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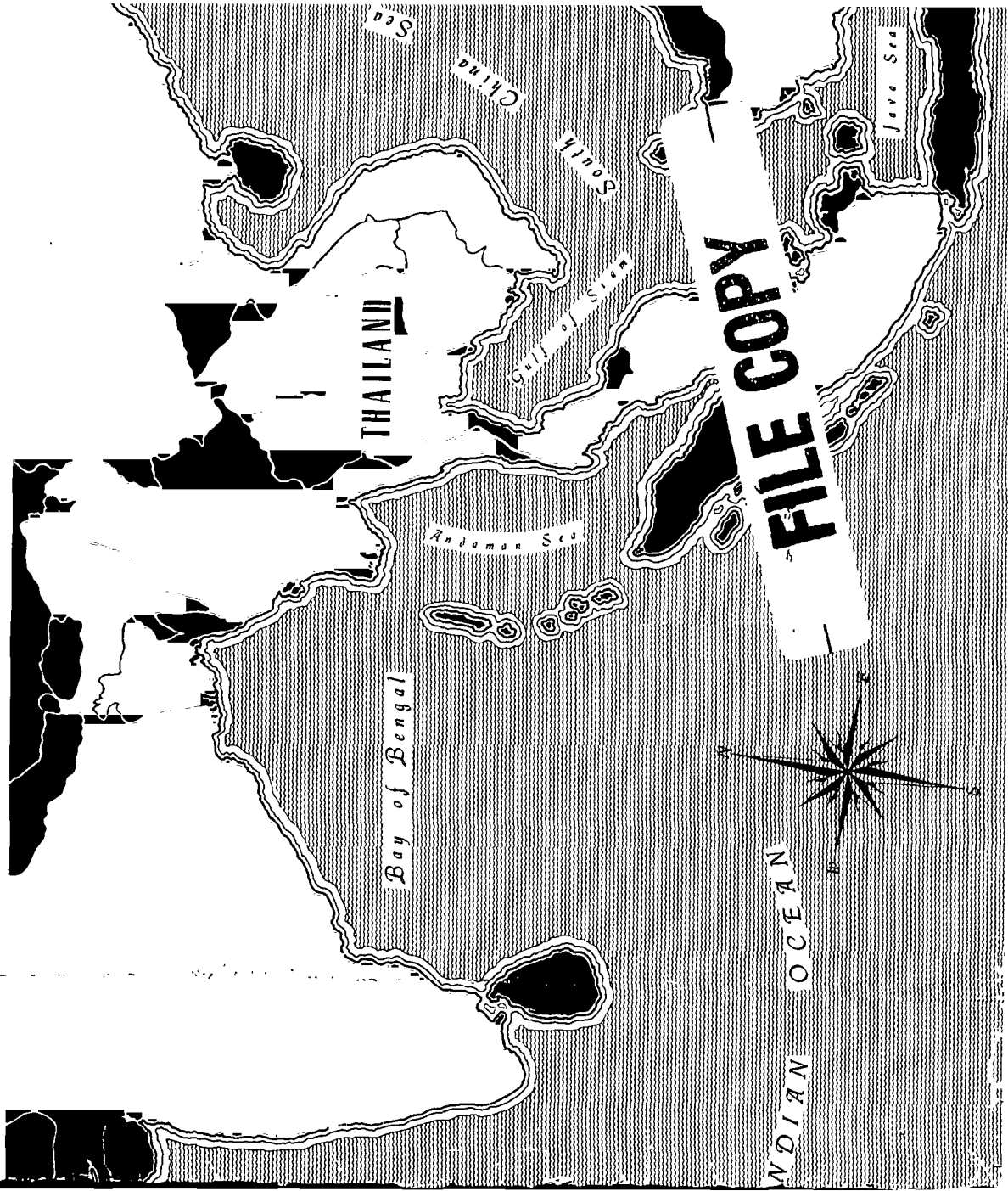
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# A PUBLIC DEVELOPMENT PROGRAM *not in* FOR THAILAND

A Public Development  
Program for  
**THAILAND**

JOHNS HOPKINS

REPORT OF A MISSION ORGANIZED BY THE  
International Bank for Reconstruction and Development



\$6.00

**A PUBLIC DEVELOPMENT  
PROGRAM FOR  
*THAILAND***

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REPORT OF A MISSION ORGANIZED BY  
THE *International Bank for  
Reconstruction and Development*  
(*the World Bank*)  
AT THE REQUEST OF THE GOVERNMENT  
OF THAILAND

This book makes a thorough analysis of Thailand's economy and appraises its potential for future growth. It also recommends action aimed at both the most efficient use of present resources and the greatest possible economic development over the next several years.

As with previous general economic surveys of the Bank—fourteen other member countries of the Bank have made use of its assistance in this way—the purpose of the report is to help the home government plan its contribution to the economic and social development of the country and to advise on the forms of organization which are likely to be most effective in fostering those developments. The mission has made an assessment of the public development funds likely to become available over the next few years and has suggested allocation of these

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at the request  
the Government of Thailar*

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## *THE MISSION*

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## *PREFACE*

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This is the report of a mission organized by the International Bank for Reconstruction and Development at the request of the Government of Thailand. As with all Bank general survey missions—fifteen other member countries of the Bank have made use of its technical assistance in this way—the purpose of the report is to help the Government plan its contribution to the economic and social development of the country during the next several years, and to advise on the forms of organization which are likely to be most effective in fostering those developments. The Mission has also made an assessment of the public development funds likely to become available and has suggested allocations of these funds in accordance with its view of development priorities. Suggestions are made on certain governmental policies which the Mission believes will assist the development process.

In sending the report to the Government of Thailand, the President of the Bank noted that the report represented the views of the Mission; the Executive Directors and the management of the Bank—in accordance with their customary practice—have not reviewed the Mission's recommendations in detail. The President added, however, that the Bank believes that the report will provide sound guidance for Thailand's future development plans and economic policies.

It should be emphasized that the report is not itself a development plan; decisions on public development policies and programs are best made in the light of changing circumstances and further study of projects and of available resources. Hence, it is to be expected that the actual programs of public development will vary from year to year, perhaps widely, from those suggested by the Mission.

The last members of the Mission left Thailand early in July 1958. Since that date much has happened in Thailand of relevance to the problems discussed in the Mission's report—especially after October 1958 when the Revolutionary Party under Field Marshal Sarit Thanarat assumed governing responsibilities. Indeed, in some ways (e.g. the promulgation of a new law governing foreign investment in Thailand) the Government appears to have taken action on the lines recommended by the Mission. Footnotes have been introduced in the text to draw the reader's attention to some such events; but it would have been impossible to ensure that all material developments were noted and it is, of course, too early to pass any judgment on them. The reader must therefore be content with a general warning that the report is based on conditions as they were in the period which ended in July 1958 and that some parts of the report may be out-of-date.

To suit the special needs of Thailand, the arrangements for this Mission differed from those normally adopted by Bank survey teams. In the first place, the duration was longer than usual, the Mission being in Thailand for a full year, from July 1957 to June 1958; this made it possible for the Mission to discuss many of its recommendations with the Government before completing the report. Secondly, special arrangements were made whereby the Mission carried on its work throughout in close association with an *ad hoc* planning committee and staff composed of officials appointed by the Thai Government. This cooperation gave planning experience to a group of officials who are expected to be involved in the operations of permanent planning machinery later to be established. In addition, the Mission was able to profit by the wide knowledge which the Thai officials possessed of the country and its economic conditions. Indeed, the advice and the staff work of the Thai group played an essential part in enabling the Mission to analyze the country's development problems and formulate recommendations. The report is, however, entirely the responsibility of the Mission and must not be taken as necessarily reflecting the views of the Thai group.

The Mission itself was composed of nationals from France,

Germany, Italy, Norway, the United Kingdom and the United States. Seven members (the Mission Chief and the advisers on agriculture, irrigation, industry, public finance, social services and transportation) were specially recruited for the purpose, and two were regular members of the Bank staff.

The Mission owes its grateful thanks to many persons and organizations in Thailand, including government departments and agencies, international and foreign national organizations conducting programs of economic and social assistance in Thailand, and private persons and organizations in the business community. All these are too numerous to be thanked individually, but those agencies with which the Mission had most frequent and most helpful contact should be singled out. They include particularly the Ministry of Finance, and also the Ministries of Agriculture, Communications, Economic Affairs, Education, Health, Industries and Interior; the Bank of Thailand; and the National Economic Council. The Mission is also grateful for the generous cooperation of the U.N. Economic Commission for Asia and the Far East in providing information, specialized advice and the use of library and other facilities. Other sources of assistance included the United States Operations Mission to Thailand and the local representatives of the Technical Assistance Board, the Food and Agriculture Organization and other U.N. specialized agencies. The able assistance of Mr. John A. Edelman of the International Bank staff in the final revision of the report is also gratefully acknowledged.

## *CURRENCY EQUIVALENT*

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The currency unit in Thailand is the baht which, since 1955, has been exchanged in foreign transactions at a unified but fluctuating rate. During 1955-58 the buying rate has varied from about 20.6 to 20.9 baht per U.S. dollar (about 4.8 or 4.9 U.S. cents per baht). In this report, most conversions have been made at the rounded figures of 20 baht per U.S. dollar (five U.S. cents per baht).

## CONTENTS

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The Mission .....	v
Preface .....	vii
Currency Equivalent .....	x
I THAILAND'S DEVELOPMENT—THE PUBLIC ROLE .....	1
Introduction—Progress and Problem .....	1
Thailand's Potential .....	4
Opportunities in Agriculture .....	4
Non-agricultural Resources .....	8
The Human Potential .....	10
Shortcomings .....	10
Haphazard Planning .....	11
Uncertain Financing .....	12
Organization Limitations .....	13
A Program for the Future .....	16
Financial Magnitudes .....	16
Ends and Means—Agriculture .....	17
Non-agricultural Goals and Programs .....	20
Financing—Requirements and Means .....	24
Proposed Development Expenditure .....	24
Non-development Requirements .....	24
Ways and Means .....	26
Organization for Development .....	28
II AGRICULTURE .....	33
Irrigation .....	37
Irrigation in the Central Plain .....	38
The North .....	41
The Northeast .....	43

The South .....	47
Other Aspects of Irrigation Programs.....	48
The Agricultural Services .....	53
Higher Agricultural Education .....	54
Agricultural Extension Services .....	56
Research .....	60
Rural Education .....	64
Rice .....	65
Higher Standards of Cultivation .....	66
Seed Improvement .....	66
Fertilizer .....	67
Pest and Disease Control .....	68
Incentives .....	68
Rubber .....	69
Other Diversification .....	74
The Northeast .....	74
Upland Crops in Other Areas .....	75
Other Aspects of Agricultural Development ...	76
Community Development .....	76
Sponsored Land Settlement .....	78
Forestry .....	82
Fisheries .....	84
Financial Recommendations .....	85
III MANUFACTURING, MINING AND POWER .....	88
The Pattern of Industry .....	88
The Government Industries .....	90
The Development of Manufacturing .....	94
Future Policy .....	96
Measures to Encourage Industrial Growth ....	97
Special Benefits .....	98
Removal of Restrictions .....	100
Improved Credit Facilities—The Proposed	
Industrial Finance Corporation .....	103
Physical Facilities .....	104
Reorganization of the Ministry of Industry	105
Elimination of Unfair Practices .....	105
Fuel and Mineral Development .....	106
Wood Fuels .....	106

	Lignite .....	107
	Oil .....	108
	Tin Mining .....	111
	Other Minerals .....	112
	Electric Power .....	113
	Existing Capacity and the Power Shortage .	114
	Expansion Plans .....	114
	Prospective Benefits .....	116
	Recommended Development Expenditures ...	119
IV	TRANSPORT AND COMMUNICATIONS .....	120
	Growth of the Existing System .....	120
	The Need for Better Planning .....	122
	Railways .....	123
	Investment Program .....	123
	Financing and Rate Reform .....	127
	Highways .....	129
	Administrative Shortcomings .....	130
	Road Requirements .....	132
	Maintenance .....	133
	Feeder Roads .....	134
	Main Higways .....	135
	Ports and Harbors .....	139
	The Port of Bangkok .....	140
	Other Ports .....	142
	Administration and Finance .....	142
	Inland Water Transport .....	145
	Air Transport .....	146
	Telecommunications .....	148
	Recommended Development Expenditures ....	151
V	SOCIAL SERVICES .....	153
	Health .....	153
	Control of the Principal Diseases .....	153
	Health Services .....	154
	Rural Health Centers .....	155
	Training Facilities .....	156
	A New Medical School at Chiangmai .....	157
	Future Requirements .....	158
	Housing .....	160

	Public Housing in Thailand . . . . .	160
	Defects of Public Housing . . . . .	161
	Suggestions for Improvement . . . . .	163
	Social Assistance . . . . .	166
	Social Insurance . . . . .	166
	Family Allowances . . . . .	168
	Assistance to the Needy . . . . .	169
	Child Care . . . . .	170
	Care of the Aged . . . . .	171
	Treatment of Crime . . . . .	171
	Training of Social Workers . . . . .	172
	Financial Requirements—Recurring and Capital Expenditures . . . . .	172
VI	EDUCATION IN THAILAND . . . . .	175
	Primary and Secondary Education . . . . .	175
	Description . . . . .	175
	Recent Changes . . . . .	177
	School Problems and Needs . . . . .	178
	A Development Program for Primary and Secondary Education . . . . .	183
	Higher Education . . . . .	188
	Particular Problems . . . . .	190
	Financial Recommendations . . . . .	197
VII	FINANCIAL MANAGEMENT . . . . .	198
	Financial Controls and Procedures . . . . .	198
	Points of Inadequate Control . . . . .	198
	Budgetary Deficiencies . . . . .	201
	Banking and Other Lending Facilities . . . . .	204
	Commercial Banking . . . . .	204
	Other Lending Facilities . . . . .	205
VIII	THE ADMINISTRATION OF ECONOMIC DEVELOPMENT . . . . .	208
	Proposed Central Planning Organization . . . . .	208
	Duties of the Planning Secretariat . . . . .	210
	Personnel of the Planning Secretariat . . . . .	212
	Some Procedural Matters . . . . .	213
	Planning and External Aid . . . . .	214
	Toward the Improvement of Thailand's Statistical Services . . . . .	215

Information and the Determination of Policy .....	215
Statistics and Statistical Services in Thailand .....	216
Action Needed .....	217
Costs .....	218
Public Administration .....	219
Lack of Trained Personnel .....	219
Placement Policy .....	221
Organization .....	223
Management .....	224
Motivation .....	226
IX FINANCING THE PROGRAM AND ECONOMIC STABILITY .	229
Total Resources .....	229
Future Growth Prospects .....	233
Financial Requirements and Sources .....	234
Total Requirements .....	234
"Normal" Revenues .....	235
Borrowing from Domestic Savings .....	236
External Assistance .....	237
The Prospective Financial Gap .....	240
Central Bank Borrowing .....	240
Additional Taxation .....	244
The Financial Projections: Summary ....	248
Resource Allocation Between the Public and Private Sectors .....	251
Alternatives .....	254
Statistical Appendix .....	261
Index .....	289

*List of Maps*

Irrigation Development .....	facing p. 38
Railway and Main Highway Network .....	facing p. 136
Population Density, 1947 (by changwads) .....	facing p. 156



A PUBLIC DEVELOPMENT PROGRAM FOR *Thailand*



## CHAPTER I *THAILAND'S DEVELOPMENT — THE PUBLIC ROLE*

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### INTRODUCTION—PROGRESS AND PROBLEM

Until recent times Thailand's impressive economic growth was achieved without much intervention by the Government. However, in the past twenty-five years, and especially since the war, the Government has found it necessary to play an increasingly important role in the economic development of the country. This trend will undoubtedly continue, for many of the more important economic problems which Thailand will face in the future are unlikely to be solved save by the initiative of the Government. These are not problems of the distant future. They are sufficiently near that it is essential for the Government to begin preparing its plans now if it is to cope with them before they become critical. Moreover, the Government—given its limited resources and the growing demands upon them—will have to play its part more effectively in the future than in the past if the momentum of the economy and the welfare of the growing population are to be maintained.

The activities of the Government have contributed much to the considerable economic progress achieved since the war. The output of the economy has advanced far beyond pre-war levels, not only in agriculture, which provides a livelihood for 80% of the population, but in most other lines of economic activity as well. The rate of growth in real output, measured during the period 1952-57, averaged nearly 5% a year. This was well in excess of population growth, and provided an

increase of almost 3% a year in the average real per capita income.

This record of progress was undoubtedly attributable in part to the stimulation provided by the prosperity and high price level which prevailed in Thailand's export sector from the early post-war years until 1953. Yet satisfactory progress, including a marked increase in export volume, has continued despite less favorable export prices in the last six years. It reflects basic sources of economic momentum, especially in Thailand's favorable ratio of resources to population and in the initiative and enterprise of its people. Contributing factors have been a rising level of foreign financial assistance and fairly substantial rates of domestic saving and investment, which undoubtedly have been facilitated by the relatively small external servicing requirements on debt and investment.

Development activities of the Government have accounted in recent years for about one-third of the total investment of the economy. Public investment has mainly taken the form of improved transport and communications, irrigation works, local improvement projects, education and other social service facilities, and some additional power and manufacturing capacity.

Concern about the future arises from a changing pattern in the traditional elements of Thailand's economic growth. Historically, the foundations of the economy were built up largely as a natural, unaided and unguided process. They have been the result of the natural expansion and enterprise of the population in an attractive and undemanding environment with abundant lands suited to the production of a large rice surplus, extensive forests including large stands of teak to meet a world-wide demand, enough tin deposits to place Thailand among the world's leading producers, and a large area favorable for supplying part of the mounting requirements of this century for rubber. These have been the mainstays of the economy, supplemented, of course, by a growing volume and diversity of additional agricultural and other primary prod-

ucts, of small-scale processing and manufacturing enterprises and of related distributing, financing and service activities.

Now, however, the most important traditional elements of natural growth are losing some of their force. Most of the good rice land has been occupied, for some years average yields have remained static, and the trend of rice exports has leveled off after a prolonged period of increase. The most accessible teak forests have been cut and their regeneration will require decades. Uncontrolled cutting of timber by farmers and illicit forest operators threatens to cause serious erosion and is endangering the nation's future water resources. Adverse world market conditions of a more than temporary character have forced a sharp curtailment of tin production. Meanwhile, there is no relaxation of the pressures for continued economic expansion; the population is growing at the already fairly high rate of over 2% a year, with prospects of a still higher rate in the future.<sup>1</sup>

These circumstances, however, need not lead to a pessimistic view of Thailand's long-run economic prospects. The country still has a large potential for development in its natural resources and in the energy of its people. Loss of momentum in the traditional sectors of the economy is so far being compensated by advances in other lines of output and of exports. But the resources are no longer such that their potential can be realized in the natural course of events through unaided individual effort. Effective government assistance to supplement activity is becoming increasingly necessary. The Government has accepted this necessity. Yet its contribution, although substantial, has been less than might reasonably have been expected in view of the large financial resources that have been devoted to public investment.

<sup>1</sup> Total population is unofficially estimated for 1958 at 21.4 million.

## THAILAND'S POTENTIAL

In looking toward a more effective public effort, consideration should first be given to the opportunities for development which the country's resources provide. There is every reason to conclude that these resources are adequate to sustain satisfactory rates of economic growth. They are also adequate to a pattern of growth which will contribute to greater economic stability through diversification of production and exports.

In absolute terms, the largest development opportunities are likely to continue for some time to be found in primary production, especially agriculture although a more diversified agriculture than at present. At the same time, it is also reasonable to expect a continued and relatively substantial growth in Thailand's presently small industrial sector. Encouragement of private activity in diversified lines of light manufacturing should in time lead to the development of a base of industrial capacity, skills and experience which will become a major support for the Thai economy.

### *Opportunities in Agriculture*

Some decline may be expected in the relative importance of rice, but this decline need only be relative if necessary steps are taken to make the most of the large technical possibilities for expanding production. A minimum practicable aim should be a rate of increase in production sufficient to keep up with internal consumption, while at least maintaining the present export surplus in normal rice years at around a million and a half tons. Technically, through increasing the area of good rice lands by means of irrigation and through various measures to improve yields, more ambitious rice production targets should be feasible. The advisability of a substantial

expansion in the rice export surplus is for the present, however, somewhat uncertain because of the possibility of greater competition and perhaps lower prices in world rice markets. Because of this, the market outlook should be studied constantly and every effort made to maintain the quality of Thai exports. Given this quality and the well established markets for Thai rice, there seems little prospect of difficulty in marketing a surplus of the present size at satisfactory prices. Market developments may well justify rice exports from Thailand in even larger volume than presently available. But even the maintenance of the present export surplus in the face of rising internal rice consumption will necessitate a more active and effective program of assistance to the rice farmer than now exists. Without such assistance, there is a real danger that rice production will continue to increase more slowly than domestic consumption, with a consequent steadily dwindling surplus for exports.

There is a wide scope for major expansion of other agricultural products. Overshadowing all the individual crop possibilities is the very large potential of Thailand as a rubber producer. Thailand is already the world's third largest supplier, with only half or less of the large area of suitable rubber land in the South under cultivation. Market prospects are favorable and unlikely to be a limiting factor. If existing and new rubber lands were properly managed and planted with the high-yielding types of rubber now available, it should be possible in time to triple the output from the presently cultivated area and achieve a larger further addition to production through the planting of new areas. The output has already grown far beyond pre-war levels. But, as in the case of rice, achievement of anything like Thailand's potential pace of rubber expansion will require more assistance and better incentives for the rubber grower than he now receives. And also, as in the case of rice, little is now being done along these lines. Before much can be done it will be necessary first to stimulate greater administrative interest in expanding rubber produc-

tion and to develop the necessary organization.

There are many other attractive possibilities for agricultural development in Southern Thailand. These include other tree crops, especially coconuts and oil palms, as well as fruits, and a variety of annual crops for commercial sale and for subsistence.

Although agricultural development in the North, Central and Northeast regions of Thailand is already further advanced than in the South, there is still a large agricultural potential in these regions. There are opportunities to raise the production not only of rice, but also of so-called upland crops (which in Thailand means all crops except wet paddy rice), and to increase pasturage and livestock as well. The output of such miscellaneous farm products is already rising sharply on the basis of the farmers' own initiative, with some boost from transport and irrigation works.

In the broad and populous Central Plain, farming is now confined almost entirely to a single crop each year. Much of this area could eventually produce two or more crops if water from the upper tributaries of the Chao Phya and other rivers were stored and distributed. The first steps in this direction are under way with the construction of the Greater Chao Phya irrigation system and of the Yanhee multipurpose project, now being constructed on one of the Chao Phya tributaries. These are expected not only to provide a more extensive and more stable basis for rice production, but also to permit double cropping on about 10% of the entire farmed area in the Central Plain. Such projects will increase the capacity of the Central Plain for crops like soybeans and other pulses, oilseeds, cotton and other fibers, sugar cane, livestock and livestock products and, of course, fruits and vegetables. Again, however, the farmers will need effective assistance if they are to make adequate use of this capacity.

In the North, with generally better water control than in other regions, upland and double cropping have already made substantial progress. This can be expected to continue in

presently cultivated areas, and with the flood protection afforded by the Yanhee project a large cultivated area just south of the dam will be open for more rapid development.

Development of the extensive upland crop potential of the Northeast will present special problems. The region has an undeserved reputation for being arid, largely because the ample rainfall is concentrated in a short rainy season, a feature that does not correspond well with the requirements of wet rice--now the principal crop. And given the characteristics of the soil, the water resources and the topography of the region, the possibilities for satisfactory irrigation of wet rice are limited. The Northeast requires a major shift in its cropping pattern, with less emphasis on rice and more on its favorable potential for rain-fed cultivation of a variety of upland crops and pasturage for livestock. A thriving agriculture can flourish on this pattern under far less favorable conditions than actually exist, and in the Mission's view this is the basic answer to the "Northeast problem."

Should development of the potentials of the lower Mekong River prove practicable, the agricultural and other prospects of the Northeast will be further enhanced. Investigations to determine whether the Mekong development is technically and economically justifiable will require several years. These investigations are now being carried out under sponsorship of the riparian governments and with outside technical and financial assistance.

In recent years the annual rate of expansion of agricultural production in Thailand, apart from rice and rubber, has been between 10 and 15%. With transport and irrigation programs already under way, it is reasonable to expect these high rates to continue in the next few years, largely from the farmers' own efforts. In the longer run, if the farmer is supported by coordinated programs of government assistance in the form of effective technical and extension services and expanded transport, irrigation and similar facilities, the rate of growth of a diversified agriculture should continue to be substantial.

*Non-agricultural Resources*

Outside agriculture proper, present knowledge indicates less promising prospects for primary production. Tin production is handicapped by unfavorable market conditions and by approaching exhaustion of the more accessible alluvial deposits. There is, however, every reason to believe that offshore and inland deposits are still ample to sustain production and in the longer run to increase it as the market situation permits. The present commercial significance of other known mineral deposits is quite small, but this may be only because geologic and mineral surveys have so far been quite cursory. Iron-ore deposits exist which may prove suitable for export, though domestic processing probably would not be economical. There are also large lignite deposits capable of further development, and oil-shale deposits in the North may in time be found to have commercial possibilities. Other known oil deposits do not appear worth the attention and investment they are now receiving.

The forest industry as a whole may still have promising potentialities notwithstanding the prospective decline in the relative importance of teak. Major programs of reforestation and forest protection are nevertheless needed to prevent erosion. They would contribute a very large, if indirect, benefit to the economy as a whole.

One of the most promising other types of primary production is the fishing industry. Next to rice, fish is the most important staple in the Thai diet, and there is ample scope for increasing both fresh-water and marine supplies. It should be easier to raise the output of fresh-water fish up-country, but marine supplies could be greatly expanded if inland marketing facilities were improved, and if cost-reducing techniques were introduced, so that producers could compete more effectively in the export market.

Although quite limited in fuel resources, Thailand has a

very large potential in hydroelectric power, especially on the upper tributaries of the Chao Phya River and possibly also on the Mekong River. The Yanhee multipurpose project is to provide power for Bangkok and about half the other provinces (changwads) of the country. It is expected to more than double installed public power capacity in five years and increase it by five times by about 1970. These increases will greatly stimulate many lines of economic activity, and will also directly improve the living conditions of a large part of the urban and rural population. As the need arises, surveys will undoubtedly establish other attractive power potentialities in the upper Chao Phya River system and, on a smaller scale, in other regions of the North, Central Plain and the South. And with the multiple benefits such projects yield in the form of irrigation, flood protection and navigation, as well as power, exploiting them may long prove preferable to other forms of power production.

In transportation, Thailand has for many years had a satisfactory railway system connecting the main centers of the country and joining with the Malayan Railways at the southern border. But highway development is fairly recent, and still has a long way to go in large sections of the country now without suitable access to railroads, water transport or existing roads. Highway development and improvements in rail capacity have already shown vividly how they can stimulate production; they have been a major factor in the expansion of agricultural output in recent years. Much remains to be done to improve the transport system still further. If improvements are carried out, they should have broad beneficial effects on the economy comparable to or surpassing those of the past.

Thailand lacks the basic fuel and metal resources needed for large-scale heavy industry. Yet, although information on private manufacturing, processing, and service enterprises is meager, there is sufficient evidence to indicate an active sector of individually small-scale private enterprises in widely diversified fields that is increasing proportionately at least as fast

as, and possibly faster than, other sectors of the economy. There can be little question of the larger scope for further expansion of these activities. They should steadily increase in both absolute and relative importance in the economy with appropriate government policies to encourage their growth.

### *The Human Potential*

In total, Thailand has a promising economic potential. And there is another, if less tangible, potential to be added to the account in the form of human resources. By this is meant not only the number of persons but the considerable private energy and drive reflected in the growth and momentum in both rural and urban sectors of the economy. Available statistics are not adequate to pinpoint all the sources of this momentum, but it is certainly evident in both selective indicators of economic activity and aggregate figures of broad economic trends. Impressive increases in agricultural output other than rice have been noted. In private industry, incomplete information suggests that since 1950 the number of establishments and of workers, though still relatively small, has more than doubled, and increases in capital invested and horsepower installed have been much greater still. Railway freight traffic has doubled in the same period, and the number of passenger and commercial vehicles has increased about fourfold. The amount of private construction has risen by two or three times since 1952, and heavy annual imports of investment materials and equipment indicate wide-range private investment in addition to the investment programs of the Government.

### SHORTCOMINGS

Against this impressive potential, however, must be set certain important weaknesses in public administration which

have greatly hampered development activity in the past. If not dealt with adequately, these limitations may frustrate efforts to take advantage of Thailand's potential for economic development.

Problems of this sort are, of course, by no means unique in Thailand. But the fact that many of them are fairly commonplace does not mean that they may not be important, or that it is not worthwhile trying to overcome them. For, while it may be unrealistic to hope to eliminate these shortcomings completely, significantly reducing their importance may well pay greater dividends in economic progress than even substantial increases in financial outlays on development.

### *Haphazard Planning*

A basic weakness in the Government's development effort in the past has been a lack of guiding objectives, not only for the effort as a whole but even in individual sectors of the economy. Investments have been authorized without first trying to find out if they would serve urgent needs, if they would be as productive as other alternatives, or if the particular forms of investment chosen were the best means of attaining their objectives. Consequently, public development effort has been unbalanced, un-coordinated and excessively diffused.

Some of the principal results have been these:

- (1) The basic difficulties in the problem areas of the Northeast and the means for dealing with them have hardly been analyzed.
- (2) The large economic opportunities in the South, especially through rehabilitation and expansion of the areas of rubber production, have been largely neglected.
- (3) Efforts to increase rice yields have been concentrated mainly on irrigation works, without sufficient attention to improvement of the research and extension services

necessary to help the farmer make the most of his land and water resources.

