. Restrictions should also be put on the right to transfer land, except through inheritance, to the government, or to farmer organizations.

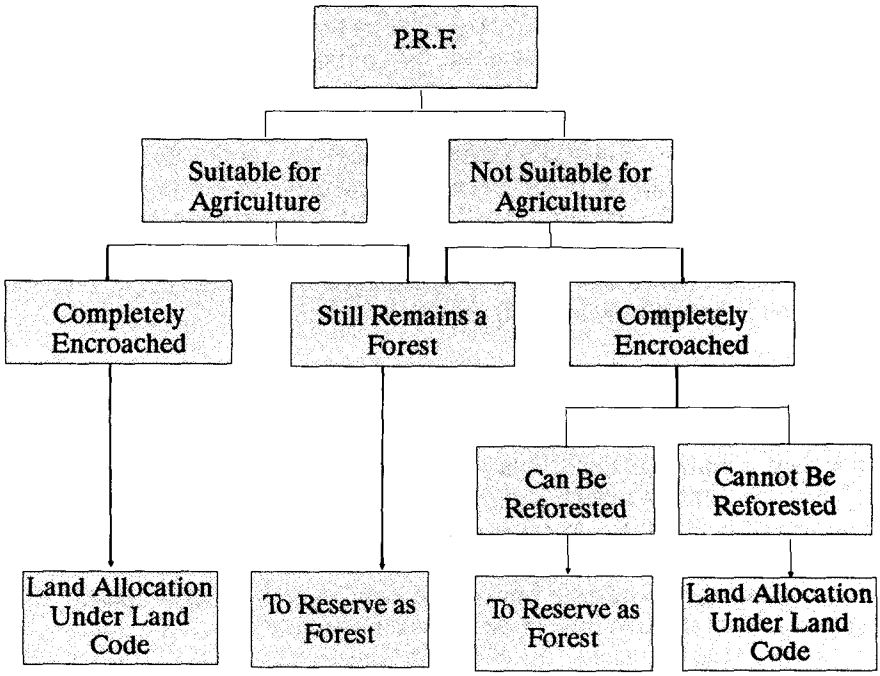
Other policies include the National Forestry Policy (1985), which calls for clearly identifying forest areas and other types of land use. The Land Development Committee (1975) has also formulated a Land Use Policy emphasizing the issuance of land documents. Finally, in 1982 the RFD started to carry out the S.T.K. Program, which issues an S.T.K. land certificate. This program will be discussed in detail in the next chapter.

From the above discussion of various policies relating to land rights, it can be seen that over the past 30 years, significant changes have occurred (see figure 6.2). Before 1957 farmers had problems of land tenure and tenancy. Agriculture became more diversified and was increasingly commercialized. During the 1960s land classification was carried out and national forest reserves were specified. Land allocation programs have been emphasized since the late 1970s, while land-titling and land-rights issues and policies have been of relatively recent interest.

Policy Issues and Analysis

There are two distinct views with regard to land rights. One supports full ownership rights, and the other maintains that only partial rights should be given. Partial rights can consist of forms of rental arrangements and temporary land-use permits. These conflicting views are reflected in laws and policies relating to land. The results of a systematic study on the effect of land rights jointly undertaken by Kasetsart University and the World Bank (Feder et al. 1986) clearly indicate that the provision of full legal ownership rights to residents—including squatters in forest reserve areas—will increase social welfare and agricultural development. The usufruct certificates such as S.T.K. documents will neither affect farm productivity nor reduce the rate of forest encroachment.

A. Prereserved Forest (P.R.F.)



B. National Reserved Forest (N.R.F.) (Already Encroached)

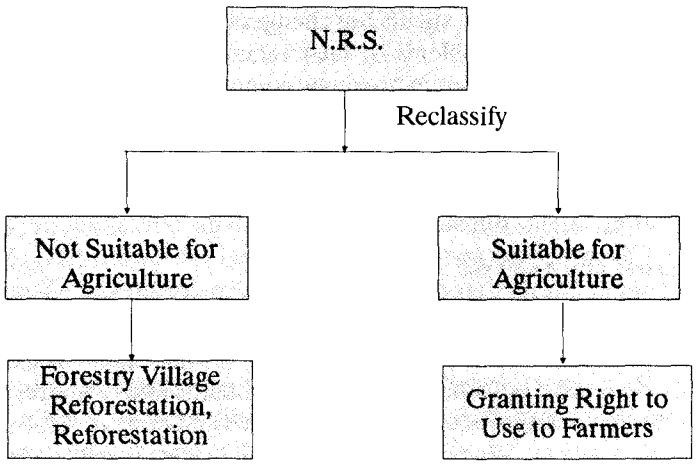


Figure 6.1 Ways to Implement Land Rights Under the Land Use and Land Rights Policy

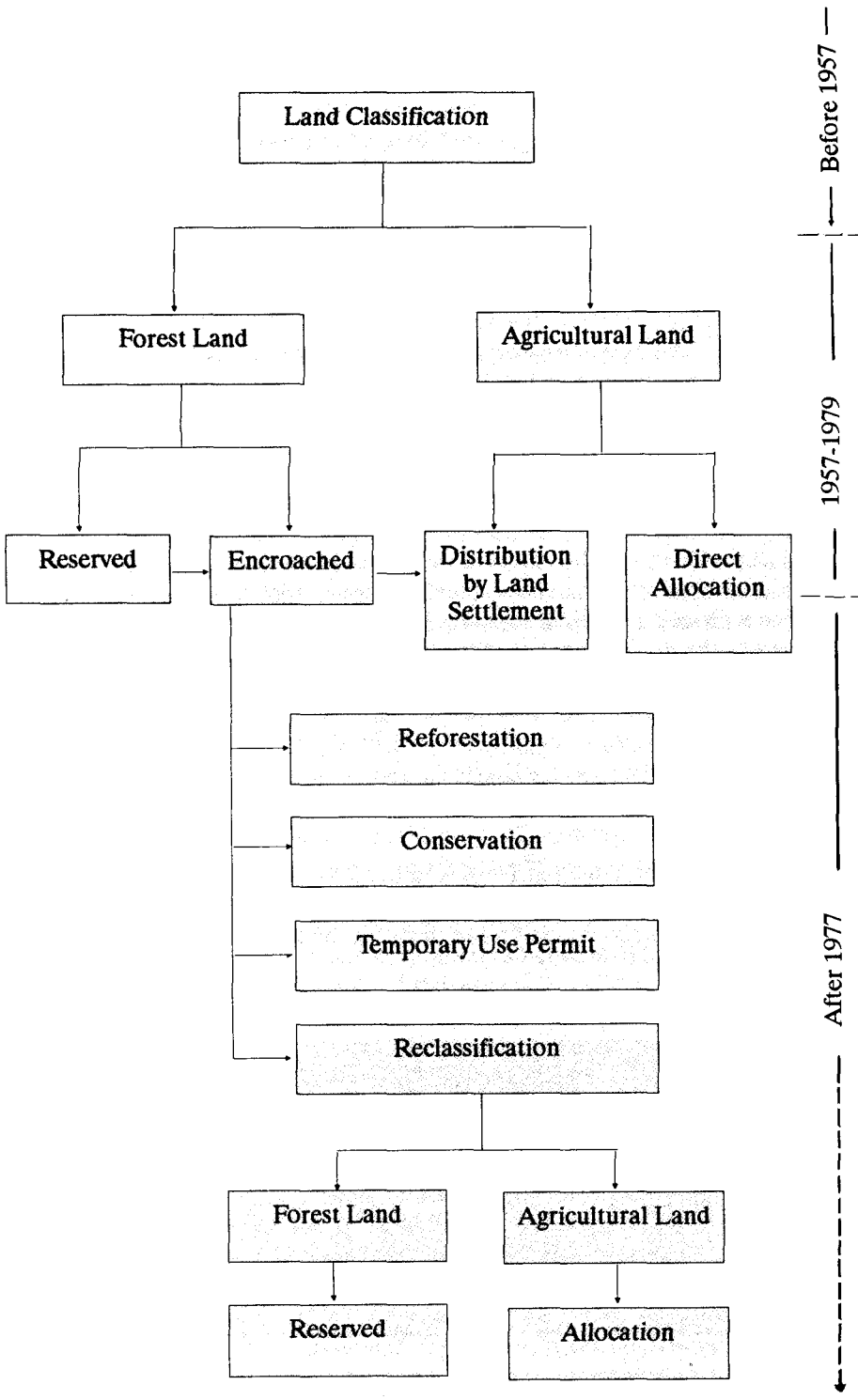


Figure 6.2 Changes in Land Use and Management During the Past 30 Years

Partial land rights are usually given by land allocation agencies operating in public lands. These programs have thus far been rather ineffective in reducing forest encroachment, as in the case of the S.T.K. Program. In fact, the S.T.K. document differs from the ALRO Program (or Sor Por Kor 4-01) in many ways, especially in terms of land rights and other provisions. The ALRO Program emphasizes infrastructural development and support services to help raise farm productivity and income. There are no such activities under the S.T.K. Program. In fact, other types of documents issued by the Public Welfare Department and the Cooperative Promotion Department are quite similar to the Sor Por Kor 4-01. After a certain period of time and with the satisfaction of certain conditions, these documents can be converted to an N.S.3 or an N.S.4. However, it is not yet clear what the long-run policy regarding legal ownership with the S.T.K. document will be.

In cases where full ownership documents are present, the right to transfer is clear. The fact that such documents are accepted by credit institutions makes them more valuable economically. On the other hand, it has been argued by many, including policy makers, that if full ownership rights are given, farmers will inevitably lose their land to capitalists or lenders. While this seems logical, it is not supported by available empirical evidence. Economists have been studying this issue for some time and have found no clear evidence to support this view. Evidence is given in table 6.5 demonstrating that in a single year (1984-1985), only 2 percent of the total number of plots were sold or mortgaged. The very nature and culture of Thai farmers argues their profound and tenacious attachment to their land. When it occurs loss of land is almost always caused by factors such as low income and poverty.

TOWARD BETTER INTEGRATION OF EXISTING POLICIES

Regarding public land, particularly in the national forest reserves, the RFD aims to keep squatters at bay and to save the remaining forests. Arguments against this contend that forest protection and the settlement of farmers are two different

Table 6.5 Changes in Land with N.S.3 and N.S.3K in 22 Amphoe, 1984-1985

	N.S.3 and N.S.3K		No. of		
Year	No. of Plot	Area (rai)	Sale	Hired Purchase	Mortgage
1984	255,147	3,204,907	4,153 (1.63)	187 (0.07)	5,479 (2.15)
1985	305,905	3,395,998	5,756 (1.88)	241 (0.08)	7,290 (2.38)

Note: Figures in parenthesis are % of total plots under the assumption both the number of persons and plots are the same.

Source: Department of Lands

situations. However, better and more efficient forest management is needed, and this can run counter to a settlement agency's role in assisting the poor. It is difficult to imagine a single agency functioning efficiently with two rather diverse roles to perform. The deterioration of forests has not been due only to log poachers and farmers, but also to the past failure of the RFD to protect the forests. It is perhaps in the best interests of all concerned that the RFD concentrate on forest protection and allow other settlement agencies to carry out land distribution. The Land Allocation Act is restrictive and outmoded. The DPW and DCP should therefore hasten the process of land allocation and development so that all settlers can become full landowners. These departments can then release human and budgetary resources to new land settlement areas, exercising legal power directly under the Land Code in the same way as the DL, and not under the Land Allocation Act. The land rights granted to farmers—such as transferability and land utilization—can then be identical. The amount of land allocated should follow the same principles with greater flexibility.

The Agricultural Land Reform Act can accelerate land distribution and can be made compatible with the Land Code through interdepartmental dialogue. In this way, the ALRO can continue its land distribution program in the usual manner. Since the beneficiaries of land reform will be entitled to use land as mere lessees, some modifications can be made to degazette Land Reform Areas and apply the Land Code. Full land ownership titles can then be issued.

As already mentioned, previous research findings indicate that land ownership is superior to any other form of tenure. In the leasing system (and others in which control and supervision are partly held by the state or by nontillers of the land), rent is extracted from the lessees, thereby reducing the income generated from the land. Even if the rent is free (as in the case of land use permit holders) government authorities find it difficult to administer hundreds of thousands of parcels of land around the country. Though transferability of land-use permits is restricted, enforcement is questionable. Leased land cannot be used as collateral. Ownership of the land arguably tends to lead to greater investment in the land, which in turn leads to higher production and income. It provides security to the owners and reduces the inequality that exists in rural areas between landowners on the one hand, and tenants and the landless on the other.

However, land ownership should not be provided to farmers in the first example. Some time should elapse, during which the government assists them in their ability to rely on themselves. One serious setback is that farmers lack land ownership titles that can be used as collateral for loans. This will require further government intervention, particularly in regard to the provision of farm credit. Suitable farm programs can be undertaken to follow directions established by the government in other areas (for example, the tapioca substitution project, in which farmers are still permitted to use land and are supervised by the relevant authorities). Time is also needed for the government to design and adopt new measures to prevent squatting, to reforest denuded areas and to reassert law and order in reserved lands. After 10-15 years, land ownership titles could be issued. Sale of public land is rare and deemed impractical. When land ownership has been transferred to farmers, new land can be opened for settlement. In this way, settlement squatter authorities can be mobilized to deal with the enormous problem.

PROPOSED POLICY ON LAND RIGHTS AND LAND TITLING

The following are proposed policies for land rights and land titling:

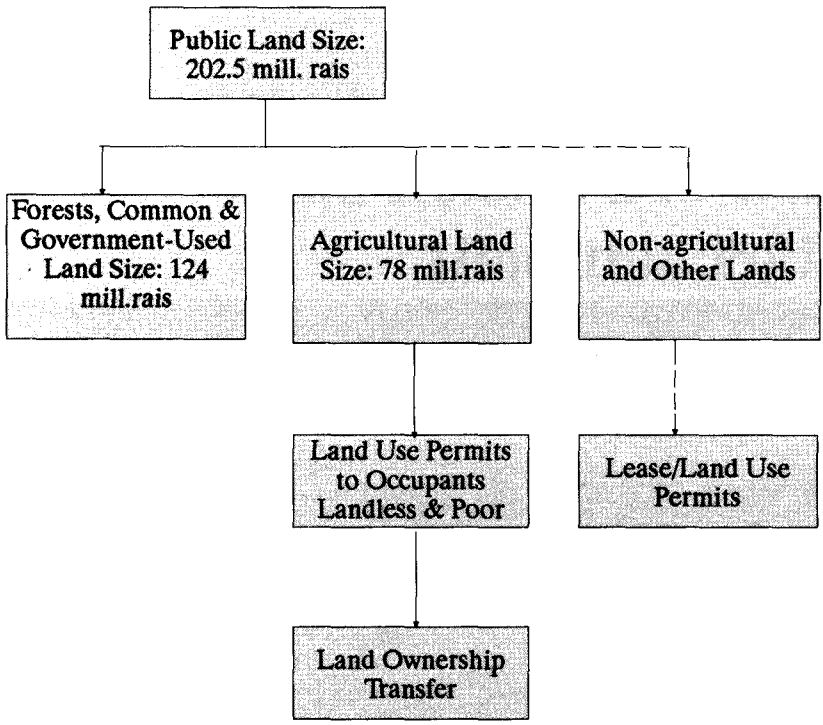
- Land ownership should be provided to tillers of the land.
- In the case of privately-owned lands, the government should continue to reduce the tenancy problem through land reform implementation. Enforcement of agricultural land rent control should also be strengthened.
- Regarding public lands that are distributed, the government should issue land-use permits which will be transformed into land ownership titles after 10-15 years. Only in special cases will a freehold or lease be granted for some limited but renewable time period. These include the following categories of land:

    1. Land reserved for potential specific government use
    2. Land that requires long-term soil and water conservation measures
    3. Land reserved for future population needs
    4. Land used as a buffer against possible intrusion into restricted or reserved areas
    5. Land for commercial, industrial, and residential use

Land rights come in the form of land-use permits, except in the last category, in which land may be leased. Government revenues can be enormous. The proposed change in land settlement with regard to the provision of land rights and land titling is illustrated in figure 6.3. Forests and government-used land, including state and private forest plantations, account for no more than 124 million rai. Agricultural and nonagricultural land extends to at least 78 million rai, most of which can be opened for private use. Later, transfer of land ownership should take place. Part of the land will be held back for government purposes, as indicated earlier.

A work plan can now be proposed. First, it should be noted that the major agencies involved are the Department of Lands, the Agricultural Land Reform Office, the Royal Forestry Department, the Cooperative Promotion Department and the Department of Public Welfare—all of which are concerned with land distribution and land allocation. However, the RFD will be restructured and reorganized to take responsibility for forest management and transfer its land allocation activities. The work plan is spread over a period of 25 years, as shown in figure 6.4. Some important details and scheduled events are also given. The DCP and DPW can be reorganized into a new, single entity after all existing land settlement schemes and land cooperatives are transferred to normal administrative machinery. The topic of restructuring the existing land administration system is discussed in Chapter 9.

Finally, except in cases where the land is reserved for common and government use, under the policy proposed here land ownership will have been transferred to farmers at the end of a 25-year period.



Implementing Agencies: ALRO, DPW, DCP & DL

Laws: ALRO Act & Land Code

10-15 Years

Figure 6.3 Proposed Change in Land Rights Provision and Land Titling

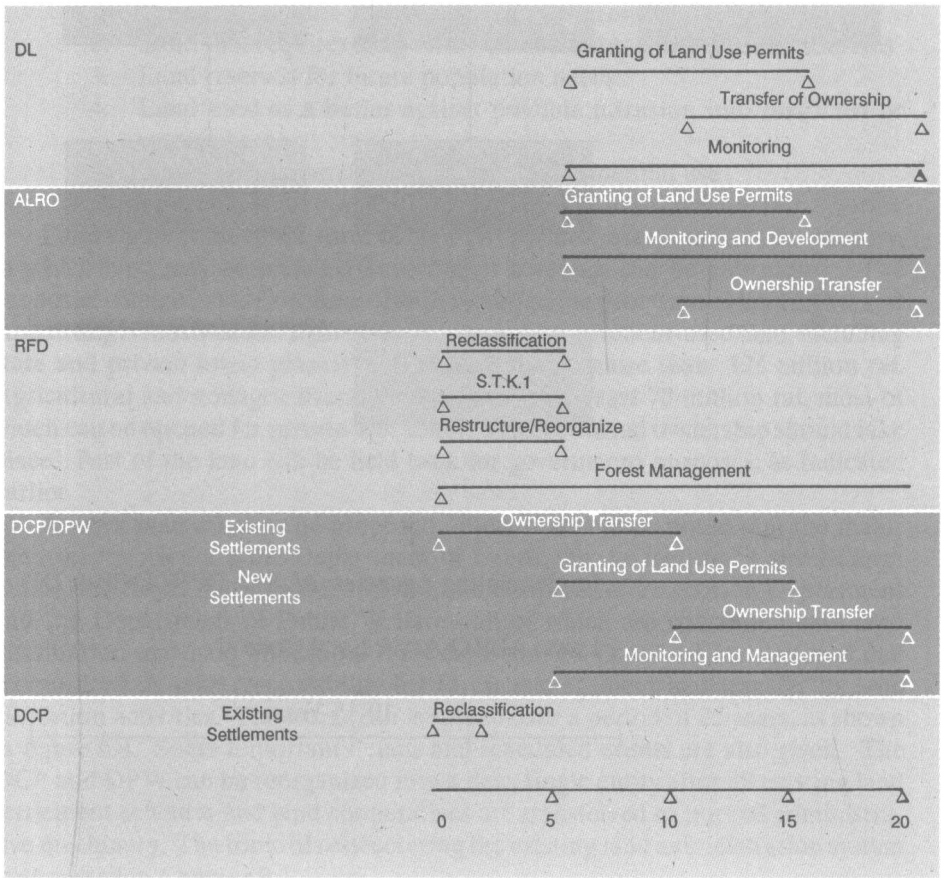


Figure 6.4 Work Plan on Land Rights and Land Titling

Chapter 7

Land Reform and Land Allocation Policy

INTRODUCTION

Since land tenure is very important to economic and social development, the land tenure system has a significant impact on farm productivity and income distribution. From a theoretical point of view, the owner-operator system of land tenure would bring about the efficient allocation of resources and the optimum distribution of income. On the other hand, the landlord-tenant system usually results in lower-than-optimum resource allocation and income. Therefore, it is sometimes not simply desirable but in fact necessary to change the landlord-tenant system to an owner-operator one. Land reform can be introduced for this change. At the same time, appropriately documented land should be provided through a land-allocation program for the landless and for those who lack land ownership security (having no legal land documents). This will facilitate the development process.

Chapter 2 mentions the problem of land tenure in Thailand. The tenancy problem is acute in certain areas. Farm size is also a problem. Trends for the future do not appear to be encouraging and could even become worse. This problem has been of interest to the government for a long time, and various land allocation programs have been carried out since the 1940s. However, the success of these programs has been limited. Considering the fact that there are about 2.5 million families that have land tenure problems (including about 1 million tenants families and 0.5 million landless families), this issue and the policy addressed to it should be carefully analyzed and articulated. Over 40 million rai of forest reserve areas have been occupied, many of them for decades. It is likely that land allocation for these people will have to be carried out, making policy on this matter of even more importance for the future. The magnitude of the task is enormous, compared to the existing capability of responsible agencies.

This chapter first discusses the land reform program and the land settlement program—including self-help land settlement, cooperative land settlement, and other programs. Finally, the STK Project is briefly mentioned. Land reform, which has become a major government policy over the past decade, is emphasized.

POLICY ON LAND REFORM AND LAND ALLOCATION

Even though land allocation programs have been underway for many years, land reform and land allocation policy only became clear in the Fourth Plan, which emphasized the need to solve the tenancy problem and supported land reform, particularly in agricultural land allocation programs. The policy in the Fourth Plan also called for unified land allocation concepts and measures.

The Fifth Plan clarified national policy regarding land reform projects, a landholding ceiling, the establishment of land banks, and land settlements. The Sixth Plan also emphasizes land reform—particularly for private land—through the establishment of a land bank again, improving the land tax system, and carrying our land settlement projects on the land already allotted while not expanding into other areas.

The overall policy outlined above quite clearly shows that the government considers land allocation an important policy measure for land reform and limits other types of program activities to existing land areas. The Sixth Plan also states that the future land allocation concept will be unified in accordance with land reform policy. This approach is easily interpreted to mean that the overall land allocation program must be reorganized or restructured to achieve greater implementation efficiency.

THE GENERAL LAND ALLOCATION SITUATION IN THAILAND

Types of Land Allocation

In addressing the problem of land tenure, previous governments have adopted various land allocation measures. At present, no fewer than 14 agencies are carrying out land settlement and land allocation projects. Land allocation can be divided into four major categories according to their objectives:

1. Land allocation for the purpose of solving problems of land rights and land ownership. Projects in this category include those under the Agricultural Land Reform Office (ALRO) and the Department of Lands.
2. Land allocation for social welfare purposes. These include self-help land settlement programs of the Public Welfare Department and of the Department of Cooperative Promotion, as well as cooperative land settlements and village and agricultural war veterans settlements.
3. Land allocation for development and conservation. Projects in this category include land consolidation and forestry village projects.
4. Land allocation for special objectives. These include projects of various agencies whose primary responsibility usually lies outside the area of land allocation. They include, for example, land settlements for evacuees from areas flooded by the construction of dams and model village projects.

General Problems of Land Allocation

Problems confronted in the process of land allocation can be summarized as follows:

- Land allocation projects have been delayed and hampered by budgetary constraints, shortages of the necessary personnel, and lack of cooperation from the people affected. This has resulted in the very limited success of the overall land allocation program. As indicated in table 7.1, land allocation by the major responsible agencies—i.e., ALRO, the Department of Public Welfare (DPW), the Department of Cooperative Promotion (DCP)—has taken place in less than 40 percent of the project area allotted to these agencies. ALRO allocated only 29 percent of the total project area, and DPW and DCP allocated only about 37 percent each. Thus, the three major agencies were able to allocate a total of only 6 million rai to farmers. Considering that the DPW and DCP have carried out their programs over a 40-year period and that ALRO's program is about 11 years old, their performance appears to be unsatisfactory.
- Land allocation projects vary in form and substance. The Royal Forestry Department's STK Project gives farmers an STK document—a temporary utilization permit—but does not provide them with any services. The ALRO Land Reform Project gives an S.P.K. 4-01 land document to farmers and provides infrastructural and developmental services. The other two major agencies, the DPW and DCP, provide similar services. The cost of these projects differs depending on the extent of the services provided.
- Land allocation projects invariably run longer than scheduled, thereby requiring an unforeseen extension of government commitment and support. This has made it difficult for these agencies to expand activities into other areas, and it is one of the important issues that should be considered in project planning and implementation.

Table 7.1 Land Allocation by Major Government Agencies, 1985.

Name of Agency	Project Area (Million Rai)	Allocated Area (Million Rai)	Percent Allocation Completed
1. Department of Public Welfare	6.966	2.596	37.3
2. Department of Lands	12.900	10.400	80.6
3. Department of Cooperative Promotions	5.460	2.030	37.2
4. Royal Forestry Department[1]	0.185	0.055	29.7
5. The War Veterans Organization of Thailand	0.060	0.030	50.0
6. Agricultural Land Reform Office	6.200	1.812	29.2
7. Department of Land	0.201	0.179	89.0

Note: [1]Excluding S.T.K. Project.

Source: Subcommittee on Land (1983), AIT (1983), ALRO (1985).

LAND REFORM

Meaning and Objectives

Mechanisms for land reform started in earnest in Thailand in 1975. The Agricultural Land Reform Act specifies the meaning of land reform as "the improvement of agricultural land tenure and land rights and the distribution of land for farming and residence." Under this act, land was to be made available by the government or expropriated from private owners who held land in excess of the legally prescribed amount or who were not themselves making proper use of the land. The government was to make such land available to qualified farmers or farmer organizations through hire-purchase, rent or right to utilize. In addition, the state was to render various forms of assistance to farmers to improve their livelihood, resources and means of production, and to improve their ability to produce, distribute and market their products.

The Agricultural Land Reform Office is responsible for the implementation of the land reform program, which entails two primary activities:

1. Improving land tenure and land rights on state (public) and private land.
2. Developing agriculture in the land-reform area.

The first activity involves land distribution to the landless, to small farmers and to tenants. The second activity concerns the development of a rural infrastructure and the provision of production and marketing services.

The main objective of the land reform program is to improve the economic and social welfare of the rural population. This can be possible if farmers are provided with land and if production efficiency can be improved by providing an adequate infrastructure and other services. It is expected that income distribution among farmers can also be more equal when the distribution of land and services becomes more equitable.

Implementation

There are four steps taken in implementing land reform projects for both public and private land:

State-Owned Land	Privately-Owned Land
1. Preparatory work (land acquisition, feasibility study, survey)	1. Preparatory work (area selection, land appraisal)
2. Settlement of farmers into the allotted land (plot division, selection of farmers)	2. Payment for land or expropriation of land. (land purchase, land expropriation, payment)
3. Development of basic infrastructure (water, roads)	3. Settlement of farmers into the allotted land (selection of farmers, plot division)
4. Coordination for development (credit, land development, marketing)	4. Coordination for development (credit, marketing, water)

For state or public lands, there are two types of projects. The first is funded totally from the national budget; the second is funded totally or in part by loans or foreign assistance. At present, there are only three projects in the second category.

- Land reform of state-owned land that relies on the national budget is conducted in designated areas according to the aforementioned procedures. Work in these areas, however, is not restricted to area-specific projects.

Land reform projects in the second category consist of:

- The Land Reform Areas Project, which is being funded by the World Bank and covers 1.2 million rai in ten areas involving 35,000 families. The total project cost is US$ 31 million for the period from 1984 to 1988.
- The project for the Development of Agricultural Irrigation in the Chao Phraya Water Basin, which is being financed by a loan from the OECF. The project covers an area of 78,000 rai in the District of Lard Bua Luang. The budget for the project includes a grant of 396.3 million baht plus a loan of 24.5 million baht and the project's duration is 1983 to 1987.
- The Land Reform Project at Pichit Province, which is a joint project between the Thai and Australian governments. The project covers 250,000 rai and involves 42,000 families. It is funded by a Thai government budget allocation of 106.96 million baht and monetary assistance from Australia of 106.9 million baht. This type of land reform project operates in specific areas. The project was designed to include defined stages for project planning, administration, coordination and evaluation.

Progress on Land Reform

Since its inception in 1975, the Agricultural Land Reform Office (ALRO) has completed the following tasks (table 7.2):

- As of September 1985, ALRO has designated areas in 109 districts and district subdivisions in 34 provinces in the Central, North, and Northeast as agricultural land reform areas. It has completed the mapping of 3,174,047 rai of land and has completed cadastral surveying of 3,267,364 rai of state-owned land. In addition, it has completed cadastral surveying of 119,956 rai of privately-owned land.
- ALRO has investigated the size and nature of state land holdings and has also negotiated with residents to either increase or decrease their land holdings to maintain equitable distribution. A total of 39,401 selected farmers were allocated 740,339 rai of land.
- Sor Por Kor (ALRO) 4-01 and utilization documents were given to 28,160 persons covering 537,308 rai of land. Permission was also granted to 53,405 households to utilize 1,283,212 rai of land. The office has also purchased 280,277 rai of land from private owners and allotted 218,229 rai to 11,595 individuals. In addition, 84,668 rai were rented out on a permanent basis to 4,861 parties, and 23,153 rai were sold by hire-purchase to 1,406 persons.

Table 7.2 Summary Results of Land Reform Program, 1975 - 1985[1]

Activity	Unit	Result 1975-84	Result Oct.84-Sep.85	Total 1975-Sep.85
1. Preparation				
1.1 Proclamation of Land Reform Area	District[2]	104	5	109
	District[2]	34	0	34
1.2 Making of Maps	Rai	2,988,791	185,256	3,174,047
1.3 Survey of Public Lands	Rai	3,224,863	42,501	3,267,364
1.4 Survey of Private Lands	Rai	102,899	17,057	119,956
2. Land Allocation				
2.1 Purchase and Expropriation (In cash only)	Rai	263,086	17,191	280,277
	Baht	366,307,954	37,668,907	403,976,861
2.2 Negotiation on Land Distribution in Public Lands	Case	30,556	8,845	39,401
	Baht	573,877	166,462	740,339
2.3 Survey for Land Distribution	Rai	1,601,416	383,733	1,985,149
2.4 Land Distribution				
- Private Land				
- Permanent Leasing	Family	4,313	548	4,861
	Rai	75,205	9,463	84,668
- Hire Purchase	Family	551	855	1,406
	Rai	8,316	14,837	23,153
- Other Purchase	Family	10,270	1,325	11,595
	Rai	190,610	27,619	218,229
- Public Land				
- Issuance of ALRO 401	Family	22,437	5,723	28,160
	Rai	425,497	111,811	537,308
- For Other Purposes	Family	43,686	9,719	53,405
	Rai	1,112,505	170,707	1,283,212
3. Development and Promotion				
3.1 Road Construction	Km	893.495	170.688	1,064.183
3.2 Reservoirs	Number	14	1	15
3.3 Weirs	Number	8	1	9
3.4 Ground Water	Number	9	20	29
3.5 Deep Wells	Number	55	10	65
3.6 Shallow Wells	Number	492	95	587
3.7 Irrigation Canals	Km	82.524	30.793	113.317
3.8 Farm Plot Department	Rai	34,587	0	34,587
3.9 Tree Planting	Rai	21,927	0	21,927
3.10 Soil and Water Conservation	Rai	10,400	600	11,000
3.11 Land Clearing and Leveling	Rai	34,214	6,606	40,820
3.12 Setting Up of Cooperatives	Unit	88	1	89
3.13 Training of Farmers	Time	406	114	520
3.14 Sale of Fertilizer	Ton	5,818.62	0.00	5,818.62

Note: [1] Up to September 1985.
[2] Included are districts which have been separated from the already proclaimed districts.

Source: Agricultural Land Reform Office

- ALRO has constructed roads and supplied water resources for agriculture, drinking and other uses. The office has developed agricultural plots engaged in soil and water conservation, organized and provided training for cooperatives, supplied fertilizer and engaged in reforestation, upkeep and maintenance of community forests.
- Efforts at land reform involving private land have been minimal, due to budgetary constraints. However, from 1979 to 1985, the national budget has allotted the Land Reform Fund 1,230.6 million baht. In addition, the fund received 100 million baht from the Farmers' Welfare Fund, 67.9 million baht from interest payments, and 64.8 million baht from other sources. Expenditures have been mostly on development activities amounting to 670.3 million baht. Other expenditures were 429.6 million baht for land purchases and expropriation and 78.8 million baht in loans to farmers.

Accelerating Land Reform

To date, land reform program progress has been limited and slow. Further, according to an initial estimation based on existing budgetary, organizational, and personnel capabilities, we discovered that reaching land reform targets for state-owned land would require another 16 years, and reaching land reform targets on private land would take another 45 years.

As already mentioned, government policy has called for the acceleration of the land reform program since the Fourth Plan. In fact, acceleration is reemphasized in the Sixth Plan. Therefore, more effort is needed to accelerate the land reform process in both state- and privately-owned lands. The preliminary estimate for this project indicates that the total budget for such an effort would be no less than 10,000 million baht, with targeted completion in 15 years.

The Land Bank

The issue of land reform financing has also been of interest to the government for some time. Policy on this matter has been explicitly stated since the Fourth National Plan. However, no mechanism has yet materialized.

Because accelerated land reform requires large investment, a land bank whose primary function is to generate funds for land reform should be established. In fact, such a proposal was recommended by a Subcommittee on Land working group. A similar recommendation was put forth by a research team from the Faculty of Economics, Chulalongkorn University. However, both groups' recommendations defined the scope of activities of the land bank quite broadly to encompass more than the primary function of funding land reform activities. The working group proposed that the land bank be set up in the form of a fund; the Faculty of Economics recommended an independent organization. However, a land bank requires large capitalization, and the current financial status of the government may not warrant such a venture.

It is therefore proposed that, for the immediate future, existing agencies should be improved in order to accelerate land reform in areas already designated for such effort. Even so, additional budget allocations to the Sor Por Kor fund are necessary for further land purchases. The review and revision of those aspects of

the act that hamper effective land reform implementation and operations is also important. The formation of a land bank could be realized later, though planning for its establishment could begin now.

LAND SETTLEMENTS

Self-Help Land Settlements

Self-help land settlements first came into being in 1940. Their purpose was the settling the poor, the underemployed, and the unemployed on unoccupied and idle land. The objective was to give legal ownership of the land to the poor so that they could subsist as farmers; the overall goal was to improve their livelihood and their contribution to the nation.