- (4) Major improvements have been made in highway, railway and port facilities; but at the same time existing roads have deteriorated because of low construction standards and lack of maintenance and the importance of an extensive feeder road system has been unrecognized.
- (5) Regulations to protect forest resources and watershed areas have gone unenforced.
- (6) Resources of finance, manpower and equipment have been spread too thinly over too many projects, particularly in road and irrigation works, with consequent delays and interruptions in construction schedules.
- (7) Government-owned and government-sponsored industrial plants have been erected without adequate studies of markets, raw materials and sites, and without satisfactory provision for management. And the uncertainty of industrial policy, particularly with regard to new government enterprises, has undoubtedly had an adverse effect on private domestic and foreign investment in industrial development.
- (8) Improvement of local power facilities, water systems, streets, telecommunications, housing and similar services has been allowed to fall far behind essential needs.

### *Uncertain Financing*

Another weakness has been the uncertain financial planning of the Government's development effort. Because defense, social and administrative expenditures have mounted without corresponding increases in revenue, there has not been assurance that adequate funds would be available for agricultural extension and other economic services, maintenance of assets

and new capital works. Measures to improve the revenue position through additional taxation and effective enforcement of tax regulations have been inadequate, especially in the field of direct taxation and local taxation where Thailand's revenue system is particularly weak. The consequences of this situation have been patchwork budgeting. Attempts to maintain increasing levels of both development and non-development expenditures in these circumstances led to heavy deficits and a large loss of foreign exchange reserves in 1953 and 1954. Subsequently the Government has adhered to a fairly conservative financial policy. But this has been at the expense of needed current and capital outlays and of adequate salary scales generally. Recently some attempt has been made to improve revenues and to curb the rate of increase in defense, police and administrative spending, but substantial additional effort will be needed in these directions if the Government is to contribute adequately to the development of the economy without resort to excessive deficits.

#### *Organization Limitations*

There is in Thailand a shortage of trained manpower and of managers and administrators qualified by experience to operate industrial concerns and government departments efficiently. Inadequate technical, managerial and administrative capacities are, of course, one of the earmarks of an underdevelop country. Were these capacities widespread in Thailand, development would not be a problem.

Industrial management is a complex function to be learned not from textbooks but from long and varied experience. Very few Thais have had the opportunity to acquire this experience because there has been relatively little industry in the country. Moreover, conditions during the last century have made access to what industry there is difficult for the Thais. The people of Thailand have long had a strong prefer-

ence for agriculture and government occupations. As Chinese immigrants flowed into the country, they found open the fields of commerce, finance and industry and assumed a major role in them. Because of this background relatively few native Thais have become skilled in the arts of trading, organizing and managing. While this may present political problems in the promotion of the private economic sector they are problems that should be faced realistically.

Government administration presents its own additional problems. Predominance of political considerations over those of efficiency and economy is not, of course, peculiar to Thailand. But there is also a tenacious adherence in the administration to traditional practices and to status relationships which tends to diffuse authority and responsibility, to de-emphasize the need for special training and competence, to obstruct inter-departmental cooperation and coordination, and to prevent the establishment and exercise of efficient procedures. Little is done to improve the scanty extension services of the Ministry of Agriculture, for example, and the administration of agricultural policy is frequently ineffectual. The Department of Industrial Promotion is not equipped and does little to promote industry, and the Revenue Department fails to collect large blocks of revenue which are due to the Government. Financial budgeting, accounting and control are generally deficient. These are but a few examples from the many which might be cited.

Institutional facilities are also inadequate to make the most of Thailand's human resources. The country is outstanding in the opportunity provided for virtually every child to make at least a start in the public school system, and the result is a relatively high rate of literacy. But the number who advance in the school system drops very sharply with each year of progression. Of those who start elementary school, less than 40% finish the first four years, and only half of these go further in the system. Only 2% of the students complete their secondary schooling. A high proportion of the teachers are in-

adequately trained, and the quality of instruction generally is low. Similarly, the standards of university education are quite deficient, and vocational instruction is far below Thailand's needs. The shortcomings of Thailand's educational system are not only an immediate problem, but one which threatens to become increasingly difficult because of the rapid growth in the school-age population.

One further obstacle should be mentioned — inadequate knowledge of the nature of Thailand's physical resources, and the scarcity of statistics and other data on the basic trends of the economy. Indifference to the need for such information is an even more difficult problem than the inadequacy of the information itself.

It seems clear that until these obstacles to development are overcome, Thailand's economic progress will be impeded. In a balanced approach to long-term development, therefore, a good deal of attention must be devoted to reducing these administrative and institutional limitations.

Prospective problems of Thailand's economy and shortcomings in the field of government development activity have been emphasized, not to disparage the considerable contribution that has been made by the Government to economic development, but rather to dispel the complacent view with which Thailand's economic situation is often regarded both within and outside the country. Attention needs to be focused on the fact that natural forces for economic growth cannot be relied upon to sustain and improve living standards to the same extent in the future as in the past. Neglected development of actual and potential resources, or their misuse, misdirection and waste are becoming of greater consequence. And the human, administrative, and institutional shortcomings and obstacles in the way of economic development need to be faced and steadily overcome. While the resource potential for a promising economic future is sizable, it is not so large or so easily accessible that, as is sometimes said, Thailand can afford to be improvident and still get by satisfactorily.

## A PROGRAM FOR THE FUTURE

A public development program for the country will be most effective if it takes the greatest possible advantage of the favorable combination of resources and enterprises. The role of government should be to stimulate and assist private development through more effective economic and social services and by providing such needed facilities as transport, communications, power and irrigation. Considerable emphasis needs to be placed on strengthening the machinery of government if it is to perform this role satisfactorily.

In subsequent chapters of this report we consider specific public programs and policies in each of the various fields of economic and social development during the five-year period 1959-63. We also recommend ways and means of raising the additional funds that will be needed and of improving the planning and execution of the Government's expanded activities. Here these recommendations may be briefly summarized.

### *Financial Magnitudes*

The financial program recommended by the Mission calls for current and capital expenditures of the Government on development during 1959-63 that reach an annual peak of about 4.9 billion baht, compared with about 3.6 billion baht in 1957 and 1958. These figures include proposed expenditures of the central, provincial and local governments as well as the most important public utilities in the fields of transportation, power and communications.

The recommended capital program ranges between 2.4 billion and 2.8 billion baht per year for a total in five years of about 13 billion baht. It is considerably larger than public capital expenditures in recent years. The largest increase would be in the field of public power, with substantial addi-

tions also in transport and communications, local development, and social service facilities. It is important to note that much of this capital program and its financing, especially in the fields of public power and main highway construction, represent actual or probable commitments in connection with agreements for external grant and loan assistance.

Recommended annually recurring expenditures on economic and social development start in 1959 at about 1.7 billion baht, as compared to about 1.6 billion baht in 1957 and 1958, and increase by 1963 to 2.2 billion. Most of the proposed additions to these recurring outlays are to provide for the education of the rising school-age population, to meet additional needs of the public health service, to take care adequately of maintenance—especially the maintenance of transport and irrigation works—and to improve economic services provided by the Government, with particular emphasis on agricultural education, research and extension activities. It is essential that recurring expenditures on development increase in correspondence with new capital investment in order to ensure that new investments are effectively maintained and utilized.

A comparison of recent and proposed average annual public expenditures on economic and social development is shown in Table 1.

The broad objectives of the program proposed by the Mission, and the recommended means and policies for working toward these objectives during the coming five years, are summarized below.

#### *Ends and Means—Agriculture*

In agriculture the primary aims suggested are: (1) to develop the large technical possibilities for increased rice production, mainly through improving yields and extending the irrigated area; (2) to take advantage of the economic opportu-

TABLE 1 Annual Averages of Recent and Proposed Public Development Expenditures

*(Million baht)*

	Recurring expenditure		Capital expenditure		Total development expenditure	
	Recent	Proposed	Recent	Proposed	Recent	Proposed
Agriculture (including irrigation)	150	265	280	270	430	535
Industry and mining	10	20	30	55	40	75
Power	—	—	110	575	110	575
Transport and communications	190	290	670	1010	860	1300
Local development	—	—	180	300	180	300
Education, health, housing and social welfare	800	1220	200	260	1000	1480
Admin. building and miscellaneous	140	160	120	160	260	320
Total	1290	1955	1590	2630	2880	4585

NOTE: "Recent" averages refer to averages for 1952-56; as may be noted in Table 3, total outlays for 1957 and 1958 are higher; however, complete data by sector are not available for these years.

nities of Southern Thailand, especially for expanded rubber production; (3) to undertake a concentrated effort to improve the agricultural output of the Northeast; and (4) to foster a more diversified agriculture generally with special emphasis on double cropping of present and prospective areas of irrigation in the Central Plain and on cultivation of rain-fed crops in the northern part of the Plain.

A further word should be added on the importance of giving priority attention to the development problems of the Northeast. This region, with about a third of Thailand's population, is by and large the poorest in the country and also, unfortunately, the one where development presents the greatest difficulties. Yet, as noted earlier, the Northeast has a large

potential for a thriving agriculture based on upland cultivation of rain-fed crops and on livestock. At the moment the development of this potential appears likely to be a gradual, long-range process. Opportunity may, however, be opened in a few years for a greatly accelerated investment effort and more rapid economic progress through development of the Mekong River. Meanwhile it is urged that in the coming five years the Northeast receive priority in the variety of measure that can be adopted now to promote a more suitable and prosperous agriculture in the region. These include: presently practicable irrigation and flood control projects; substantial improvements in communications, with particular emphasis on extension of the northeast highway beyond Korat and with priority for the Northeast in the proposed feeder road program; additional special projects to promote particular lines of agriculture, including a pond excavation program to improve the preparation of kenaf and centers for the study and promotion of livestock production and pasturage; and first consideration for the Northeast in recommended programs of agricultural research and extension service, in the assignment of land-use survey teams, in mapping, geologic and mineral investigations and other resource studies, and in reforestation and forest protection programs. In addition to their immediate contribution these efforts will also lay the groundwork for the more rapid economic growth of the Northeast which may become possible through development of the Mekong.

One important means of attaining the goals in agriculture will be to continue the substantial irrigation programs that have been under way for a considerable time. We suggest, however, larger provisions for maintenance of existing and new irrigation works and for subsidiary structures, regulators and outlets to carry water control down to the individual farm.

Irrigation must be supplemented with more effective guidance and assistance to the farmers. For this purpose a substantial increase in expenditure and effort is proposed to improve higher agricultural education, to create an adequate

agricultural extension service, to intensify research and experimentation along lines of particular promise, and to widen the educational opportunities of the rural population.

Regarding rice specifically, it is urged that a coordinated effort be organized to ensure that production keeps pace with domestic consumption so that a decline in exports may be avoided. This effort should emphasize not only irrigation works, but also research and extension work. In addition, consideration should be given to subsidies to foster especially the use of improved seed and fertilizer and pest and disease control.

A three-phased program is also proposed to greatly expand Thailand's rubber production. It will be necessary to devote much of the 1959-63 period to building an effective organization for administering a subsequent major effort to encourage new planting and replanting with high-yielding rubber on smallholdings, and to foster large-scale private rubber operations.

Measures recommended in forestry are mainly for flood protection and erosion control, especially in the upper watersheds of the Chao Phya River system and in the Northeast. While the scope for increased output of marine fisheries is limited by the export markets, there is a need for expansion of inland fishing for domestic consumption. Measures to this end are suggested.

#### *Non-agricultural Goals and Programs*

In the industrial field it is noted that the record of government industrial ventures, including nominally private ventures sponsored by the Government, has been for the most part poor. Further government ventures into industrial operation are considered inadvisable, and a review of existing government industries is proposed to distinguish between those for which continued operation may be justified and those

which should be discontinued. It is suggested that the former be operated independently by competent and experienced private management organizations working on contract with the Government. It is also noted that the most promising way to develop industry is to encourage private domestic and foreign enterprise, first by leaving the field clear for private initiative and second by special tax and other inducements, creation of institutional credit arrangements and provision of such physical facilities as sites, buildings, power and water services, roads, housing, etc. Specific measures and policies along these lines are suggested.

Recommended expenditures in the next two years include a considerable sum for industry. This does not, however, reflect a view in favor of increased industrial activity by the Government. It simply recognizes the fact that the Government has been forced to take over the National Economic Development Corporation (NEDCOL) and will have to advance funds for the completion and operation of its plants<sup>2</sup> and will also have to meet the dubious commitments made for oil development in the North. Each of the NEDCOL ventures should be carefully examined before further expenditures to ensure that it can yield sufficient income to cover more than current costs, depreciation and interest on the additional capital required. If not it should be abandoned.

Occupying a highly important place in public development activity during the next several years will be the large electric power program to relieve a critical shortage and meet growing power demand in the Bangkok area and the Central Plain for a number of years. This program accounts for 20% of proposed capital expenditure during 1959-63. Nearly the whole of the power investment will be required for the Yanhee project and related installations. This project has been well conceived and is being effectively carried forward. It is only

<sup>2</sup> Debt obligations of NEDCOL which will have to be serviced by the Government have been taken into account in estimates of public debt service requirements.

necessary to emphasize the importance of satisfactory coordination of the various elements of the power program, especially to ensure that necessary improvements and extension of power distribution facilities in Bangkok and up-country are completed in time to utilize the Yanhee power when it becomes available.

The largest part of proposed capital expenditures, about 40% of the total, is in the broad field of transport and communications. This reflects the continued need, adequately recognized only in recent years, to provide Thailand with a satisfactory road system and to rehabilitate and modernize the railway system. Still larger expenditures might well be recommended for the road system were it not for limitations of technical capacity. The proposed railway investment is essentially for continuation of programs now under way which emphasize dieselization, improved track and bridges, additional and more modern rolling stock, and improved marshaling yards, sidings, communications and other auxiliary facilities. Extension of new rail lines is not recommended except for completion of the 260 kilometer line from Genkoi to Bua Yai.

In the road program, the Mission urges that greater emphasis than in recent years be placed on road maintenance and that higher priority be accorded to feeder roads. These roads are needed especially for providing outlets for additional and more diversified agricultural production in the Northeast and for opening prospective rubber and mineral areas in the South. As for main highway construction, greater emphasis is proposed on improvement and completion of trunk lines from Bangkok to Nongkai in the Northeast, to Chiangmai in the North, to Songkla and Puket in the South and to Trad in the Southeast. On the Bangkok-Chiangmai route, urgent priority should be given to the section between Chainat and Tak in view of its importance to the efficient movement of equipment and materials for the Yanhee project.

Other important elements of the proposed transport and communication program include: integrated countrywide tele-

communications; improvement of the Bangkok telephone system; additions to and modernization of domestic air transport facilities; and installations and equipment for the Port of Bangkok and, on a modest scale, for ports in the South.

Requirements for education, public health and welfare account for the largest part of proposed recurring expenditure and for substantial capital expenditure as well. Most of the proposed outlays on education are needed simply to provide for the rapid growth in the school-age population. In addition, an expanded program of teacher training is recommended to increase the proportion of qualified teachers in the education system and to raise standards of instruction. The objectives of the suggested program for public health are mainly to provide more doctors and nurses for existing and proposed hospitals, to expand and improve the rural health service, and to establish better administrative arrangements in the two medical schools.

The final broad category of proposed development activity is in the field of local development. Improvement in water supplies, drainage and sewage, traffic and transport facilities, communications, power, housing assistance, and the like, have been grossly inadequate to the needs of the growing population of Bangkok and other urban areas. In addition to urban power and telecommunication improvements, a major increase in expenditures on other urban services is proposed including a substantial outlay on improvement of the Bangkok water system and a start on local housing programs. The recommended amounts are, however, still modest in relation to needs, partly because of competing demands for funds for purposes which are more immediately and directly productive, but more importantly because of the limited administrative capacity of local governing bodies. The efficiency of local administration needs to be increased substantially before committing sums sufficient to provide adequately for urban services. It is suggested that this will only be possible as local authorities achieve greater independence and responsibility. And for this it is a first essential that local bodies develop their own independent

sources of revenue. Emphasis should be concentrated for the next few years on achieving this goal, with a satisfactory local property tax as a principal base, and on improving the efficiency of local administration. Once these preliminary objectives are attained, a more adequate program of urban services can be undertaken.

## FINANCING – REQUIREMENTS AND MEANS

### *Proposed Development Expenditure*

The detailed financial requirements of the proposed public development program are summarized in the following table. It may be noted that the recommended capital expenditures reach a peak in 1961 and decline somewhat in the following two years. This is due mainly to the phasing of financial requirements for the Yanhee multipurpose project which are reflected in the proposed expenditures on power.

### *Non-development Requirements*

The Government will also have to spend large additional sums for purposes not directly related to development. These include general administration, defense and law enforcement, debt service and other items. The needs of debt service during 1959-63 have been estimated independently. For the rest it has been arbitrarily assumed that there will be an upward trend of about 4% a year. It should be emphasized that this is not a recommended rate of increase in all categories. Every effort should be made to economize wherever possible and scope for this may be found in the heavy defense budget and in the possible reduction of redundant administrative personnel. For the latter this is probably only practicable gradually as vacan-

TABLE 2 Proposed Expenditures on Public Development, 1959-63

(Million baht)

	1959	1960	1961	1962	1963
<i>Recurring Expenditures</i>					
Agriculture . . . . .	110	125	150	160	195
Irrigation . . . . .	80	95	120	135	150
Cooperatives . . . . .	10	10	10	15	15
Industry and mining . . . . .	10	15	20	25	25
Highway . . . . .	150	170	200	210	220
Other transport and communications . . . . .	80	90	100	110	110
Education . . . . .	900	930	980	1040	1100
Health and welfare . . . . .	200	210	230	250	250
Public works . . . . .	70	75	80	90	100
Other . . . . .	65	65	65	60	60
Sub-total . . . . .	1675	1785	1955	2095	2225
<i>Capital Expenditures</i>					
Agriculture . . . . .	35	65	50	45	45
Irrigation . . . . .	225	230	190	210	265
Industry . . . . .	100	30	40	50	60
Power . . . . .	560	660	740	620	280
Highway . . . . .	475	485	440	450	440
Other transport and communications . . . . .	515	560	575	585	515
Local development . . . . .	250	270	305	330	335
Education . . . . .	100	140	205	215	185
Health and welfare . . . . .	50	65	70	30	30
Housing . . . . .	—	30	40	60	80
Administration buildings & miscellaneous . . . . .	135	140	170	175	185
Sub-total . . . . .	2445	2675	2825	2770	2420
Grand Total . . . . .	4120	4460	4780	4865	4645

cies occur. Savings through economies that may be found should not necessarily be used to reduce total expenditure, however, since if financial circumstances permit it would be preferable to divert the funds released to improve the low salary scales of public servants. Therefore, while we believe that cuts can be made in non-development expenditures, the

Mission thinks it will still be advisable to plan for development on the assumption that financial requirements outside the development fields will rise by 4% a year. The addition of these requirements to those proposed for development would increase the combined expenditures of the central, provincial and local governments from an estimated 7.2 billion baht in 1958 to about 8 billion in 1959 and to about 9.2 billion by 1962 and 1963. The recent and proposed financial picture may be summarized as shown in Table 3.

TABLE 3 Recent and Proposed Total Public Sector Expenditures<sup>1</sup>

(Billion baht)

	Actual		Estimated <sup>2</sup>		Proposed				
	1952	1956	1957	1958	1959	1960	1961	1962	1963
Recurrent development expenditures . . . . .	1.0	1.5	1.6	1.6	1.7	1.8	2.0	2.1	2.2
Capital expenditures . . . . .	1.2	1.7	2.1	2.0	2.4	2.7	2.8	2.8	2.4
Sub-total development . . . . .	2.2	3.2	3.7	3.6	4.1	4.5	4.8	4.9	4.6
Administration, police, defense & miscellaneous . . . . .	2.4	3.5	3.5	3.6	4.0	4.2	4.3	4.4	4.6
Total government expenditures	4.6	6.7	7.2	7.2	8.1	8.7	9.1	9.3	9.2

<sup>1</sup>Includes expenditure of the central, provincial and local governments, capital outlays of the major publicly owned utilities from their own resources, and non-budgetary expenditures on economic projects financed from foreign loans and grants including counterpart funds.

<sup>2</sup>Rough approximations based on partial information.

### *Ways and Means*

Required expenditures would thus increase by more than a fourth over present levels during the period 1959-63. Though substantial, this expansion does not appear unreasonable. It would represent an average annual increase of around 5% a

year, a lower rate than that which prevailed in 1952-58, even after allowance for price increases. Furthermore, a large part of the projected increase in expenditure can be expected to be financed from increased foreign financial assistance, even though prospective aid under the program of the U. S. International Cooperation Administration (ICA) is estimated conservatively. Some scope may exist for additional foreign borrowing beyond that assumed. But this is uncertain and in any event is unlikely to be large in relation to total requirements during this period. Another large part of the increase can be expected to come from normal growth of revenues at existing tax rates. This rise is assumed at an annual rate of 4%, in line with the expectation that recent economic growth rates can be maintained. Some additional financing can be expected from increased borrowing from private savings. Use of Central Bank credit beyond recent levels is, however, strongly advised against in the interest of maintaining internal financial stability and avoiding excessive inroads into Thailand's foreign exchange reserves. Another source of additional financing can be expected from larger surpluses of the State Railway to be used for railway investment, provided a proposed moderate increase in railway freight rates is adopted.

It will still be essential for the Government to raise more money, both by adding new central and local taxes and by increasing the yield of taxes already in effect. This is particularly urgent during the next two or three years, to provide for projects and programs of special importance to Thailand's further development. Specific tax proposals are indicated in Chapter IX. They would still leave Thailand with a moderate tax burden and one that it should have little difficulty in bearing. Total required revenue would not increase beyond about 15% of the national product (compared with about 14% at present). This proportion is hardly excessive, and actually is less than in many other countries of Southeast Asia and of other underdeveloped areas that are attempting to accelerate economic progress. Furthermore, the required increase in

revenue beyond that to be expected through normal growth at present tax rates is relatively small, amounting to little more than 10%. At present the proportion of revenue that Thailand collects in direct taxation is among the lowest in Asia. Additional taxation and effective enforcement of revenue laws are, of course, always politically difficult. Yet they are essential and, as in other underdeveloped countries, must be faced with courage and firmness if Thailand is to avoid the unfortunate dilemma of having to choose between an inadequate and unsatisfactory program of development on the one hand and the internal and external instability created by unsound financial policies on the other.

### ORGANIZATION FOR DEVELOPMENT

But more than increased government revenue is needed. Improved organization of the public development effort will also be necessary if the Government is to fulfill satisfactorily its essential role in Thailand's economic growth. In agriculture, special effort is necessary to improve and expand government research, extension, educational and other services to the agricultural population. In industry, while recommending a policy of government withdrawal from the field of new industrial ventures, we also urge more adequate and efficient arrangements for providing inducements and services to private industrial initiative.

For government development activity, considered as a whole, the first need is systematic planning of public development expenditures. Both expenditures on investment projects and recurring expenditures that contribute to the nation's progress need to be geared to national needs. This goal can be achieved by establishing for both types of spending, priorities that reflect the largest possible return for a given outlay. We have outlined a program of expenditures for the coming five years that, in our judgment, at least approximates such a rational

balance. However, changing circumstances and more detailed investigations are bound to necessitate continuing review and revision of such a program and corresponding appropriate adjustments in government policy.

There is consequently a very real need in Thailand for a central agency to make a continuing study of the nation's economy and to draw up plans for its development. These plans would include, especially, programs of government spending that reflected the relative importance of different types of outlays, but would also deal with policies and practices affecting economic activity. To perform these and related tasks, the Mission urges that there be created a central planning organization for Thailand.

Policies are inevitably politically determined. They must be approved, first by the Council of Ministers and then by the Assembly, if they are to be enacted into law. Therefore, we suggest, as the guiding head of a planning organization, a small committee of the Council of Ministers, which we shall call the National Development Board. This Board would consist of those Ministers most intimately concerned with problems of economic growth, and would be headed by the Prime Minister. Its duty would be to determine programs of economic development to be recommended to the full Council.

But such a body could not be expected to have the time or the technical qualifications for making a continuing study of the economy, for reviewing all the specific proposals of individual Ministries, or for coordinating and supplementing those proposals. To perform these tasks, we recommend the creation of a Planning Secretariat. The Secretariat would formulate, in the light of the country's needs and resources, programs and policies for economic development, and recommend them to the National Development Board. That body in turn would consider these recommendations, consult with its Secretariat, and after making any amendments it considered necessary, refer them to the Council of Ministers for action.

The staff of the Secretariat need not be large, but if its views

are to be respected, it must above all be thoroughly competent, and it must be as independent of political pressures as possible. Therefore we urge that the greatest care be exercised in the selection of staff. We believe that the independence of the Secretariat will be best assured if it reports directly to the Prime Minister.

A change in policies and attitudes toward providing information is also needed. In Chapter VIII the problem of reorganizing the Government's statistical services is explored in some detail. Here it may be noted that both the Central Statistical Office and the statistical units serving the different Ministries need to be up-graded in quality, though not greatly expanded. The Government should obtain foreign technical assistance to plan and inaugurate a more adequate statistical program, and to provide training, both in Thailand and abroad, for present and future personnel working in the statistical services.

Another area of government administration requiring reform is that of financial management. Important elements of public expenditures in Thailand are but loosely controlled. Budget preparation is haphazard and poorly coordinated, appropriations are excessive in frequent cases and not large enough in others. A large number of independent government agencies and special funds receive and spend large sums that are not recorded in the budget and in many cases are only casually supervised. Corrections are needed in the interests of better management and optimum use of funds. We recommend that extraordinary expenditures beyond the current budgets of independent agencies require prior government approval, and that complete accounts of the operations of these agencies be promptly reported and reviewed. The practice of setting up special funds should, with few exceptions, be abolished. And expenditures in excess of budget allocations should require either a specific appropriation from a special contingency fund, to be approved by the Council of Ministers, or enactment of a supplementary budget.

Another defect of fiscal control in Thailand is the absence of public accounting for government financial operations and, in fact, the failure to prepare satisfactory accounts at all, except after prolonged delay. Appropriate reforms have been recommended by a firm of specialists in financial administration. If their recommendations were acted upon, the budget and accounts of the Government could become what they should be—important aids to financial analysis, control and planning.

Finally, not only the form of the budget but also the procedures by which it is prepared are grossly inadequate. There is no machinery for ensuring that the estimates of the different Ministries bear any relation to reality, nor is the staff of the Ministry of Finance large enough or competent enough to judge whether these requests are reasonable or to determine their respective priorities. Fortunately, a satisfactory plan has been approved to develop an effective Budget Department and establish budget units in each operating branch of the Government. We can only urge that it be put into effect as promptly as possible.

The need has been stressed for a more rational organization of planning, for much improved statistical services, and for reforms in the management of the nation's finances. If the changes recommended in these areas are adopted, it should be possible to formulate programs of economic development more intelligently. Their execution, too, should be greatly improved. Other defects of administration discussed in the concluding chapters also need to be corrected if the execution of programs of economic development—or even the day-to-day work of government—is to be as efficient as it should be.

We have stressed the shortage of trained and qualified personnel in many branches of administration. Present training programs are doing much to correct this shortage; most of them should be continued, and some expanded. But particular attention needs to be paid to the quality of each kind of training and its suitability to the kind of job that has to be done. There is a strong tendency in Thailand to stress aca-

demetic degrees as such, and to fail to inquire into the quality of the degree-granting institutions or the nature of the training they provide.

Greater care is also necessary in placing the scarce supply of trained people. Skilled people should be assigned only where their skills are needed, and tasks requiring skills for which there are no recruits should not be undertaken. Primarily, this is a matter of job analysis and description, and of assignment of candidates in accordance therewith. But it will not be satisfactorily handled until the Civil Service Commission is reconstituted and strengthened to the point where it is a truly professional body.

## CHAPTER II *AGRICULTURE*

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Agriculture continues to be the mainstay of the economy of Thailand although there is a growing diversity in the country's economic activity. It provides a livelihood for about 80% of the population, produces almost half of the national income and is the source of 85% to 90% of Thailand's exports.

In large measure the past development of Thailand's agricultural resources has been the result of the unguided and unassisted efforts of the individual Thai farmer, working on small plots of land and relying on family and communal labor. Government aid has been confined until quite recently to minor irrigation works and the construction of the railway system. In the last few years the Government has greatly expanded its outlays on irrigation and on road projects and on improvement of rail and port services. These efforts have contributed substantially to raising farm output and to increasing agricultural diversification through improving the farmers's resources and enlarging his market. But the pattern of small-scale family farming, with traditional crops and techniques, has not changed very much.

Most farms range in size from about six rai<sup>1</sup> in well irrigated areas in the North to 40 or 50 rai on poor "upland", which in Thailand has come to mean any land not flooded for wet rice cultivation. The average size for the country as a whole is probably about 25 rai. There are few large commercial farms, and the cultivators for the most part own their land. Typically, they grow only one crop a year, and cultivation is highly specialized in the production of rice. Despite Thailand's potential for a more diversified agriculture and marked recent

<sup>1</sup> One rai = .395 acre or .16 hectare.

trends in this direction, rice farming continues to occupy more than 70% of the total cultivated area and to account for about 40% of the total value of agricultural output.

A favorable natural environment for rice farming and the importance of rice as the staple of the Thai diet accounts for this high degree of specialization. And with the abundance of rice land Thailand has been able not only to expand production to feed its growing population but at the same time to become one of the world's largest exporters of rice.

It is, of course, oversimplification to describe Thailand as a rice economy. Nevertheless it is difficult to exaggerate the importance of rice in Thailand's past economic development and present economic well-being. Probably about two-thirds of the population earns a living from rice farming; it is by far the largest single contributor to the national income; it provides nearly half of Thailand's export earning; and is a major support, directly and indirectly, of government revenues.

In considering Thailand's economic future, therefore, the very limited scope for extending the rice area poses a serious problem. Little if any unused land remains that is well suited to the further extension of rice farming through individual effort alone. Rather it is apparent that Thailand has for some time been crowding the margin for such rice development. Evidence of this is to be found in the closely settled and increasingly fragmented holdings in the country's most productive rice area, the Chao Phya Plain; in the extension of rice farming into unfavorable areas, particularly in the Northeast, where conditions are more suitable to an alternative crop pattern; and in a decline in average yields, which started in the mid-20's and continued until the area under cultivation ceased expanding significantly in the early 1950's. A moderate recovery in yields has occurred recently as the result of expanded irrigation, and total output has continued to expand at an average rate of about 2% annually. But rice exports have levelled off after a prolonged period of expansion.

Yet these developments do not suggest that Thailand cannot produce more rice. The Mission is convinced that rice production can be greatly increased through a well designed program. This would include irrigation works to provide better water control, the provision of more productive seed, encouraging the use of fertilizer and other assistance to the rice farmer to increase his incentives and encourage better techniques and higher yields. It is true that effective irrigation programs can bring considerably more rice land into cultivation. But the more promising possibilities lie in the improvement of yields on both existing and new lands.

The problem is that such a program requires not only a substantial public investment and a great deal of effort, but also considerable technical and administrative capacity if the rice farmer is to be helped. But without these investments and services, there is the danger that the people will consume an increasing share of what they produce, and less and less will be left for export.

In any case, it is only prudent to question whether, even on the most optimistic assumptions, sufficient rice can be grown to permit any substantial long-run expansion of exports. Moreover, since the best prospects for growing more rice appear to rest on improving yields rather than on extending the cultivated area, it appears doubtful that opportunities for employment in rice farming will expand in proportion to output. Given the prospective growth in the numbers dependent on agriculture for a livelihood, there arises the spectre of rural unemployment.

Both these problems of future exports and future employment emphasize the need for an agricultural policy that aims not only at stimulating rice production but also at inducing a broad and diversified development of Thailand's other agricultural potentialities.

The Mission suggests that the basic objectives of Thailand's agricultural policy should be:

- (1) to develop the large possibilities that exist for further expansion of rice production by the use of modern techniques, especially in the Chao Phya Plain;
- (2) to take advantage of the major opportunities for agricultural development that are to be found in Southern Thailand, with particular emphasis on the possibilities of this area for an expansion of rubber production to many times its present level;
- (3) to improve the agricultural economy of the Northeast through various means, including especially the encouragement of a steady shift in the cropping pattern of the Northeast, with less emphasis on rice and greater emphasis on rain-fed upland crops and on pasturage and livestock; and
- (4) to foster a more diversified agriculture generally, and particularly to facilitate and encourage the double cropping of rice lands in the Chao Phya Plain, and to develop the cultivation of rain-fed crops in its northern part.

It should be made clear from the outset that these are long-range objectives to be fully realized only over an extended period. Irrigation works can produce substantial benefits in a much shorter time and they represent by far the largest expenditure element in the proposed agricultural program for the next five years. Road programs in rural areas will also continue to stimulate farm output in the shorter run. But in many other respects progress toward these objectives must initially be slow until the necessary means are strengthened—especially technical and administrative capacities. Hence, much of the emphasis in our agricultural recommendations is on laying the foundations during the next five years for subsequent progress rather than on attempting to achieve substantial short-run results.

## IRRIGATION

Irrigation is making an important contribution to agricultural productivity in Thailand. And it can do a great deal more to increase crop yields by opening new lands and by making it possible to cultivate better combinations of crops. Furthermore, the Royal Irrigation Department has the organization, experience and staff to take advantage of these opportunities. The Mission therefore advocates that irrigation be given a major role in future programs of agricultural development.

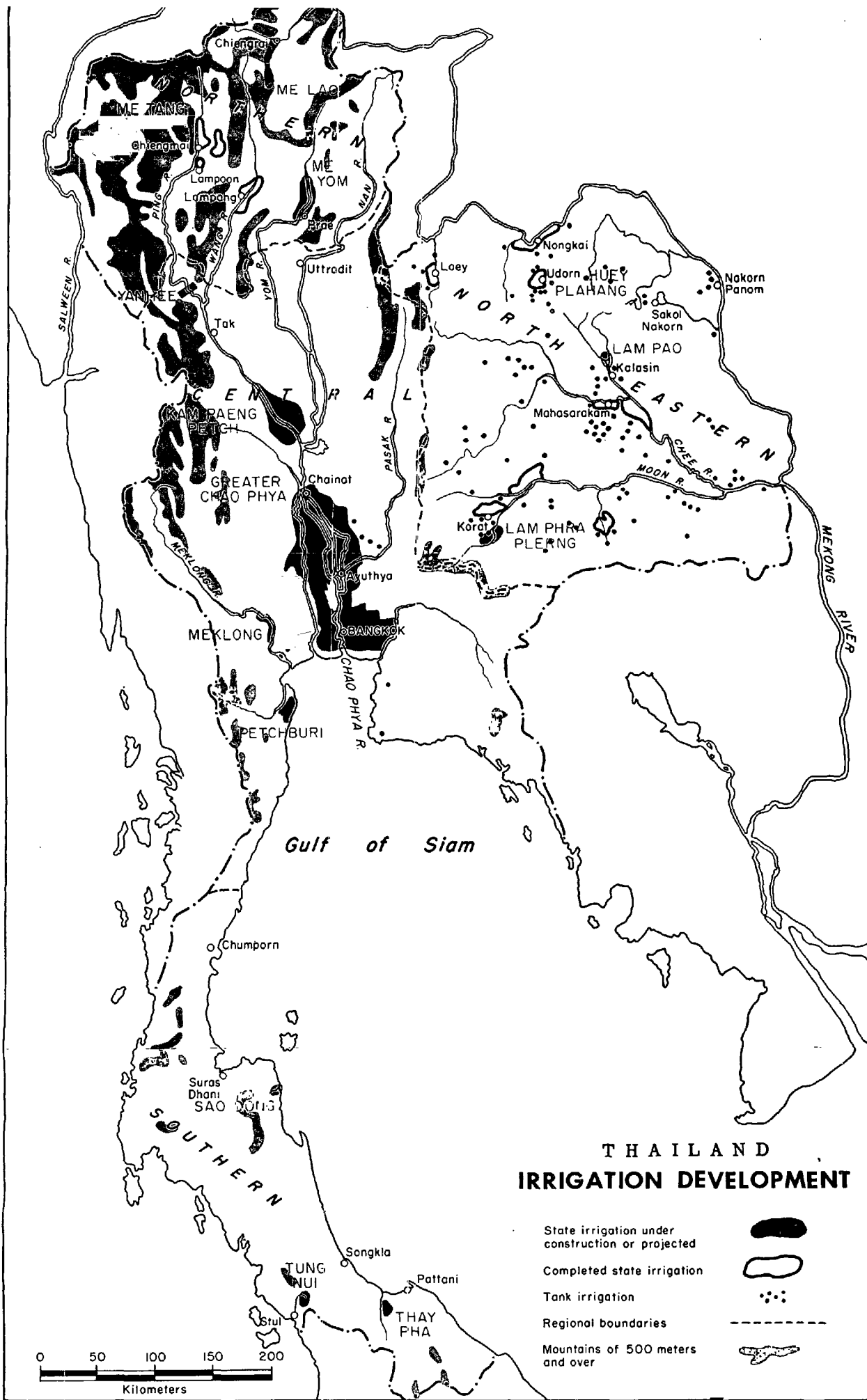
The total rainfall throughout Thailand, brought by the southwest monsoon and even more by the tails of typhoons blowing in from the Pacific along the East Asian coast, is generally sufficient for cultivation. The problem is the irregularity and high seasonal concentration of the rainfall. Except in the South, which has no marked dry season, water is ample and often of flood proportions in the rainy season (generally May to October) but quite insufficient for cultivation in most areas at other times of the year. Furthermore, year-to-year variations in the timing and volume of the rains often upset the schedule of cultivation, with adverse effects on farm production, especially of rice.

Irrigation works have so far been aimed mainly at a better distribution of the natural flow of water. This provides some flood protection, and is also most important in ensuring that higher areas get enough water for seasonal cultivation and in reducing excessive seasonal supplies in lower-lying areas. Works have also been undertaken to lengthen somewhat the period during which water is available, especially through tank (reservoir) construction in the Northeast. These are, however, relatively minor projects. The first major effort at water storage as distinguished from water diversion is just getting under way. It will also provide year-round water regulation and flood protection as well as hydroelectric power.

Irrigation works contribute jointly with other measures to raise the productivity of agriculture. Hence our recommended program of irrigation is discussed according to Thailand's main geographical divisions rather than according to any specific objectives of agricultural policy.

#### *Irrigation in the Central Plain*

The largest irrigation work in Thailand is the Greater Chao Phya project. It consists of a large diversion dam on the Chao Phya River at Chainat, completed in 1956, and an extensive canal system still under construction. The project will irrigate almost six million rai in a broad belt running across the Central Plain and extending from Chainat south to Ayuthia. Its purpose is to extend and improve the distribution of Chao Phya water rather than to regulate the seasonal flow. Completion of the canal system, including the three main canals and a network of lateral canals, sublaterals and field ditches is one of the highest irrigation priorities. We therefore urge that sufficient financial and other resources be allocated to finish the canal system by the present target date of 1961 and to complete other incidental works necessary to take advantage of the possible benefits of the project shortly thereafter. Our recommended financial program for 1959-63 includes 190 million baht for project completion and another 218 million for such subsidiary works as drainage systems, dredging, navigation facilities, extensions of existing canals and small dike and ditch works. Necessary agricultural research and extension services and access roads in the Chao Phya area should be provided from financial allocations proposed elsewhere. This will bring total public investment in the project since 1950 to over 1,500 million baht, of which, incidentally, almost 25% will have been financed through a loan from the International Bank. The large expected benefit in increased production of rice and other crops, including an estimated addition to the rice export





surplus of over 300,000 tons, well justifies the investment in this project.

The economic value of the Greater Chao Phya project will be further enhanced when the Yanhee multipurpose project is completed. This is located on the Ping River, an upper tributary of the Chao Phya. It is the first project to undertake storage and regulation of river waters in Thailand on a large scale, and includes a 150-meter high dam and a reservoir of over five billion cubic meter capacity. Besides providing 560,000 kilowatts of electric power, it will protect the Chao Phya Plain from floods, even out the year-to-year supply of water for rice cultivation, and increase the flow of the Chao Phya River in the dry season by about 200 cubic meters per second. With water available to the Chao Phya irrigation system during the dry season, it is expected that following the first rice harvest, a second crop could be cultivated, with an estimated annual value of over 200 million baht on about 2.3 million rai of land. It is also estimated that Yanhee will add more than 50,000 tons a year to the increase in rice production made possible by the Chao Phya project itself.

Finally, the flood protection provided below the dam site will open the way for a project to irrigate about 1.5 million rai of new rice land, about half of which could be double cropped. This additional project is located in the Ping Valley near Kam Paeng Petch. It is estimated that it will add 230,000 tons to the production of rice, and other crops worth about 80 million baht. As soon as this Kam Paeng Petch project becomes feasible, it should have a high priority because of the large benefit to be realized from a relatively small additional investment. It will, however, require major construction work on a diversion weir and canals. This should not be started until the high risk of flood damage is eliminated by near completion of the Yanhee project. Hence, in our investment recommendations we have deferred provision for the start of this project until 1962, with proposed initial expenditures at Kam Paeng Petch of 24 million baht in 1962 and 1963, leaving most of the

work and investment to the immediately following years. The financial provision for the Yanhee project proper is discussed in Chapter III under power.

Another Central Plain irrigation project that is likely to prove highly attractive on further investigation is on the Meklong River (not to be confused with the Mekong), which flows along the southwestern fringes of the Plain and into the Gulf of Siam. Preliminary assessments indicate the possibility of irrigating over two million rai of good land through a diversion dam and canal system. Benefits have been estimated at more than 450,000 tons in increased rice production and additional production of dry season crops. These would provide a very high return in relation to cost, which has been tentatively figured at 523 million baht. This amount may be too low, but the Meklong project would still be excellent even if the cost were doubled. Planning of this project is not complete, and further study is needed to determine the most appropriate dam site and canal layout. This will delay the project, but in any case it would be inadvisable to assign substantial staff and equipment to it in the near future, since this would only divert resources from the canal system of the Chao Phya and delay its completion. We urge, however, that studies and plans for this project be pushed so that work could be started about 1962 if its probably high merit is substantiated. We recommend about 13 million baht for studies and preliminary works during the next three years and, assuming these establish the justification of the Meklong development, provision of 130 million baht for construction during 1962 and 1963.

Also in the southwestern part of the Central Plain, further work is necessary, and should have high priority, to complete an irrigation project encompassing about 210,000 rai south of Petchburi. At present water is available from a barrage on the Petchburi River for seasonal irrigation of about 135,000 rai. With a further investment of about 55 million baht in a storage dam at Krung Krachan on the Krachan River, a tributary of the Petchburi River, and additional canal works, water

and enforce regulations to protect and regenerate forest and ground cover.

### *The Northeast*

The most difficult area in Thailand to establish a satisfactory relationship between water resources and crop patterns is the Northeast, which includes over 40% of the total area in farms and about 35% of the farm population. Although a large part of the Northeast is still covered with deciduous forests, the soil and cover are poor and cannot hold much water. The Northeast receives almost as much rain as the North but, as in the North, cultivation of rice is made difficult by variable annual flooding, which quickly disappears through rapid runoff and seepage. The undulating character of the country favors accumulation of water for rice farming on low fields. But rice farming has spread beyond these suitable low lands to areas where the farmers depend on unusually heavy rains and as often as not are disappointed.

Hence irrigation is badly needed for the present cropping pattern, as is flood protection in some places. Yet irrigation through diversion of river flow offers no real solution because of the uncertainty and high irregularity of the flow, and also because the population is not concentrated near the rivers but scattered throughout the country. Moreover, regulation of the main rivers would require large expensive storage dams, and the terrain (though there are no accurate maps) appears to offer very few good dam sites.

Some scope does of course exist for improvement of irrigation by river works in the Northeast. A number of river projects have been undertaken by the Irrigation Department since 1939, mainly for irrigation but some also for flood protection. The irrigation works supply water for the rice crop (although some are short of water at the beginning and toward the end of the rice season), but none has enough water to be

useful for dry season crops. During the next five years we recommend some further river development work (discussed below), but the main emphasis of an irrigation program for the Northeast should be on small reservoirs or tanks.

Tank construction was started in 1951, on the recommendation of an FAO mission. By the end of 1957, 107 tanks had been completed, consisting of earth dams across the valleys of small streams. Eighty-six are intended to store water to supplement the rain during the paddy cultivation season, while 21 are for domestic use only. Ultimately these tanks will irrigate 209,000 rai, but since not all the canals have been built, only 62,500 rai received water in 1957.

Tank irrigation in the Northeast involves an investment of about 350 baht per rai of irrigated area. The return in additional rice production, relative to investment, is not so high as on most irrigation projects recommended in other regions. It is, nevertheless, quite sufficient to justify the necessary expenditure. Tanks have the further advantage that they need not necessarily be located on the rivers and are therefore useful in this region, with its scattered population. They also provide household water supplies, and contribute to the moderation of floods. A stepped-up tank irrigation program is urged as a sound means of contributing to the employment and income of the large and relatively poorer population of the Northeast.

We recommend that tank construction and related canal works be undertaken to irrigate 500,000 rai in a ten-year period and that expenditure on this program be increased to an annual rate of 20 million baht. Priority should be given first, however, to the provision of adequate canal systems for tanks already completed. This phase of the tank program, which in the past was a responsibility of the Ministry of Cooperatives, has been given inadequate attention. Responsibility has now been transferred to the Irrigation Department and it is to be hoped that the canal work will henceforth receive the attention it deserves. About 50 kilometers of canals remain to be constructed at a cost of only about 2 million baht. It is

estimated that with the completion of this work the area at present irrigated from completed tanks can be more than doubled.

In addition to the tank program in the Northeast, the following further river irrigation works are also recommended.

- (1) Construction of an earth dam on the Lam Phra Plerng near Korat to irrigate and provide flood control for three downstream tracts totaling over 60,000 rai, of which about 17,000 could be double cropped. This project would also generate about 1,500 kilowatts of firm power and supplement the domestic water supply at Korat. The proposed expenditure is about 55 million baht over five years, including about 22 million for hydroelectric equipment.
- (2) Improvement of an existing irrigation project on the Huey Plahang River near Sakol Nakorn. This project irrigates an area of about 100,000 rai. The efficiency of irrigation would be improved and the project would be better protected if a barrage were constructed to divert water when necessary from the Huey Plahang to the nearby Yang River. This could be done at the small cost of about 8 million baht. Work has been scheduled to start in 1958 and should be completed as rapidly as possible.
- (3) Construction of a dam on the Lam Pao near Kalasin, mainly for flood protection of a large cultivated area, and of a road between Kalasin and Mahasarakam. The dam could also be used to generate about 3,000 kilowatts of firm power. It is recommended that construction be started in 1962 and that 32 million baht be appropriated for this project in 1962 and 1963.

It is possible that irrigation and domestic water supplies can be further improved by means of wells to tap underground currents. A program of deep well drilling has been under way

with U. S. government assistance. Results, however, have so far been discouraging, most of the wells having been unsuccessful because of deep underground layers of salt. Further exploration of underground water resources is justified, and the proposed program to sink test wells in the severe drought area along the Cambodian border is recommended.

For the longer run, development of the Mekong River might make a major contribution to the water and other requirements of the Northeast. The Mekong, one of the world's major rivers, flows along the northern and eastern edges of the Northeast region and marks part of Thailand's border with Laos. Should investigations establish justification for construction of a dam in the Pa Mong area of the river, sufficient water could be diverted to irrigate a large section of the Northeast. A program to determine the feasibility of Mekong development has been prepared by a United Nations Commission, to be carried out jointly by the Governments of Cambodia, Laos, Thailand and Viet Nam. What can be done with the Mekong cannot be determined until this investigation, expected to take about five years, is completed. The program should receive full cooperation and support from the riparian governments on the Lower Mekong.

Full development of the tanks, rivers and wells in the Northeast, even assuming that the Mekong project proves practicable, is unlikely, however, to solve the water problems of rice farming in the region. As mentioned previously and as discussed later, the Mission is convinced that the prevailing crop pattern must be changed if the most is to be made of the natural advantages of the Northeast for cultivation.

Water control in the Northeast must also confront the serious problem of erosion. Shifting cultivation (which involves clearing an area of forest and other vegetation, farming it for two or three years and then moving on to repeat the process in another location) is widely practiced in the Northeast, and is steadily replacing an already thin forest cover with

exhausted and eroded soil. This practice also reduces the natural storage of water, greatly increases the destructive strength of floods in the wet season, and diminishes river flow in the dry season. If it is not controlled, the drought in the Northeast will gradually increase and more areas will be turned into semi-desert. This is not a problem for some future date; it is of immediate urgency if steady destruction of the natural resources of the Northeast is to be stopped. We strongly urge a thorough study of this problem by the Ministry of Agriculture, in order to establish areas in which shifting cultivation should be strictly prohibited because of danger of erosion and flood. Once these areas are established, the Government should direct the Interior and Justice Ministries to enforce the ban on shifting cultivation through arrest and punishment of violators.

### *The South*

Since Southern Thailand has a more regular rainfall than other regions of the country, its need for irrigation is less urgent. Problems of flood control and drainage, however, are greater, and most of the 25 projects the Irrigation Department has completed or under construction in the region are for this purpose.

Three projects to divert the water of rivers are recommended in the South during the next five years: the Tung Nui project in Stul Province; the Sao Dong project in Nakorn Srithamarat Province; and the Thay Pha project in Songkla and Pattani Provinces. Each of these would irrigate an estimated area of about 70,000 rai.

Expenditures to complete river diversion projects under way and currently proposed in the South are estimated at about 190 million baht, of which about 100 million is recommended during the 1959-63 period.

*Other Aspects of Irrigation Programs*

Irrigation projects have on the whole been well conceived and administered, and the Royal Irrigation Department can be proud of its accomplishments. Yet numerous complaints are encountered in the countryside about the service from irrigation works. To a considerable extent we believe these complaints are unjustified and that they arise from a misconception of the nature of projects and what they are supposed to do. As previously noted, most river projects have been designed for diversion and wider distribution of normal water flow, but not for its seasonal control. Hence the supply of irrigation water can be no more regular than that of the rains and river flow. They have not been meant to compensate for late or deficient rainfall, and this many farmers do not understand.

There is nevertheless some basis for complaint. This rests on shortcomings in planning, design and construction; on deficiencies of operation and maintenance; and on inadequate enforcement of laws to protect irrigation works and to ensure proper use of water.

**(1) PLANNING, DESIGN AND CONSTRUCTION**

Some mistakes have been made that reflect inadequate preliminary investigation and planning. In the first place, planning of river and tank projects should be based on a complete study of valley conditions and requirements, as well as on adequate river records over a sufficient period to avoid errors in estimating water flow. Studies of valley conditions should include accurate topographical information on the entire basin and an understanding of the nature of the land to be irrigated, including soils and probable crops. One serious handicap in such planning is the absence of satisfactory maps. A continuing program of comprehensive mapping of Thailand

could also be provided in the present irrigated area during the dry season, and the area of seasonal irrigation could be extended by about 75,000 rai for rice cultivation. Capacity would also be created for generation of about 1,000 kilowatts of firm power. This work would not seriously divert resources of the Irrigation Department. We recommend that the project be started in 1959 and carried out in the next five years.

### *The North*

According to the usual terminology, the North of Thailand consists of the mountainous area extending north of Utradit to the Laos border and west to the Burma border. Being mountainous, its rivers are torrential. It is sheltered from the southwest monsoon by the Tenasserim Range and from typhoons by a large land mass, so the mountain slopes receive less rain than other parts of the country. Since the soil is light and sandy, it does not hold water long enough to permit cultivation under natural flood, as in the Central Plain. Hence irrigation projects were undertaken a long time ago by farmers. But their lack of capital resulted in the construction of numerous small projects without much relation to one another.

Beginning in 1928, the Royal Irrigation Department was given control of all irrigation in the North. It inaugurated four major projects in the region around Chiangmai and Lamphoon. Between them, these projects furnish water sufficient for rice growing to 245,000 rai, and for dry season crops to about 60,000 rai, and have greatly improved the control of water on the left bank of the Ping River. A fifth scheme on the Me Tang near Chiangmai, for the irrigation of the right bank, has been studied and construction has begun. It will supply water to 150,000 rai at the estimated low cost of 160 baht per rai, and will enable farmers to get considerably better crops. Hence the Mission supports its inclusion in the program for the next five years and recommends appropriation of about 20

million baht for completion of the project by 1963.

Some distance east of Chiangmai, near Prae, a project is under construction on the Me Yom that will irrigate 230,000 rai. Begun in 1953, the work is progressing slowly for lack of funds. Because the rainfall in this area is low and the light sandy soil does not retain moisture, and because current delays only serve to raise costs, the Mission recommends that this project be pushed to completion as rapidly as possible. The remaining funds required are 20 million baht.

Another project in the North that should be completed is on the Me Lao near Chiengrai. This has been under construction for seven years and only 3 million baht of further expenditure is required. Prospective benefits of this project to farmers are large in relation to the cost and it will also supply water to the town of Chiengrai.

In addition to these irrigation works in the North we urge a major survey in the region as a basis for longer-run programs of water control. This is needed in the first place to establish additional upstream reservoir sites, since all irrigation projects in the North are short of water during the dry season. In the second place, there is special need for investigation and planning of water control in the Nan River Valley. Flood danger in the Central Plain, though it will be diminished by control of the Ping River after the Yanhee project is finished, will continue to be a threat so long as the Nan River is uncontrolled. Hence suitable sites for the location of reservoirs on the Nan should be established. Finally, there should be a systematic and thorough study of the serious problem of flood and erosion in the North, which has been created by destruction of forest and cover in the upper watersheds of Thailand's main river complex. A program to deal with this problem is urgently needed, since these watersheds feed Thailand's most important irrigation system. Investigations of the problem and measures of control will require a cooperative and coordinated effort of the Departments of Forestry and Irrigation. The Ministries of Interior and Justice will also be involved to police

through aerial photography is under way. The economy would benefit greatly if the needs of irrigation planning, especially in the Northeast, could be taken into account when areas to be mapped are being given priorities.

Irrigation programs have suffered somewhat in the past from undertaking too much at once and from the failure of the Government to provide sufficient funds to complete projects as scheduled. These practices have resulted in idle equipment and staff as well as unnecessary flood damage to incomplete works. Political pressure to start too many projects has been one explanation. Another has been haphazard budgeting practices, which may provide appropriations to start a project in one year but leave it without enough funds for completion in subsequent years. A tendency grossly to underestimate costs has been present. It is shortsighted to start projects that will be long in reaching completion in response to pressures for immediate benefits.

In the design of irrigation works sufficient attention has not always been given to protection from siltation, erosion, salinity (especially in the case of tanks) and deterioration due to insufficient compaction of earth works. A further matter of importance in dam planning and design is the absence of fish ladders, particularly at the Chainat dam where a heavy loss of fish has resulted. The people of Thailand consume large quantities of fish, and inland fishing needs to be further developed. These facts underline the seriousness of preventing movements of fish upstream to spawning grounds. We urge that provision be made for this at Chainat as soon as possible and that, in the absence of convincing evidence that fish ladders are unnecessary, they also be provided in other existing dams and included in future dams.

Finally, it is a reflection on planning and design that projects often fall short of full efficiency because insufficient provision is made for subsidiary structures, regulators and outlets to carry water control down to the farm level. Some instances of this have been the result of divided responsibility and

inadequate coordination. Such factors account for incom-  
pleted canal systems or tank projects in the Northeast. Also,  
many irrigation projects are designed primarily for rice cultiva-  
tion. In these, water is made available at the highest point in  
a large area and allowed to flow from field to field by way of  
breaches in the field dikes. With abundant water and full co-  
operation among farmers this system works for wet rice cultiva-  
tion. But it is far short of providing the greatest possible bene-  
fits, and when water is short or farmers uncooperative, the area  
served is considerably less than it could be with complete water  
delivery channels and laterals. And the system will not work  
well at all for upland and dry season farming.

It would be a misfortune if the promise of the Greater Chao  
Phya project, complemented by the storage and control of  
water by the Yanhee dam, were not to be fully realized because  
of failure to build enough distribution channels to the individ-  
ual farms. It is useful to reiterate, and we strongly support, the  
recommendation of the FAO Agricultural Mission of 1948 that  
"system planning that will assure satisfactory water delivery to  
every farm would be one of the most important improvements  
in Thailand's irrigation policy. This requires that controlled  
delivery be arranged directly to the individual farm; to groups  
of farms for redistribution by farm laterals; or to groups of  
farms irrigated as a unit as must be the case for deep-water  
rice. This delivery may be made on request where continuous  
flow is possible, or by turn where each farmer is allotted a  
certain quantity of water at specified time intervals. On old  
projects system adjustments should be made to produce the  
same results."

## (2) OPERATION AND MAINTENANCE

Efficient operation of an irrigation project requires suitable  
equipment, responsible administration and adequate funds.  
We have noted how important subsidiary channels are to the

effective distribution of water. Such channels should also include gates with padlocks to prevent misuse of water by some farmers, without regard to the needs of others or to the preservation of canals.

More adequate provision of needed structures and equipment would reduce maintenance requirements. But a considerable maintenance program is still vital where, as in Thailand, annual rainfall is heavy and much of the soil is light and easily eroded. Deterioration due to inadequate maintenance is widely evident in the existing irrigation systems. The principal reason for this has been gross underprovision of funds. We recommend a sharp increase in the ordinary appropriations to the Irrigation Department to bring maintenance funds to around 100 million baht in about two years. This is about double recent levels. These funds should be further increased thereafter to provide for maintenance of new projects.

With such funds each project should be assigned adequate crews to sod and shape earthworks where this was not done in the first place, to keep canals clear of silt and growth, and to repair promptly damage caused by floods, human beings and animals.

The prevention of damage also calls for enforcement of irrigation laws designed to protect the structures and to prevent improper and excessive use of water. This enforcement has been weak in Thailand because the police have shown little interest and have been preoccupied with other matters and because local magistrates have shown too great a sympathy for offenders. We suggest that the enforcement function be transferred to the Irrigation Department, to be performed not by the engineers or maintenance crews, but by a special staff empowered for this specific purpose. The Government should also direct the Ministries of Interior and Justice to give full support to the Irrigation Department in the prevention of damage to irrigation works and in the punishment of persons found guilty of such damage.

## (3) TAXATION OF IRRIGATION BENEFITS

Unlike many other countries, Thailand at present levies no direct charge or tax for irrigation benefits. Where these benefits are tangible, in the form of larger crops, there can be little question that a charge is justified. In the nature of Thailand's irrigation system it is not feasible to levy a water charge related to the amount of water used. We propose, therefore, a tax on irrigated land additional to the small regular land tax (local development tax). This presents problems, however, because the water supply in most of the irrigated areas is not regularly assured, and it would be administratively impossible to adjust the irrigation tax for year-to-year variations in the water supply. Of the 8.5 million rai of irrigated land now under the control of the Irrigation Department, probably not more than about 2 million rai have an assured and adequate supply of water at the right time every year. Over most of the irrigated land, the reliability of the irrigation service varies widely.

As a basis for levying the recommended tax on irrigated land we propose that the Irrigation Department classify all holdings in irrigated areas into four groups depending on the availability of water from the irrigation works: (a) Those obtaining a sufficient supply for both a wet and a dry season crop; (b) those obtaining a sufficient supply for only one crop; (c) those for which water is sufficient for one crop except in unusually dry years; and (d) those for which the water supply is not sufficiently dependable to ensure one crop even in normal years.