There are presently five kinds of self-help settlements, which are differentiated by function:

1. General self-help land settlements to assist the poor and landless
2. Self-help land settlements to assist people in achieving certain political or economic objectives
3. Special self-help land settlements for economic development purposes and to solve administrative problems
4. Self-help land settlements to assist people along the border and in sensitive areas
5. Self-help land settlements for evacuees from flooded areas

The general procedures for establishing a self-help land settlement are as follows:

- Preparation, planning, budget proposals, etc.
- Cadastral survey, land preparation, and mapping
- Selection of prospective members and the settlement of members
- Development of a basic infrastructure, such as the construction and/or repair of roads and bridges
- Issuance of land-ownership documents

In addition, activities related to these projects may be categorized as follows:

- Social-development-related activities dealing with education, health care, and public health services in the settlements.
- Political activities that enlist and encourage full participation by members in the development of their community. Emphasis is also given to the development of viable local institutions to serve farmers in a meaningful way.
- Activities related to livelihood improvement, such as the development of production and marketing systems, loan services, and supplementary occupations for farmers.

At present, there are 47 self-help settlements throughout the Kingdom. Invariably, residents include the original inhabitants of the land, those who had encroached on the land, and those who lived on the land before the settlement Act.

All were lawfully incorporated into the settlement as members. These 47 settlements involve 109,713 families, totalling 709,805 individuals on 7,103,725 rai of land, not all of which is fertile or usable (1983). Of the 2,244,184 rai already divided and distributed to members, 2,068,351 rai have been utilized. As for the issuance of land ownership documents in these settlements, 17,397 Nor Khor 1 certificates indicating utilization of land, 2,155 Nor Sor 3 certificates of land utilization, and a total of 3,635 title deeds have been issued (table 7.3).

The Department of Public Welfare is responsible for self-help land settlements. The department receives an average budget of 250 to 350 million baht per year for this task, which is deemed adequate to the task of effectively supporting these settlements. In addition to budgetary constraints, self-help land settlements are plagued by various types of problems common to such projects, a matter that will be discussed later.

Cooperative Settlements

Land settlement in the form of cooperative settlements began as early as 1938. The primary objectives of this scheme were threefold:

1. To provide members with land on which to make a living
2. To provide financing to members for improving and expanding their occupations
3. To collect members' produce for conversion and distribution at better prices

Major activities of cooperative settlements can be divided into three categories:

1. Procuring land for the settlement of farmers
2. Planning for land utilization and development
3. Forming cooperative settlements by way of procurement, hire-purchase, or rental

The agency responsible for cooperative settlements is the Cooperatives Promotion Department. In 1986 the 48 cooperative settlements in the kingdom covered an area of 3,196,833 rai, out of which 2,156,833 rai, or 67.5 percent, has been settled. The amount of land left to be settled totals 1,040,000 rai, or 32.5 percent. According to the department's statistics, 70,000 thousand households are presently members of cooperative settlements. Accelerated efforts to complete settlement projects should take another five years.

In general, cooperative settlements evolved from state-owned land, such as forest reserves. When these areas became infertile through deforestation, they were degazetted and declared nonforest areas, and the National Committee for Land Allocation granted the land to cooperative settlements to be utilized by the poor and landless. Although the granting of the rights to utilize land is of major concern, the organization of cooperative members is as important, if not more so. The cooperatives have many purposes: financing, agricultural production, and marketing. In addition, a basic physical infrastructure is also provided.

In fiscal year 1986, the Division of Cooperative Settlements of the Department of Cooperatives received a budget of 2,091 million baht, a 10 million baht increase from the previous year. Nevertheless, settlement work continues to proceed more slowly than can be considered acceptable. Cadastral surveying and land division

Table 7.3 Progress of Self-Help Land Settlement, 1983

Region/Number	Land (rai)			
	Total Land	Allocatable	Allocated	Already Utilized
North (6)	736,498	462,739	202,935	198,087
Central and East (9)	2,200,975	976,077	971,042	947,909
Northeast (18)	2,177,857	774,471	624,840	495,459
South (14)	1,988,395	759,686	445,367	426,896
Total (47)	7,103,725	2,972,973	2,244,184	2,068,351

Source: Department of Public Welfare

have not progressed as planned, new construction proceeds slowly, partly because efforts are inadequate and often diverted to repair and maintenance of existing facilities; and there is a shortage of personnel needed to effectively carry out the division's work.

An analysis of the division's work performance reveals that from 1980 to 1986, an average of two new cooperative settlements emerged annually. Land allocation and land settlements lag far behind. Because the older cooperative settlements are not ready to be phased out, the division's personnel and machinery are not fully available for newer settlements. Hence, the work at newer settlements cannot be accelerated.

Given the division's current capacity to process and handle projects, if the number of new cooperative settlements is forced to increase, performance is likely to be poor. Thus, under present conditions, expanding into new land areas should be delayed in favor of accelerating efforts to complete existing settlements. In the meantime, land classification activities can proceed and be completed so that when future settlements are implemented, they will concur with land classification results.

Other Types of Land Settlements

This section will briefly discuss five other types of land settlements:

1. Forest communities under the direction of the Royal Forestry Department
2. Forest communities under the Forest Industry Organization
3. Land settlements by the Department of Lands
4. Land settlements by the War Veterans Organization
5. Land settlements by the Land Development Department

Table 7.3

Membership		Land Documents			
Family	Person	N.K.1	N.K.3	N.S.3K	Title Deed
13,803	77,802	7,689	5,121	156	
34,557	268,081	799	4,844	2,155	1,493
36,671	235,696	6,986	9,464	1,345	
21,682	128,226	1,923	2,001	641	
106,713	709,805	17,397	21,430	2,155	3,635

The objectives of land settlement by the above organizations have changed somewhat from the traditional objectives of providing social welfare to the landless, the poor, and the needy. They now incorporate:

- Land settlement as way of mobilizing human resources for the preservation of the forests
- Land settlement as a way of providing legal ownership of land
- Land settlement to assist specific target groups

The procedures, rules, regulations and objectives for handling settlement projects vary from agency to agency. The result is that there are no standardized practices or common objectives. This individualistic and uncoordinated approach has led to overall inefficiency and ineffectiveness.

Problems of Land Settlements

Land settlement projects face a plethora of problems. However, the key problems encountered by most agencies can be categorized by problems arising from: (1) the government sector; (2) the public; and (3) the physical, social, and economic environment.

Problems Arising from the Governmental Sector

Effective coordination among different agencies involved in land settlement is either slow, inflexible, or altogether absent. The lack of cooperation from other organizations also poses a serious problem.

The way in which land settlements are administered and managed needs to be improved. Some officials also lack commitment to and pay little attention to the project, resulting in a failure to understand the people's problems and needs. The result is that the responsible administrative agency often fails to develop relevant solutions. Moreover, the top-down management approach has led to a failure to

understand the needs of the people and a lack of perspective on obstacles and problems. This mismanagement results in delays and hinders project implementation.

Budget allocation priorities have been problematic and need to be revised. For example, the allocation of funds for cadastral surveying and the issuance of land ownership documents have been minuscule compared to budget allocations for infrastructural development, even though the former are critical tasks in land settlement work. In fact, because budgetary and organizational constraints have limited and delayed work progress, unforeseen consequences have resulted. For example, since qualified members are being settled so slowly, the land is open to encroachment by squatters and trespassers.

Problems Arising from the People

Members of land settlement projects lack commitment to the project and its related activities. They are self-serving and are primarily concerned with their own immediate interests. Members also lack knowledge and experience in agriculture and have not been successful in their agricultural activities.

Moreover, members have debt problems that preclude them from receiving land-ownership documents. Many harbor the mistaken perception that government loans need not be repaid, and many put their loan proceeds into nonproductive activities from which they do not recover their investment.

Problems Arising from the Physical, Economic, and Social Environment

There are four main problems arising from the physical, economic and social environment: (1) soil infertility causes lower than expected productivity; (2) lack of water is a problem in many areas where rainwater is the only water source for agriculture. The creation of additional water resources has not been adequate; (3) the absence of a stable and fair market for agricultural products has hindered members' ability to earn a reasonable income and pay back their debts; and (4) the tension and conflict between members of the settlement and illegal settlers has hindered project operations.

THE SOR TOR KOR PROJECT[10]

The Sor Tor Kor Project of the Royal Forestry Department focuses on reserved forest land that has been encroached. It started in 1982 and received financial assistance through a World Bank Structural Assistance Loan in 1983. The two major STK Project objectives are:

1. To grant legal land utilization rights to citizens who have encroached on the land and are illegally living off reserved forest land
2. To survey and gain a clearer picture of the extent of deforestation caused by encroachers and the extent to which reforestation must follow

The results to date include the completion of a survey of 579 forests, 195 of which were surveyed with government funds and 384 with funds loaned from the World Bank. Certificates of utilization of land, Sor Tor Kor 1, have been issued to 660,379 families, covering 6,750,834 rai out of approximately 1,240 forest reserves.

and about a million families who had encroached upon forest reserves prior to January 1, 1982.

The major undertaking of the project involves aerial surveying and mapping, public relations work, and surveying for the issuance of land utilization certificates (Sor Tor Kor 1), which are valid for five years. The certificate entitles the holder to a temporary right to utilize the land. This land cannot be bought or sold. At the conclusion of the fifth year, the holder is entitled to receive a new certificate—Sor Tor Kor 2—as an extension of the right to land utilization, subject to full compliance with the rules and regulations set by the Royal Forestry Department. To date, however, no Sor Tor Kor 2 certificate has been issued. A Sor Tor Kor 1 certificate holder is allowed no more than 15 rai of land, unless special permission has been granted in accordance with stipulated regulations and laws.

The Center for Forestry Research, Faculty of Forestry, Kasetsart University has studied the impact of both Sor Tor Kor Projects. The Office of Agricultural Economics has also surveyed the socioeconomic status of farmers in the forest reserve areas. Both studies reported that most forest reserves occupants are poor. Twenty-three percent of these farmers have an average of 5.5 rai of land per family outside the forest reserve. Half of these farmers had trespassed and encroached on the forest reserve within the past 10 years; 47 percent claimed ownership through purchase of land denuded by illegal log poaching; and 33 percent staked their claim on the land by themselves.

It is difficult to assess how effective the Sor Tor Kor Project has been in deterring further encroachment on forest reserves. The reasons cited for encroachment include increased population, the need for wood as fuel, and dissatisfaction with the soil conditions of previously occupied land. On the basis of these reasons, the researchers concluded it is unlikely that the issuance of Sor Tor Kor certificates would be enough to deter further encroachment. While the rate of encroachment might be declining in certain areas, the reason is probably because less land is available rather than because of the Sor Tor Kor Project.

It may thus be concluded that the issuance of Sor Tor Kor certificates is not the primary deterrent to encroachment on forest reserves. On the operational side, the issuance of certificates has not been a problem, partly because of the availability of support funds. However, there is a shortage of staff at the central office to coordinate and evaluate the project (there are presently 10 positions for the central office), and the project has had to borrow personnel from other divisions to assist in its work. The same situation exists at regional offices. Temporary workers are also hired. In the future, if financial and personnel assistance are not available at current levels, project implementation could become more difficult.

Attempts should also be made to improve the screening of applicants to prevent possible abuse by those who do not qualify. Furthermore, development activities should be promoted concurrently with the right to use the land in order to raise farm productivity and income.

LAND REFORM AND LAND ALLOCATION POLICY

The proposed policy and operational strategies for land reform and land allocation are summarized below:

Proposed Short-Term Land Reform Policy

- Accelerate and complete all existing land reform projects before initiating new ones.
- Accelerate the purchase and expropriation of private land for land-reform purposes, in concert with current budgetary capabilities.

Proposed Long-Term Land Reform Policy

- Proceed with land reform on state-owned land and target completion within 15 years.[11]
- Proceed with land reform on private land and target completion within 10 years.[12]

Proposed Short-Term Land Allocation Policy

- Accelerate the allocation of land and the issuance of ownership documents, particularly in self-help and cooperative settlements. Target completion to coincide with the conclusion of the Sixth National Economic and Social Development Plan.
- Base the allocation of state-owned land (including the Sor Tor Kor Project) on primary principles, the results of land classification.

Proposed Long-Term Land Allocation Policy

- Proceed with the issuance of land ownership documents to those who have been allocated state-owned land or who have been given land utilization rights, on the condition that these people adhere to the rules and regulations applying to ownership for said purpose.
- Coordinate land allocation activities into a unitary system with power and authority to monitor and control the allocation and settlement of land by all organizations concerned.
- Conduct development activities concurrently with land allocation in every case.

OPERATIONAL STRATEGIES FOR SUCCESSFUL IMPLEMENTATION

Short-Term Land Reform

- Increase the budget to the Fund for Agricultural Land Reform to enable it to purchase and expropriate more private land.
- Limit the use of the fund to (1) the purchase and expropriation of land; and (2) loans to farmers to pay for land compensation only. The fund should not be used for other projects or for development activities.

- Revise provisions of the Royal Act on Land Reform for Agriculture, particularly with reference to the Fund and the purchasing or expropriation of land, in order to facilitate and accelerate project implementation.

Long-Term Land Reform

- Set up a land bank as a funding source for land reform.
- Set up a Land Reform Bureau to strengthen the administrative capability for the acceleration of the land reform program (see chapter 9).

Short-Term Land Allocation

- Make certain that organizations dealing with land settlements allocate the bulk of their budget to land settlements and the issuance of land ownership documents.
- Contract out certain activities to the private sector (such as cadastral surveying).
- Closely monitor and evaluate the performance of all land settlement organizations.
- Slow down the Sor Tor Kor Project, pending the detailed results of land classification.

Long-Term Land Allocation

- Readjust all types of land settlement projects to achieve uniformity, then assign projects to agencies according to locality.
- Establish a central agency for the coordination, control, and implementation of land settlements and land allocation.

Chapter 8

Land Information System

INTRODUCTION

For over a decade, the government and some other agencies have been very interested in setting up a national land information system. However, due to problems of politics and readiness, such a system has not been actualized. In the meantime, the need for an up-to-date, accurate land information system for land-use planning has increased. In fact, several government agencies have been collecting land data for a long time, but the data have been used inefficiently. The collection of data has been primarily for each agency's own use, and little access to the information has been given to others. Systematic data collection would be far more efficient. It would eliminate the duplication of activities among agencies and would foster more rapid and accurate data collection. There has been a recent attempt to set up a national land information system (LIS). The discussions among various agencies are more frequent now, and such a system could be more feasible. Foreign consultants have also been asked for opinions and suggestions. However, a major prerequisite for a national LIS is a clearly defined national land policy.

THE PRESENT LAND INFORMATION SYSTEM

Land information includes information on forestry and other natural resources. Some agencies—such as the Lands Department and the Land Development Department—are responsible for the collection of land data and have been trying to develop their own land database. Some agencies are carrying out feasibility studies and pilot projects, while others already have their own databases. The Soil Information System (SIS) and the Geographic Information System (GIS) are examples of existing databases. The Lands Department is now using new technology for map production and is also developing a Land Ownership System. However, these attempts face a number of serious problems:

- Appropriate technology to update existing data is lacking.
- There are conflicts in priority. Data are collected primarily for specific activities rather than for general purposes.
- Huge volumes of complex data are more difficult to process and use within short time periods.
- Agencies lack trained personnel, funds, and equipment (including computer software) to update existing data.
- There is no clear national LIS policy.

PRINCIPAL PROBLEMS WITH EXISTING DEPARTMENTAL LIS's[13]

Existing departmental land information systems have two primary problems: data and administration.

Data

The most conspicuous problems with the data are:

- A great deal of land data and many maps have been collected by many land-related departments. Each department has its own objectives and develops its own definitions and methodology. This lack of standardization creates difficulty in finding specific information. Some departments attempt to solve the problem by using their own maps and data. Duplication of data collection is therefore frequent, and information is scattered.
- Since the data are collected by different departments without considering the needs of other outside users, land information is organized by different definitions, methodologies, and forms. The scope of the information used within each department is quite limited, obstructing the development of a national LIS.
- Only a small number of officials presently have good computer training. Consequently, the use of computer technology to develop a national LIS will be severely limited in the early stages.
- The amount of existing land data is enormous. In order to convert the data into a computerized system, a great deal of time and effort, will be required for adjustment and modifications.
- Land problems are delicate and complex. At present, policy makers lack the information they need to enable them to predict the possible social, economic, and political consequences of their decisions, on land issues.

There are two main administrative problems:

- Due to the absence of a clearly defined national land policy, the administrative structure and nature of the national LIS is unfocused.
- Specifying a LIS administrative structure is closely related to political issues. Land information is one of the keys to understanding the country's social, economic, and political situation. Those who control this information could conceivably use it to gain both power and position. This perception leads to the difficult issue of who will be responsible for setting up the national LIS. This one problem will have to be solved.

THE CONCEPT OF A NATIONAL LIS

As mentioned earlier, there has been long standing interest in establishing a national LIS, and a great deal of effort has already been expended. A subcommittee was established to conduct an LIS project feasibility study; several seminars were held to discuss the concepts behind the proposed system; and foreign experts were consulted and studies undertaken to design the system.

It should be noted that foreign institutions and international organizations have participated in these efforts from the beginning. The first seminar was organized in 1978 by the Agricultural Land Reform Office (ALRO), with the support of the International Development Research Center (IDRC) and the Ford Foundation. The second ALRO seminar was held in 1983 and was supported by the German Foundation for International Development (DSE). Since then, there have been more two seminars—one in March 1984, and one in June 1985—conducted with the assistance of consultants from the Canadian and Australian governments. The results of these seminars and consultations have been beneficial, and they clearly indicate the need for a national LIS as well as the formation of its general conceptual framework.

These past efforts to understand the underlying problems as well as the necessity for establishing such a system have revealed important concepts regarding a national LIS. They can be summarized as follows:

- It is economically and technically feasible to establish a national LIS that would facilitate the use of information to analyze problems, make decisions, and specify land policies.
- The national LIS should contain the following types of data: size, boundaries, area, use, geographical condition, soil properties, water sources, names and addresses of land holders, value, and other necessary socioeconomic information.
- The national LIS should consist of many relatively small, independent subsystems rather than a single large unit.
- There should be the same standards and definitions for each data type in order to facilitate data usage.
- A coordinating organization for the national LIS should be the central unit linking all subsystems. This will be crucial to the success of the entire project. The organization should have its own personnel and should be given enough authority to supervise, coordinate, and regulate the work of each subsystem.