Very little land would fall in the first category at present. Completion of the Yanhee project, however, will make the necessary conditions available to an extensive area. When this comes about, we propose an annual charge of 20 baht per rai, which would be only a small fraction of the additional income the farmer could expect to realize. Similarly, a rate of about

15 baht per rai is proposed for holdings in the second category and about 5 baht per rai for holdings in the third category. We would not propose any irrigation charge for land in the fourth category. We recommend that the Irrigation Department start at once on the necessary land classification, with the object of obtaining the necessary legislation and starting to impose the proposed charges in 1960. All irrigated areas should be covered from 1962 onward.

## THE AGRICULTURAL SERVICES

Among Thailand's most urgent needs for sustained agricultural development is improvement of the Government's agricultural services. Agricultural techniques are still quite primitive. The farmer does not lack initiative, but his ambitions are modest and his knowledge is limited to the traditional. His patterns and methods of cultivation can hardly be expected to change without sound and adequate advice and guidance. And the government services for providing this are sadly deficient.

To remedy this deficiency Thailand must develop a substantial body of suitably trained men, some with high scientific ability, the majority with a practical understanding of crop and animal husbandry and with the capacity to help the farmer in solving his problems.

We suggest four main lines of effort in the creation of such a trained service: (1) more emphasis on the importance of higher agricultural education and an improvement in its quality; (2) creation of an adequate agricultural extension service; (3) additional research and experimentation, especially along lines that promise practical advantage to Thai agriculture; and (4) increased educational opportunities for the rural population.

*Higher Agricultural Education*

The importance of the university level of research and instruction in developing and maintaining a competent agricultural service need hardly be emphasized. Kasetsart University near Bangkok, a department of the Ministry of Agriculture, has been established for this purpose and its facilities and curriculum have been expanded in recent years, partly through U. S. technical and financial assistance. Admissions have increased to almost 300 new students per year (about 10% of applicants) at present, and at this level the number of annual graduates will probably run around 200. Kasetsart offers a three-year "junior degree," and four- and five-year Bachelor of Science degrees. Areas of possible specialization include agriculture, forestry, fisheries, veterinary science and irrigation. Yet its standards of education are unimpressive and the emphasis of its curriculum is misplaced. The staff includes well-qualified members in their particular fields, but they are few in number and the attempt to make up for deficiencies of the faculty by numerous part-time appointments is unsatisfactory. Possibly the greatest shortcoming is the lack of sufficient instruction and experience in the practical application of scientific and technical knowledge to the particular circumstances of Thai agriculture. Few of the Kasetsart teaching staff have field experience; there is no commercial training farm at or near the University, and that at Siracha does not meet the need. Discussion of field problems with an agricultural officer trained at Kasetsart is usually disappointing.

While the students now being trained at Kasetsart are none too numerous for the needs of government and of private enterprise, we would certainly advise against any early increase in the student body. Rather we urge concentration for several years on improving the quality of instruction by adding more qualified staff; on providing more adequate classrooms, laboratories and student quarters; and especially on adding facilities

for instruction and experience in applied crop and animal husbandry at field stations in both the Bangkok area and at selected up-country locations.

Students would be better off without the numerous courses which are not adapted to Thai conditions; if more rigorous training were given in such basic subjects as physics, chemistry, botany, zoology, soil science, entomology, genetics, biochemistry, mycology and bacteriology; and if the latter part of the curriculum became increasingly "applied" and less academic. In order to provide this "applied" emphasis we suggest that adequate farm lands in the Bangkok area be acquired and operated by the University under the supervision of staff that is not only technically qualified but which also includes officers from the Ministry of Agriculture with experience in the field. And we further recommend that seven or eight of the existing experimental farms in representative up-country areas be equipped to provide practical training facilities for Kasetsart graduates. We also suggest that a year of such practical training, including satisfactory performance in an examination on the year's work, be made a prerequisite, with few exceptions, for service in the Ministry of Agriculture.

To finance these particular recommendations, as well as for scholarships as proposed below, we recommend that, in addition to normal appropriations for the maintenance and development of the University, there be appropriated over five years about 33 million baht for capital improvements, including field stations near the University and up-country, and 3 to 5 million baht for additional annually recurring operational expenditures.

We also suggest that Kasetsart should be included as an agricultural faculty in the proposed consolidation of higher education facilities in the Bangkok area into a unified Bangkok University if this proposal is accepted.

*Agricultural Extension Services*

A strengthened and more practical course of higher agricultural education would be the first step in building a more effective extension service, for it would provide qualified personnel for research, training, supervision and administration. The next step is to develop a corps of technically qualified and practically experienced extension officers.

At present there are less than 300 extension officers in the whole of Thailand, including those who do some extension work incidental to their main assignment on experimental farms. Most of the extension staff belong to the Rice Department of the Ministry of Agriculture and are engaged mainly in the Government's program for propagating the use of improved varieties of rice seed.

We recommend, as the minimum objective of a satisfactory extension service, two general purpose extension officers in each of the 448 districts (amphurs) of the Kingdom. We emphasize "general purpose" because we see little merit in prolonging the present division of extension activities among the Agriculture, Rice, Livestock and Irrigation Departments of the Ministry. We would certainly not wish to minimize the importance of the program of distributing improved rice seed and urge that it be given every possible support by the Government. We believe, however, that this program could be carried out as effectively, and perhaps more so, if its officers were part of a general purpose extension service rather than a specialized staff of the Rice Department. We have also been impressed with the interest of the Irrigation Department in experimental and extension work. But this work has grown of necessity, because other agencies of the Ministry of Agriculture have failed to provide such services. As an effective general purpose extension service is built up, it should take over these activities from the Irrigation Department.

If each district were provided with two extension officers,

a staff of about 1,000 would be required, including supervisory and administrative personnel, or more than three times the number in extension work at present. Obviously, a capable staff of this size cannot be built quickly, and the first prerequisite will be expanded training facilities. We do not propose that such training be of a high scientific standard. Emphasis should be on practical understanding and an experience with the way Thai farmers actually work. The training should impart local knowledge of rice, upland crops, tree crops and livestock.

The most effective extension influence is the neighbor who is one step ahead. Most farmers are unresponsive to organized talks and demonstrations, but are quick to learn from what goes on in neighboring fields. An extension worker must therefore be a man of patience, prepared to spend considerable time with the farmers, to listen to their troubles, and to win the friendship and confidence of at least a few in each village. With him he carries seed samples, some phosphate, mineral licks for the cattle, medicines for the pigs and chickens. In return for his help and company one farmer agrees to a trial of new seed, another to use phosphate on part of his land, etc. This is not the slow way to progress but the quickest. It means, however, that the extension officer must know his business.

To train an extension staff, it will be necessary to rely for the present on the existing senior vocational schools, and to provide a period of actual farming experience at the Government's experimental farms.

We suggest that the agricultural curriculum in the 15 senior vocational schools be strengthened, and that promising students of this curriculum be selected for further study in the advanced vocational schools at Nakorn Srithamarat and Mae Jo. The staff and facilities at these two schools should also be improved and expanded to provide the technical instruction needed for effective extension service, and further practical training under actual farming conditions should be made available to prospective extension officers.

The vocational schools are now under the Ministry of Education. The program we propose will therefore require close cooperation between this Ministry and the Ministry of Agriculture. We believe, however, that the improved and expanded agricultural program of the vocational schools should be looked upon as a necessary interim step. Later, the Ministry of Agriculture should establish several agricultural institutes to train new extension officers and other junior agricultural officials. Specialized institutes for this purpose are already operated by the Royal Forest Department and the Department of Livestock Development.

The staff necessary for building up the agricultural program of the vocational schools, especially the higher vocational courses, can undoubtedly be developed within about two years by drawing on Kasetsart graduates and by a rotation of suitable officers within the Ministry of Agriculture between field service and teaching assignments.

To finance these recommendations for the vocational schools we suggest capital outlays of about 18 million baht during 1959-63 and increases in recurrent expenditure up to 4 million by 1963.

To provide practical field experience, we propose that the present departmental experimental farms, numbering about 50, be reorganized and utilized not only as training centers but also as the divisional headquarters of the local extension service. These functions could appropriately be combined with existing experiment programs, but they will require a major change in the nature of the experimental farms. At present they are divided among different departments of the Ministry of Agriculture, and the work of each is concentrated on a particular interest. In many cases the farms are on adjacent sites with unnecessary duplication of administrative and technical staff and facilities. If these farms were dealing with highly specialized problems, their separation would be reasonable, but they are for the most part conducting simple trials in crop and animal husbandry, and it is difficult to under-

stand why they should not be unified. With unification there could be concentration on experiment and training in the mixed-farming techniques appropriate to the particular area and necessary for its development. In rice areas, for example, major attention should, of course, be given to improvement of rice production. Similarly, in rubber areas the focus should be primarily on rubber. But such attention should not be exclusive. There should also be ample scope for work and training in cropping patterns and rotations that combine rice or rubber with a more varied farming suited to the farmers' capacities and necessary to Thailand's agricultural development. We recommend, therefore, that the experimental farms be brought under the supervision of the Research Division of the Department of Agriculture, that their programs be redirected to emphasize mixed-farming, and that they be assigned, and equipped for, a major role in the training and supervision of the agricultural extension service.

It is not to be expected that the senior vocational schools and experimental farms can quickly produce the number of qualified extension officers that we have suggested as a minimum objective. Progress must necessarily be slow at first as the agricultural side of the vocational schools is strengthened and staffed and as the experimental farms are organized and equipped to provide the necessary field training and experience. This program should be started at once, however, so that within about five years there would be an annual outflow of 200-300 adequately trained agricultural field officers. Within eight to ten years the extension service could be expanded to about 1,000 persons.

Along with the training program there must also be adequate provision for the local transport of extension officers, so that one or the other of the two assigned to each district can be regularly on tour. Probably in many districts bicycles or motor-scooters would serve the transport needs. But in most districts we believe it desirable that a jeep be assigned to the extension office. In all districts the officers should be

provided with an adequate travel allowance when out of station. Maintenance facilities for vehicles will also be necessary at the divisional extension headquarters.

For these purposes of providing training facilities and equipping an extension service we suggest capital outlays over a five-year period of 45 million baht and, in the same period, increased recurrent expenditures running up to 20 million in the fifth year. We also strongly urge that the Ministry of Agriculture adopt a policy of promoting deserving and capable men from the field service to senior agricultural posts, even though their academic background may be inferior to that of otherwise less qualified candidates. And in line with this proposal we also urge that the present disproportionately small number of higher grade posts now attached to field stations be considerably increased relative to the number of such posts in the central agricultural administration.

### *Research*

The primary need is not so much for academic research (though there is much work to be done) but for adaptation of established scientific knowledge to the traditional skills and customs of the farmer. We believe that more rapid progress can be made in research programs with the help of foreign specialists, provided they can be found with experience specifically applicable to the natural and social conditions of Thailand. In line with the basic objectives of agricultural policy, we recommend the following priorities of agricultural research (the numbers in brackets indicate the number of foreign experts who would be necessary in the early stages).

- (1) The agronomy of farming the uplands, including pasture research (two). This is given priority because of the urgent need, first, to foster multiple cropping

patterns in the Central Plain to take advantage of prospective perennial irrigation, and second, to evolve a farming system, especially in the Northeast, which will conserve the land, replace shifting cultivation and combat the serious erosion this form of cultivation creates. The Research Division of the Department of Agriculture has made a good start along these lines, but employment of a foreign expert with first-hand experience of similar problems in a similar environment would speed the program. The second expert should be a specialist primarily in tropical pastures—work in which Thai experience is still very limited. Research into upland agriculture in the whole of Thailand will obviously need strong financial and staff support from the Government.

- (2) Of equally high priority is the continuation of rice-breeding research for yield, quality, local adaptability, and resistance to diseases and pests (one). Basic work has already been done in the first three fields with valuable aid provided through U. S. technical assistance. Continuation of this work should be strongly supported by the Government. The recommended foreign specialist is required to establish a program of breeding for pest and disease resistance. Trials to determine the most appropriate fertilizer and its effects in different rice areas should also be continued.
- (3) The extension of varietal and agronomic research on sugar cane into the Southeast and the Northeast (one). Valuable work is being done, under the guidance of an expert from the Food and Agriculture Organization, in the irrigated areas of Supanburi to supply cane to a modern sugar mill now ready for operation. The same expert, given competent assistance, could develop a sugar cane research program at one of the Ministry's experimental farms in the Northeast and another in association with the modern sugar mill in the Southeast

at Cholburi, where the local sugar factory already has a small experimental farm. That farmers' yields of cane are often less than five tons per rai, with 6% extractable sugar, is emphatic evidence of the need for both research and extension work. Fifteen tons per rai yielding 10% is a reasonable target.

- (4) Investigation of the possible improvement in quality of tobacco (one). In 1956 Thailand imported 4,276 tons of tobacco for blending, to make a fairly good cigarette, at a price of 31,000 baht per ton. Exports of Thai tobacco in excess of home requirements were 4,608 tons at 10,500 baht per ton. Thailand can grow any quantity of tobacco, but it is difficult to find a good market for it. It may be that foreign expertise can improve the quality and therefore the export prospects for Thai tobacco. If so, the expert will be a very profitable investment.
- (5) Research into improved year-round production of leaf from mulberries, including trials of introduced varieties. In Northeast Thailand the growth of foliage on the mulberries before the rains break is very sparse and seriously depresses silk production. Countries with much less rainfall are able to produce plentiful mulberry foliage through the dry season. Strains recently imported look promising. A series of simple experiments on the management of the mulberry tree, which in Thailand is grown as a shrub stunted by overcrowding, should solve the problem in a few years. The five established sericulture demonstration centers could conduct the experiments with little extra cost. No foreign expert should be needed to design or to supervise the experiments.
- (6) Cotton breeding, attended by disease-and pest-control research (four). Much knowledge has been accumulated elsewhere about the genetics of the cotton plant and Thailand's cotton crop could benefit greatly from

the local application of this knowledge. Plant-breeding programs are inescapably slow, and two expert cotton breeders would be needed for at least seven years to establish a sound basis. They could then be succeeded by trained Thai, because a plant-breeding program never has an end. If it is stopped, the rate of regression is as rapid as the pace of progress during the years of achievement. In general, disease problems are more intractable and more associated with genetics than are pest problems, so an expert pathologist would also be needed for seven years, and an entomologist for three years. With a comprehensive and continuing research effort, cotton could become a significant addition to Thailand's exports.

- (7) Expansion of research in livestock nutrition and management (four). An FAO expert is already working on problems of nutrition and correction of the effects of nutritional maladjustment, and an ICA expert is advising on the management of the livestock centers and is conducting instructional courses. Another FAO expert is promoting a program to improve pigs. The subject is of such economic importance to the small farmer and to the evolution of a sound system of farming the uplands that at least one additional expert should be recruited, to investigate the digestive efficiency of the types and breeds of indigenous and introduced livestock and the economic results obtainable from local and introduced feed stuffs.
- (8) Continuation of research in livestock diseases and their control (one). In veterinary research Thailand has long been the leader in East Asia. A long line of distinguished foreign experts helped to achieve and to maintain this position. As disease problems are always changing, continued association with international expertise is essential. Although Thailand has her own qualified veterinarians, one or more visiting specialists,

to help in solving the pressing problems of the time, will always be of advantage.

- (9) The establishment of sisal nurseries in a suitable area of the Northeast, adjacent to plentiful water supplies for processing, may not strictly come under the heading of research, but it is something that the Government should be doing in preparation for commercial development.

For financing this proposed research program we recommend capital outlays over a five-year period of 60 million baht and increasing recurrent expenditures rising 25 million above the recent level by 1963. We also recommend that the Research Division of the Department of Agriculture should transfer its headquarters to a major research station to develop mixed farming for the uplands. Sisamrong, Tha Phra, and the Loei-Udon area are worth consideration as possible sites. The Rice Department and the Department of Livestock Development would join in this coordinated research effort, seconding suitable staff to work under the orders of the Chief of the Research Division, who should be promoted to the rank of Director.

### *Rural Education*

While Thailand's general educational system is discussed elsewhere, it may be advisable to mention here one aspect of the system as it bears on the educational advancement of students with farming backgrounds. The need for farmers' sons to help on the farm already tends to draw them from school at an early age. We do not believe that this tendency should be worsened by the very early division of the school curriculum into academic and vocational education. This starts now at the fifth year of the school system and those who enter the vocational stream at this point devote about a third

of their time to purely vocational instruction. Aside from the dubious value of the vocational work at this level, it limits the time available for academic instruction, and consequently places the students at a disadvantage for advanced education in competition with those from the conventional three-year intermediate schools. The bright country boy who may become interested in higher education should not have his prospects for university entrance jeopardized by an early diversion into vocational rather than academic preparation. This of course applies to students from other than farm backgrounds as well. But because of the importance of agriculture to Thailand and of the need to combine advanced agricultural education with practical farm experience, it is most desirable that as many farmers' sons as possible receive the necessary preparation for higher learning. We would suggest that education policy might aim at postponing the vocational curriculum until completion of the seventh year of conventional schooling. Later a further postponement, until completion of the tenth year, might be considered. We also recommend that the Government appropriate a million baht each year for scholarships at Kasetsart University for worthy and qualified students from bona fide farm families who are unable to afford the cost of fees and maintenance.

## RICE

A steady expansion of rice production has been emphasized as one of the main objectives of agricultural policy, and better water control is probably of first importance as a means to this objective. But major increases in rice output can be achieved by other means which will complement water control. We have already recommended the research program for rice, and the other most important means are set out in the following paragraphs.

*Higher Standards of Cultivation*

Provided there is an assured and regulated water supply, the benefits from care of the nursery bed, good leveling and bunding, adequate ploughing and harrowing for weed control, proper plant population and subsequent hand weeding can add up to a 100% increase in yield on a crop.

*Seed Improvement*

Like cereal growers throughout the world, Thai farmers have long been conscious of the value of selecting and maintaining strains of seed suited to their local conditions. With the dual objectives of ensuring uniform high quality for the export trade and of raising yields, the rice-breeding program, which started at Rangsit in 1916, was extended in 1950 with technical aid from the United States. Excellent work has been done and is continuing. Varieties approved by the Rice Department are distributed by District Officers to selected farmers for multiplication. The number of stock seed farmers is now about 24,000. The number estimated as needed to supply the country's annual requirement of seed is 40,000.

It is difficult to put a quantitative value on this work. Seed trials under field conditions indicate possible increases in yield up to 15-20%. Many farmers are enthusiastic about the new seeds, but one finds others, a smaller number, who after trial maintain that their own seed is better. The probable situation is that the improved seed will usually live up to expectations in farm use provided other conditions are satisfactory and that a potential 15% to 20% improvement in yields can be realized in general use.

*Fertilizer*

Additional yields from improved seeds would be greater and more certain if the seed were used in combination with suitable and effectively applied fertilizer under conditions of satisfactory water control. At present very little rice is grown with fertilizer. Experiments with its use show results that vary widely from one locality to the other and with variations in the combinations of fertilizers used. Responses to nitrogen and potash are not always assured, but are more likely if used along with phosphate. Phosphate alone frequently gives remarkable increases. At present price relationships between paddy and fertilizers, the application of nitrogenous manures or soluble phosphate on a commercial scale cannot be recommended except after trial on the individual farm. Fortunately, the relatively cheap ground rock phosphate produces a response equal or superior to that of soluble phosphate.

There is, however, the further problem that under the flood irrigation pattern which is characteristic of much of Thai rice cultivation, the water flows from one paddy field to another. Hence, part of the fertilizer applied to higher-lying lands tends to be carried by the water to lower-lying fields. Studies are necessary and are recommended to determine appropriate timing in the application of fertilizer to minimize this effect. Pending such studies, we have not suggested a broad program of subsidized fertilizer distribution. Such a program should be adopted, however, in combination with the distribution of improved seed, as soon as the technical bases for its justification are established. If this becomes possible within the coming five-year period, the proposed recurring expenditures for agriculture should be increased to allow for the provision of fertilizer to rice farmers at about half price, the deficit to be met by the Government. Thailand is well served by competing traders in agricultural chemicals. Some of the firms have their

own extension services and conduct experiments and demonstrations.

### *Pest and Disease Control*

An important factor in the advantage to be obtained from improved seed is increasing freedom from pests and disease. This has been emphasized as a high priority in the proposed research program.

### *Incentives*

Rice returns a smaller income per area of cultivation than many other crops. In fact, village studies have shown that if a reasonable valuation were to be placed on family labor, rice production would more often than not show a loss. In practice, of course, the farmers seldom consider the cost of family labor. They also want to be sure of having enough rice for their own needs, quite irrespective of the market incentive. Nevertheless, the importance of the latter to the farmer is growing with increasing knowledge of the things money can buy. Consequently, the price the farmer receives for his rice must be constantly kept in mind. He must earn enough to stimulate him to produce more, if the necessary upward trend in rice production is to be attained.

At present there is a large tax (duty and premium) imposed on rice exports. The Mission has considered whether this tax depresses the internal price and should be removed in order to provide more incentive to the farmer. On the whole, it seems likely that the tax does not act as a serious disincentive and that, if it were removed or reduced, little benefit would accrue to the farmer. Another consideration is that removal of the tax would have a seriously adverse effect on government

revenues. Finally, the tax definitely tends to reduce rice prices within the country and its removal would undoubtedly create problems for the substantial part of the population that buys its main staple of diet on the domestic rice market. For all these reasons, elimination or substantial reduction of the export tax is deemed inadvisable at present, except if it is necessitated by external market conditions. It would seem preferable in the interest of the farmer, as well as that of the economy as a whole, to retain the tax and at the same time to spend a larger share of public revenues in assisting the farmer to increase his productivity and, consequently, his income. Such a policy is reflected in the proposed development program in the form of steadily rising capital expenditures to improve agriculture and greatly increased outlays for recurring services to the farmer. Eventually it might be desirable to substitute income taxes for the report premium. This would be, in some respects, theoretically preferable, since income taxes can be more directly related to ability to pay than export taxes—whose incidence is proportionally the same, regardless of the net profit accruing from rice production or trade. But a significant shift in this direction would hardly be feasible in the foreseeable future, because of the substantial changes that would be required in education and attitude of the small farmers before an effective farm income tax system would be possible.

## RUBBER

The large potential for rubber in Thailand lies in an expanding world market, in prospects that natural rubber can continue to compete successfully in this market, in the existence of improved rubber varieties that can increase Thailand's yields per rai by three or four times, and in the unused land suitable for rubber in Southern Thailand. The last alone is sufficient to double the present rubber area, or—with terracing

of usable hill country—even to triple it. Conceivably, Thailand's rubber output could well be eight times what it is today within a few decades, although a practicable goal is undoubtedly lower. The Mission believes that rubber exports can come to rival and eventually exceed rice exports.

This promise will not be easily fulfilled, however. Present rubber production comes from about two million rai in Southern Thailand, operated almost entirely by smallholders and planted for the most part with obsolete varieties of trees. About a quarter of these have reached the advanced age where yields of latex are declining steadily.

Rubber has the great advantage as a smallholder crop that once the trees mature they provide a satisfactory income by peasant standards, however they may be neglected. The reverse of this coin, however, is that the conservatism and poverty of the peasant make it difficult for him to replace old and obsolete trees with new varieties. There is not only the cost and effort involved, but the smallholder must also forego the income from a considerable part of his land for a period of six or seven years while the new trees mature.

Although official statistics do not reflect it, smallholders undoubtedly plant new rubber lands at a rate more than sufficient to offset declining yields in the older planted areas. But again much of this planting is with ordinary low-yielding varieties rather than with the newer high-producing types, with which most smallholders are unfamiliar.

In Malaya and Ceylon the Governments are conducting a smallholder replanting program based on substantial inducements to replace old trees with new varieties. A similar program has been considered in Thailand, based on subsidies for smallholder replanting, to be financed from an additional tax on rubber exports. We believe that some such program is a desirable means, among others, for the stimulation of rubber production. But we do not advise its adoption for several years until the organization can be built up to administer such a program effectively.

Our recommendations for rubber development include first, an official acceptance of that development as one of the basic aims of national economic policy and, granted this, a three-stage program starting from modest beginnings but building up to a major effort on a broad front. The essential elements of the program should be to encourage the planting of new rubber areas by smallholders, while making every effort to ensure that this is done with superior plants; to provide every appropriate inducement for the development of private large-scale rubber estates; and finally to undertake at a later stage a substantial replanting of over-age rubber areas with new high-yielding trees.

The first stage of our proposed program would emphasize, during the next three years, the improvement and expansion of nurseries and plantations for increasing the supplies of superior planting material; the establishment of centers to demonstrate proper planting and care of new rubber lands; and the training at these centers of extension officers. These officers should be assigned in the South to maintain contact with newly planted smallholdings and to provide guidance in the planting and care of high-yielding trees. Until domestic supplies of such trees are adequate, imports should be continued. We suggest that such trees should be distributed free, and that their use should be the only condition for obtaining a permit to plant rubber on state lands.

To encourage private large-scale estates, whether operated by Thais or foreigners, it is recommended that rubber and other tree crops be excluded from the present maximum limit on land owning of 40 rai per individual. We also recommend that state lands be made available for large-scale private rubber ventures either through sale at attractive prices or through long-term lease (99 years) at attractive rentals. Payments might be deferred until the rubber trees matured, but the sale or lease should be cancelled if in the interim appropriate standards of planting and care of new rubber trees are not observed.

The first stage should also include surveys of new areas most suitable for rubber planting and incorporate desirable government measures (access roads, mechanical clearance, water and erosion control, etc.) to facilitate their development.

Finally, it is recommended that the Rubber Division of the Ministry of Agriculture move its headquarters from Bangkok to the rubber growing area. An expanded program cannot be effectively directed and followed from a great distance.

The second stage should continue the emphasis on new planting but should expand activities based on the foundations built up during the first stage. With larger supplies of plants, a bigger staff, and more information on the location and needs of new areas suitable for development, the Government should be able to broaden its services to the rubber industry. At this stage, large areas could be brought under coordinated programs of new planting. These programs might include the construction of roads, centralized land clearing operations, measures to control water and prevent erosion, organized settlement, malaria protection, etc. Such services might also be provided for large estates, but with provisions for compensating the Government for improvements made within estate areas.

This second stage will obviously require effective planning and coordination, involving various departments of the Ministry of Agriculture as well as other Ministries and the proposed National Development Board.

Appropriations required for the first two stages of the rubber program during 1959-63 are estimated to be about 55 million baht for capital outlays and annually recurring expenditures. These are additional to the present budget of the Rubber Division, which increases to about 15 million baht by 1963.

The third stage should be started after about six or seven years, when experience will have been gained and capacities developed. This stage should continue the previous program for new planting, but should add a new program for the re-

planting of over-age rubber area with high-yielding rubber. We would recommend procedures generally similar to those followed in Malaya and Ceylon. An initial goal for replanting might be 25,000 rai per year, building up to an annual rate of 75,000 to 100,000 rai. What inducements should be offered and what services provided to foster replanting are questions that can be deferred for the present and decided in the light of conditions prevailing as the time approaches to begin the program. So, too, can the details of financing. It is likely, however, that the sums needed may run to well over 200 million baht a year. Plans for meeting this expense should be made by the fiscal authorities well in advance. It would also be most valuable if early arrangements could be made to provide training and experience for Thai personnel in Malaya or Ceylon.

Provided the necessary organization, competence and experience can be developed during the next six or seven years, by the mid-1960's the rubber development program should become one of the Government's most important activities for strengthening and expanding Thailand's economy.<sup>2</sup>

<sup>2</sup>In recommending a rubber expansion program, we are aware of the fact that prospects for rubber production in Thailand are affected by the competition of synthetic rubber. Present costs of production of general purpose synthetic rubber in the United States are around 18-20 cents per pound. These costs can be reduced appreciably in only two ways—if the raw material costs (primarily butadiene, a petroleum product) should fall drastically, or if radically new techniques were applied in synthetic rubber production. While petroleum prices may well weaken in the next several years, it is unlikely that they will undergo a dramatic change. The possibility of new processes cannot be excluded, but present prospects do not seem to include an early reduction in costs for this reason. Under these circumstances, it is unlikely that the cost of synthetic rubber will be substantially lower during the next several years than at present. The uncertainties, of course, become greater in the more distant future; and factors affecting the competitive position of natural and synthetic rubber should be held under constant review. Thus, it may be necessary to re-evaluate the prospects for natural rubber before the third stage is implemented—in six or seven years after the beginning of the program—in order to determine whether any changes in that part of our proposals are necessary.

## OTHER DIVERSIFICATION

### *The Northeast*

The problems and hazards of rice cultivation in the Northeast, associated with topography, soils and rainfall patterns, have been indicated. The prevalence of shifting cultivation in this region has also been noted, along with the serious adverse consequences of this form of farming for the resources of the region. To meet these problems we have recommended a serious effort to direct husbandry in the Northeast toward a stabilized dry-farming pattern with an appropriate rotation of upland crops. This must be regarded as a long-range objective to be attained only gradually, in view of the farmers' preference for rice farming and the long standing tradition of shifting cultivation.

Among the first steps toward this objective we have recommended that development of upland crops suitable to the Northeast be given a high priority in the research program. Progress will also hinge on the training of an adequate extension staff for the Northeast, as part of the expanded and improved extension program previously recommended. We also suggest as a further step that the Northeast be given priority, along with potential rubber areas of the South, for proposed land use surveys.

The survey teams for the Northeast should be made up of men who know the requirements of upland crops and livestock and who understand the relations between plants and their environment. It should be possible to draw such teams from the Departments of Agriculture and Forestry and from Kasetsart University. The information they need should be fully taken into account when aerial photography and mapping are planned for the Northeast. The work of these teams should also be closely coordinated with the previously recommended study of the Northeast erosion problem. Attention should be

concentrated first on land use farming and on hillside cultivation. The purpose of these studies should be to devise practicable and more suitable alternatives for crop rotation.

There are good possibilities for upland crop development in the Northeast. These include both cash and subsistence products. Among the most promising are maize, groundnuts and other oil seeds, kenaf, kapok, sugar cane, tobacco, fruits and vegetables; livestock and poultry products should be given special attention.

Given guidance from the land use surveys, the main burden of influencing the Northeast cropping pattern will fall on the extension service, assisted by the research program. We advocate some additional assistance, however, particularly the mechanized excavation of small ponds for the retting of kenaf, for which 10 million baht is included in the proposed financial program. The research and extension proposals on the continued support of a livestock program to improve the breeds of native cattle; the growing and storage of forage; and the establishment of pastures should also be emphasized. Kenaf could be a crop of considerably greater importance in the Northeast, both for export and for domestic production of gunny bags. But retting facilities must be adequate and marketing arrangements must be improved. And livestock husbandry, including the rotation of pastures with arable crops, may prove to be the economic alternative to shifting cultivation.

#### *Upland Crops in Other Areas*

Most of the upland crops of promise in the Northeast are also suitable for development in other areas. Other crops that should be developed include mung beans and soybeans in the upper Central Plain; cotton in the same area and also in the Ping Valley, after the Yanhee project provides flood protection and irrigation; coconuts and oil palm, especially the latter, in the South; tea and coffee in the northern hill areas (provided

processing methods are improved); and, of course, many varieties of fruits and vegetables. How effectively the growing of these crops can be stimulated will depend largely on the caliber of the extension service and of the research program. Special effort and attention should be given to developing and promoting suitable rotations to take advantage of the year-round irrigation that will be provided to a large area of the Central Plain by the Yanhee project.

There is also a promising field for encouragement of large-scale agricultural enterprise, not only in rubber but also in tea, coffee, oil palm, sisal, coir (coconut fiber), pepper and dairying. As with rubber, we urge that private domestic and foreign interests that may be willing to develop these agricultural activities on a commercial scale be given liberal inducements.

## OTHER ASPECTS OF AGRICULTURAL DEVELOPMENT

### *Community Development*

In some quarters it is believed that a Community Development Program would be the logical development of the work of the Thai-UNESCO<sup>3</sup> Fundamental Education Center (TUFEC) at Ubol. Supporters of the proposal feel that a program along lines similar to those followed in India is the only way to accelerate the pace of social progress in rural Thailand.

In Thailand, however, the situation is quite different. Rural indebtedness is not a serious problem. The majority of the farmers own their land. They are resourceful and, if need be, are willing to take up temporary or permanent alternative occupations to offset crop failures or overcrowding. They feel

<sup>3</sup>United Nations Educational, Scientific and Cultural Organization.

unoppressed and free, there are no subservient castes, and each village has the stabilizing, and sometimes stimulating, influence of its Buddhist temple. Particularly in the Northeast there is a tradition of travel and of contact with the metropolis. Within the limits of the conservatism of all rural people, the Thai villagers are lively and intelligent enough to accept change and progress if they see that there is value in it. In the opinion of the Mission, expenditure of funds and effort on strengthening the technical services will be more potent in effecting rural development than the proposed Community Development Program.

It is understood that it is the intention of TUFEC that its teams of six "graduates" in each province will have two functions. Their first appears to be to use the skills acquired at Ubol to promote community development in the village to which they are posted and perhaps in nearby villages. The second function of the teams is to train selected village leaders and district officials in the techniques of community development, so that these leaders may then spread the acquired techniques more broadly through the province.

Clearly, the direct impact upon community development of a single team of six people in an entire province will be slight, even if it shifts its base of operations from village to village every two or three years. It is also doubtful whether TUFEC's envisaged teams of six "graduates" in each province will be strong enough to run the required training courses for village leaders and district officials. Most of the team members, though intelligent and dedicated, are young and with little experience in farming. We recommend that, in this experimental stage, the experienced and adequately trained staff at Ubol concentrate on the study of village needs and on running short courses both for volunteer village leaders and for assistant district officers and selected rural departmental staff. Depending upon his personality and local standing, the selected village leader might be a priest, a headman or a schoolteacher.

Another important function of TUFEC should be the pro-

vision of reading material for those who have left the village school. At present a high proportion of village school children forget how to read and write within a few years through lack of opportunity or need to practise. The habit of reading can best be maintained by a supply of books on popular and useful subjects.

#### *Sponsored Land Settlement*

More than 40 land settlement projects have been started by various Departments in the last two decades. Interdepartmental coordination and adequate planning have been conspicuously lacking in much of this activity. Some of the projects have been abandoned because of malaria, some because of poor soil, and others because of their remoteness.

At present there are two groups of settlement projects of importance. The first group consists of nine projects under the Ministry of Cooperatives; the second group includes six older projects and fourteen more recent ones, mostly in the early stages of construction, administered by the Department of Public Welfare, Ministry of Interior.

The nine settlements of the Ministry of Cooperatives include about 3,300 families organized into cooperative units. These units assume corporate responsibility and unlimited liability for loans to members from the Ministry. The average of individual loans is probably about 2,000 baht. The settlements also receive public assistance in the form of roads, water supplies, schools, dispensaries, and police protection. The Cooperative Officers in charge of the settlements appear energetic and devoted to their jobs and their fairly satisfactory record in the collection of installments and interest on loans speaks well for the operation of the settlements. They have been handicapped, however, by insufficient or weak technical advice in the planning of the settlements and in the conduct of farming operations.

The settlements under the Public Welfare Department include about 11,000 families. Although administrative buildings are more ostentatious than in the cooperative settlements and loans to settlers are much more liberal—running up to 10,000 baht—repayment terms are not enforced and in general these projects are unimpressive. Sites are not always well chosen and the layout of the settlements shows ignorance of land use and little regard for the settlers' social habits and preferences. Agricultural advice is scanty or non-existent. This is particularly regrettable since the settlers' knowledge and experience are so limited that much of the land is used only for the "slash and burn" of shifting cultivation.

We believe that agricultural settlement programs can be soundly based only when their planning and direction are guided by competent technical advice. We further believe that in the circumstances of Thailand and because of the characteristics of the Thai farmer, elaborate provision for settlers is unnecessary and that much greater reliance could be placed on what may be called "natural development". By this we mean the process that is taking place every day as an agricultural migrant finds a place where he can live in safety, grow a satisfactory crop, and sell any surplus. The process can be accelerated if areas for settlement are chosen according to sound technical criteria and if the Government provides access roads, water supplies, malaria control and police protection. Expansion of this kind lays a comparatively light burden on the taxpayer, and the Government's funds would be far more economically spent in creating conditions to promote natural expansion than in developing settlement schemes that require large capital and recurrent outlays.

We recommend, therefore, that this method of fostered "natural development" be the guiding principle of government-sponsored settlement programs—except possibly for some special assistance in settling distressed persons without agricultural experience. We also recommend that these settlement programs be brought under the jurisdiction of the Ministry of

Agriculture, to ensure that they are established and directed with sound technical advice. Possible exceptions might be three or four of the settlements of the Ministry of Cooperatives. These might be left under the supervision of that agency, provided the suitability of the settlers for cooperative effort is well established and arrangements can be made to secure the technical guidance necessary for satisfactory cultivation.

In line with these general recommendations we propose specifically that:

- (a) development of all new settlements be suspended, unless this is demonstrably inhumane or uneconomic, until existing settlements can be placed on a more satisfactory basis;
- (b) any further expansion of the six settlements now under the Department of Welfare that pre-date 1950 be suspended until the suitability of their unused reserve lands (almost two million rai) for natural development can be reviewed. Pending such review, possible exceptions might be considered, depending on urgency, to permit the settlement of distressed non-agricultural families and the migration of farmers now cultivating hill slopes;
- (c) the Public Welfare Department withdraw from agricultural operations and land management, leaving these functions to the Department of Agriculture, but providing guidance and advice with respect to the selection of distressed non-agricultural families and the social aspects of their settlement;
- (d) existing settlements be reviewed by agricultural and sociological specialists to reconsider their suitability for non-agricultural settlers; and
- (e) serious consideration be given to withdrawal from direct administration of all schemes not selected under (d) above.

Specific steps recommended to guide and facilitate the natural processes of land settlement include:

- (a) surveys to determine the areas suitable for agricultural development. This need not be a slow or expensive process. An adequate team need comprise only four people; a good ecologist capable of identifying soil types by their natural flora, an agriculturist and a forester who could join issue with the ecologist on what crops or trees to grow and by what methods, and a cartographer to record the results of the land classification on the maps derived from the aerial survey that has already been made. Foresters and district officers have expressed a need for such a land classification map as an authoritative guide to enforcement of the land laws, with particular reference to encroachment of unterraced cultivation onto steep slopes.
- (b) assessment of domestic water supplies immediately following the land classification, to be done by a hydrological engineer (for surface water storage) and a ground water specialist for investigation of subterranean water tables to a considerable depth. The latter would require a boring rig and team;
- (c) determination of the best places for access roads and possibly also for branch lines from the railway, based on a map showing the areas of good land and the location of domestic water supplies, and under the direction of a road surveyor with field rather than drawing-board experience.

When the wells, deep bores, tanks or dams have been constructed and the access roads made, development should take place of itself, preferably within the context of planned town and village layouts. District staff would of course need strengthening in the fields of administration, agriculture,

lands, and police (for enforcement of the land laws and to ensure public security). Anti-malarial campaigns might be necessary and the Ministries of Health and Education would have to extend their usual services. The priests can be relied upon to found a Buddhist temple on every selected village site. The Government might find it expedient to bring parties of village leaders from overpopulated or unproductive areas to inspect the proposed site and to spread the news of the better prospects offered by migration. The Public Welfare Department might wish to investigate the prospects for distressed persons. Motor roads and an active farm community will ensure the presence of the trader.

## FORESTRY

The Mission included no specialists in forestry and fisheries. These fields have, however, been well studied and reported on by experts of the Food and Agriculture Organization. We have relied heavily on their views and experience as well as on information and guidance from the Departments of Forestry and Fisheries of the Ministry of Agriculture.

It is difficult to put a monetary value on all the various forest products of Thailand. The Ministry of Agriculture published a figure of 1.6 billion baht for 1955, less than the value of rubber and only a fourth that of rice. Particularly in view of the development of hydroelectric and irrigation projects dependent on river flow, the Mission emphasizes that the maintenance of forest cover on the watersheds and on the lower slopes of the hills is of greater importance than commercial exploitation of timber. The Royal Forest Department has therefore a keen interest in the land use surveys and erosion studies recommended earlier in this chapter.

There is, however, no need to wait for completion of these surveys and studies before banning unterraced cultivation from

the watersheds and hill slopes. The Ministry of the Interior is apparently not fully awake to the dangers of erosive practices, and district staff do not take strong disciplinary action against offenders. The maximum penalty for unauthorized encroachment on public domain is a fine of 500 baht, but the relatively few offenders who are brought to court are fined only a few baht, which is no deterrent. (In the Mission's opinion the penalty should include imprisonment, as well as a fine). This leniency often derives from sympathy with those cultivators who have no immediate alternative way of making a living.

Reserved forests now total about 33,000 square kilometers, in some 300 units. The official goal is 269,000 square kilometers, which is just over half the land area of the country. There are only 224 forest rangers to supervise these reserves, and they have no means of transport. Felling, particularly of teak, is exceeding the rate of natural increase. Illicit felling and theft of timber from authorized concessionaires and from reserves, have gone on vigorously during the last few years, often under the protection of armed guards. The penalty for illicit felling is nominal in relation to the profit (500 baht fine or six months imprisonment), and prevention of such felling has been made more difficult by the intrusion of political influence.

Over-exploitation has caused a temporary doubling of output, but this is now falling rapidly. The magnitude of illicit timber extraction largely invalidates production statistics. Available data, however, seem to indicate that output of major commercial species was considerably less in the period 1956-57 than in previous years. Production of teak, for example, was 359,000 cubic meters in 1954 and only 200,000 cubic meters in 1956. The stock of mature teak in the 15-year period 1930-45 was estimated to be 1.3 million trees. For the 15-year period 1955-70 it is officially estimated at 460,000 but may in fact be as low as 300,000. Because of the time lag between extraction and sale, the impact of falling supplies is only now becoming felt.

Government revenues from royalties and export duties amount to about 100 million baht. The Royal Forest Department's budget has recently been about 20% of this sum, and it will need a much more liberal budget appropriation to carry out its programs of reservation and reforestation to restore the forest wealth of Thailand and to undertake the most important task of all—the protection of watersheds and catchment areas. We urge every possible support of this vital program, including the provision of additional staff, more transport equipment and a steady increase in annual appropriations roughly to double their recent level by 1963.

## FISHERIES

The basic Thai diet is rice and fish. All along the long coast line there are fishing villages. The traveler up-country sees fishing by various devices in every river, ditch and pond. The consumption of fish that does not enter into trade is estimated roughly at 20% more than the total commercial fish catch.

Since 1951 the fishing industry has received valuable technical and financial support from the U. S. aid program and from FAO. The potential for expansion of marine fisheries is great, but at present the industry is faced with a marketing problem. Export possibilities at satisfactory prices are limited and up-country markets for salted sea fish are not yet well developed.

The Mission is favorably impressed by the value of the up-country fishery stations and by the quality and enthusiasm of the staff running them. The keen public demand for the fingerlings bred by these stations and the great increase in the number of privately-owned fishponds testify to their contribution to the local economy and diet. The program should be

expanded. Fishponds attain their greatest value in areas that are relatively short of perennial streams, such as the Northeast. Even if a pond can contain water for only six months, the fingerlings can grow to an edible size. It is also logical to develop fishponds in all parts of the country, including the Chao Phya Plain. The fish can be properly nurtured and substantial returns obtained with less trouble and greater certainty than by fishing, often laboriously, in "natural" waters.

In the meantime several million people in the Chao Phya Plain depend for an important element in their subsistence on the fish they can catch in natural waters and that thrive in the paddy fields. This emphasizes the seriousness of the previously-mentioned heavy seasonal loss at irrigation regulators of fish moving upstream, notably at the Chainat dam. The official position is that fish ladders should not be built into dams and regulators until biological studies have proved that the fish can use them and that they are necessary to admit the desirable species to their breeding grounds. Establishment of such facts may take some years, and it is for this reason that we emphasized in the earlier discussion of irrigation that fish ladders be included in all regulators and dams on rivers until biological research has proved them to be unnecessary. The hardship that may be caused to millions of poor people if the prevailing official view is wrong greatly outweighs the cost of building fish ladders.

## FINANCIAL RECOMMENDATIONS

Table 4 below summarizes the proposed development expenditures in agriculture during the next five years by purpose and amount.

TABLE 4 Recommended Capital and Additional Recurring Expenditures on Agriculture and Related Fields, 1959-1963

(Million baht)

	1959	1960	1961	1962	1963
<i>Total Expenditures</i>					
Total recurrent expenditures . . . . .	190	220	270	295	345
Total capital expenditures . . . . .	260	295	240	255	305
Total development expenditure . . . . .	450	515	510	550	650
<i>Recommended Recurring Expenditure by Major Category</i>					
Irrigation . . . . .	80	95	120	135	150
Other agriculture . . . . .	110	125	150	160	195
Recommended increases over 1958 level . . . . .	14	29	54	64	99
Kasetsart University . . . . .	2	3	3	5	5
Vocational schools . . . . .	2	2	3	3	4
Research . . . . .	1	4	10	15	25
Agricultural extension . . . . .	1	4	10	10	20
Rubber promotion . . . . .	2	5	10	12	15
Pond excavation . . . . .	—	2	2	2	2
Livestock services . . . . .	2	3	3	3	3
Forest . . . . .	3	4	10	10	20
Fisheries . . . . .	1	2	3	4	5
Total recurrent expenditure . . . . .	190	220	270	295	345
Financed by: Government budget . . . . .	190	220	270	295	345
<i>Recommended Capital Expenditures by Major Project</i>					
Irrigation . . . . .	223	232	188	210	264
Surveys and investigations . . . . .	4	4	4	4	4
Projects in the Central Plain . . . . .	128	138	93	112	159
Projects in the Northeast . . . . .	31	33	38	46	55
Projects in the North . . . . .	14	13	9	4	3
Projects in the South . . . . .	20	20	20	20	20
Flood control . . . . .	2	2	2	2	2
Dikes, ditches, etc. . . . .	2	2	2	2	2
Machinery and equipment . . . . .	15	15	15	15	15
Roadways . . . . .	7	5	5	5	4
Education, training and services . . . . .	28	37	38	29	29
Kasetsart University . . . . .	13	12	8	2	2
Vocation schools . . . . .	5	5	5	2	2
Research . . . . .	5	10	15	15	15
Agricultural extension . . . . .	5	10	10	10	10

TABLE 4—continued

	(Million baht)				
	1959	1960	1961	1962	1963
<i>Other agriculture</i> . . . . .	9	26	14	16	17
Rubber promotion . . . . .	5	10	10	15	15
Pond excavations . . . . .	—	10	—	—	—
Livestock breeding . . . . .	1	2	—	—	—
Forestry . . . . .	2	2	2	1	1
Fisheries . . . . .	1	2	2	1	1
Total capital expenditure . . . . .	260	295	240	255	310
<i>Financed by:</i>					
Government budget . . . . .	235	270	215	230	285
ICA aid assumed . . . . .	25	25	25	25	25

## CHAPTER III MANUFACTURING, MINING AND POWER

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The sectors of manufacturing, mining and power together account for approximately 15% of Thailand's gross national product. Within this total, manufacturing contributes the most important share. Mining activity accounts for only about 2% of the total product, and electric power production for less than 1%. With appropriate government policies, the relative contribution of the manufacturing and power sectors should steadily increase in the future. In the case of power, a decision has already been taken to augment very substantially the rate of public investment, and this will provide a direct stimulus to the development of manufacturing. To ensure optimum growth in manufacturing, however, modifications in other government policies will also be required.

### THE PATTERN OF INDUSTRY

The industrial structure of Thailand is similar to that of most other eastern countries. The bulk of the activity takes place in a large number of small and medium-sized establishments producing a great variety of goods and services, often of mediocre quality. Much family labor is used. Standards of hygiene and safety in the workshops are generally low. A few large establishments exist in such fields as tin mining, cement, sugar, tobacco, soap and weaving (including gunny bags). The most efficient of these are, or recently have been,

under foreign management, while the most modern have been erected directly or indirectly by various government organizations.

A demographic survey carried out in 1954 showed that of the economically active population, then amounting to about 10.2 million of both sexes, over 80% were engaged in agriculture, forestry and fishing. Only 2% were engaged in industry. In order to bring these and other pertinent data up to date, the Mission issued a questionnaire to all 71 changwads, asking for information on the 110 different kinds of factories for which registration is compulsory. These cover almost every industry except mining and the government factories. Replies were received from only 45 changwads, but with the aid of other information it has been possible to estimate roughly the broad trends in private industrial development in recent years.

Data on numbers of manufacturing establishments, numbers of workers, capital invested and potential consumption of power indicate a growth of three to four times in private manufacturing capacity since 1950. This growth has been based on an average annual investment of the probable order of 400-500 million baht a year, which is about 10% of total fixed investment and around 15-20% of total private investment. This figure excludes funds invested in industry by the Government and by the quasi-governmental National Economic Development Corporation Limited.

Industry in Thailand has moved forward from very small beginnings, however, and is still relatively small in relation to total output and employment. An indication of the main private industrial lines and the numbers employed during 1957 is given in Table 5.

Of the 15,960 establishments in Table 5, only 306, or about 2% were classed as large, i.e., with more than 50 employees. The table indicates the importance of the industries ancillary to agriculture and forestry: rice and saw milling, sugar, and flour (which includes tapioca). It illustrates also how widespread are these activities. But since rice milling and sugar

TABLE 5 Number of Industrial Establishments and Workers Employed in Thailand, 1957

	Number of Establishments	Number of Workers
Saw milling . . . . .	1,736	130,154
Rice milling . . . . .	4,921	58,459
Printing . . . . .	484	17,288
Sugar mills . . . . .	1,521	12,685
Weaving . . . . .	409	12,470
Flour milling . . . . .	1,336	11,982
Ceramics . . . . .	90	11,694
Engine repair . . . . .	528	7,219
Foundry and machine shops . . . . .	810	6,931
Smithies . . . . .	778	3,803
Ice factories . . . . .	388	3,199
Aerated beverages . . . . .	143	1,946
Others . . . . .	2,816	38,108
<b>Total . . . . .</b>	<b>15,960</b>	<b>315,938</b>

production are seasonal, and the saw mills employ much labor in the forests, the workers engaged in them cannot be regarded as full-time industrial employees, similar to those in the engineering occupations.

#### *The Government Industries*

Measured in terms either of personnel or capital employed, the Government's share in manufacturing proper is probably small in comparison with the aggregate number of private establishments. Nevertheless, its influence in industry is disproportionately large. Almost inevitably it stands alone in the field of public utilities. These utilities by themselves constitute a very considerable volume of industrial activity. But the Government is also involved directly or indirectly in a large number of commercial and other industrial enterprises. In manufacturing it monopolizes tobacco, potable and industrial spirits and playing cards; it dominates timber, sugar, paper,

gunny bags and minerals other than tin; it has large interests in cement, glass, pharmaceuticals, batteries, tin, tanneries and textiles, sometimes in direct competition with established producers; and finally, it operates a number of small plants making such diverse products as shoe polish, alum, rubber footwear, metal cabinets, paper clips, ceramics, and many others. In all, it controls some 60 establishments (including 15 distilleries), of which perhaps 40 can be classed as large, in the sense of employing more than 50 workers. Even without the plants of the National Economic Development Corporation, the fixed capital invested in government factories may be between 700 and 800 million baht.

At least five Ministries are now directly engaged in manufacturing activities of one sort or another. These are the Ministries of Industries, Agriculture, Defense, Finance and Health. Control is nominally in the hands of Boards of Directors consisting of high-ranking military or naval officers and influential politicians, but the effective direction is exercised by permanent officials of the Ministries, with the factory managers having little authority.

The National Economic Development Corporation Limited (NEDCOL) is a conspicuous example of governmental activity in the field of industry. NEDCOL was established in 1954, nominally as a private corporation, with an authorized capital of 50 million baht of which only 3 million were actually paid by the shareholders.<sup>1</sup> The majority of the shares were held, but not paid, by government entities.

The Corporation acquired a large modern sugar mill from the Thai Sugar Organization, and an old factory for making gunny bags. It then started to build another sugar mill, a paper mill, a marble factory,<sup>2</sup> and an extension of the gunny bag factory. To finance these operations it obtained a private foreign bank loan of \$10 million, and medium-term credits from suppliers of machinery in Europe, all secured or guaran-

<sup>1</sup> Only 12.5 million baht were ever called for payment, however.

<sup>2</sup> The marble factory is no longer part of the NEDCOL complex.

teed by the Government. By the end of 1957, NEDCOL's total debt amounted to over \$30 million, plus 83 million baht of local short-term debt, and the first loan repayment had fallen due. The sugar mill at Cholburi was making a small profit (before debt service), the gunny bag factory was running at a heavy loss and the other three factories were not completed. All available funds had been spent. To prevent bankruptcy, the Government has had to take over the whole concern. NEDCOL's affairs have now been analyzed by foreign industrial consultants, and it is apparent that the Government has on its hands a group of expensive factories, the cost of which will have to be met from public funds without prospects for an adequate return on the total investment.

The concept behind each of the projects was probably sound. The sugar industry undoubtedly needs modernizing, the production of gunny bags from locally grown kenaf ought to be profitable and there is room for a modern paper mill using indigenous raw materials. But none of the projects was properly studied at the beginning. There is little doubt that each of them has cost much more than it should have, and that none will be profitable at all until put under the control of experienced managers.

Several reasons are given for the Government's entry into the many industrial enterprises it now operates. The reasons most commonly given are: (a) the revenue is needed; (b) the products are wanted by the Armed Forces or Government Departments; and (c) local manufacture of certain products is essential for the economy of the country, and no private entrepreneur has been willing to undertake it.

In practice, however, all of the state industries, except the monopolies, have proved unprofitable by commercial standards. The equipment, other than arms, required by the services could very well be obtained in the open market, and it is doubtful whether great benefit is derived by coexistence, in some fields of industry, of state-owned and private enterprises.

An examination of the financial sheets of government com-

panies, together with personal visits, leads to the following conclusions about why state industry has commonly failed:

- (a) The enterprises were too often initiated by persons with political influence, who had no special knowledge of the industry or particular concern about ultimate success. Consequently, there was little control over expenditures during the course of construction.
- (b) As a result, the fixed assets tend to be overvalued. Because of their political origin, the projects were not properly studied at the beginning. Supplies of suitable raw materials were not assured, equipment was not always appropriate, competent managers were wrongly assumed to be available, and the problems of marketing were ignored.
- (c) Working capital has been allowed to grow out of all proportion to fixed capital and turnover. Inventories are reasonably low only in the newer factories, which are not yet in full production. Both assets and liabilities are swollen by loans to and borrowings from other government agencies--a pernicious system which not only makes the balance sheets unintelligible but is obviously open to abuse. On the other hand, the revolving funds at the disposal of the factory managers are usually inadequate for the day-to-day conduct of operations, and certainly not enough to provide for the minor improvements and alterations necessary to keep up efficiency.
- (d) Both the factory managers and the senior officials directing them at ministerial headquarters lack commercial and industrial experience. The evidence of poor management is to be seen not only in procurement and marketing methods, but also in idle labor, poor maintenance, inefficient use of plant, and bad housekeeping. Some of the managers and factory staff have been trained in subjects totally different from those they have

to deal with. It has been too lightly assumed that anybody with a university degree can run any kind of factory. Modern equipment demands modern techniques, and good management requires qualified men with long experience in their chosen field. Inevitably they are scarce in Thailand.

- (e) Labor being cheap and the tempo of working slow, all establishments tend to employ more workers than do their western equivalents. But the disproportion is even greater in the government plants. Political reasons are said to be responsible. In any event, the Mission believes that the excessive number of employees of all ranks is another reason for the high costs of production in the state industries. If managers cannot easily dismiss redundant or inefficient workers, they become resigned to inefficiency of all kinds, and the results are apparent throughout the organization.

## THE DEVELOPMENT OF MANUFACTURING

Thailand is still overwhelmingly an agricultural country. Thanks to a flourishing agriculture, Thailand has neither the unemployment nor the foreign exchange difficulties that in some countries create heavy pressure for industrialization. Some conditions that would promote the rapid growth of industry, moreover, are not present. While thorough surveys still need to be made, the mineral and solid fuel resources so far discovered are comparatively unimportant. Although the hydroelectric potential is large, the chances are remote that basic heavy industries able to meet international competition can be established. For the time being, limitations of technical and managerial skills also are a handicap.

It is essential for the satisfactory future development of Thailand, however, that the relative importance of manufacturing

activity in the economy should be increased. This is already happening. As we have seen, the growth of private manufacturing in the post-war years has been remarkable, although it has taken the unspectacular form of many individually small additions to industrial capacity.

The potential for continuing growth is good. Business initiative is not lacking in Thailand, and the evidence shows that risk capital is, or could be, forthcoming on a scale large enough to ensure that the rate of development would be higher in manufacturing than in other sectors. Experience indicates, moreover, that industries directly based on Thailand's natural resources are likely to expand almost automatically as agricultural development proceeds. For the rest, scrutiny of the import lists reveals many opportunities in other fields, particularly light engineering, textiles and assembly plants. With suitable encouragement, foreign investors could be attracted to supplement with modern techniques the efforts of domestic businessmen.

In general, the climate for private enterprise created by past decisions and actions has not been a favorable one. Ministers and high officials have frequently declared their recognition of the need for encouraging private industry and for attracting foreign capital. But they have not, perhaps, realized enough how other policies of the Government, adopted for seemingly sufficient reasons, have run counter to these aims. More recently appreciation of these facts appears to have been growing; and future circumstances should accelerate this trend.

One complicating influence on government policy towards industry has been concern arising from the fact that a great part of the manufacturing establishments in the country is owned by Chinese. Some Thai leaders have a very real fear that an indiscriminate policy of encouraging industry might lead to dangerous predominance of the Chinese community in this field. The problem is a difficult one. It is clearly desirable to encourage greater participation in industry on the part of Thais. At the same time, any attempt to do so by

excluding Chinese from the benefit of Government help is unlikely to produce the economic results which Government industrial policy should aim to achieve. Thailand has been very successful in the past in the assimilation of Chinese into the Thai community, and the most hopeful solution of the problem would appear to lie in encouraging the acceleration of this process.

### *Future Policy*

There is, clearly, little case for a "forced draft" program of industrialization based on Government investment and operations in industry. What is wanted instead are policies and measures that stimulate and assist private initiative, both domestic and foreign.

As far as investment is concerned, such assistance should be applied to the further development of basic facilities in transport, communications and power, as well as to some specific services to private industrial enterprise. If the national resources are used for those purposes which will achieve the greatest benefits, the Government will have little to spare for new industrial ventures of its own. This may mean that for some time to come ambitious schemes for starting iron and steel mills, fertilizer plants and other heavy industries will have to be shelved.

The Mission believes that the Government should not only refrain from seeking to increase its industrial participation, but should try to disengage itself from its present commitments. Complete withdrawal is hardly possible, and not necessarily desirable. Whether or not the erection of these factories was originally justified, they now exist as physical assets of considerable value. Under better management, and with a limited expenditure of new capital, they may be able to make a useful contribution to the national wealth. The Mission has not been able to study any of them in sufficient detail to make

specific proposals. We therefore recommend that one or more firms of industrial consultants be engaged to make a thorough investigation. Money spent on getting the best out of existing assets may be better invested than on creation of new ones. We believe that certain of the existing ventures would be recommended for immediate closure and sale, even at scrap value. Others will be worth retaining, particularly the more modern ones. If possible, they should be sold as going concerns. If not, we would expect the consultants to propose radical changes in the financial and technical management.