NATIONAL LIS POLICY

The state should develop a national LIS which can be used to support the Kingdom's socioeconomic planning and development. Such development should conform to the existing administrative system which also should be able to indicate what data is available and where it can be found. Thus, the duplication of data, would be eliminated and the system would be simple enough for all user levels as well as for the other agencies contributing data.

The National LIS Structure

The land data scattered throughout a number of agencies have been developed primarily to serve the particular needs of each agency, with little thought given to providing data to other agencies. While some coordination does exist in the form of requests for data or reports from producing agencies, until now, there has been no development of a single system to serve both the national administration and

individual agencies. The national LIS should be accurate, complete, up to date, accessible, relevant, and easy to use.

The system should consist of land information subsystems. A subsystem can be linked with other subsystems or can be cross-referenced through land parcel numbers. A subsystem established within an agency (a department) can communicate with others through the computer (figure 8.1). The subsystem approach is suitable for the existing situation in Thailand, is feasible both in terms of operation and development, and is based on the specific duties and needs of each department. Moreover, coordination among these agencies can be achieved as well.

An LIS subsystem should include:

- Base map
- Public utility database (tap water, electricity, telephones, etc.
- Land ownership database
- Property value database
- Soil property and national resource database
- Land allocation database
- Forestry database
- Statistics (socioeconomic) database

There will be a summary report for each subsystem. The report should be up to date and easy to use. The summary report for each subsystem will be combined and summarized into a single report for decision makers such as Directors-General, Permanent Secretaries, Ministers, the Prime Minister and other related committees. However, the contents of the reports for each decision-making level and restrictions on access to the information are yet to be determined. The structure of the subsystem organization has not been determined as well. Even though national land data are divided into several small groups (of data) according to their nature and the agency, each small data group must be connected or be referable through a land parcel number. This is possible by the establishment of several databases (subsystems) established among related agencies, which will interconnect through computer linkage (figures 8.2 and 8.3).

Data Needed to Create a National LIS

Any particular piece of land data can be classified into two types: graphic and alphanumeric. The data that conform to the subsystems mentioned above and are needed in the construction of the national LIS are as follows:

- Base maps and aerial photographs will be made for each department (agency) according to its needs.
- Public utility data indicate the number of public utilities available in any area.
- Land ownership data indicate the type of land ownership of any particular piece of land.
- Property value appraisal data indicate the appraisal value of any particular piece of land.
- Soil property and natural resource data indicate soil properties and the availability of natural resources for land use and economic development planning.

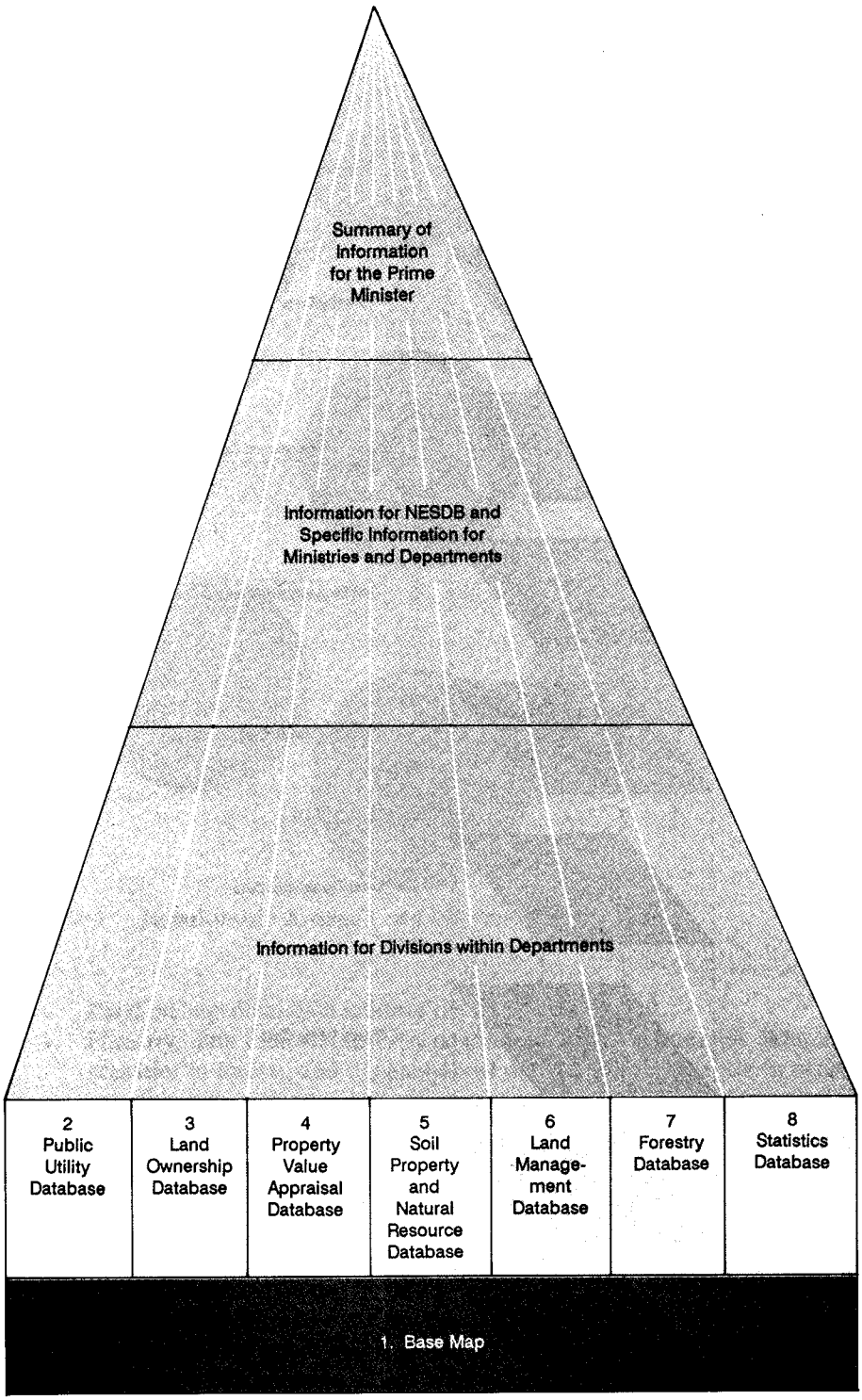


Figure 8.1 National LIS Structure

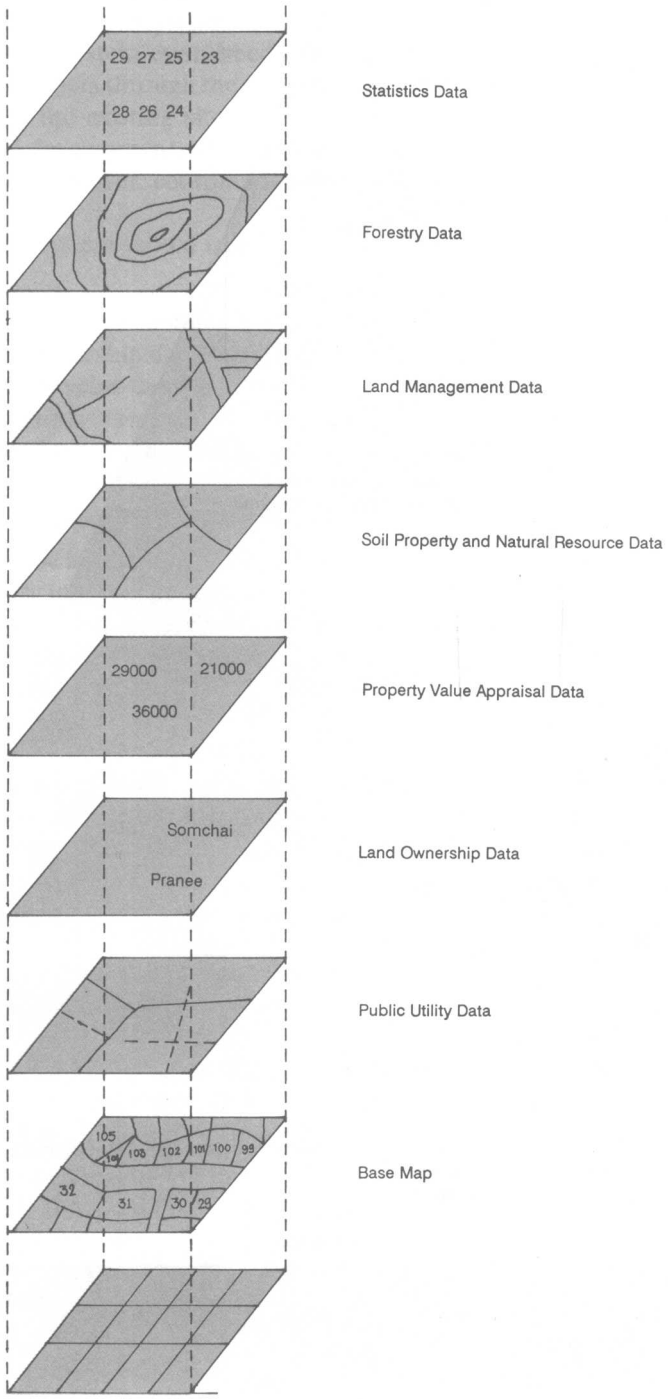


Figure 8.2 Layers of Data Within LIS

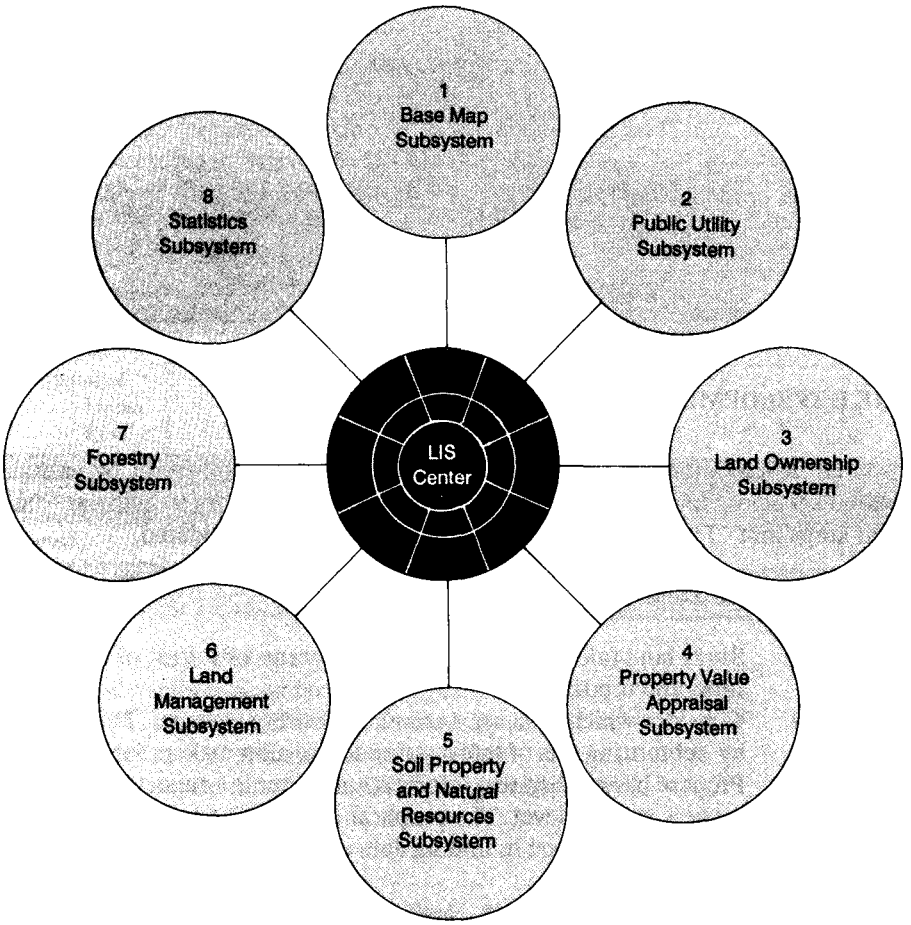


Figure 8.3 Relationship Among Land Information Subsystems

- Land management data indicate the allocation of land.
- Forestry data indicate forestry conditions, forest boundaries, land-use activities in forests, and the analysis of data for land allocation in forest areas.

Statistical data indicate various socioeconomic statistics, such as population, income, population growth, birth control, etc.

Criteria for the Use of Land Information

Land information originates in various agencies, some of which are responsible for national security, and there are many levels of users—low-level officials, decision makers, and those who set national policy. The number of users at each level also differs. Furthermore, some land information is very important for national security and cannot be revealed to the general public. Therefore, in order to facilitate the use and ensure the security of land information, the following criteria are proposed:

User Level	Position	Data Group[14]
5	Prime Minister	A, B, C, D, E
4	Minister	B, C, D (only ministry data)
3	Director General	B (only with minister's approval C, D (only with department's data)
2	Director	C (only with Director General's approval) D (only division data)
1	Head of Subdivision	D (only subdivision data)

THE DEVELOPMENT OF THE NATIONAL LIS

The development of the national LIS involves data collection by various related agencies. In order to avoid complications, it is necessary to map out some clear steps first. Then, the subsystem's readiness must be considered.

Development Steps

Step 1. Study land information subsystems in terms of source of data, data flow, and reports.

Step 2. Consider which data are needed by decision makers. This is done by submitting sets of information to decision makers for selection.

Step 3. Prepare basic subsystem information to create a report for decision makers at each level. The preparation will take into account convenience and speed in finding data and using information.

The Readiness of the Subsystems

At present, the development of the information system is at a different stage in each department or agency. Some departments have started collecting the data they need. Some are already using computers, while others are in the midst of installation or still in the planning stages. Some still have no plan or budget at all for this purpose (table 8.1).

Many factors must be taken into account in planning the development of the national LIS. The capability of the department responsible for each subsystem is of particular importance and depends upon the following points:

- Establishing correct priorities for subsystem development. Some subsystems must be developed before others. For example, the base map must be developed before the forestry subsystem.
- The availability of funds. The subsystem must be a budgeted project, designated for funding either by the government or by foreign sources.
- The availability of personnel. Qualified personnel are required to oversee subsystem development.
- Technical readiness. The department should have enough technicians and technical advisers to develop and operate the subsystem.

Table 8.1 Readiness in Setting Up LIS

Type of Data	Order of Priority					Budget					Personnel					Technical					Total
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
Map					/					/					/					/	13
Quality of Soil/ Resources					/					/					/					/	16
Land Right/ Tenure					/					/					/					/	13
Public Utilities				/					/					/					/		13
Land Value Appraisal																					
Urban				/					/					/					/		11
Rural		/					/							/					/		9
Land Allocation			/					/					/					/			11
Forestry					/					/					/					/	11
Statistics	/					/					/						/				9

Notes: 5 means necessary or mostly ready
4 means necessary or very ready
3 means necessary or moderately ready
2 means necessary or ready a little
1 means necessary or ready very little

The National LIS Development Plan

When the capability of the departments responsible for subsystem development has been demonstrated, a national LIS development plan can be designed, as follows:

- The Subsystem Development Stage. Calculating the total number of points for various factors will indicate readiness for setting up the LIS (table 8.1). Subsystem development can be divided into four stages:

  Stage 1: (1) Base map: This map is necessary for the development of other types of data. Therefore, a base map must be developed first.

  Stage 2: (2) Soil property and natural resource data, (3) Land ownership data, (4) Public utility data: At present, some agencies are developing public utility data for their own use. The scope of data development should be expanded so that it can be used in planning at higher levels or at the national level.

  Stage 3: (5) Property value appraisal data (urban), (6) Land management data, and (7) Forestry data.

  Stage 4: (8) Statistical data and (9) Property value appraisal data (rural).

Stage 3 or 4 subsystem data can be transferred to a lower stage—i.e., Stages 2 or 3—under the condition that the department is ready to develop that particular subsystem data.