The Mission itself considers that the best solution may be found by providing wherever possible for independent operations by competent and experienced management organizations under contractual arrangements with the Government. The possibilities for making such arrangements should be good. There are in Thailand many foreign and some domestic firms with an intimate knowledge of the country and with wide interests and contacts in other parts of the world. While they are mostly concerned with trading, some have industrial establishments of their own, and their parent companies or foreign principals have experience elsewhere in contractual management services. Some even have local surplus funds which might be available for investment.

The Government should therefore explore the possibility of entering into fair and mutually satisfactory management contracts with some of these firms. Such contracts would have to have equitable provisions about such matters as the selection of staff and workers, the purchase of raw materials and so forth.

#### MEASURES TO ENCOURAGE INDUSTRIAL GROWTH

There is much which the Government could do directly to restore the confidence of private businessmen and to assist them

in expanding industry in Thailand. Progress can be made by adopting measures found to be successful in other countries, not all of them underdeveloped. Chief among these measures are: (i) the grant of special benefits, such as initial tariff protection, relief from taxation, and so forth; (ii) removal of restrictions on expansion; (iii) improved credit facilities; (iv) provision of physical facilities, (v) reorganization of the Ministry of Industries; and (vi) elimination of unfair practices.

### *Special Benefits*

The need to grant special benefits was recognized in the "Act on Promotion of Industries" more than four years ago. During this time 93 applicants have requested benefits, but no action of practical significance has resulted. The Act is confused in its wording, difficult to administer, and gives the impression that applicants will be penalized rather than helped. The Minister of Industries, advised by a committee of Ministers and high officials, is in charge of its execution. Neither the Minister nor his committee has the staff necessary to evaluate applications, and neither has the power to confer benefits, since all recommendations have to be made to the Council of Ministers. Consequently, there is excessive delay in dealing with applications, and the results—as might be expected—are negligible.\*

This Act could be made an effective instrument of policy. But its defects cannot be cured by amendments, and the Mission has therefore recommended that it be completely revised. A draft of a new Act has been prepared and submitted to the authorities. In making this revision, we have kept in mind the proposals for setting up a National Development Board with its Planning Secretariat. The principal changes from the original are as follows:

\*Many of these points were dealt with in the proclamation of the Revolutionary Party dated December 5, 1958 regarding the promotion of private industry.

- (a) the purpose is more clearly defined, and benefits are separated from the criteria on which they can be granted;
- (b) the new Act does not limit applications to certain specified industries, but covers all proposals above a minimum size;
- (c) the constitution of the Committee for Industrial Promotion has been altered so as to make it a smaller and more effective body, with executive power to confer benefits;
- (d) the machinery for dealing with applications has been improved, by making use of the Planning Secretariat and laying down better procedures;
- (e) the benefits have been revised;
- (f) "promoted" industries are given a guarantee against state competition;
- (g) all new proposals for government participation in industry are to be reviewed by the committee of Ministers.

We have retained most of the benefits which could be granted under the old Act, with two exceptions. Instead of relief from taxation on profits, we suggest an accelerated depreciation allowance, for tax purposes, on the fixed assets. And we question the advisability of relieving a new industry of duty on raw materials while continuing to charge the duty to established domestic competitors or users of the same raw materials in other lines of production. Rather than this, it would be preferable in a country attempting to develop industries if raw materials generally could be admitted free or at low duty levels. There must, of course, be exceptions to this for revenue or other policy reasons. In these cases the tariff schedule should at least ensure that domestic producers are not penalized because of raw material duties which are too high in relation to the duties on competing imports of finished products. There are many cases of this in the Thai tariff schedule and it is in need of thorough revision.

Beyond this, there is the whole question of tariff protection for new industries. On this subject it should be emphasized that such protection, as well as any other expedient adopted in the interest of industrial expansion, should be used only for the benefit of those enterprises that give real promise of being able to hold their own in competition with foreign products without duty within a few years.

In keeping with this approach, we have proposed that the benefits authorized by the old Act in the form of special import duties or quantitative restrictions on competitive products be qualified by an important modification, namely, that they can be extended for a maximum period of five years only. In the case of special tariff protection, provision is made in our proposals for a reduction to a normal rate within a further five-year period. In the case of quantitative restrictions, the manner of removal after five years is left to the discretion of the Industrial Promotion Committee. These benefits are acknowledged to be valid weapons for protecting young industries. Their application in practice is difficult, and rules to govern all cases cannot be laid down. Each case has to be studied individually, and complete data must be available. On these matters, the Industrial Promotion Committee will have the help of the Planning Secretariat and a reorganized statistical office, but we appreciate that a great deal has to be left to the Committee's discretion. We therefore wish to emphasize that the main objective of the Committee should be not to control new industries, but to make it possible for them to flourish by all reasonable means that do not conflict with the interests of the community as a whole.

#### *Removal of Restrictions*

The Government should also remove some of the restrictions which recent legislation has placed on industrial expansion. With the quite proper intention of raising social standards,

laws have been passed that are too advanced for the present stage of development. Because the machinery to enforce them does not exist, they have often failed to achieve their objectives, and instead have actually put a brake on progress. We have particularly in mind the Act on Factories of B.E. 2482 (1939). This was enacted "to control factories in order to develop the economy and to ensure public safety, welfare, and health." It does not seem to have been recognized, either then or since, that additional controls do not usually help to develop the economy. The Act has three principal provisions, viz.: (i) the compulsory registration and licensing of private factories (but not state factories); (ii) their inspection, by competent officials, so as to ensure compliance with the terms of the license and observance of safety regulation; and (iii) notification of accidents.

The Act is administered by the Ministry of Industries, which uses the registrations as the chief source of information on industrial activity throughout the country. The Act is open to criticism on the following grounds:

- (a) licenses can only be issued by the Ministry in Bangkok, and then only after the submission of detailed information by the applicant. Very long delays are frequent.
- (b) the Ministry does not have enough competent officials, either to perform the duties under (i) or to carry out the required inspections of the factories now specified (110 kinds in all).
- (c) the regulations on safety and health are too general, and too much is left to the discretion of the competent officials.
- (d) some of the provisions overlap with the Act on Labor, administered by the Labor Division of the Ministry of the Interior.\*

\* This situation has been mended by the amendment to the Labor Act contained in the proclamation of the Revolutionary Party dated October 31, 1958.

We consider that all measures affecting the welfare of the workers should be under the charge of the Ministry of the Interior, and should therefore be removed from the Act on Factories. They should also be as simple as possible, and for the time being limited in their application to sectors where they can be enforced by the small staffs available.

An alteration of this kind would entail the repeal of the Act on Factories. Its place should be taken by an act on the registration of factories, having two main purposes—to simplify the system of registration and licensing, and to provide the Ministry of Industries with up-to-date information. It need contain only the following provisions:

- (a) all registrations should be made initially in the offices of the changwad Governors, where the licenses should be issued automatically and without prior reference to the Ministry of Industries;
- (b) licenses should be renewed annually, on payment of a small fee, based on the number of workers employed in the previous year; and
- (c) as a condition for the granting or renewal of licenses, applicants should be required to supply information on such matters as output, employment, power consumption, etc., but not on technicalities of factory design or operation.

By requiring the annual renewal of licenses, which is not necessary under the present Act, the Ministry would be able to keep its industrial information up-to-date. The absence of accurate data, not only in this but in almost all other fields, has been one of the chief handicaps in assessing the performance and trend of different sectors of the economy. Taking away from the very small body of competent officials their duties of factory inspection and technical scrutiny of new projects will free these officials to assist factory owners in producing the much-needed data on which to base future policy.

*Improved Credit Facilities—  
The Proposed Industrial Finance Corporation*

The growth of small industries during recent years shows that there has been considerable demand for risk capital. Most of this growth has undoubtedly been self-financed, although a part has involved borrowing from private non-institutional sources at the very high rates of interest that are characteristic of the economy. The small entrepreneur, like the Government, is often inclined to start without adequate working capital. He then finds that he cannot carry on without recourse to the money-lender, who eventually reaps much of the profit.

A state-owned Industrial Bank was formed in 1953 for lending to small business enterprises, but its record has not been satisfactory. It is now intended to establish in its place an Industrial Finance Corporation under private ownership. Private investment in the total equity of the Corporation would supply about a quarter of the initial capital with the balance to be provided on a loan basis by ICA and, to a smaller extent, by the Government. The government funds would come from recoverable assets of the present Industrial Bank. The total initial capital would be 20 million baht. This is quite small in relation to total industrial financing requirements. It is nevertheless advisable that the Corporation begin operations on a modest scale while the staff acquires experience and a reputation is developed for sound and careful lending. In any case, the inadequacy of preparation of loan applications, as experienced by the Industrial Bank, will probably limit for a time the scope of sound operations. As the Corporation gains in reputation and experience, however, it should be able to increase steadily its rate of sound lending. This should be facilitated by the inclusion on the staff of foreign specialists (as is intended) to assist applicants in analyzing their businesses and in documenting their loan requests in an adequate

manner. In anticipation of a rising volume of lending, the Mission recommends that the Corporation's capital be increased at the rate of 10 million baht a year beginning in 1963. It is also recommended that officials of the Corporation visit and study similar institutions in Ceylon, India and Pakistan.

### *Physical Facilities*

We have already suggested that the Government could help new industries by providing physical facilities. These might take the form of factory sites, buildings and local services such as power and water supply, roads, housing, and so forth. This is common practice among the national and local authorities of many countries anxious to stimulate industrial development. Although for the present, we do not recommend any concrete action in this direction, a beginning should be made by studying ways of making available these facilities as soon as the natural growth of industry and an improved institutional and organizational environment justify providing them. Allowance is made in our financial recommendations for moderate outlays for this purpose starting in 1962. Facilities so made available can be sold, or leased, or rank as a loan, or even as a holding in the equity of the enterprise. Moreover, potential investors should be given comprehensive information and advice on raw materials, markets, labor supply, taxation, legal questions and on all other matters that have to be examined before a new enterprise can come into being. Excellent examples of industrial encouragement, worthy of study by the Thai Government, are to be found in the industrial estates in Singapore and the Federation of Malaya, the Economic Development Administration or Puerto Rico, and in the trading estates of England and Northern Ireland. In Thailand, it should be one of the chief functions of the Ministry of Industries to provide facilities of this sort.

*Reorganization of the Ministry of Industry*

Government industrial activities should be coordinated, and this should be the function of the Ministry of Industries (in consultation with the Planning Secretariat), acting through its Department of Industrial Works. This Department should devote itself exclusively to these duties and cease to concern itself with the encouragement of new projects. The latter should be the responsibility of the Department of Industrial Promotion, but only up to the point of collecting information and preparing data to be made available to private industry. That Department should also undertake the work of providing physical facilities, as recommended above. The Departments of Mines and Metallurgical Works should be merged (as they were prior to 1954), and should concentrate on the completion of the geological survey and the administration of the mining laws. The Department of Science should cease to have industrial functions, but should be responsible for advising all government departments on scientific matters.

In order to carry out these functions effectively, the Ministry needs to strengthen its staff. This would require additional posts of high civil service rating. The relative shortage of such posts in the past has made it difficult for the Ministry to retain competent personnel in competition with other Ministries which are more favored in this respect.

*Elimination of Unfair Practices*

Importers of well-known brands of goods are constantly complaining of unscrupulous competition from inferior products sold under trademarks almost identical with those of the genuine articles. At least one firm of international repute has attributed a heavy loss of sales to this practice, of which many examples can be cited. Some of the imitation goods are locally

manufactured; others, already carrying the forged trademarks, are imported from neighboring countries. There can be no objection, of course, to the local production of any article in competition with imports. This, after all, is one object of industrial development. But the local goods should be sold on their merits of price and quality, and not on the reputation of firms that have established themselves in the world market.

The law of Thailand prohibits this practice, but it needs to be much more vigorously applied. Past attempts to obtain legal redress have not been successful, for the courts require absolute proof of intent to defraud. Although the immediate effect may be to encourage local manufacturers, in the long-term nothing will be gained if their products earn the reputation of low quality. Moreover, foreign firms which might have been induced by a growing market to set up their own plants in Thailand will hesitate to do so if they have to meet unfair competition from forgeries. The Government should consider urgently how the law can be amended to make its application more effective.

## FUEL AND MINERAL DEVELOPMENT

### *Wood Fuels*

Wood and charcoal are still the chief fuels in Thailand. Average production during the ten years 1947-1956 was 1,347,000 and 649,000 cubic meters respectively. However, 1956 output was down to 1,030,000 and 570,000 a year. The decline is no doubt due to the rising imports of liquid fuels. But in order to protect the forests, a further reduction is required (cf. Chapter II, pages 82 and 83.)

Charcoal burning is carried out wherever there are forests, often as a part-time occupation of the rural workers. The kilns are small and primitive, and are always varieties of the bee-

hive type. There would appear to be scope for one or two modern plants using retorts, so as to recover the valuable by-products.

### *Lignite*

Deposits of lignite have been found in many parts of the country, but only two or three have been surveyed, and only one, at Mae Moh in Changwad Lampang, is being exploited. Except for Mae Moh, the deposits have the disadvantage of lying in sections of the country far from centers of consumption. In a few places, the quality is almost bituminous, which gives rise to the hope that coal of good quality may yet be discovered. But in general the lignite has the usual characteristics of high water and ash content with no coking properties, and calorific value on undried samples of about 3,500 cal/gm. The sulphur content is very high. Hence it is suitable for direct use in thermal power stations, but not for metallurgical or domestic purposes without expensive pre-treatment.

The deposit at Mae Moh is being actively developed with the aid of equipment obtained through U. S. assistance. Presently proven reserves are 30 million tons; exploration is continuing, and total reserves are expected to be of the order of 120 million tons. Mining, by open-cast methods, began in 1954; production and sales in 1957 were about 80,000 tons; they are expected to increase to 130,000 tons in 1958, and eventually to reach a maximum of 200,000 tons a year. Present output is almost entirely consumed by the Wat Lieb and Samsen power stations in Bangkok, where some of the mechanical stokers have been adapted for the purpose. The new thermal power plant to be built in Bangkok (see discussion under "Power" below), which will replace these two plants, will be able to utilize the full 200,000 tons a year. The cost at the mine is said to be 70-80 baht per ton, and with a special

freight rate of 83 baht per ton, the cost at the Bangkok power stations is 180-200 baht per ton. At this price it is just about competitive on a calorific basis with fuel oil at 650 baht per ton. Given the saving of foreign exchange which the use of lignite entails, it would probably be justified to continue its use even if the cost were slightly in excess of imported fuel oil. Indeed, it may be that the economic cost is already higher than the quoted price in Bangkok, since the State Railways find the lignite haul unprofitable at existing rates.

Primarily in order to make use of the low grade and dusty material produced at the mine and unsuitable for shipment, a project is going forward with U.S. aid for the erection of a 12,500 kw thermal power station at Mae Moh.

The exploitation of other lignite deposits can only be regarded as a long-term prospect inseparable from Thailand's power problem as a whole. The Department of Mines has carried out some work near Krabi in the South, but operations ceased owing to the familiar problem of transportation. By its very nature, lignite cannot compete with other fuels unless it can be used at or near the mines. At these points other conditions are not favorable for industrial development, so that the only practicable solution is to generate electrical energy on the spot and transmit it over long distances, for the benefit of agricultural and domestic, as well as industrial, consumers. Thus a thermal power station at Krabi might eventually become the focal point of an integrated power supply, incorporating small hydroelectric stations, to serve most of Southern Thailand. Much detailed study must be carried out before any concrete scheme could emerge, and justification appears probable only in the longer run.

### *Oil*

At the present time, Thailand has to import virtually the whole of its requirements of petroleum products. Consump-

tion has grown rapidly from about 300,000 tons in 1950 to a total of 903,000 tons in 1957, and is expected to reach about 1,500,000 tons in 1963. Fuel oil and diesel oil at present account for about 4% of import value, and gasoline for another 4%.

The only known occurrence of natural asphalt and oil is in the Mae Fang basin in the northern changwad of Chiangmai. Drilling in this area has revealed a small field of high-viscosity heavy-naphthene base oil at a depth of some 200 meters, associated with much water. The rate of exploration has been very slow owing to the limited equipment and personnel available, but it is now stated that 1.5 million barrels have been proven, with possible reserves of about 5 million barrels. On this basis, the Ministry of Defense has contracted with a U.S. company for the erection of a refinery with a capacity of 1,000 barrels a day at a cost of \$2.7 million, apart from local expenditures. The same company is to carry out further exploration at the Government's expense. The refinery is far too small to have any hope of being profitable, and geological opinion is by no means unanimous about the probable reserves. In this case, as in some others, arguments of strategic considerations are sometimes made. The Mission would like to emphasize, however, that the financial cost of strategic considerations must also be taken into account and that the economic arguments against this proposal are very strong.

Aerial surveys have revealed other "promising" areas, and drilling has begun at Ayuthia, north of Bangkok. One of the two rigs at Fang has been transferred for this purpose, and a second is being procured. Progress will necessarily be very slow.

Oil shale crops out at many places in the Mae Sod basin near the Burmese frontier. Reserves are said to exceed 2,000 million tons with a hydrocarbon content of up to 35% on the best samples. Here again, inaccessibility is likely to present problems not solvable in the near future, but the possibilities of development seem to be worth further study.

The consumption of oil products in Thailand is now approaching the level where it would be economic to refine imported crude oil. Several foreign concerns have made proposals for a refinery, the most important being by the three oil companies already established in the country. They have made a firm offer to erect jointly and at their own expense a 25,000 barrel-a-day refinery, to be operated commercially. The cost would be about 500 million baht and no foreign exchange would be requested. The offer, though still open, has not been accepted. Instead, the Government has signed a contract for the erection of a 5,000 barrel-a-day plant by a Japanese company—although this has not yet been implemented. Since this capacity is well below the minimum universally recognized to be economic, it is not clear where the profits are to come from unless exemption is to be granted for import duties on crude oil for the refinery, an action which would adversely affect public revenues. For this reason, if for no other, the Mission believes this project to be thoroughly unsound. It may, however, be merged with another scheme, also put forward by Japanese interests, for making use of Thailand's special yen account, and that might make possible the construction of a larger and more economic plant.

There are obstacles in the way of this proposal, but even if they could be overcome, the Mission considers that government funds should not be used for such projects which private capital is willing to undertake. It should not be difficult, given goodwill on all sides, for an arrangement to be worked out which would, on the one hand, bring in foreign capital and technical skill and, on the other hand, adequately safeguard the interests of Thailand.<sup>5</sup>

<sup>5</sup> Several competing proposals from foreign oil companies to finance, construct and operate an economic-size refinery were under consideration by the Government at mid-1959.

*Tin Mining*

Despite a recent decline, tin mining is still one of Thailand's most important industries. Tin exports rank in value only after rice and rubber. In 1956 and 1957 they exceeded 500 million baht. Production was at its peak in 1940, when 24,000 tons of 72% concentrate were exported, nearly all to smelters in the Federation of Malaya. After the interruption of the war years, production between 1950 and 1955 remained steady at about 14,000 tons, but thereafter increased to 18,600 tons in 1957. In 1958, output will be considerably less owing to the restriction of Thailand's quota to 10,000 tons under the International Tin Agreement.

Most of the mines are situated on the Kra Peninsula near the Burmese frontier, but deposits are known to exist all along the western mountain ranges. Before the war, recovery was principally by means of dredges working in the alluvial deposits of well-defined stream channels. But the number of dredges is decreasing; none has been replaced, and some have been sold by their previous foreign owners to Chinese or Thai operators, who with lower overhead and other costs are better able to work poor deposits at a profit. Gravel pumping in small placer deposits is accounting for a growing share of the output. There is little doubt, however, that the more accessible deposits are being exhausted, and if Thailand is to maintain her place in the world tin market (at present fifth), vigorous action will be necessary. An important step forward has been made by a joint British-Thai company which has built a special sea-going dredge now operating in the coastal waters off Phuket. If this is successful, as appears likely, a large new ore body will become available for exploitation.

Nevertheless, every effort should be made to uncover additional workable deposits. For many years the Government has reserved to itself all prospecting and mining rights north of the 10th parallel of latitude. Hence, mining activity over

the greater part of the country is directly controlled by the Department of Mines, and the foreign companies established in the South, where they have invested much capital, are unable to extend their operations. Like many other government departments, the Department of Mines does not have enough qualified staff to do properly everything it tries to do, viz., operate mines, carry out prospecting at the rate needed, administer the mining laws, and follow through with the geological survey, which is still far from complete. The last should be the Department's most important function. In any event, we recommend that the restriction on private mining north of the 10° line should be removed, and that private companies and prospectors should be encouraged to operate all over the country.

The incidence of taxation on the tin mines appears to be heavy. In the long-term interest of the industry, some relief might be advisable during the present period of difficulty caused by the reduction of the quota. New mines might also be assisted in the construction of access roads, which would also serve the secondary purpose of opening up fresh country for agriculture.

#### *Other Minerals*

The other known metallic minerals have little significance at present. Small quantities of tungsten, manganese, lead, zinc and antimony have been mined. Gold, copper, zircon, titanium and uranium have been found, but are not commercially exploited. Iron-ore deposits are known, and up to 6,000 tons per year have been used by a local company in a small charcoal-fired blast furnace. These deposits are being surveyed by a team of German engineers with the object of advising the Government on the feasibility of erecting an iron and steel plant using lignite. The financial aspects of such a plant have not yet been assessed, but it appears very doubtful that this

could be an economical proposition by commercial standards.

Among non-metallic minerals, large quantities of salt (340,000 tons in 1946) are produced by solar evaporation of sea water, and the greater part is normally exported. Extensive deposits of rock salt have also been discovered on the Korat Plateau, and may be of commercial value at some future date. Production of gypsum and marble has recently begun. Clays and marls suitable for the production of cement, bricks, and pottery are found in abundance in many parts of the country.

While it does not appear so far that Thailand is particularly rich in mineral resources, much of the country still remains to be explored and surveyed. It should be one of the Government's first duties to push forward vigorously with this work.

## ELECTRIC POWER

The chief power resource of Thailand lies in the large hydroelectric potential of its extensive river system, but up to the present, there has been no significant amount of generation of power from this source. However, in 1957 construction of a major hydroelectric project was initiated at Yanhee—some 260 miles north of Bangkok on the Ping River. In addition, a decision has been taken to modernize and expand the Bangkok distribution system, and to construct a large modern thermal power station in Bangkok. Even before these projects are finished, power generation will be augmented by the installation of small diesel units and the thermal plant at Mae Moh. In total, expenditures on electric power development are expected to amount to 2.8 billion baht in the period 1959-1963, or more than 20% of the total recommended public investment program.

This emphasis on power development finds ample justification in the present and prospective needs of the economy for electricity.

*Existing Capacity and the Power Shortage*

Throughout the post-war period, the expansion of generation and distribution facilities has lagged far behind the growth in demand for power. Total generating capacity has been increased from about 40,000 kilowatts in the immediate pre-war years to about 200,000 kilowatts at present.<sup>6</sup> About half of this is in Bangkok. But both in Bangkok and in the provinces, only half of existing capacity is in the public utility systems. The rest is in private establishments which have found it necessary to install generating facilities to meet their own needs in the absence of sufficient supplies from the public systems. Practically all the private capacity consists of small, high-cost diesel units. The facilities of the public system also have comparatively high operating costs.

As the result of the sharp growth in power demand during and after the war, a severe power shortage existed in Bangkok as early as 1950, and since then it has been getting worse. Between 1950 and 1956, the peak load grew by 16% a year on the average, but it has been impossible to meet demand despite restrictions on use. There is little doubt that this shortage has been a significant deterrent to the development of commercial and industrial activity in the Bangkok area during recent years.

*Expansion Plans*

During 1958, ten 1,000 kw diesel units were installed in Bangkok, and in 1959, ten more will be added. Half of these

The result still leaves Thailand one of the lowest power consumers in the world. It is estimated that total generation in Bangkok amounted to around 250 million kilowatt hours during 1956, as compared to 917 million kwh in Manila, a city of comparable size. On a per capita basis, total consumption in 1956 is estimated at between 18 and 20 kwh in Thailand, as against 49 in the Philippines, 23 in India and 15 in Indonesia.

are being financed by ICA aid. The 12,500 kw Mae Moh plant is expected to be in operation by 1960 at a total estimated cost of 100 million baht, of which 70 million will be financed by ICA.

The new thermal power plant planned for Bangkok will have a capacity of 75,000 kw, and is expected to come into operation by 1961. The cost of this project is estimated at 320 million baht, and negotiations are underway to secure financing for 270 million of this amount through a loan from the U.S. Export-Import Bank.

By far the most important component of present expansion plans is the Yanhee project. This will have an ultimate capacity of 560,000 kw. The first stage of the project is scheduled for completion by early 1963; it will include the dam and the reservoir, two 70,000 kw generators and transmission lines to Bangkok. The cost of the first stage will be about 2.0 billion baht, of which 1.3 billion will be financed by a World Bank loan signed in the fall of 1957. When all eight generators have been installed and the full transmission grid (which will cover 33 of Thailand's 71 provinces) has been completed, the total cost will come to around 4.2 billion. It is expected, however, that this expansion to full capacity will not be achieved before 1975.

The modernization and expansion of Bangkok's distribution system is essential if Yanhee power is to be used there. The present system is hardly adequate to handle the existing load. It is estimated that improvement and expansion will cost about 480 million baht. Negotiations are now in process with the U.S. Development Loan Fund for a loan to finance 400 million baht of this amount.

The construction of distribution facilities in the provinces between Yanhee site and Bangkok will also be necessary to provide power to consumers in those areas. Preliminary engineering surveys of the localities in these provinces are now being conducted by a consulting firm under an ICA-financed contract. Detailed cost estimates are not yet available on this

phase of the power investment program, but on the basis of preliminary estimates, 90 million baht has been included for this item in the projections. Consideration should also be given at an early stage to the establishment of the necessary organizational arrangements for administering the retail sales of power to the provincial consumers.

Prospective demand for power in regions other than the North and Central Plain—to be served by the schemes just described—would not appear to justify a large and integrated supply. Both in the Northeast and in the South, localized markets are small and the cost of transmitting power over long distances in sparsely populated country presents serious problems. After a number of years, development on the Mekong River may provide the answer for the Northeast, while in the south there are possibilities for small hydroelectric stations that could be combined with a thermal station on the lignite deposit at Krabi. In the near future, however, a temporary solution will be afforded by the transfers of diesel generators from the Northern and Central provinces to other districts after power from Yanhee becomes available in those provinces.

#### *Prospective Benefits*

The installation of an addition 85,000 kw of power in the Bangkok area between 1959 and 1961 will meet the expected growth in power demand in that period and also help to reduce the existing backlog of unsatisfied demand. Even after the Yanhee power becomes available, the thermal plant will continue in operation and will provide a desirable technical balance in the system.

When Yanhee power does become available in 1963, only a part of the 140,000 kw that will then be installed will represent a net addition to actual generation. For at that stage, it will be desirable to close down the great part of the existing antiquated generating units in Bangkok. In addition to the

increase in generating capacity that will be realized, however, an important immediate benefit to the economy will be the substantial reduction in the cost of generation. But the Mission does not believe it would be desirable for the reduction in cost to be fully reflected in a reduction in price to the consumer. For present prices are probably not adequate even to cover depreciation on existing plant, whereas it is considered important that the price of Yanhee power be sufficient to provide not only for depreciation but also for the accumulation of reserves to help finance future electric power development. Even with such a policy, however, it is expected that the price of electric power in Bangkok can be reduced somewhat below existing rates after Yanhee power is on the line. In the 11 provinces that will be served by Yanhee from the first stage, the price reductions will be much larger, since present prices of electricity in the provincial areas are a great deal higher than they are in Bangkok.

Reduction in cost and price will also be the chief immediate benefit from the Mae Moh plant for the provincial area it will serve. There, the use of lignite fines which would otherwise be wasted will permit a very economical operation.

Important agricultural benefits from the Yanhee project will begin to accrue as soon as the dam is completed. The reservoir will have a storage capacity of 14.4 billion cubic yards—about half that of the entire TVA system. As already mentioned in Chapter II, the control of the water flow by the reservoir will permit irrigation of a great part of the Central Plain for most of the year, and make it possible to grow two crops instead of one. The flood control and navigation benefits will also be substantial. From an economic standpoint, these benefits would justify the assignment of at least half the cost of the first stage of the Yanhee project to irrigation.

The power potential of the Yanhee project will be sufficient to meet the electricity needs of its service area for the next 15 years or so. Moreover, as further generating units are added, the average cost of generation will be steadily reduced;

TABLE 6 Recommended Public Development Expenditures for Industry and Related Fields and Means of Financing — 1959-1963

(Million baht)

	1959	1960	1961	1962	1963
<i>Total Expenditures:</i>					
Recurring expenditures . . . . .	10	10	10	15	15
Capital expenditures . . . . .	660	690	750	640	310
Total . . . . .	670	700	760	655	325
<i>Financed by:</i>					
Government budget . . . . .	260	255	240	210	145
U.S. ICA project financing . . . . .	50	35	—	—	—
Eximbank and DLF loans . . . . .	275	185	110	65	10
IBRD loans . . . . .	85	225	410	380	170
<i>Recommended Capital Expenditures by Main Project:</i>					
<i>Industry (proper):</i>					
Working capital <sup>1</sup> . . . . .	100	30	30	30	30
Industrial bank . . . . .	—	—	10	10	10
Industrial sites . . . . .	—	—	—	10	20
Industry total . . . . .	100	30	40	50	60
<i>Financed by:</i>					
Government budget . . . . .	100	30	40	50	60
<i>Power:</i>					
Bangkok "diesel" and Mae Moh . . . . .	60	55	—	—	—
Yanhee project . . . . .	185	375	560	500	235
Bangkok "interim" power plant . . . . .	200	100	20	—	—
Distribution systems . . . . .	115	130	160	120	45
Power total . . . . .	560	660	740	620	280
<i>Financed by:</i>					
Government budget . . . . .	150	215	220	175	100
U.S. ICA project financing . . . . .	50	35	—	—	—
Eximbank and DLF loans . . . . .	275	185	110	65	10
IBRD loan . . . . .	85	225	410	380	170

<sup>1</sup> Includes 60 million baht recommended for NEDCOL and about 40 million committed for Mae Fang project. For NEDCOL, an additional 160 million baht are provided under "Debt Service" in 1959 and further amounts for service of NEDCOL indebtedness in subsequent years (see Chapter IX, Table 26). The 60 million baht for NEDCOL will not now be adequate since expected provisions of construction and working capital in the 1958 budget did not materialize.

and eventually, significant reductions in price to the consumer should be possible. Even at the prices presently planned for the first several years of operation, however, the advantages of having ample and dependable supplies of electric power in the area served by the Yanhee project will undoubtedly constitute a significant stimulus to economic development.