The Organization of the National LIS

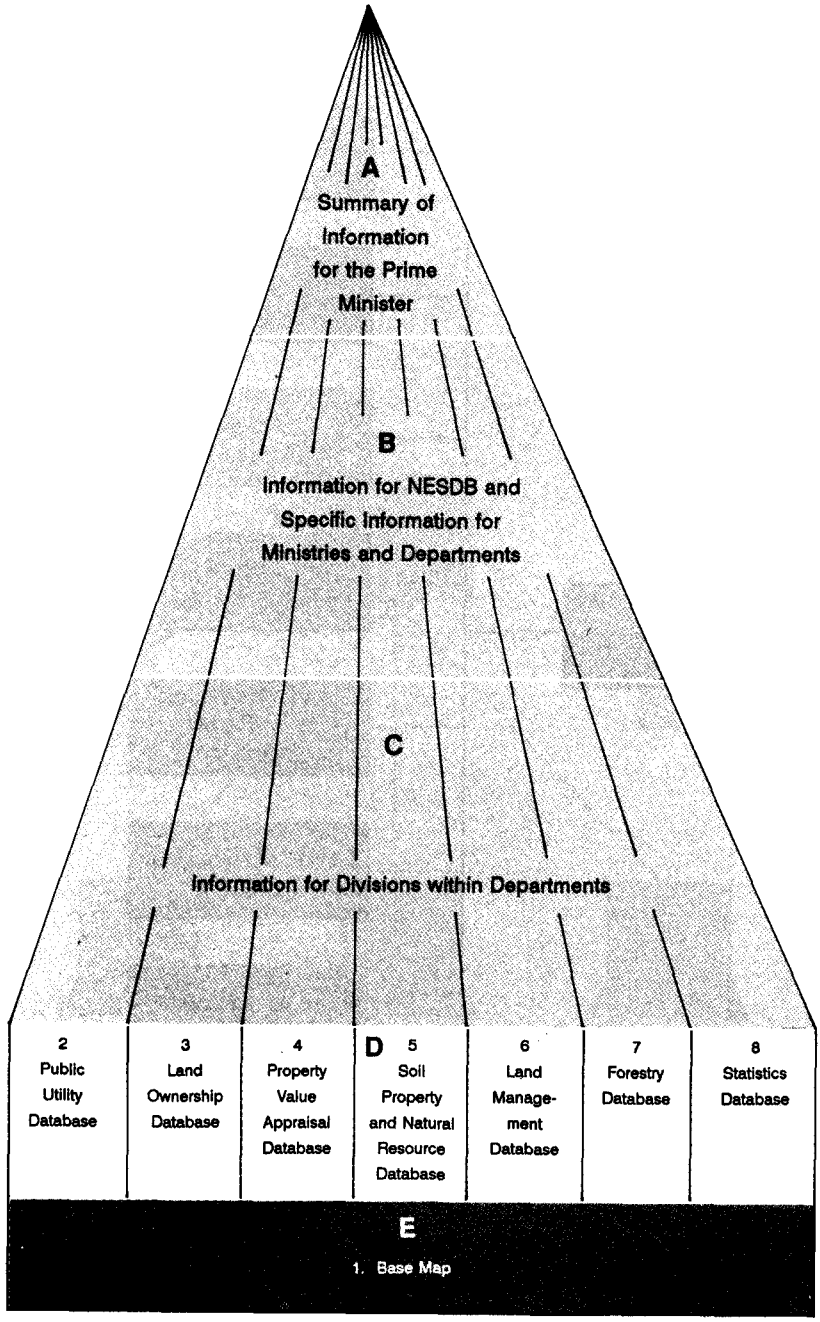
Recognizing the importance and benefits of a LIS, many departments have already collected some types of subsystem data. The following are some of these important departments:

Department/Agency	Type of Data
Lands Department	Land ownership data
Royal Forestry Department	Land statistics in forests
Property Value Appraisal Office	Home address
Bangkok Metropolitan Authority and some public utilities	Map
The Royal Thai Survey	Map
Land Development Department	Land use map, domestic information system
Department of Local Administration	Municipal and sanitary areas land tax statistics

Since many departments are involved in the collection and maintenance of subsystem data, a decentralized approach for the organizational structure of the national LIS should be instituted. Each department (organization) will be responsible for the collection and the storing of certain types of data—in detail. It is also necessary to have an administrative center to coordinate and manage the collection of data for national administrative purposes and for the use of data among various departments and agencies (figure 8.4). This multidivisional set-up needs strong support from the highest administrative level of the nation—the Cabinet. The proposed national LIS organizational structure is depicted in figure 8.5. The recommended computer system is shown in figure 8.6.

The LIS administrative center will be responsible for the detailed monitoring of the progress of the national LIS during its development. Land information needed by policy makers, aspects of technical design, and form specifications of each type of information will all require consideration. The administrative center must also make decisions on the technical aspects of the computer system and on the establishing subsystem committees. The computer system should be able to send information to and from the administrative section and other sections. Each subsystem committee will receive specifications and duties for its own subsystem so that it can be linked with the national LIS. Coordination is carried out by subsystem personnel working with the administrative center.

The national LIS is divided into several subsystems. The divisions will be consistent with the main responsibilities of the relevant departments. A subsystem can be further subdivided into small groups. This is intended to increase the efficiency of operations. For example, the public utility subsystem database can be divided into electricity, telephone, and tap-water groups. A small group can be



Notes: A = Data for National Planning
B = Data for Ministry Planning
C = Data for Department Planning
D = Data for Division Planning
E = Base Map

Figure 8.4 Classification of Land Information Users

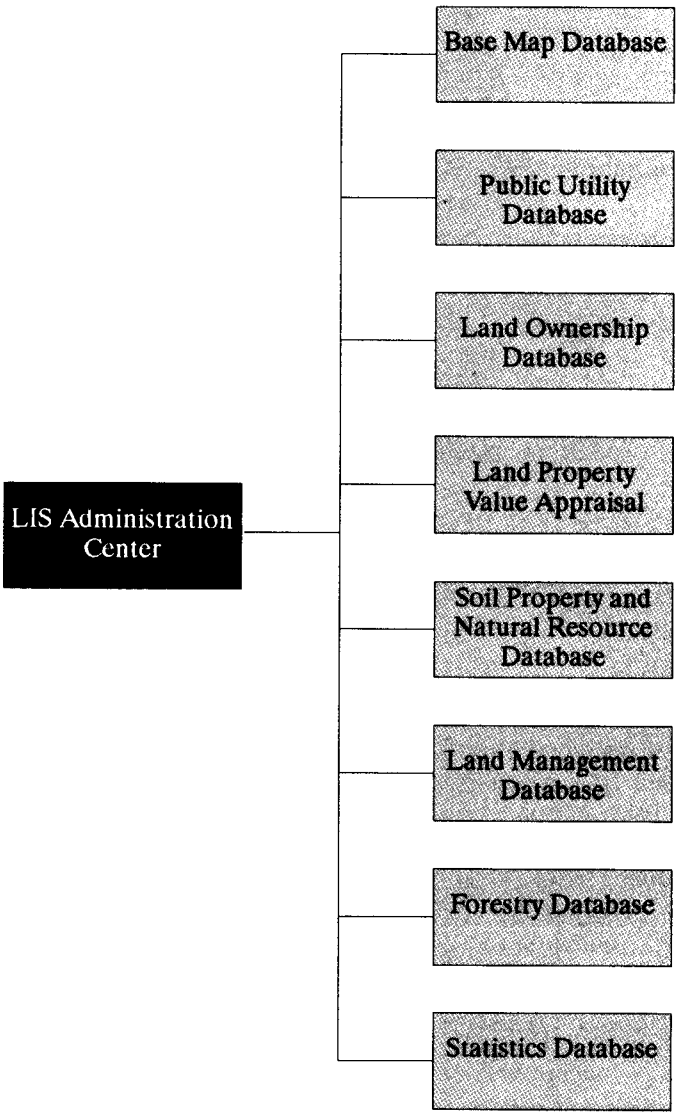


Figure 8.5 Proposed LIS Organization

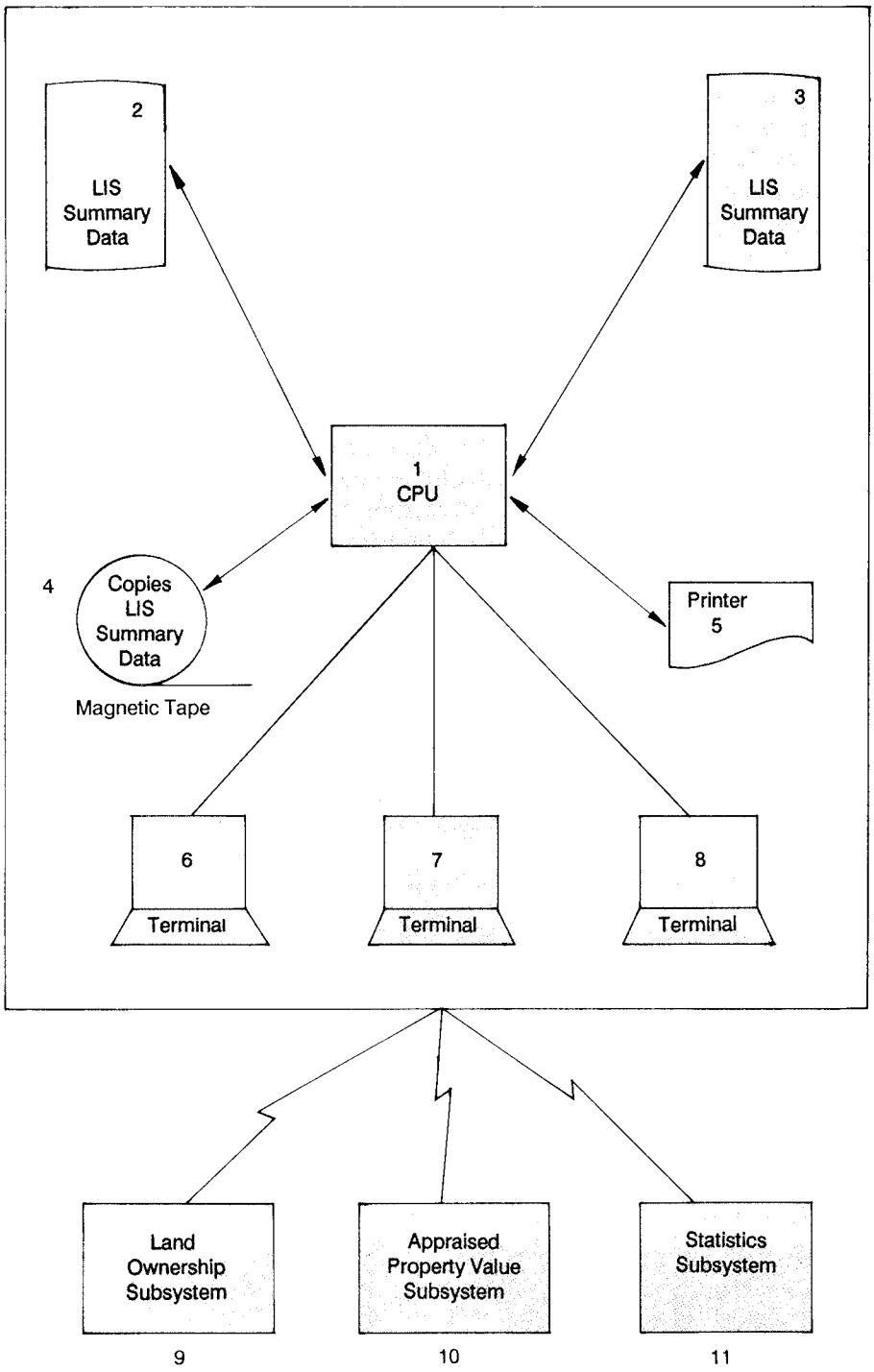


Figure 8.6 Proposed Computer System Within LIS Administration Center

further divided into sections, according to the needs of its operation. For example, the electricity group can be divided into the metropolitan electricity section and the rural electricity section (figure 8.7). The small sections will work together through forms and lists of information to be sent to the national LIS. Small sections can also have their own additional information lists.

The LIS administrative center is responsible for coordinating activities among the following:

- LIS users at the national development planning level
- LIS users at the departmental planning level
- Subsystems

The LIS administrative center is the most important coordinator of subsystem information. For example, the center can combine land ownership information and forestry information. The center will coordinate with decision makers who want land information combined with other information for their planning activities. Whenever decision makers have questions or need land information, the center will analyze and locate the information sources through its index or by consulting the subsystems. Then it will prepare the information in a form that decision makers can understand and easily use.

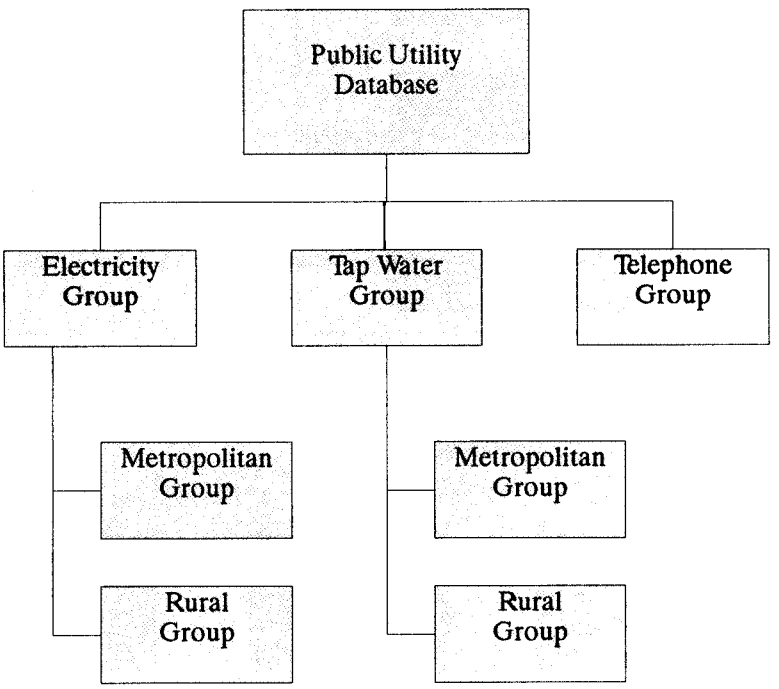


Figure 8.7 Organization Within Public Utility Database (Subsystem)

Administrative center duties can be divided into two timed phases. During the establishment phase, the administrative center will be responsible for the development or creation of the national LIS. After the system has been established, the center will administer the national LIS, operating it to achieve designated goals and targets and adjusting the system according to user needs.

In order to achieve these objectives, however, the center must first be established with appropriate and adequate facilities. The center should be staffed by full-time personnel who will be responsible for administering the LIS and for supervising and maintaining the equipment and facilities needed for its effective performance. Figure 8.8 shows the organizational structure of the LIS administrative center. The Chairman of the Board of Directors will be the minister in charge of the LIS; directors are the top decision makers (Directors-General) of the subsystems.

The Board of Directors will set policies, examine short-term and long-term operational plans, and supervise the operation of the LIS administrative section consistent with accepted policies and plans.

The LIS Director will be in charge of the center's administrative work. The director should have expertise in management information systems, databases, and computers, and should posses the ability to develop good relationships with various departments.

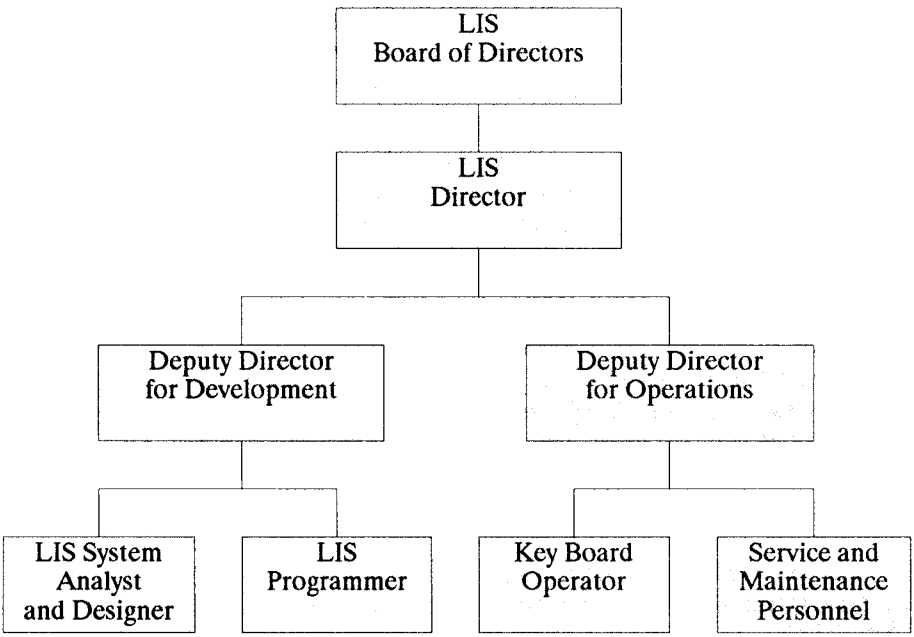


Figure 8.8 Organization Within LIS Admistration Center

The Deputy Director of the Development Division will oversee and develop the system, be responsible for analyzing demands for information, and for designing and developing computer programs. The Deputy Director should have expertise in analysis, design, and programming. The Deputy Director of the Operational Division will supervise the use of the LIS and any computer used in its operation.

A Development Plan for the National LIS

The plan to develop the national LIS will have three stages as follows:

Stage 1: A working group consisting of representatives from the main data collection departments and agencies will design methods for collecting land data by subsystem. This work will require between 6 and 12 months.

Stage 2: Another working group will consist of representatives from user agencies who will consult with land information specialists to plan how decision makers at various levels will use the land information. Planning will take into account the amount of information that will be required. This stage will also take from 6 to 12 months.

Stage 3: After both working groups have reported their findings and recommendations, the next stage will be designing the system. A pilot project will test the design. The form of the pilot project will depend upon fund availability, staff, technical personnel, and the quantity of required information.

CONCLUSION

Land information is invaluable for Thailand's socioeconomic planning and development. This information is presently scattered among various departments. LIS policy should conform to operational needs within and among the departments, as well as at the national level. The lack of a national LIS not only delays planning but also leads to unrealistic plans that are difficult or impossible to implement and that often obstruct the ability of the government to administer projects. Since a national LIS involves many organizations and departments, its operating plan should be very clearly articulated. The system should be divided into several subsystems, according to the primary duties of each department. Each subsystem will be clearly assigned to collect a portion of the data for the national LIS. In other words, each subsystem's activities and responsibilities to the national LIS should be clearly defined. In terms of administration, the national LIS must be a complete entity: There should be an LIS administrative center to collect information from subsystems and the produce the reports and information needed by decision makers for their planning. The center will play a vital role as the link between the departments producing the information and the decision makers at different levels who use it. Therefore, the center should have a full-time, fully qualified staff. Full-time personnel should also be available to function as staff members at the subsystem level. During the development stage, the types of reports and information that decision or policy makers require will be the most important factor in determining the direction of the LIS development. Further, the development of each subsystem will depend upon other crucial factors, such as adequate budget, staff, and technical personnel.

Chapter 9

National Land Administrative System

THE PRESENT LAND ADMINISTRATION SYSTEM

General Characteristics

In the past, land administration was performed by a number of government departments. The Royal Forestry Department dealt with the country's forests, while the Royal Irrigation Department dealt with its water resources. The horizontal linkage approach—in which more than one department is responsible for a project in the areas of town planning and coastal zone management—has been partially adopted only recently. At present, the coexistence of these two systems describes the land administration system in Thailand.

Land-Use Patterns and Related Agencies

Land use patterns involve: (1) forests (2) bodies of water (3) minerals and energy deposits (4) marine resources (5) recreational areas (6) agriculture (7) industry (8) commercial and residential areas and (9) transportation. Government agencies with responsibility for these activities can be categorized as follows:

- Government agencies with direct responsibility refer to those that possess power to regulate the pattern of land use in areas under their responsibility. The outcome of applying these regulations could be interference with the ability of adjacent areas to adopt land use patterns similar to the regulated area (such as ALRO or the Thai Tourist Authority). There are 33 agencies with direct responsibility, belonging to seven ministries.
- Agencies responsible for planning and land information are primarily involved in policy formulation in affecting land-use patterns, land surveying, and evaluation. Altogether, there are 21 of these agencies, under eight ministries.
- Land related agencies act to support the work of the agencies in categories (1) and (2) above. There are 62 agencies, under nine ministries, in this category.

The above figures clearly indicate that a large number of government agencies have administrative responsibility for land use in Thailand. Thus, the underlying difficulty with land administration is that of synchronizing these agencies in order to maximize social benefits and minimize interagency conflict and administrative costs.

PROBLEMS WITH LAND ADMINISTRATION

Land Utilization Conflicts

It is widely agreed that there are conflicts in the utilization of land. Some examples are: (1) the spread of urbanization into fertile agricultural lands; (2) deep sea mining with detrimental environmental effects; and (3) the expansion of agricultural lands into forest areas. In the past, many policies have failed to minimize these conflicts, partly due to the lack of a central agency with adequate expertise to formulate land policies.

In the past, land classification efforts have not been seriously undertaken and, when adopted, have not solved conflicts in land utilization due to the lack of cooperation among land-related agencies. Such a lack of cooperation among the responsible land-related agencies could be a function of the disparity in their interests. To a degree, this problem has aggravated the existing conflicts and has caused further damage to the society.

It is therefore appropriate to advocate the establishment of a central land agency to formulate highly effective land-use policies that would be well received by other agencies so that conflicts are minimized and efficiency improved.

The Lack of Clarity of Responsible Agencies at the Policy-making Level

The first major agency or committee responsible for this area is the National Land Allocation Committee (NLAC). According to Land Act BE 2497, this committee with the Department of Lands (which acted as the Secretariat) is responsible for land classification. In 1964 land classification was transferred to the Land Development Department. In 1972 the Land Classification Committee was set up when the National Land Allocation Committee's responsibility was revised, although the Land Classification Act remained unaltered. This revision also specified NLAC's authority for land surveying and formulating policy, particularly with reference to land use patterns. Despite these modifications, the Land Classification Committee continued to exert its original responsibility until 1983, when extensive revision of responsibilities took place. After 1983 the Land Development Department was to be responsible for formulating policy on the land use, land classification, specification of land-use areas, and land development. In addition, the National Land Allocation Committee was responsible for formulating policy on land allocation, land rights planning, land conservation, and land allocation to low income families. Although extensive revision has taken place, the overlapping of responsibilities between these two agencies still exists. In 1984 the Ministry of Interior proposed policies and measures affecting land management, land use, and land development and further suggested that a Master Plan on land allocation, land use, and land development be established by the National Land Allocation Committee. This proposal was submitted to the Cabinet, which

later requested that the agencies concerned revise it. The revised proposal contained elements that added more power to these two committees, while at the same time, suggested that the committees work hand in hand.

Despite efforts to minimize difficulties related to the formulation of land policy, problems due to the lack of clarity about the responsibilities of land-related agencies at the policy making level still persist. This in turn has caused misunderstandings and confusion about current land policy for other agencies.

Beyond the absence of a central land policy planning agency, policies formulated by the National Land Allocation Committee and the Land Development Committee tend not to yield socially optimal solutions. While the Department of Lands consists of a large number of representatives from the Ministry of Interior, the Land Development Department tends to be more agriculturally oriented. In fact, the scope of land policy has to cover a wider range of issues—industrialization, town planning, energy, recreation, education, and so forth. An agency with diversified expertise is necessary in order to cover all of these areas.

SEVERAL AGRICULTURAL LAND ALLOCATION AGENCIES

While the basic objective of agricultural land allocation is as simple as "allocating lands to farmers for cultivation," there are now as many as 16 agencies responsible for meeting this objective. The various responsibilities of these agencies are based on the achievement of one agency's objective serving as the input to other agencies objectives.

These sub-objectives are: to maintain national security, to prevent forest encroachment, to remove families from denuded areas, and so forth. In fact, land allocation for cultivation follows a straightforward procedure, starting with infrastructure planning, then proceeding to appropriate production planning, the provision of required farm inputs, and marketing. The lack of cooperation between responsible agencies has led to bottlenecks in certain areas: namely, not meeting the overall objective as well as differences in the size of land allocated, infrastructure and supportive services, and type of land rights allocated. A movement toward combining existing resources (human, managerial, and material) into areas of common interest would create more efficiency and help achieve the primary objective at less cost.

CONFLICTS BETWEEN RURAL AND URBAN LAND USE

While rural and urban land use patterns do differ distinctively, rural and urban land use are interdependent. However policies governing them are independent. Expanding urban areas is possible only when some rural land is occupied or when a rural area simply develops into an urban area. Thus, urban and rural areas share many common residential, commercial, recreational, agricultural, and industrial characteristics. What makes the administrative procedures between the two areas differ is simply the emphasis that is placed on certain activities. Furthermore, economic and social relationships between rural and urban areas are also established, especially when the two areas are adjacent. Therefore, it is imperative that an integrated land policy, that includes regional planning be adopted in order to mitigate rural-urban land use problems.

THE RELATIONSHIPS BETWEEN TYPES OF LAND USE AND ECONOMIC AND SOCIAL DEVELOPMENT

Not only is the interrelationship between types of land use clear, but also a strong correlation between overall land use patterns and national economic and social development exists as well. If the private sector is to participate in land use, issues involving physical development, legal matters and taxation require a set of guidelines and precise policy measures. Regarding agriculture, the government needs to provide adequate sources of funds (Bank for Agriculture and Agricultural Cooperatives—BAAC) and marketing services (Marketing Organization for Farmers—MOF). Guidelines and policy measures for land policy, that operate in line with the country's the National Economic and Social Development Plan must be formulated.

The government's recognition of the importance of the relationship between land policy and the country's Development Plan is indicated by its establishment of the Subcommittee on Land under the National Rural Development Committee. However, this committee's effectiveness in managing the country's land use problems is as yet undetermined. There have been indications that the National Rural Development Committee is inefficient in performing its tasks. For example, "The Policy Guidelines for Land Use and Land Rights" proposed by the committee in 1982 advocated a revision of the existing land lease laws when, in fact, such laws had already been revised in 1981 by Royal Decree on land lease for agricultural purposes. Furthermore, "The 1984 Progress Report" of the Ministry of Agriculture and Cooperatives still insisted that for agricultural purposes, laws on land lease be revised.

A LAND INFORMATION SYSTEM AND THE ENVIRONMENT

The acquisition of appropriate and sufficient information is an essential component of any decent planning. It has been observed in land policy planning that land-related information is scattered throughout a large number of agencies—each agency collecting information to serve its own purposes. Neither an information sharing system nor a standard format of information classification has been used in the past. A great deal of important land information was kept in departments such as the Department of Mineral Resources, the Department of Transportation, the National Statistical Office, and the Department of Meteorology. A comprehensive land information system is therefore a prerequisite for sound land policy planning and administration.[15]

Many land-related agencies have devoted a great deal of effort toward development without regard to the environmental context. Future Land policy planning needs to address the importance of both short-term and long-term environmental impact, together with land activities.

POLICY DIRECTION FOR LAND ADMINISTRATION

It is now clear that conflicts between different land policies and duplication of effort have been responsible for work process delays as well as inefficient utilization of the country's scarce resources, namely, financial, human, and natural resources. This inefficiency has led to the misallocation of resources, deprived the country of maximum growth, and deterred social justice and national security. Despite past mistakes, however, future prospects show promising trends.

Government land policy can be divided into two broad domains:

1. To ensure that land utilization coincides with the set directions and national development plans, the government should reassess the mandates of land-related agencies in order to minimize existing conflicts, promote the harmonization of activities, and clarify objectives.
2. The government should aim at increasing land-use efficiency while at the same time improving social justice and rural welfare, particularly in regard to land distribution.

POLICY GUIDELINES AND MEASURES

Consensus Building in Land Administration

The current situation clearly shows that individual government agencies responsible for land resources have each been assigned a specific task. Combining the land-related agencies would not mitigate the existing conflict as long as each agency continues to pursue its own objectives. The existing problems are likely to be solved only when consensus is reached and all land-related agencies strive toward a common objective and are able to work together. Therefore, an overall plan is essential. Such a plan would reduce the required resources—personnel, a central budget, and materials—and harmonize the objectives of all agencies concerned. Three major sanctions in regulating the land use patterns are:

1. Development. This will discourage land use for other purposes, since the user will be inconvenienced and will not obtain the services provided.
2. Regulation. For example, permission must be sought for building construction in specific areas.
3. Taxation. This will serve as an incentive to the land owner to follow the set land use pattern through collecting taxes or by exemption from taxes.

Such an arrangement, although somewhat complex, would still provide the related agencies with the freedom to execute work using their own approach. The difficulty lies in ensuring that these agencies are following their plan as well as the National Economic and Social Development Plan.

The Characteristics of an Organization Responsible for Land Use

- A committee consisting of specialists from across disciplines who also possess a high degree of political authority is the best type of organization. Its quality of work should be of the highest standards, and its recommendations would be readily accepted by concerned ministries, agencies, and most importantly, by the Prime Minister.

The committee's role would involve formulating work plans and projects that would be compatible with the NESDB work plans. The committee's areas of work could be divided into nine categories (see figure 9.1). Such a committee should be entitled, "the National Resources Committee."

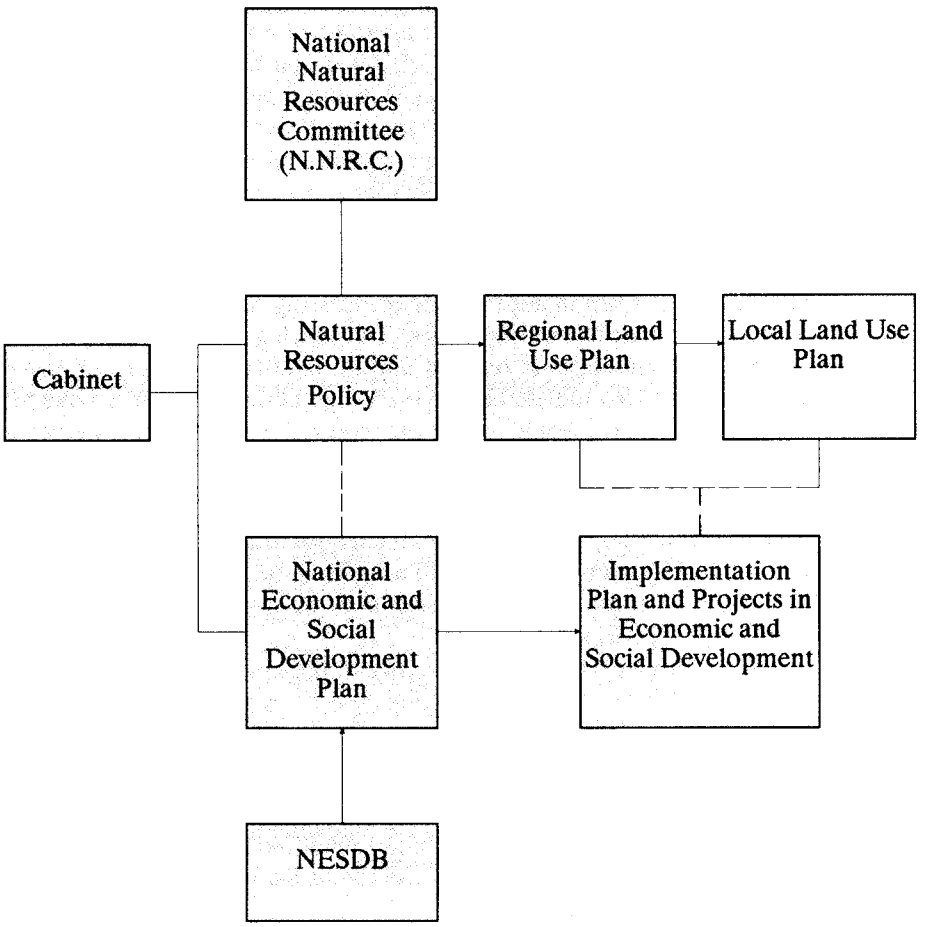


Figure 9.1 National Natural Resources Committee

- In dealing with dynamic subjects that require professional-level academic skills, the committee needs a strong secretariat that could provide the most updated information in the nine areas.
- Existing, well-qualified staff members with experience in land issues are located in various departments, such as the Land Development Department, the Department of Lands, the Town and Country Planning Office, the Ministry of Industry, and the NESDB. Much effort would be required to extract these staff members from their current offices and place them within the secretariat.
- Policy formulation and planning for land-use will require much of the time series data and updated information that is now scattered among a large number of agencies. Acquisition of this information, as well as its conversion into a uniform format, is another task facing the secretariat. Moreover, the secretariat will need to conduct surveys to obtain any required information that is not currently available.
- The secretariat will need to deal with nine land-related issues as well as collaborate with nine ministries and the NESDB. However, having the secretariat operate under a single ministry, might not be an acceptable arrangement.

Due to the secretariat's heavy work load, it would be best if the committee were located either under the Land Development Department or the Department of Lands, rather than under the Ministry of the Interior or the Ministry of Agriculture and Cooperatives, both of whose scope of work are already extensive. Establishing the secretariat under the Office of Prime Minister is also a logically possibility, since the Prime Minister is already the Chairman of the Natural Resources Committee. Its major drawback is that, since staff would need to be drawn from other agencies, this approach would not reduce friction in dealing with the Royal Forestry Department, the Irrigation Department, and the Department of Mineral Resources.

Proposing a Ministry of National Resources is a possible solution that appears to offer a greater potential for more effective results and a sound administrative system. The establishment of a new Ministry of Natural Resources would pull together natural resource-related agencies. Following are justifications for the establishment of a Ministry of Natural Resources:

1. The establishment of a Ministry of Natural Resources would not create an atmosphere in which one agency is under the supervision of another but would allow various divisions to work together. Agencies that are appropriate for such integration would be those involved in water, land, forests, minerals, energy, town planning, and rural development.
2. Merging natural resource agencies would facilitate any required inter-agency staff changes, as all personnel would be directed by one minister. Further, the tedium of managing such a sizable staff team would be greatly reduced.
3. Information about all natural resources would be uniformly managed.
4. Efficiency in work procedure and the following of regulations would be achieved, as all the agencies concerned would be located in one ministry.

We propose that the following agencies be transferred into the new ministry:

- The Royal Forestry Department (Ministry of Agriculture and Cooperatives), which is in charge of a large land area covering agricultural lands, marine fishing zones, recreational areas, and forests.
- The Royal Irrigation Department (Ministry of Agriculture and Cooperatives), which is in charge of water resources and plays a vital role in agriculture, energy, transportation, marine resources, recreation, industry, and urban areas.
- The Land Development Department (Ministry of Agriculture and Cooperatives), which is responsible for land surveys and information analysis to serve as a basis for policy formulation.
- The Department of Lands (the Ministry of Interior), which deals with land-related legal matters and information.
- The Office of the National Energy Authority (the Ministry of Science, Technology, and Energy), which deals with all energy-related issues.
- The Department of Mineral Resources (the Ministry of Industry), which possesses information on mineral and water resources as well as managing the exploration of land for mining and energy.
- The Town and Country Planning Office (the Ministry of Interior), which has direct control over the pattern of land use, particularly in urban areas.

The scope of the work that this newly proposed Ministry of Natural Resources would cover most of the country's land resources. The inclusion of the Town and Country Planning Office would facilitate a great deal of land-use planning, both rural and urban. This newly proposed ministry would also permit a higher degree of integration and coordination on matters relating to agriculture, transportation, industry, recreation, commerce, and town planning. The new secretariat of the Committee on Natural Resources would be transformed into "the Natural Resources Policy and Planning Office." Further, the staff transfer to and from the secretariat and the Ministry of Natural Resources would be based on pragmatic considerations, leading to a more technically sound policy planning system.

In this context, the Office of the Natural Environment Board, whose work covers all forms of land use, would best remain at the Ministry of Science, Technology and Energy, which would assume an overall view of the matter. Although a large number of agencies would be extracted from the Ministry of Agriculture and Cooperatives and from the Ministry of Interior, their work is already extensive in scope and will thus not be affected by these changes.

AN ADMINISTRATIVE BODY FOR AGRICULTURAL LAND ALLOCATION

Agriculture has historically dominated the Thai economy for reasons other than concerns for the forest cover. While its contribution to the GDP has declined in recent years, agriculture still absorbs as much as 70 percent of the total labor force. As mentioned before, there are presently as many as 16 agencies that deal with land allocation for agriculture. They are: the Department of Lands; the Department of Public Welfare; the Department of Agriculture Extension; the Royal Forestry Department; the Agricultural Land Reform Office; and the Central Land Consolidating Office. In the absence of a systematic administrative system,

these agencies were established whenever necessary and without abolishing existing ones.