#### RECOMMENDED DEVELOPMENT EXPENDITURES

Table 6 on the facing page summarizes the recommended development outlays in the sectors of industry and power.

## CHAPTER IV *TRANSPORT AND COMMUNICATIONS*

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### GROWTH OF THE EXISTING SYSTEM

The development of the railways as a factor in the economic growth of Thailand during the period 1900-40 was probably second in importance only to the growth of external demand for rice, which had begun some years earlier. The decision to construct a railroad system was political rather than economic, deriving from the need for closer contact with the provinces. But once the railways were built they greatly stimulated the production of rice and other agricultural commodities for shipment to Bangkok, for use there or for export. The development of highways followed the opening of the railways, for many years taking the form of feeder roads to the rail centers. Postal and telegraphic communications also followed the railways.

By the beginning of World War II, Thailand's rail system covered 3,200 route kilometers and had rolling stock adequate to meet the country's needs. Main highways, excluding the feeder roads, totaled only about 2,200 kilometers; motor transport only began to grow significantly in the years immediately before the war. As late as 1941, there were only 2,000 motor vehicles in Bangkok, and probably no more than that in the provinces. Telecommunications were also very limited.

During World War II, Thailand's railways were damaged by Allied bombing, while construction on the highways and on the Port Bangkok (begun only in 1939) was delayed. After the war, as most forms of economic activity quickly regained

or exceeded the pre-war level, the strain on the existing transport facilities became serious. Total rail traffic soon was more than pre-war, while available rolling stock and track in good repair were much less. In spite of the generally poor condition and limited length of existing roads there was a sharp increase in the import and use of motor vehicles. At the same time congestion and high costs at the Port of Bangkok became increasing obstacles to trade.

In an effort to deal with these problems, the Government has devoted large sums to improving transport throughout the post-war period. Substantial foreign resources, from World Bank loans and from U. S. aid, have also been directed to the same end, particularly since 1955. In the period 1952-56, an average of nearly 700 million baht annually, or over 40% of total public investment, was spent on transport and communications. In 1957 and 1958 investment in this sector rose to about 1 billion baht annually, or just about half of the total, because of the relatively sharp increase in foreign financing of outlays in this period.

TABLE 7 Investment in Transport and Communications as a Percentage of Total Public Investment

	1952-56 (%)
Railways . . . . .	14
Highways . . . . .	20
Port facilities . . . . .	3
Air transport . . . . .	4
Telecommunications . . . . .	1
Sub-total . . . . .	<u>42</u>
All other . . . . .	58
Grand total . . . . .	<u>100%</u>

In physical terms, these expenditures have produced the following main results:

- (1) a considerable rehabilitation of the railroad system, including large-scale rail replacement, better mainte-

- nance, new rolling stock and a beginning of dieselization; also, an extension of the existing network by some 200 kilometers;
- (2) an extension of the highway system from about 3,000 kilometers in 1947 to 7,450 in 1957, plus extensive repair and improvement of bridges;
  - (3) the completion of a more accessible harbor at Bangkok, improved maintenance equipment and expanded wharf facilities;
  - (4) the extension of airport facilities, the purchase of three Super-Constellations and a number of smaller aircraft;
  - (5) a modest extension of the country's still very limited telephone and telegraph system.

Although not shown separately in Table 7, another significant aspect of post-war transport development has been the improvement of inland water transport facilities and rural access roads as the result of the extension of the irrigation canals, particularly in the Central Plain.

In spite of the progress to date, however, there still remain major inadequacies in Thailand's transport and communications network. The railroad rehabilitation program needs to be pressed in order to reduce existing inefficiency and to cope with the growth of traffic; rebuilding and extension of the road system is also urgent to remove existing bottlenecks and open up new areas for development; port and air transport facilities need further improvement; and the telecommunications system should be expanded substantially.

#### THE NEED FOR BETTER PLANNING

Ambitious plans exist for further expansion in virtually all sectors of transport and communications. As these plans in most cases call for more money than can possibly be raised,

however, the need for determining priorities both within and between the various sectors is urgent. Although this problem is encountered everywhere in the economy, it is perhaps more important in transport than in almost any other sector, both because the expenditures are large and because the problems are often particularly complex.

In the following paragraphs the Mission recommends certain priorities in expenditures and administrative reforms; but we wish to urge strongly that responsibility for developing a national transport policy and for reviewing the priorities set out below be vested in a central body in the Thai administration. The logical place would be the Ministry of Communications, which should work in close cooperation with the proposed Planning Secretariat (see Chapter VIII). To ensure the Secretariat's competence in this field, it should retain a well-qualified transport economist. In the meantime, a team now in Thailand under an ICA contract is conducting a nine-month survey of the transport sector, and its work should provide additional guide lines for policy.

## RAILWAYS

### *Investment Program*

Under its investment program for 1955-59, the State Railway organization has been giving top priority to rehabilitation and improvement of the existing network rather than to extensions. The new lines built since the war were designed for the most part to contribute to national defense as well as to serve longer-term economic needs. To date most of these recent extensions have proven unprofitable and are likely to remain so for some time. With one exception, the urgent needs foreseen for the extension of transport facilities can probably be met by new or improved highways better than by new railway lines.

The one important extension of the existing railway system that is recommended is the so-called Korat cut-off line, from Genkoi to Bua Yai, a distance of some 260 kilometers. Work on this line was actually started some years ago, but has proceeded only intermittently since. About one-third of this project is now completed. The Korat plateau, which this line would serve, has a considerable potential for economic growth and the completion of this line should provide a significant stimulus to increased agricultural output and trade. At the same time, the completion of the cut-off would be useful to main line traffic between Bangkok and Nongkai. The present line through Korat has very steep grades and sharp curves which have in the past caused delays in traffic and required extra locomotives. The introduction of more powerful diesel locomotives and automatic couplers will reduce this problem, but even with these improvements, the Korat cut-off would still provide a useful alternative route for a substantial portion of the traffic on this important run.

Because previous commitments for other railway construction programs will place heavy demands on available technical capacity in 1959, we recommend that further work on this project be postponed until 1960. It could then be completed by 1963 or 1964. The cost of this part of the project is estimated at around 300 million baht. At least in the initial stages of operation, rolling stock now available or planned for other parts of the system could be diverted to this line without creating undue difficulties elsewhere. Once traffic begins to develop, the needs for additional rolling stock can be appraised as part of the general assessment of future railway requirements.

Total railroad traffic is likely to grow steadily for the foreseeable future. Freight traffic growth has been expanding in recent years at an average rate of about 5% annually, although in the earlier post-war period its growth was considerably faster as the result of the recovery from the abnormally low level to which activity had fallen as the result of war damage.

A number of highways are now being built parallel to main line tracks and competition from motor transport is already beginning to affect railway traffic to some extent. This was noticeable in 1958, when total railway revenues leveled off. However, the main reason for the slower growth rate in total revenues during 1958 was the poor harvest that year, and as production and trade in agricultural commodities resume their expected upward trend<sup>1</sup>, railway freight traffic of these commodities is expected to grow at nearly the same rate. The expected increase in provincial demand for finished goods and for raw materials to be used locally in light manufacturing should also contribute significantly to a continued increase in railway traffic. On balance, total railway freight traffic is likely to grow at an average annual rate of 4% or 5% in the coming five to ten years. The volume of passenger travel took a dip in 1955 when fares were increased and has been growing rather slowly since. For the future, it is projected to grow by only about 2% a year on the average. But these projections assume that a balanced transport policy will be developed and that the recommended improvement program for the railways will be carried out.

In addition to the need for expanded facilities to meet this expected growth, there remains the task of completing a number of basic capital improvements in the existing system which are highly desirable because they will increase efficiency substantially.

The main recommendations on investment priorities for 1960-64 that flow from the Mission's discussions of these needs with the State Railways of Thailand (SRT) are summarized in Table 8 below, along with indications of the pattern of investment being realized in 1955-59.

The 1960-64 "top priority" program shown above corresponds quite closely in total with the preliminary view of the SRT on further development. For better internal balance,

<sup>1</sup> Already evident in early 1959.

TABLE 8 Investment in Railways 1955-64

	(Million baht)	
	Five-year totals	
	1955-59	1960-64
<i>New line development</i> . . . . .	200	300 <sup>a</sup>
<i>"Top priority" improvement program on existing lines</i> . .	1,127	1,170
Shift from steam to diesel locomotives (involving purchase of 30 diesels in 1955-59 and 50 diesels in 1960-64) . .	86	225
Replacement of rails & switches (on 1,500 km. of track in 1955-59 and 700 km. in 1960-64) . . . . .	460	234
New freight cars (850 in 1955-59 and 1,500 in 1960-64) . .	78	150
Station yard remodeling and extension of sidings . . . . .	72	100
Repair and replacement of bridges . . . . .	40	116
Diesel rail cars (16 in 1955-59, 30 in 1960-64) . . . . .	35	63
Telecommunications . . . . .	58	8
Automatic couplers . . . . .	75	—
Other "top priority" investment items . . . . .	223	274 <sup>a</sup>
<i>Other investment</i> . . . . .	200	100
Total investment in railways . . . . .	1,527	1,570

<sup>a</sup> Korat cut-off.

<sup>a</sup> Includes 110 million baht for contingencies

however, some shifts are recommended. Thus, the amount recommended above for freight cars is 42 million baht (representing 500 wagons) less than estimates of the SRT, while the amount for diesel locomotives is 22 million higher; the amount for bridges is 30 million below the SRT program, but the amount for station yard remodeling is 17 million higher.

In their year to year phasing, the preliminary estimates by the SRT of 1960-64 requirements are uneven and need to be smoothed out. This would be desirable for both technical and financial reasons and can be achieved in large part by spreading the planned delivery dates of rails and diesel locomotives more evenly over the whole period. The Mission's recommendations on phasing are reflected in Table 9 below.

A particularly important aspect of the 1960-64 program is the remodeling of the marshaling yards. The principal yards

are too small and are poorly laid out. Foreign engineering advice will be needed in redesigning them. Since work on this aspect of the program cannot get properly under way until the designs have been made, we recommend that the SRT employ qualified foreign consultants as soon as possible, and have them work on this project in Bangkok with the engineers of the SRT.

### *Financing and Rate Reform*

The railroad investment program of the 1955-58 period has been financed from several sources: the current surplus of the SRT, grants from the government budget, a World Bank loan and ICA aid. In the 1959-64 period the Mission believes that a larger amount can and should be provided out of current earnings. In view of the relatively large size of the investment required, the increase in rates needed to finance the entire amount on a current basis would be excessive. Therefore, accumulated reserves will have to be used and the Government will have to continue to contribute to the investment program. But some increase in rates definitely appears justified.

In the past year, the SRT management has prepared a proposal for modest increases in freight rates. But the Board has not acted, and has instead referred the proposal to the Ministry of Communications, which has also been reluctant to pursue the matter because of the possibility of an unfavorable reaction. The Mission recommends that this proposed rate increase be put into effect as soon as possible, in view of its importance to the achievement of an adequate level of investment in the railways.

Beyond the question of this immediate rate increase, a number of changes should be made in the present structure of freight rates to remove anomalies that now exist. To work out the details of a more rational system of rates is quite a complicated task, however. We therefore recommend that the SRT

initiate a study of this problem in the near future with the aim of developing a comprehensive plan for rate reform within one year. It would probably be worthwhile for the SRT to hire a foreign rate expert to advise on this study.

Since its creation as an autonomous government corporation in 1951, the SRT has accumulated substantial reserves. These are held in various forms: deposits in the Bank of Thailand and other banks, government securities, deposits in the government treasury, and obligations of the Government in the form of unused capital contributions and of unpaid bills for railway charges. In total, these reserves amounted to about 300 million baht at the end of 1957. In order to achieve a tidier financial relationship vis-a-vis the central government, it would be desirable if future needs of the SRT beyond its current surplus were met first from government payment of these unpaid bills to the SRT, including unused capital contributions from prior years. Any additional capital funds required should take the form of long-term loans—either from the Government or from other sources, in order to give the SRT a fuller measure of financial autonomy and responsibility. Whatever form the Government's financial support of the SRT takes, however, it should be firmly committed for several years ahead, so that the agreed railway investment program can be carried out in an orderly fashion. Such a commitment might well contain an upper limit on capital expenditure during any one year. This would prevent delays in the program from leading to large subsequent concentrations of outlays that might generate serious inflationary pressures.

The following table summarizes how the financing of the railway investment program might be divided over the next five years between the SRT current surplus and other sources. Data on 1955-58 are shown for purposes of comparison.

Another significant element in total transport charges to the consumer is the cost of delivery from or to the rail terminals. At present, the Express Transport Organization (ETO), a semi-autonomous government corporation, has a monopoly

TABLE 9 Recommended Railway Investment Program and Its Financing

*(Million baht)*

	1955-58 (4 yr. average)	1959	1960	1961	1962	1963
New lines . . . . .	50	—	40	60	80	100
Other investment . . . . .	200	310	270	260	260	260
Total . . . . .	250	310	310	320	340	360
Financed by:						
Current surplus <sup>1</sup> . . . . .	121	180	180	180	190	190
Net use of accumulated reserves and new grants or borrowings	38	125	130	140	150	170
IBRD loan . . . . .	61	5	—	—	—	—
ICA aid . . . . .	30	—	—	—	—	—

<sup>1</sup> Including depreciation allowances; assumes freight rate increase from 1959 onwards.

on these services, and its charges are very high. As part of the development of a general transport policy, the Government should consider reducing these rates, and at the same time decide whether this monopoly situation is in the best economic interests of the country.

## HIGHWAYS

The development of Thailand's highways was late in getting started, partly because initial interest in improved transport was understandably concentrated upon railways, partly because the nation awoke slowly to the need for motor highways for commercial and strategic purposes. Before 1936, highways were negligible in quantity and poor in quality; during 1936-40 a five-year construction program gave the country 2,215 kilometers of roads of fair quality.

Since the war, the Thai Government has undertaken highway construction on a greatly expanded scale. In recent years government outlays have been supplemented by major contributions from the United States, largely in the form of projects carried out by foreign contractors. Since 1957, total expenditures on road construction, maintenance and administration, including the U.S.-financed projects, have been running at about 600 million baht a year as compared to an average of about 400 million in the period 1953-56<sup>2</sup>. By 1957, 7,450 kilometers of national roads were open, in addition to municipal roads and subsidiary roads under provincial jurisdiction. Because of Thailand's late start in the highway field, however, much remains to be done before the country can be considered to have a satisfactory road system. Not only is additional construction needed but existing roads must be far better maintained. Standards of construction must be raised and the planning and operation of the highway administration improved.

#### *Administrative Shortcomings*

In the Mission's view the deficiencies of the highway administration stem as much from influences outside the highway organization as from its own technical limitations. It is constantly subjected to strong political pressures to construct more roads than available technical capacities permit. Consequently many roads are built to inadequate specifications, work control

<sup>2</sup>In the period 1954-56, actual expenditures of the Highway Department, excluding certain transfers back to the Treasury, were about 300 million baht annually. These included the Department's cost of living allowance outlays as well as transfers to the municipalities for road construction. (The latter amounted to 18.5 million baht in 1956). Indications are that the Department's expenditures were maintained at about this level in 1957, while the 1958 rate may have been some 30-40 million baht less. ICA outlays on highways increased from 80 million baht in 1955 to 172 million baht in 1956 and about 300 million baht in 1957.

and supervision are too diffused to be effective, and roads are often opened to traffic before they are ready. Perhaps the most serious outcome of this situation is the waste of resources that results from the heavy toll which the rains take each year on roads which were built initially to unsatisfactory specifications and subsequently neglected. The shortcomings in planning, standards and maintenance are compounded by haphazard budgeting. Some effort has been made to place the highway budget on a more definite year-to-year basis but the availability of appropriations remains uncertain and there is little evidence that specific construction projects are carefully programed to accord with the funds allotted.

In addition to the broad problem of highway policy and administration, a number of technical improvements would contribute to better operations.

Besides its headquarters in Bangkok, the Highway Department has 12 divisions in the provinces, each with a main depot and workshop. If given sufficient subordinate staff, each of these divisions is large enough to supervise maintenance and minor new works adequately. For large works, it would be well to establish a small number of central pools of highly specialized modern road-building equipment. These could be moved about the country as each large job is completed. This arrangement would permit an effective concentration of effort and avoid overburdening the regular divisional staffs. It has been used successfully in Malaya, which has similar physical conditions and maintains excellent highway standards. The equipment could be made available not only to the Highway Department itself, but also, on a rental basis, to private contractors doing work for the Highway Department.

At present, each divisional depot has far too many types of equipment, of which little is used intensively. If more highly specialized equipment were placed in mobile pools, divisional depots could economize by eliminating this excessive variety. But effective use of mobile pools will require much improvement in standards of machinery maintenance.

Other technical needs include careful soil surveys and analysis. These are especially needed where—as is frequent—good road stone cannot be obtained, so that laterite or other poor materials must be used. The need for more careful study and analysis of soils is increased when much of the construction is by hand methods. More research is also needed on methods of compacting and stabilizing local materials, and on the most suitable methods for constructing low-cost but durable feeder roads. Studies of traffic densities and trends are also needed in order to provide a basis for choosing suitable specifications for particular routes.

Considerable progress has been made on technical improvements, particularly with the technical assistance provided to the Highway Department since 1951 under the U.S. aid program. Progress in introducing advanced engineering practices and improving operational efficiency in construction and maintenance work should be accelerated by a recent U.S.-financed contract with a foreign firm of highway specialists to provide training and guidance for the highway staff. Aid of this kind should add to the highway cadre of trained personnel, including not only engineers but also skilled foremen, maintenance men and other technicians. It is among these groups that needs are greatest.

### *Road Requirements*

Like most countries, Thailand could spend huge sums on roads, but if she did, little would be left for other more urgent needs. Besides, the Highway Department does not have the trained men to carry out efficiently more than a limited number of projects. This is the factor that puts an effective limit on expenditures, and it can only be overcome gradually. Therefore the Mission concludes that, for the present, government appropriations for road construction, maintenance and administration should not exceed recent levels of about 300

million baht. As the Highway Department improves its technical capacity, however, appropriations for additional work should be increased correspondingly. It is assumed that such improvements will be sufficient to justify a rise in expenditures for roads to around 500 million baht by 1963.

We also assume that U.S. aid will continue to supplement government outlays on highways, although it is prudent to allow for the possibility that this aid may be reduced. Starting with existing commitments and allowing for a decline in new ones, we assume that U.S. highway assistance will amount to 325 million baht a year for the 1959-60 period and that it will decline thereafter to 150 million by 1963. Adding these sums to the recommended Thai government expenditures, the total to be spent on roads would come to around 620-660 million baht a year.

These funds should not all be spent on main highways. Adequate provision must be made for maintenance and for the construction of subsidiary roads.

### *Maintenance*

Failure to maintain roads and highways has probably been the most serious shortcoming of the past. Recurring outlays on maintenance and routine betterment, together with general administration, have apparently been running at about 150 million baht a year. This amount is almost certainly inadequate and we recommend increasing it to 200 million baht a year by 1961. Even more important is the need to improve existing maintenance techniques. At present, a considerable part of maintenance outlays are wasted as the result of faulty repair methods. There are, however, grounds for expecting that progress will be made in this area during the next few years, mainly as the result of the technical advice and training being provided by foreign highway experts under contract with ICA. In 1957, this phase of ICA activities was con-

siderably intensified, but it may take a number of years of such training to build up a force adequate to employ modern maintenance methods on an extensive scale.

### *Feeder Roads*

The construction of feeder roads also has a high claim to priority. These roads are essential to the program of agricultural development recommended in Chapter II. Similar roads are needed to stimulate the development of mineral and forestry resources.

Expenditures by the central government on such roads should, we suggest, amount to 60 million baht in 1959 and should increase to about 120 million in 1963. Presumably these amounts would be supplemented by provincial funds from local taxes. And these could be increased if, as we have proposed, the rural land tax is doubled. The major share of local road construction, especially that financed from provincial funds, should be undertaken by the provincial and local authorities. The Highway Department could furnish technical advice and assistance.

Feeder roads are needed in many parts of the country. The top priority claims appear to exist in (1) the Central Plain, where additional roads are required to develop the full potential of the Chao Phya irrigation system, (2) the Northeast, where they are needed to facilitate the recommended changes in cropping patterns, and (3) the South, where feeder roads will be required to encourage the development of rubber and other tree crops. The land-use surveys recommended in Chapter II are probably essential to the determination of the best location for specific roads in much of the Northeast and South. But the delay involved need not be long, provided the land-use surveys are carried out promptly. Later on, as the development of the Kam Paeng Petch and Meklong areas get under way, feeder roads will also be needed there, as well as in

regions where prospecting shows that exploitation of tin and other mineral deposits can be profitable.

### *Main Highways*

The planning and construction of an integrated and independent system of main highways is a quite recent development in Thailand. Hitherto they had been treated as a supplement to the railways, and the country lacks a satisfactory basic network of main highways linking the principal sections of the Kingdom. In fact, it was not until 1954 that there was a comprehensive assessment of the minimum requirements for such a network, carried out jointly by the Highway Department and the U.S. aid mission.

This assessment indicated that development of a satisfactory arterial highway system would require major rehabilitation and extensive new construction work on eight basic routes. These were:<sup>3</sup>

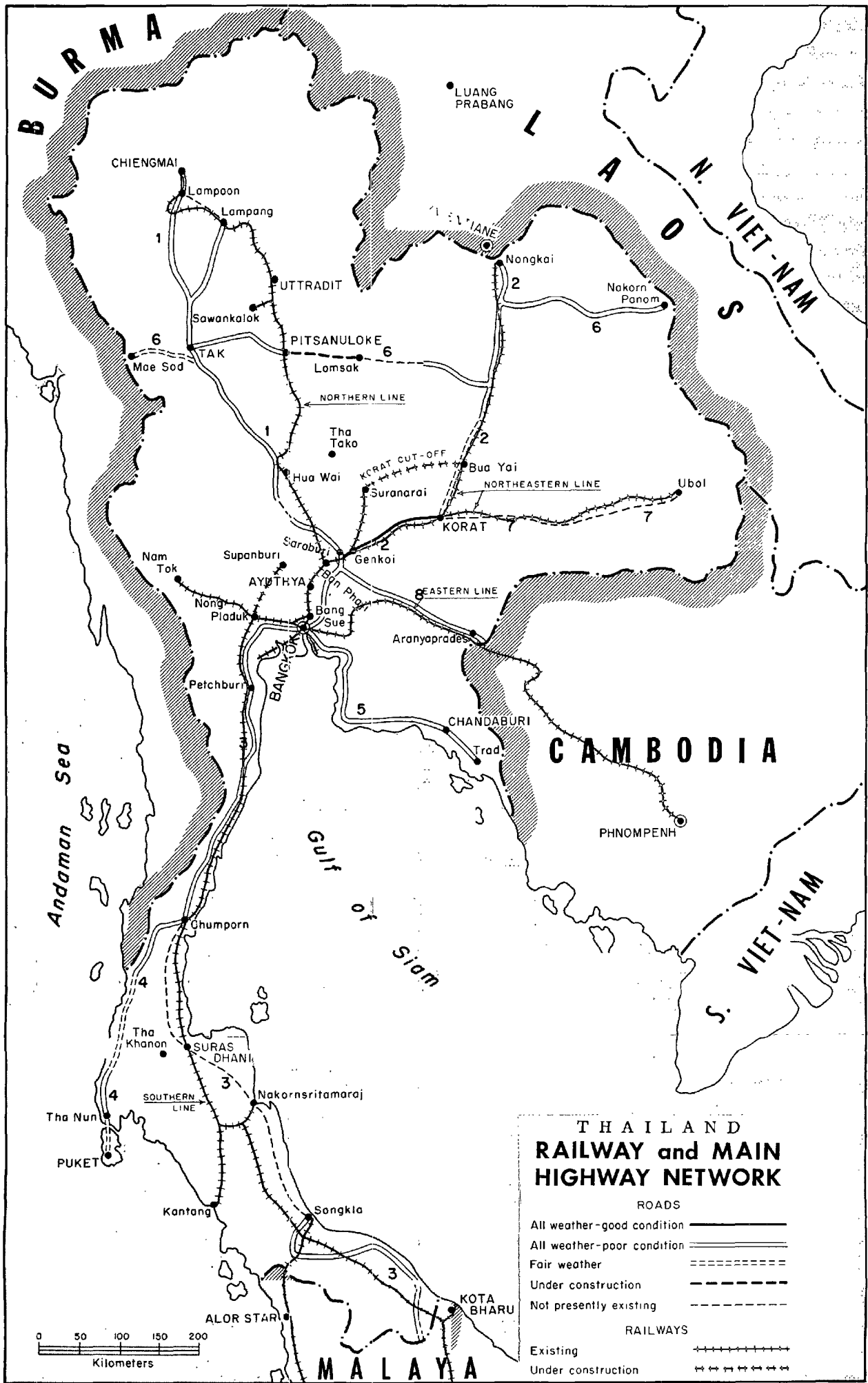
- (1) the main route from Bangkok north to Chiengmai;
- (2) the main route from Bangkok to the Northeast, branching off from the Bangkok-Chiengmai route at Saraburi and running through Korat to Nongkai on the Mekong River;
- (3) a main southern route from Bangkok down the eastern coast of the Kra Peninsula to the Malayan border;
- (4) a branch to Puket on the western edge of the peninsula, connecting with the main southern route at Chumporn;
- (5) another southern route from Bangkok down the eastern side of the Gulf of Siam as far as Trad;
- (6) an east-west route across North Central Thailand from Mae Sod on the Burma border to Nakorn Panom on the Mekong River in the Northeast;

<sup>3</sup> The eight basic routes are indicated by number in the map on the following page.

- (7) an eastern branch of the northeast route running from Korat to Ubol;
- (8) a route from Bangkok to the Southeast to reach the Cambodian border at Aranyaprades.

On most of this system, roads of one kind or another already exist. Work required on the eight routes varies from new construction of non-existent segments to rehabilitation of existing roads. Some form of construction work will be necessary for more than 4,000 kilometers. Total costs were initially estimated at around 4 billion baht. But it now looks as though the figure would be closer to 6 or 7 billion baht, depending on specifications.

Since the 1954 survey, a good start has been made on main highway construction, in which both the Highway Department and foreign contractors, financed by U. S. aid, have participated. Yet by far the greater part of the work remains to be done. Work on two of the eight main routes is being financed by U.S. aid. These are the route from Saraburi to the Northeast and the east-west route across North Central Thailand (Routes 2 and 6 in the list above). The first phase of the northeast highway, 148 kilometers from Saraburi to Korat, was completed to high specifications in July 1958, at a cost of about U.S. \$16 million. Work under the U.S. program is now concentrated on the segment of the east-west route between Pitsanuloke and Lomsak and on rebuilding the Saraburi-Bangkok road. In addition, engineering work on the first half of the Korat-Nongkai route (a continuation of the northeast highway) has been started. Construction of the east-west route is being carried out by the U.S. contractors who built the northeast highway. It is planned that local contractors, under the supervision of U.S. and Thai Highway Department engineers, will do the greater part of the work on the Bangkok-Saraburi road and on the Korat-Nongkai route, with the major part of the financing to be provided from counterpart funds, and the remainder from direct dollar assistance in the





form of equipment and salaries for foreign engineers. The other U.S. highway effort is the rebuilding or replacement of about 1,000 bridges on most of the main highway routes, now about half completed.

In considering future resources available for highway development, we assume that highway expenditure will continue as the largest element in U.S. aid, and that even though aid as a whole may be substantially reduced over the next five years, the amount available for highway construction will be sufficient to complete the northeast route all the way from Bangkok to Nongkai, the section of the east-west route from Pitsanuloke to Khon Kaen, and the remainder of the main highway bridge program. This would come to about 1,200 or 1,300 million baht (U.S. \$60-65 million) over the next five years.

This very large U.S. contribution, together with work already completed, will still leave far more construction to be done on the main route systems than can possibly be carried out by the Highway Department within five years or even ten years.

Concentration on the more essential construction and postponement of the lesser is therefore necessary. Considering both the technical capacity of the Highway Department and the total investment needs of the economy, we estimate that the Government should allot about 600-700 million baht of its budgetary resources to main highways over the next five years. While technical capacity will gradually be expanded over the next several years, a substantial portion of available resources would be absorbed by the intensified maintenance program, by work on feeder roads and on the Bangkok-Nongkai route. In view of this it is doubtful that budgetary expenditures on main highways in excess of 90-100 million baht a year for the next two years could be efficiently used. As training progresses, an expansion of budgetary outlays on main highways to 170 million baht by 1963—or perhaps even more—would seem feasible.