For decades the abundance of land in Thailand permitted the country to pursue a generous land allocation program. The Department of Lands distributed land through a free-to-choose system (Land Code BE 2497, Section 33) and through allocation of land certificates to those who could provide evidence that their lands were being used for cultivation. As unoccupied land approached its limit, however, an agricultural land allocation system was needed. Thus, the Department of Lands commenced a land allocation project with direct bearing on the allocation of large land areas (Land Code BE 2497, Section 27).

When nearby land became increasingly scarce, agricultural land allocation was extended to include remote areas and forests. Such an expanded scope of work demanded a new land allocation approach, and thus, land settlement was pursued on a temporary basis. Then, in 1895 land settlement was legalized and is presently under the responsibility of the Department of Public Welfare and the Department of Cooperative Promotions of the Land for Livelihood Act, BE 2511.

With rising population pressure and the fact that the country is undergoing transformation into a semi-industrialized economy, the government deemed it appropriate to legislate a land reform act in 1975 in an attempt to consolidate the country's natural resources and rehabilitate the agricultural sector to support the future expansion of the industrial sector and the economy as a whole. To this end, the government began purchasing private land for distribution to landless farmers. Given the high associated cost, payment was stretched over a number of years. Thus, farmers to whom land was allocated must pay back the Government but are given several years to do so.

Since land reform turned out to be time consuming and did not eliminate the problems associated with forest encroachment, in 1979 the government initiated the STK Project as a means of assigning property rights (right to use) to those who had encroached on forest reserves in search of land for cultivation. However, STK property rights have been considered insecure land titles and as STK land rights were allocated free of charge, they do not coincide with proper land reform procedures. The STK Program has therefore served as a temporary diagnostic mechanism that has contributed toward land allocation—while land classifications were being processed. A more systematic land allocation scheme will be pursued after the land has been completely classified and after forest reserves are classified according to land suitability.

Such a land allocation system (which relied on the country's central budget to allocate lands to farmers on a hire-purchase basis) cannot coexist with other systems that allocate land at no charge. Hence, past land allocation systems contradict the present social structure and have failed to achieve social justice. Furthermore, the status of land rights has also distinctly differed. (See details on land rights, land reform, and land allocation in Chapters 6 and 7).

Technically, land allocation for agricultural purposes should follow the same approach, both conceptually and administratively. This approach would greatly reduce the drain on the country's resources. It is therefore appropriate to propose that agencies concerned with land reform should be clustered together into one body—the "Land Reform Bureau." As the responsibilities of the proposed Land Reform Bureau would be augmented to cover rural credit, agronomy, cooperatives, and marketing, this body should be formed under the Ministry of Agriculture

and Cooperatives. As for land allocation planning, if this body's scope of work proves to be less extensive, it might be possible for the Office of the Permanent Secretary of the Ministry of Agriculture and Cooperatives to act as the Office of Permanent Secretary of the Land Reform Bureau. This innovation would help to integrate Bureau planning with that of other departments in the Ministry of Agriculture and Cooperatives.

STEPS INVOLVED IN THE ESTABLISHMENT OF THE NEWLY PROPOSED BODIES AND IMPROVEMENTS IN THE ADMINISTRATIVE SYSTEM

Step 1 The National Committee on Natural Resources.

The establishment of this committee would involve the careful revision of a number of existing laws and regulations as well as a change in responsibility for a number of committees. These committees can be divided into two categories:

1. Committee(s) possessing the power to regulate the country's land use should transfer power to the Committee on Natural Resources, or they should be placed under the supervision of the Committee on Natural Resources.
2. The related committee(s) should have the ability to cooperate and coordinate in order to increase work efficiency. Should special issues arise, the concerned committee could act as a subcommittee under the Committee on Natural Resources.

The previous plans and projects either under the responsibility of the government or under specific committees will be followed until new plans are formulated by the Committee on Natural Resources.

Step 2 The Ministry of Natural Resources.

Due to the large number of laws and regulations that frame many agencies within a rigid structure, it is impractical, if not impossible, to combine all land-related agencies into one Ministry under a sound administrative system at the same time. One possibility that exists in this initial stage is to merge those departments concerned with natural resources in such a fashion that their union would not interfere with ongoing staff responsibilities, budgets, plans, and projects. Once this innovation is completed, however, staff should be recruited from various agencies in order to establish the Office of Natural Resources Policy and Planning, which would serve as the secretariat for the Committee on Natural Resources (figure 9.2).

Step 3 The Land Reform Bureau (Figure 9.3)

Two issues arise when combining agencies concerned with land allocation for agriculture to support nationwide land reform:

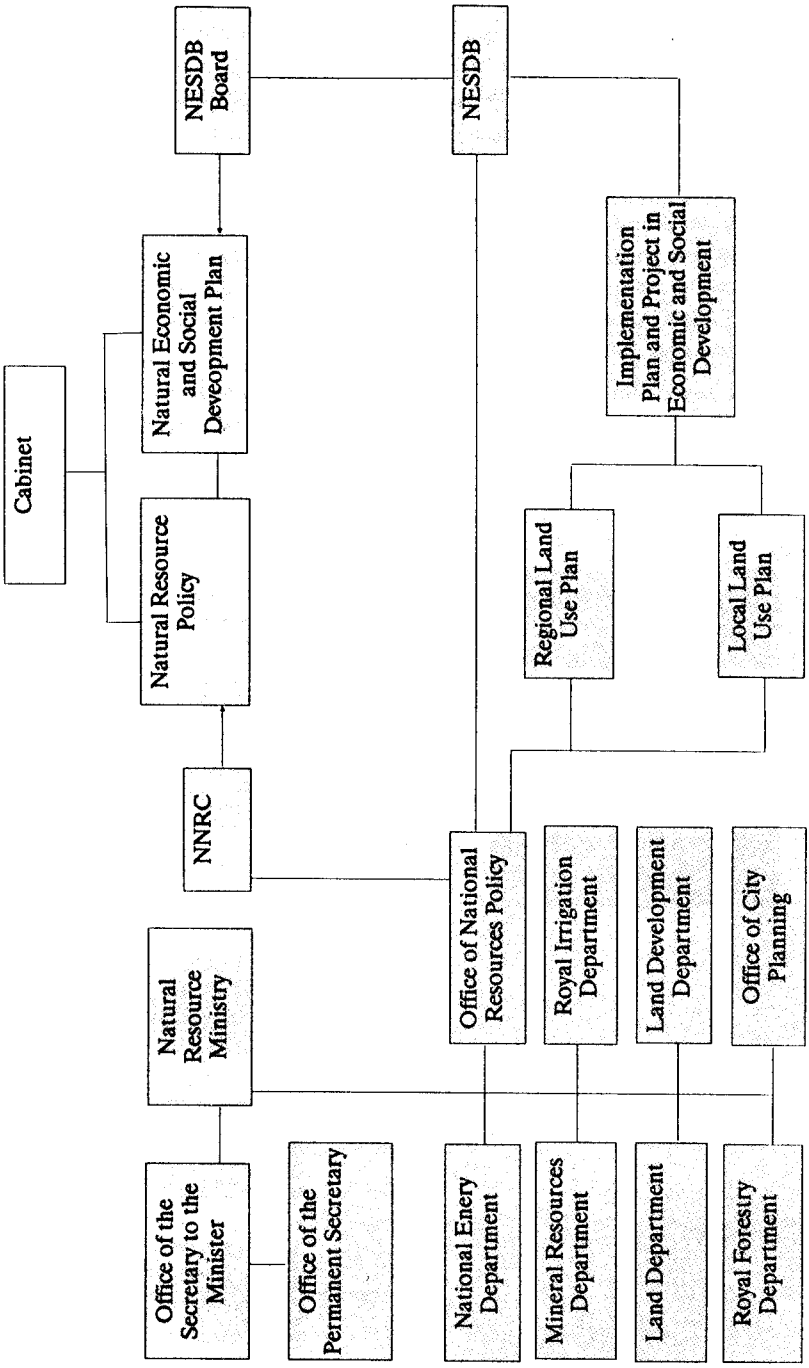


Figure 9.2 Structure of Natural Resources Ministry and Land Use and Management

1. Land Rights. The differences in the conditions stipulated in each type of land document (SPK, N.K., K.S.N.) call for a modification in the conditions noted on these certificates—whether in terms of restrictions associated with land ownership certificates or in payment for land that has been allocated.
2. Since there are as many as 16 agencies concerned with land allocation for agricultural purposes, the transfer would involve the rescheduling of work, staff routines, and finances on a case-to-case basis. There might be situations in which work responsibilities are transferred without change in staff or budget. However, ongoing projects and plans will be executed until a new work plan in part (1) is finalized and laws and regulations are revised (see figure 9.3).

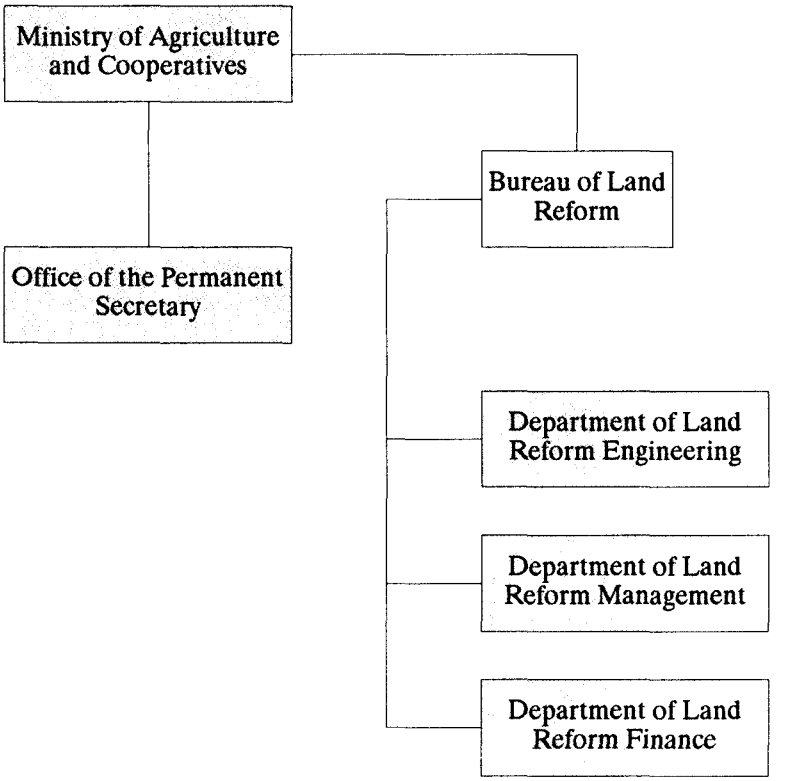


Figure 9.3 Bureau of Land Reform

Finally, in establishing the Committee on Natural Resources, the Ministry of Natural Resources, and the Land Reform Bureau, it is essential to assign an agency the responsibility for undertaking a detailed and thorough study of possible impact and the extent to which work plans, responsibilities, staff, and budgeting must be modified. Currently, the Subcommittee on Land, (initiated by the National Rural Development Committee), working in collaboration with the NESDB seems most suitable to pursue such a study as it is presently involved in matters involving the country's land management. In addition, the Subcommittee on Land is also in a position to structure the required procedure to the National Economic and Social Development Plan. Further, the Subcommittee on Land should also revise existing plans and projects due to the possibility of establishing "the Land Reform Board" and "the Natural Resources Committee." This work should be completed within the first two years of the Sixth National Economic and Social Development Plan. Furthermore, the Subcommittee on Land should also search for solutions in establishing the Ministry of Natural Resources, which should be completed within the Sixth Plan period.

Chapter 10

Conclusion and Recommendations

DIMENSIONS OF LAND POLICY

Because land can be used for a variety of purposes, there are often conflicting opinions about how a land area should be utilized. The question of whether land should be used for agriculture, forests, or urban development has economic, social, and political repercussions. Any land policy that intends to support only some land-use factors cannot meet its objectives efficiently. At the same time, a coherent land policy is obviously needed in Thailand so that the country can best utilize its land resources. Most land policy decisions are currently left to the separate government departments involved in land use—each having its own mandate to promote a particular kind of land use. Not infrequently, the goals of one department conflict with the goals of another. Thus, a clear policy is needed to resolve these conflicts and to promote the most efficient use of the land.

Land policy should be viewed from and determined by several distinct dimensions that correspond to the nation's social needs. Thus, in formulating land policy the following dimensions should be considered:

- **The Economic Dimension:** What is the best use of the land economically?
- **The Social Dimension:** What other social aspects—such as the land rights or land reform—should be considered in land use?
- **The Land Conservation Dimension:** How can the land best be maintained for future use?
- **The National Security Dimension:** How should land along the nation's borders be used to help protect national security?

Based on the results of an analysis of land problems and policies (as summarized in the preceding chapters and information contained in the reports prepared during this study) and using the above dimensions as the basis for understanding land use and land tenure, formulating a coherent land policy for Thailand is now possible and is presented below.

LAND POLICY'S ECONOMIC DIMENSION

Land Other Than Forest Areas

Land that is not officially designated forest area—most of which is owned by private individuals—is set aside for agricultural, industrial, and residential use. Utilization of this land should emphasize the greatest economic benefits possible. and the main points to be included in the policy in order to produce the highest economic benefits are:

Land Rights

Legal rights of ownership can be given for private land occupied by individuals. So far (up to July 1986), the Department of Land (DOL) has issued title deeds covering 23.7 million rai; N.S.3A documents covering 48.4 million rai; and N.S.3 documents covering 22.5 million rai of land. There is an urgent need to accelerate the issuing of title deeds so that land holders can have greater security in land ownership. In this connection, the DOL land titling project (which is now being implemented) should be supported. Accelerated efforts to enable people to acquire full rights of ownership will stimulate higher agricultural production and greater investment in land development and other activities. It has been clearly demonstrated that people's confidence in permanent occupancy—a result of their having appropriate land documents for their land—will enable titled land owners to obtain more credit from various financial institutions.

Land Tax Collection

To assure fair land utilization, to prevent the acquisition of large tracts of land, and to discourage land owners from allowing their lands to remain unexploited, there is a need to amend the land tax system structure as follows:

- The guidelines for assessment of the value of assets for the various types of land utilization should be reformulated to conform with technical principles and facts.
- A progressive tax according to the land value and the area occupied, but without affecting small agriculturists, should be introduced.
- A high tax should be levied on land occupants who do not utilize the land or who hold the land for purposes of speculation.

The above supplementary measures are proposed to aid in solving the problem of occupancy of large tracts of inefficiently used land as well as preventing the purchase of land for speculation. Moreover, as a result of these measures, the government will earn more revenue, which it can then use to pay for the services necessary to maintain the activities that will contribute to the area's most efficient land utilization.

Legislation to Conserve Agricultural Areas

The government should initiate legislation to conserve areas that should be used for agriculture—the fertile lands most suitable for agriculture which the state has already invested a considerable sum to develop an infrastructure; and the basic

support activities needed to prevent the utilization of these lands for other activities. The aim is to reserve fertile agricultural lands—which are now gradually decreasing—and to prevent encroachment into certain categories of land by nonagricultural activities that could pollute adjacent agricultural areas. This will enable the country to obtain an adequate rate of return on its investment in the infrastructure and support activities for those areas.

Agricultural Development

With regard to future agricultural development projects, agricultural areas should be divided into two parts:

- Production should be adjusted in irrigated agricultural zones (about 21 million rai). Decreasing the production of certain types of agricultural goods with uncertain and sluggish demand (such as rice and sugar cane) and substituting new crops would reduce production costs and create other activities that would enhance the value of agricultural goods. In order to create a "full circuit" agricultural system—including supplying of input and marketing output—the private sector should be encouraged to participate in agriculture's development.
- Rain-fed agricultural areas should be divided into two kinds. In areas with fertile soil and regular rainfall, production should be diversified by planting high-yield crops, such as fruit trees and various kinds of perennials in place of some field crops. In addition, research on increasing the crop yields in these areas should be accelerated.

The second kind of rain-fed land consists of land not well suited to agriculture and where rainfall is irregular. Production of low-return crops should be stopped and other crops substituted. The government should accelerate research to discover crop systems suitable for specific locations as well as the crop varieties that should be introduced for optimal production.

Improving Soils with Special Problems

Some of the nation's lands are characterized by soils with chemical and physical problems—acidic soil, saline soil, soil with a high rate of expansion and contraction, extremely sandy soil, or shallow soil. Land with such problems totals about 68 million rai, some of which is presently used for agriculture while the rest remains unexploited. The government should accelerate research to solve these special soil problems with research aimed toward:

- Preventing the spread of acidic soils in the Northeast
- Improving problematic soils in order to increase yields
- Determining the future exploitation of problematic soils and lands presently not exploited—such as shallow soil or extremely sandy soil

Soil and Water Conservation

Soils used continuously for agriculture over long periods deteriorate in a variety of forms, such as decreased fertility, altered physical condition, and the erosion and collapsing of topsoil. Although the government has instituted soil and water conservation over an extended period of time, its efforts have not met with the success expected. The problems lie with the organization of government activities, the lack of support from farmers, and complicated and costly soil and water conservation measures. The problem of soil deterioration urgently requires solution. The government is not in a position to act on agricultural areas totaling 152 million rai. There is a need to establish projects that do not involve complicated methods, that require small investments, and that can impart techniques to individual farmers—with government support in providing technical advice. The government should intervene and accept full operational responsibility only in areas with serious problems that farmers cannot solve.

Utilization of Lands in Urban Areas[16]

To ensure that land utilized for residences and communities conform to town planning principles, the government should accelerate its announcement of overall town plans and adhere to the plans when developing towns and cities.

Development of regions and principal towns should be undertaken with government participation within proper limits. The private sector should also be given a role in the development of towns and cities, adhering to approved plans.

Lands Within Officially Designated Forest Areas

- According to national forest policy, forests should comprise 25 percent or about 80 million rai, of Thailand's area. Since land policy concerns the economic use of forest areas, strong emphasis should be placed on private-sector participation—by both small and large operators—in the development of forests, especially in planting forest plantations.
- National reserved forest areas on which extensive existing settlements and communities are situated should be degazetted. In areas where national reserved forest areas or national permanent forests contain permanent housing and/or government offices, the forest area designation should be cancelled, and the present occupiers of the land given ownership rights, according to appropriate procedures and depending upon local conditions.
- Development of Coastal Forest Areas.

Coastal forests presently comprise about 1.67 million rai. They should be divided into three areas—reserved areas, conserved areas, and development areas. Land-use conflict is occurring due to the lack of clearly demarcated areas. This demarcation should be accelerated, and the areas developed. Coastal forest areas that are declared development areas can yield high economic returns to the nation if proper support is received from the government.

THE SOCIAL DIMENSIONS OF LAND POLICY

Approximately 2.5 million families (or about 12 million people) have problems with the possession of the land they need for their livelihood. They are classified as either squatters on national forest reserves, numbering about 1 million families; or they are land renters, numbering about 500,000. It is incumbent upon the government to meet their basic requirement for land so that they can earn a livelihood, move beyond the poverty level, and create opportunities for themselves and for their children's futures. The areas which this policy should be implemented are national forests with extensive squatter settlements—both national forest reserves and planned forest reserves—permanent forests, and unexploited public lands. The main points to be formulated in the policy involve current and future land allocation projects as follows:

Land Allocation Projects Currently Being Carried Out

Since 1940 state agencies have been entrusted with state or public lands (comprising about 30 million rai) allocation to the people as land for livelihood. To date about 17 million rai have been allocated; the rest is yet to be allocated. Although current agency operational methods differ, all agencies have a common objective—to enable farmers or members of settlements to acquire adequate land on which to earn their livelihood. The following action is required for those areas approved by the government but which have not yet been allocated to farmers:

- Allocation of land by the Public Welfare Department and the Cooperatives Promotion Department. The areas remaining to be allocated amount to 1.8 million rai (Public Welfare Department 800,000 rai; Cooperatives Promotion Department, 1 million rai). The operational stages should be streamlined and accelerated, with an emphasis on surveying; admission of members to settlements; and completion of the issuance of title deeds within the Sixth Development Plan period. Construction of a basic infrastructure should be carried out as appropriate.
- Allocation of land by the Agriculture Land Reform Office. Land reform work on private lands should be accelerated. The Agricultural Land Reform Act section, concerning capital funds or the purchase of appropriated lands should be amended to achieve higher efficiency. Regarding land reform work on state lands, the distribution of occupancy rights should take priority over development. The objectives for implementing the reform of state lands announced as land reform areas should be completed within ten years, and of private lands, within 15 years. Moreover, future land reform projects can be classified into two categories. In the first category—areas suitable for agriculture and where development investment is worthwhile—economic projects should be formulated for overall development. In the second category—economic benefits that are not as great—the Agricultural Land Reform Office should provide occupancy rights and develop a basic infrastructure.

- The Forestry Department's STK Project. While all the agencies concerned with the allocation of land for livelihood are still backlogged with work, the allocation of land in national forest reserves should continue as before. However, the distribution of STK land utilization occupancy documents, should be slowed down during the initial phase of the Sixth Development Plan period. Regarding project areas remaining in the national forest reserves, the results of land classification should be used as the basis for allocation, and the cartographic system adopted should be identical to that of the Land Department. Once the land classification results are known, allocation of the remaining areas should be accelerated and land allocation completed during the Sixth Development Plan.
- Solutions to the problems and discrepancies in current land allocation projects should be undertaken. The problems are as follows:
  - Land rights. At present, documents are issued to farmers or settlement members in the following forms:
  - Differences in the form of development by the various state agencies.
  - Differences in the amount of land distributed to members or to farmers in the same locality.

Work unit	Document issued
Lands Department	N.S.3/title deed
Public Welfare Department	N.K.
Cooperatives Promotion Department	K.S.N.
Agricultural Land Reform Office	S.P.K.4-01
Royal Forestry Department	S.T.K.1

Correcting these differences must be done through amending the various pieces of legislation, rules and resolutions, as well as through streamlining the administrative system. This should be completed during the Sixth Development Plan.

Future Land Allocation

Since land allocation is a long-term activity that cannot be amended or cancelled at will, the five-year period of the Sixth Development Plan should be used for restructuring the agencies involved and amending legislation. During this time various agencies can adjust their plans and organizational structure, and existing legislation and rules can be changed by the time the Seventh Development Plan is underway. The land allocation project should then be carried out as follows:

- Forest areas that are heavily encroached upon by squatters should be set apart from those specified as conserved and economic forests. These areas (as well as other public lands with squatters and unexploited lands) should be allocated to the people, with the primary consideration being the suitability of the lands concerned.

- Work should continue in areas where the Royal Forestry Department has implemented the "Land for Livelihood" project and outside areas specified as forests (according to national forest policy), work should continue by adjusting the cartographic system in areas already implemented under the Fifth Development Plan, so that its areas conform to those of the Land Department. Moreover, the agriculturists who live in areas unsuitable for agriculture—or in prohibited, reserve areas—should be moved to appropriate locations. They should be given exploitation rights for 5 to 10 years in order to enable the government to complete the basic infrastructure before ownership rights are given. Allocation of this land will be based upon the same policy initiated on other lands intended for allocation by government agencies, under the supervision however, of a national-level committee. This committee (to be set up in the future) will implement work in these areas after the Royal Forestry Department has completed its work.
- Infrastructure development and land allocation should go hand in hand.
- The government should not confer land ownership rights during the initial stage but should give holders exploitation rights for 5-10 years before conferring full ownership rights on them.
- As the allocation of land entails other related time-consuming activities, it is not possible to entrust all work and responsibilities to any one agency and still meet the needs of the people. However, it is necessary to assign the major agencies presently concerned with land allocation (the Agricultural Land Reform Office, the Lands Department, the Public Welfare Department, and the Cooperatives Promotion Department) which have the expertise and experience in these matters, to work together. The operations need to be adjusted—especially regarding matters of land ownership—so that they all follow the same patterns. There might be differences in practice, in the amount of land allocated, and in the level of development support provided, depending upon the suitability of each location. The details on responsibilities for the particular areas and methods of operation should be finalized near the close of the Sixth Development Plan. At this time, the Royal Forestry Department will have its improved land classification results and have completed the classification of the 128 million rai of forest areas.
- Although land allocation is quite expensive, previous development costs were levied at no more than 200 baht per rai (Article 10 of the Land Allocation for Livelihood Act BE. 2511). Expenses incurred should be borne by the benificiaries, in this case farmers/settlement members. Payment will create an obligation to the land on the part of farmers/settlement members, who must pay for the land rather than receiving it free of charge. Moreover, this approach corresponds to agricultural land reform projects through which the Agricultural Land Reform Office sells its land to farmers by using the hire-purchase method.

THE LAND CONSERVATION DIMENSION

In order to conserve the nation's environment, certain areas have been designated for conservation. This is fixed at 15 percent of the nation's land area—or about 48 million rai—and includes the national parks, wildlife conservation areas, and headwater areas. The following policies should be adopted:

Headwater Areas

To ensure a regular and sufficient water supply to the nation, some areas should be specified as "headwaters areas" and should be conserved to prevent destruction or use for other purposes. In damaged headwater areas, reforestation should be accelerated and research undertaken to discover the means to rehabilitate the headwater areas and to accelerate reforestation.

National Park Areas

National park areas now comprise 16 million rai. A master plan for the development of national parks should be designed with the participation of the private sector so that two categories for these areas can be considered concurrently—national parks and tourist and recreational areas. Consideration should be given to consolidating wildlife conservation and national park areas so that their management system is the same. This would require amending appropriate legislation and regulations to ensure that they are not in conflict with each other.

THE NATIONAL SECURITY DIMENSION

Some of the nation's land should be reserved for activities supporting national security beyond any present use for military purposes. This would include establishing border settlements or projects for security in various areas, as appropriate.

The determination of land policy should be based on the major objectives, which will provide a clear picture of the development and administration of each dimension. Moreover, solutions to certain problems might involve the formulation of specific policies that are concerned with economic aspects, social factors, conservation, and security (such as the hilltribe policy).

HILLTRIBE POLICY[17]

The problem of the hilltribes in Thailand closely relates to all aspects of land policy. There is an urgent need to seek a solution to the problem in order to forestall violent repercussions and damage to the country's entire social fabric. Land policy, insofar as it concerns the hilltribes, will be based on the cultures and traditions of the different hilltribes, in conjunction with other factors. A policy on land utilization can thus be formulated as follows:

The hilltribes should be divided into two cultural and traditional categories: (1) hilltribes who can be persuaded to settle down, and (2) those who move about, cannot easily be made to settle down, and who practice shifting cultivation.

Appropriate forest areas for those hilltribes willing to settle down can be appropriated. Land in areas where their agricultural practices are not likely to cause damage from soil erosion or soil collapse can be used.

The government must move those hilltribes who will not settle in areas where there is a land allocation project. This will be difficult, and the government will need to provide a great deal of budgetary support, closely control tribal movement, and block new migration.

STRATEGIES

To ensure the practicability of implementing land policy covering the four previously mentioned dimensions, the following strategies are required:

Improving Land Classification

In order to determine the actual condition and characteristics of lands in the national reserved forest areas and planned reserved forests (i.e. which areas (1) remain virgin forest; (2) are suitable for agriculture and have squatters; and (3) should be used for other purposes), it is necessary to accelerate the completion of the land classification program within the period of the Sixth Development Plan by utilizing the U.T.M. cartographic system. This system has been adopted by the Military Cartographic Department, the Lands Department, and the Royal Forestry Department, so that all agencies will apply the same standards.

Improvement of Land Information System

- The government should support the further development and improvement of a land information system that is acceptable to all agencies. The cartographic system used should also be one common system. The government should support the introduction of remote photographic interpretation technology in surveys of land resources, as well as the training of personnel and the provision of tools and equipment. At stages of work requiring detail, aerial photography should be allowed, as needed.
- The government should support the introduction of computers in preparing a land data system network. There should not be just one large data center, but many data centers in the various fields, as appropriate. Each agency should be able to develop its own data system by using small computers that can be linked with other agencies. The central agency will then be responsible for coordinating land administration activities and for preparing an index on the various aspects of the data.

Administration

To achieve unity in the administration of land and to obtain actual benefits, the following steps should be taken:

1. In the short run, the responsibility of the Land Subcommittee of the National Rural Development Committee (which presently coordinates the work of the various agencies connected with land) should be increased by providing more qualified personnel, facilities, and equipment to its secretariat. These increases will enable it to act as a viable national policy and land administration center, mandated to coordinate both the policy and the work plans connected with all the land in Thailand. This should be done during the initial phase of the Sixth Development Plan time frame.
2. Concurrently, it will be necessary to improve and amend legislation concerning land resources—particularly, land allocation and land rights—as well as to revise rules and regulations covering the duties of the various agencies so that they correspond with future needs and conditions.

Every agency involved in land allocation should complete its operations in the area for which it is presently responsible within the Sixth Development Plan time frame. The allocation of the various categories of land has one principal objective: to enable the people to have land for their livelihood. The principal differences are concerned with operational details. To ensure that land allocation by all agencies is conducted along the same lines, it behooves the Land Subcommittee of the National Rural Development Committee, to consider setting up a "Land Reform Bureau" during the Sixth Development Plan time frame. This can be accomplished by consolidating the major agencies presently responsible for land allocation so that land allocation activities will be more consistent, efficient, and fair.

- A natural resource committee should be set up during the period of the Sixth Development Plan. The committee should then be endowed with a capable secretariat, with sufficient personnel to work full time analyzing work plans and budgets, and assisting operational agencies in problem solving.
- The natural resources committee should then consider the means and stages necessary for the establishment of a Ministry of Natural Resources to administer land resources on a long-term basis and to coordinate with those offices concerned with other aspects of natural resources.

Endnotes

1 The North in 1953 is an exception; farm size is shown to be small, which appears contradictory to later years and there may be a statistical error.

2 The data on tenancy problems are somewhat confusing, particularly in the mid 1970s. For example, in 1973, the Agricultural Land Reform Office reported that there were over 900,000 rented farms.

3 See Appendix 2 for details on responsibilities of land agencies, including commissions, committees and boards.

4 This is considerably higher than the data reported by the Office of Agricultural Economics, which was only 125 million rai in 1984/85.

5 See details on residential and urban land-use planning in the report on "Land Classification".

6 See details in "Hilltribe Policy" and proposed policy in Chapter 10.

7 Forest is defined in the Forest Act of 1941 as "land area on which no one has any rights under the Land Act." From an ecological point of view, forest is defined as "the community of living things, composed mostly of trees grown on soil with root penetration into subsoil, and it is a renewable resource." Each of the two definitions has a different emphasis. The first definition emphasizes rights to the land. If no one is able to acquire the right to it, land is defined as forest land. The second definition is based on the existence of trees on the land and their role in environmental conservation. This study was based largely on the second definition. The first definition was adopted only in some cases and where appropriate.

8 This will involve land classification and land use and planning, particularly in urban areas (see the report on Land Classification Policy and also Chapter 10 of this report).

9 This was the number at that time. It is now estimated at over 40 million rai.

10 This is a unique and special land allocation project. In fact, it cannot actually be considered a land allocation program, as it was set up to legalize the occupation of forest reserves by squatters. They occupy the land that they have used and lived on for years. Under the project, they are entitled to obtain 15 rai of the occupied land. They must lease the rest of their land from the Royal Forestry Department. As mentioned elsewhere, the policy on this, particularly concerning land ownership rights, is still unclear.

11 The proposed time period for the completion of land reform targets is indeed rather ambitious. However, this is based on the land-reform concept and its potential impact. To fulfill this goal, effective measures, particularly financial and administrative, measures, should be effectively used.

12 Ibid.

13 A departmental LIS is a small land information system within a department.

14 A = Data for national planning
B = Data for ministry planning
C = Data for department planning
D = Data for division planning
E = Base map

15 A land information system is a component of the Land Policy Study, the details of which can be found in chapter 8.

16 See details on urban land use planning in the report on "Land classification."

17 See details in the report on "Hilltribe Policy."

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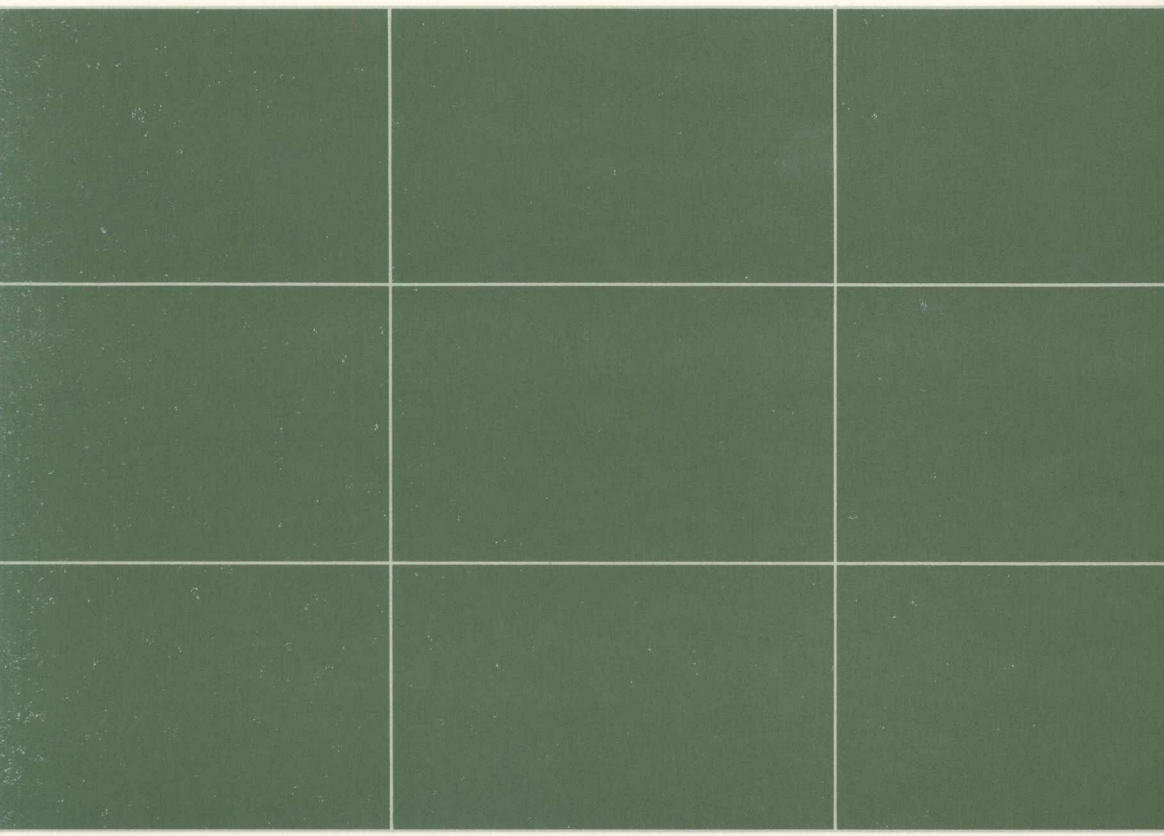
A Land Policy Study

At the request of the NESDB, this study was initiated to develop a comprehensive land policy strategy for Thailand. The study's objectives were to document and analyze available data on Thailand's current land problems; to formulate and recommend a national land policy to the government; and to develop strategies for implementing the recommended policy. The final project report was presented to the National Rural Development Committee and to the Cabinet, where findings and recommendations were accepted in principle.



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