This expenditure, and the technical capacity it represents, should in our opinion be concentrated during the next five years on the northern route from Bangkok to Chiangmai and on the two southern routes on either side of the Gulf of Siam. The top priority task on the Bangkok-Chiangmai road will be to improve—and maintain—the 280 kilometer stretch between Chainat and Tak leading to the Yanhee dam site. The urgency of this task stems from the need to move construction materials and equipment to the dam site in large quantities during 1959–60. Since the road is the main artery to the project area, it is important that it be brought into proper repair. The cost of the work now contemplated—involving resurfacing and some widening—would come to about 30 million baht in 1959. This would not in itself be sufficient to provide for a permanent improvement of the greater part of the road. Further expenditures will therefore be required in subsequent years to provide for a low maintenance road.

Beyond this project, the longer term objectives should be completion of a satisfactory all-weather route over the full distance to Chiangmai; similar highways running from Bangkok down the peninsula at least as far as Songkla; completion if possible of the remaining improvements needed on the connection from Chumporn to Puket; and rehabilitation necessary to bring the highway from Bangkok down the east side of of the Gulf as far as Trad to a satisfactory standard.

It may well prove impossible to achieve these objectives within the five-year period, but we feel work should in any event be concentrated on these routes. We consider these and the northeast route, together with related subsidiary roads, as the main priorities of a road construction program for the next five years. We recognize the advantages to be gained from construction of the eastern connections with Ubol and with the Cambodian border at Aranyaprades, and we realize that work additional to that proposed on the southern routes is needed. Unfortunately, however, limitations of capacity and finance necessitate a choice. And we believe that the choices we have

service for any length of time, silting could seriously handicap the operations of the entire port. To meet this problem, a new dredge is to be ordered soon. It will cost about \$2 million, and will probably be financed by the U.S. Development Loan Fund.

Dredging expenses amounted to about 30 million baht for the year ending August 1957. While the new and more efficient dredge is expected to reduce current operating costs considerably, service on the loan for the dredge will offset most of these savings. Thus, total maintenance costs are likely to remain high for some time.

At present, there is no basis for determining what the future rate of silting is likely to be or how best to meet this problem. To permit intelligent planning, therefore, the river estuary and bar should be thoroughly studied. It has been decided to proceed with this study in the near future, and an expert from the U.S. Corps of Engineers has been retained to undertake a preliminary survey. This investigation should include hydraulic-model tests. It would provide a basis for determining the most suitable location and depth of the entrance channel, as well as possible measures to reduce dredging costs. The investigation would take about four years, and cost about 35 million baht.<sup>4</sup>

Other capital outlays for the port that should be included in an investment program for the next five years are: a new tug, mechanical equipment to improve cargo handling, and a new lighter basin. Costs for these items are estimated at about 85 million baht. We also recommend an allowance of about 30 million baht for miscellaneous improvements to existing facilities. These investments would help substantially to increase the efficiency of the port's operations, and the Port Authority already has plans to carry them out.

Tentative plans have also been drawn up for a new export wharf, but these are far more ambitious than is justified by

<sup>4</sup> Revised estimates indicate the cost may be considerably less than this.

prospective needs for the next five or even ten years. Although its cost has not been closely estimated, present indications are that it might range from 300 to 500 million baht. A main object of this project would be to permit bulk handling of rice shipments. But bulk handling of rice is unlikely to develop for a long time to come, and the Mission has therefore included no allowance for this project in the program recommended here.

#### *Other Ports*

For varying reasons, any large-scale development of the ports in Southern Thailand does not offer the prospect of a good economic return. The deep water Port of Penang, just across the border in Malaya, provides a logical outlet for the exports of Southern Thailand, mainly rubber and tin. Use of this port could be expanded with benefit to both countries.

A limited development of the facilities at the three principal Thai ports on the Kra Peninsula nevertheless does seem justified over the next five years. Specifically, the improvement and relocation of the wharves in these ports would appear warranted. This would give deeper draft to coastal ships and better shelter for lighters. The recommended levels of expenditures for this purpose are 15 million baht each at the ports of Songkla and Puket, and 25 million for new wharf facilities at Kantang. A plan for developing Songkla into a deep water port at a cost of some 400 million baht or more should definitely be dropped.

The total recommended investments in ports and harbors for the five-year period are summarized in Table 11.

#### *Administration and Finance*

The Port Authority of Thailand (PAT), which was estab-

TABLE 11 Recommended Investment in Ports and Harbors 1959-63

<i>Port of Bangkok</i>	<i>(Million baht)</i>
Silting investigation . . . . .	35
New dredger . . . . .	40
Mechanical equipment, etc. . . . .	24
Tug . . . . .	11
Lighter basin . . . . .	50
Other . . . . .	30
 <i>Other ports</i>	
Songkla, new lighterage and coaster wharf . . . . .	15
Puket, new lighterage and coaster wharf . . . . .	15
Kantang, new lighterage and coaster wharf . . . . .	25
Total . . . . .	245

lished as a semi-autonomous government corporation in 1951, is responsible for the development and administration of the Port of Bangkok. By and large, its administration has been satisfactory in recent years. Some cause for concern about the future has, however, been created by the recent replacement of the former top management of the Port Authority with a Director and two Deputy Directors who have had no prior professional experience in port management. At the same time the services of the PAT's General Advisor were terminated. For the future, a definite policy should be introduced of training middle-grade officers in the organization to take over top responsibility.

Capital budgeting procedures in the Port Authority leave much to be desired. Expert advice on this subject should be sought by the PAT with a view to introducing fundamental improvements.

The current financial position of the PAT appears good. During recent years, it has apparently had annual operating surpluses in the range of 19 to 30 million baht. This excludes the outlays for maintenance dredging, which are now borne entirely by the central government. As with the SRT, the

TABLE 12 Sources of Financing of Investment in the Port of Bangkok

*(Million baht)*

	Totals 1952-56	1957 & 1958 (estimate)
Total investment . . . . .	270	100
Financed by:		
Port's own resources . . . . .	100	} 30
Central government . . . . .	110	
Work Bank loans . . . . .	60	
ICA aid . . . . .	1	70
		—

investment outlays of the PAT have been met from various sources. The main elements are indicated in Table 12.

Since the Port Authority's current surplus has exceeded the amount of its own resources reinvested, reserves have been built up in the past few years. At the end of 1957, they were estimated to be about 60 or 70 million baht net of current liabilities.

For the period 1959-63, the non-budgetary resources likely to be available for financing the investment program are: the 40 million baht loan from DLF for the dredge, and about 30 million annually from the current surplus of the PAT, or 190 million in all. This is probably a conservative estimate. Specific investment needs, including the silting survey, are estimated at only 160 million baht, leaving 30 million for miscellaneous improvements. Under present tentative arrangements, the silting survey would be financed from the central government budget, rather than from the PAT's own resources. However, there now seems to be some prospect that the survey may be financed by the United Nations Special Projects Fund. This would reduce the burden on the central budget for port development to the 55 million baht required for investment in the three minor ports in the South.

## INLAND WATER TRANSPORT

Inland water traffic consists mainly of the movement of rice and paddy on the Chao Phya River and its branches in the Central Plain; teak is also rafted down the river. The rivers are among the main arteries of freight traffic, the annual volume of which is roughly estimated at more than half that carried by the railroads. Transport is chiefly by country boats, increasingly towed by launches. Completion of the Yanhee dam in 1962 should permit maintenance of a guaranteed minimum draft in the lower reaches of the Chao Phya, and thus encourage the introduction of larger craft of modern design. Development of the Mekong River as an international project, should it prove feasible, would also be of substantial benefit to inland transport.

Inadequate data exist on the number of river craft and none on costs. Much of the inland water transport is conducted by merchants as a mixed operation. They buy and sell paddy and rice, sell imported merchandise, transport goods both to and from Bangkok, own and rent godowns, and lend money. Operators of country boats and launches, whether merchants or others, are small proprietors. The resultant system of small units is not necessarily uneconomical. There are no conspicuous economies of scale, and large waterways abroad show examples of both large and small operations carried on successfully side by side. Thus, there is no case for a large state-owned merchant fleet.

There is, however, a case for greater government interest in river transport, considering the importance of this traffic and the lack of information about it. Because of the deficiencies of data it was not possible, within the time and competence available to the Mission, to assess the role and the investment requirements of the inland waterways in the further development of Thailand's transportation system.

It seems unlikely that investment by the Government in this

field need be large in view of the private character of the river fleets and the prospects for their further expansion along private lines. There should, however, be greater government attention to problems of channel maintenance and improvement and of coordination of river and other means of transport. It is, therefore, important that investigations be made by the Ministry of Communications of river traffic through traffic counts and sample studies of costs and rates, cargoes, routes, seasonal patterns, etc. The Ministry, in cooperation with the Irrigation Department, should also study the priority requirements of river traffic for channel improvements and navigation aids.

## AIR TRANSPORT

At Thailand's present stage of economic development, a rather extensive domestic air service is clearly needed in view of the size of the country, the fact that its population centers are scattered, and the limitations of existing surface transport. A domestic air service exists, but it is not fully adequate to meet the current or prospective requirements of the economy. This service is provided by the Thai Airways Company (TAC), a government corporation with a fleet of 12 aircraft, consisting of five DC-3's, three DC-4's, one Norseman and three Super-Constellations.

The main domestic needs are regular, frequent and dependable services between the capital and the chief provincial cities as a supplement to the slower rail service. In addition, development of low-cost feeder services by small aircraft to small outlying centers would be helpful. However, at present not all of the airfields are all-weather, and provincial airfields lack radio aids and runway lighting to permit night flying. Maintenance facilities exist only at Bangkok; inability to service planes elsewhere means frequent cancellation of flights.

Service at intermediate stops is unreliable, and official passengers receive undue priority—as well as excessive discounts. Partly because of these factors but also because of the poor condition of the aircraft, the domestic air service has been losing money.

The ICA has recently undertaken several projects designed to improve civil air transport in Thailand. These consist of the construction and improvement of provincial airfields, an overhaul and maintenance program and projects to improve meteorological services, navigational aids and traffic control, as well as various training programs for Thai personnel. In total, the funds committed by ICA in this sector amounted to about 200 million baht as of mid-1958, although actual expenditures were only about 50 million. These projects should make a substantial contribution to the development of civil air transport in the next four or five years.

In addition, the TAC itself should plan gradually to replace its existing aircraft, either with similar types in better condition or with more modern types. It should also purchase a number of smaller planes and develop more feeder airfields. An expenditure of 20 million baht spread over five years is recommended for each of these latter purposes.

In addition to its present domestic services, the TAC also operates several short international flights. But the present scale of these operations cannot be justified; they are already causing a heavy loss, which will increase when jet aircraft become universal. Given the existing intense competition and the regulatory activity of the International Civil Aviation Organization, there is no danger from exploitation by foreign airlines. Therefore Thai Airways would be well advised to withdraw as soon as possible from international business, except for flights to Laos, Cambodia and Penang, and to sell its three Super-Constellations while it still can. It is suggested that the proceeds of this sale, together with about 60 million baht additional, be devoted to the replacement of aircraft for domestic use.

The Don Muang Airport at Bangkok is an important international center for international air traffic, served by ten world-wide carriers in addition to local Southeast Asian operators. Well placed to retain its competitive position, it is adequate for present aircraft, but extensive improvements will be needed to accommodate jet aircraft. Such improvements, at an estimated cost of 50 million baht in the next five years, are already planned. As part of this project, the Government should plan to provide modest civilian accommodation at the large military airfield near Korat, so that it could serve as an alternate landing field in the event of poor weather at Don Muang. The cost involved would be small.

If the reforms recommended above are carried out, the TAC should be able to operate at a profit within a few years. However, the capital outlays indicated above (other than those financed by ICA) would probably have to fall largely or entirely on the central government budget, at least initially. Whether these outlays should most appropriately take the form of a capital grant or a loan to the TAC would depend on an appraisal of the present financial situation of the company. Since the accounts of the company are not available for analysis, it is not possible to reach even a tentative judgment on this matter at present. It seems clear, however, that the Government should obtain an expert appraisal of the TAC's current financial status and of its accounting methods.

## TELECOMMUNICATIONS

Thailand's existing telecommunication facilities are limited and generally inadequate for present needs.

The Bangkok metropolitan area is served by an automatic telephone exchange with a total of about 16,500 lines, but much of the existing wire plant is in poor condition. An expansion program now being carried out by the Telephone Organization from its own resources should bring the total

TABLE 13 Recommended Investment in Air Transport:  
Five-year Totals 1959-63

	<i>(Million baht)</i>
Don Muang Airport . . . . .	50
Provincial and feeder airfields . . . . .	40
Overhaul and maintenance (equipment and services) . . . . .	55
Ground service improvement (navigational aids, traffic control and meteorological services) . . . . .	55
Feeder aircraft . . . . .	20
Replacement of principal aircraft (net after sale of Constellations) . . . . .	60
Total . . . . .	280
<b>Financing:</b>	
ICA aid . . . . .	130
Central government . . . . .	150

capacity of the automatic telephone exchange to 29,000 lines during 1959. However, the outside plant required to connect these lines will entail considerable further investment.

In the provincial towns, there were an estimated 4,000 telephone lines in operation in 1957. These were all manually operated. Some communities enjoy good local service, but in the majority the plant is generally in poor condition.

Inter-regional telephone communications are extremely limited, and contact between regions is handled mainly by telegraph. These facilities are also overloaded, and it frequently takes two days to get a message through. International communications are very inadequate. In addition to the need for expansion of these facilities, there is a need for an integration of the existing operations. At present there are eight different telecommunication systems in the country.

A large-scale plan to meet both civilian and military telecommunication needs in Thailand, Laos, Cambodia and Viet Nam has recently been developed by the Governments of those countries in conjunction with ICA. ICA has obligated \$17 million (340 million baht) for the Thai portion of this project which will get under way in 1959 and is scheduled for completion by 1962.

The project calls for the improvement and the expansion of existing telecommunication facilities into an integrated network for the country as a whole and for integration with the systems of neighboring countries.

The main elements of the Thai portion of this plan are set forth in Table 14.

TABLE 14 Projected Investment in Telecommunication, 1959-63

*(Million baht)*

Rehabilitation and expansion of telephone system in Bangkok, including 10,000 new lines and connection of existing capacity . . . .	80
Rehabilitation and expansion of provincial telephone systems, including conversion to automatic dial operation and total of 10,000 new lines . . . . .	45
Long distance facilities . . . . .	195
Training . . . . .	10
Other . . . . .	10
Total . . . . .	340

The inter-regional telephone facilities will consist of about 4,000 kilometers of broad band radio relays in VHF (Very High Frequency) and microwave. This technique is now regarded as considerably more efficient than long distance lines, and it is being extensively used in the United States and other countries. About one-third of these long distance facilities are designed for use by the police and military authorities. The remaining portions of the program will clearly provide a substantial expansion of Thailand's civilian telecommunication system.

Modest capital outlays by the central government on postal services and additional telecommunication facilities will probably continue to be required as a supplement to this program. An allowance of roughly 10 million baht annually is included in the recommended public investment program for each of these purposes.

## CHAPTER V SOCIAL SERVICES

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Over the past several decades the Government has made an impressive effort to develop social services, in the fields of health, housing and social insurance. These services, though they contribute nothing as direct or tangible as, say, power to light cities, are nevertheless important to economic development since they affect the efficiency and the productivity of the population. Thailand's achievements in this field compare favorably with most other countries of Southeast Asia. But ambitions have sometimes outrun available human and financial resources. The Mission believes a thorough study of the problems and needs should precede expansion of the social services so that development plans may be soundly prescribed.

This chapter attempts to consider what can profitably be accomplished in the main social services over the next few years.

### HEALTH

#### *Control of the Principal Diseases*

The most marked advances have been made in the attack on malaria, smallpox and plague. Once scourges, these diseases have been brought largely under control through programs for early detection of cases needing treatment, and through preventive measures. Technical and financial assistance from the World Health Organization, the U.N. Children's Fund and the U.S. ICA program have played a major

part in these achievements. Recorded deaths from malaria have substantially decreased in recent years, and cases of smallpox have become rare. No outbreak of plague has been recorded since 1952. Cholera, too, had apparently been eradicated as long ago as 1951, but again broke out in Thonburi near Bangkok in early 1958 and spread to large sections of the entire country before it was brought under control. This outbreak emphasizes the vital need for continuing vigilance and active programs of prevention even in those fields of communicable diseases where marked successes have been so far achieved.

Leprosy, yaws, rabies, diarrheal diseases and dysenteries, intestinal parasites and venereal diseases are still rather widespread in the country, and tuberculosis is a continuing problem. A pilot project for the control of leprosy has been recently started and has quickly gained the confidence of the population which has benefited from it. Substantial progress has been made against yaws under the control campaign which began in 1950. But for other prevalent diseases very little has been achieved so far, and sanitary and other control regulations to reduce the incidence of these diseases have been inadequately enforced. Basic deficiencies of sanitation and housing facilities in any case set limits to the practicable effectiveness of control measures.

### *Health Services*

Within the past decade health services have improved considerably. The number of doctors per thousand inhabitants has increased (1 per 13,600 in 1947 to 1 per 7,100 in 1956). Health services available within the Bangkok metropolitan area greatly exceed those elsewhere in Thailand. In 1957 the number of doctors in Bangkok was 1 per 1,100 of population compared with 1 per 30,000 in the rest of the country.

Nurses are also in short supply. There are now only about

5,000 practicing nurses in the country, two-thirds of them in the metropolitan area. It is estimated that 25,000 are needed.

There has been an increase in the number of dentists, pharmacists and midwives in both the metropolitan area and in the country as a whole. But, as with doctors, the rate of increase has been faster in the Bangkok area, the number available in the rest of the country being extremely low.

The supply of hospital beds in Thailand (average 0.5 beds per 1,000 population, ranging from 1.9 in Bangkok to 0.1 in the worst supplied areas) is low compared with Malaya, for example, which is fairly adequately supplied (3 per 1,000). Over 50% of all beds are in the metropolitan area and 79% are publicly provided. There are six mental hospitals in the country accommodating about 4,300 patients.

### *Rural Health Centers*

Health centers are of special importance, particularly in the rural areas. The best of these (First Class Health Centers) have a minimum staff of one doctor, one nurse-midwife, one sanitarian and one midwife, and also have a minimum of ten beds for urgent cases or temporary accommodation. But these centers are available in less than a quarter of the total administrative districts (amphurs). Other districts are served only by Second or Third Class Centers with minimum staffs respectively of a sanitarian and midwife or a midwife only.

In 1957, with the cooperation of ICA, a program was adopted to improve the rural health services by strengthening the staffs and increasing the facilities of the First Class Health Centers in order to enable them to serve a larger area. Ten such centers in widely scattered parts of the country were included in this program during 1957-58, and it is planned to extend the program steadily throughout the rural areas. The objective is to provide at least one of these reorganized First Class Health Centers for each 50,000 persons. This will

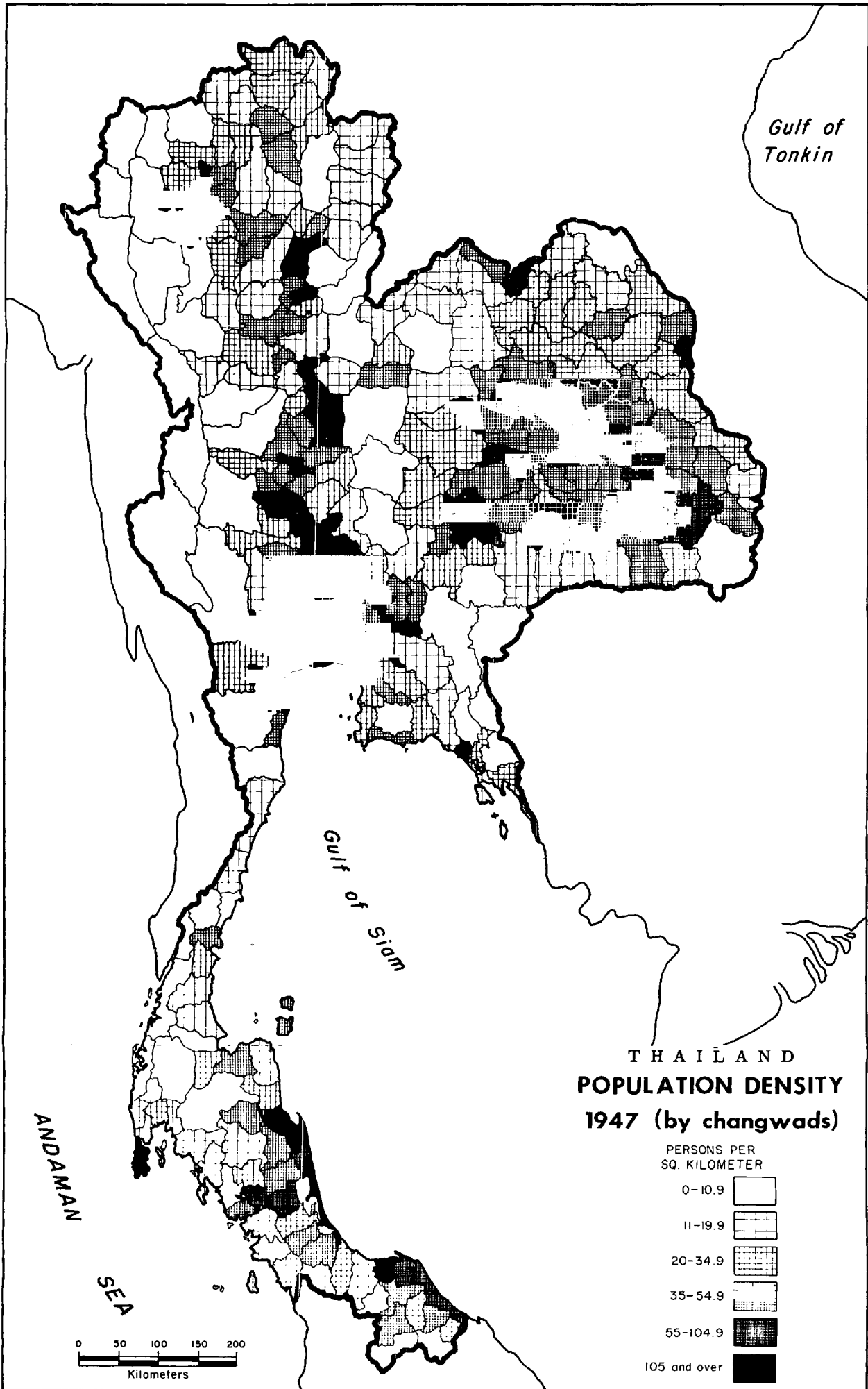
ultimately require about 500 centers, and will clearly take a long time to achieve, primarily because of the limited rate at which qualified personnel can be trained to meet the requirements of the program. However, the program should be pushed forward as rapidly as personnel requirements can be met.

In addition to the rural health centers, the Ministry of Public Health has 11 mobile health units which assist in furnishing demonstrations in schools and health centers and to community groups.

Recently the Ministry has endeavored to enlist various communities in a public health program. Seven projects have been organized, with elected local health committees supervised by the provincial health officer. These committees interest themselves in and attempt to get action on improvement of sanitation, prevention of disease and prompt response when disease breaks out. A number of "demonstration" villages have also been set up to stress the handling of some particular problem of health or sanitation.

### *Training Facilities*

At present there are two medical schools in Thailand, graduating 200 physicians a year, while a School of Public Health offers an additional year's training. Both medical schools have been under pressure to admit more students, but their facilities are inadequate to train properly those already enrolled. In fact, standards of teaching have deteriorated since the war, partly because the number of students has risen without a parallel increase in the staff, partly because the average quality of students has declined, and also because the student's ability to use English has diminished. Moreover, there have been no basic changes in the curriculum, although medicine has made giant strides forward.





there will be a repetition of what happened recently at Chiang-mai. There, a new section of a government hospital, with 100 beds, was completed late in 1957, and six months later it was still empty because there was no staff to operate it. Before new hospitals are built, much can be done to improve and expand the services of existing ones, by providing more staff and more and better equipment and by enlarging out-patient departments. The construction of a few infirmaries to treat the chronically ill should also be considered. Their cost is less than that of hospitals, and they would relieve the pressure on the latter.

An increase in the supply of doctors and an improvement in the quality of their training could be effected at no great expense at the existing medical schools. A thorough reorganization would be very helpful. Administration is bogged down because Deans have multiple duties and totally inadequate professional and secretarial assistance. Professors should be relieved of routine duties, many of which could equally well be performed by nurses or assistants, and permitted to concentrate their energies on teaching. Other hospitals in Bangkok, notably the excellent Women's Hospital, should be included among those used for teaching purposes. The out-moded civil service system of promotion should be altered to permit the advancement of promising young teachers on the basis of ability rather than seniority. The curriculum is in need of thorough revision. And finally, ICA could be of great help by supplying additional technical experts to strengthen and expand the teaching of medicine. At present there are only two assigned to the task of improving medical education.

For preventive services, the type of instruction given at the School of Public Health Nursing is quite suitable. It appears dubious whether a two-year course is needed, however, in view of the fact that many advanced countries cover similar work in six to twelve months. A shortening of this course should be considered.

Preventive services such as the measures against malaria and

yaws need to be continued. Other preventive services are mainly those related to health education. The pilot village projects should be continued, but to produce quicker results the network of district and village health committees should be extended and strengthened. These committees can be very effective in stimulating villagers to adopt such simple practices as keeping streets and markets clean, digging wells and constructing simple but sanitary latrines.

To improve nutrition, the very difficult problem of overcoming food prejudices and taboos must first be accomplished. Over the long run, the inclusion in school curricula of simple instruction on the improvement of diet, reinforced by the example provided in school lunch programs, is likely to be effective. Adult education, conducted through the health centers and the mobile units, should be used to supplement training in nutrition in the schools. Enough is already known about the Thai diet and its deficiencies so that available funds should be concentrated on spreading this knowledge rather than spending much more on research.

In view of the rapid rate of increase in the population, a responsible attitude toward the size of families should be encouraged by making birth control information available at public health centers.

## HOUSING

### *Public Housing in Thailand*

Few data relevant to housing are currently available in Thailand. The Mission compiled data on how many permanent dwellings were completed in recent years, but there is no information on the extent or severity of crowding in Bangkok or any other city. A movement from the country to cities is

The School of Nursing and Midwifery, attached to Siriraj Hospital in Bangkok, provides instruction in those fields, graduating about 80 each year from a three-and-a-half year course. In 1956, the School of Public Health Nursing was started, offering a two-year course to graduates of the first school. There are in addition eight undergraduate schools of nursing.

#### *A New Medical School at Chiangmai*

As part of a joint Thai Government-ICA medical education project, the establishment of a third medical school at Chiangmai has been proposed, and plans for this are well advanced. Over the years 1958-60, some 70 doctors and nurses are to be sent to the United States for an average of two years of advanced study and training. When they return, they will serve on the Chiangmai faculty. It is expected that this staff will be reinforced with a number of technical advisers.

The original plan called for instruction to begin in 1960, with the first class of 50 doctors and 50 nurses graduating four years later. Unavoidable delays will require this schedule to be postponed at least a year.

Land, buildings and equipment for the new school are estimated to cost around 100 million baht, of which U.S. counterpart funds will provide 35 million, with the Thai Government providing the remainder.

The basic concepts underlying this project are sound. Decentralization of medical facilities is all to the good, in view of the present concentration of those facilities in Bangkok. The Chiangmai region would gain substantially from the establishment of a medical school, including a new 400-bed hospital. It is hoped, and may reasonably be expected, that a sizable proportion of the graduates will locate in provincial centers, whereas most of the graduates of the Bangkok medical

schools remain in the metropolitan area. And Chiangmai already has a number of medical facilities that make it an excellent center for training. These include a Provincial General Hospital, a private hospital, a midwifery training school, a superior rural health service, a good mental hospital and a nearby leper colony.

It is the execution of the project that creates doubts. There appears to have been little careful advance planning, either for the teaching requirements or for the buildings. Neither the Dean, the architect nor the architect-adviser has yet been named. In recruiting staff for the new school, no advantage appears to have been taken of the fact that this is a venture that offers participants considerable opportunities for responsibility and growth. Stress has been laid instead on the chance of foreign study in exchange for a limited service contract at Chiangmai. It is doubtful if this approach will attract the better young men and women now on hospital and medical school staffs in Bangkok.

Some have expressed skepticism as to whether the Chiangmai staff can be held in that city, once their service contract (twice the period of government-financed foreign study) is over. In the short run, the small size of Chiangmai (about 50,000) may create a problem, since the opportunity for private practice will be limited. But over a period of years, as the city acquires a reputation as a medical center, it should attract more and more patients from the northern region.

### *Future Requirements*

We have already called attention to the shortage of doctors and nurses in Thailand, especially outside the Bangkok area. More hospital facilities are also needed. But it would be a waste of money to build additional hospitals before the staff necessary for their efficient operation is trained. Otherwise

recognized but unmeasured.

This lack of information, however, has not stood in the way of a public housing program. The first such (except for housing in connection with land settlement schemes) was undertaken in 1948. Between then and 1957, some 4,316 houses and apartment units were constructed by the Department of Public Welfare and by the Welfare Housing Office (since 1951) and by the Welfare Housing Bank (since 1953), at a total cost of approximately 139 million baht. A variety of methods has been used, including loans to approved landowners to build and repair houses for their own use, and the construction of houses and apartments for sale via hire-purchase arrangements or for rental. Financing for these projects has come from an investment fund of 45 million baht operated by the Ministry of Finance, from a revolving fund of 53.6 million baht run by the Welfare Housing Office, and from loans and advances by the Welfare Housing Bank.

A small part of the Public Welfare Department's houses—184 units in all—were constructed for the use of government officials. In addition to these, each department of the Ministry of Defense has small housing projects for officers and men and the Police Department, the Irrigation Department, and the State Railways also have smaller schemes for their own employees.

#### *Defects of Public Housing*

If a case for providing housing for civil servants exists, it should follow a survey of the needs, and we suggest that first consideration be given to those in the lowest pay brackets for whom the housing problem is generally most pressing. This principle does not appear to have been followed in the government projects actually undertaken. Thus 56 houses built in the Tung Mahamek district of Bangkok cost roughly 110,000

baht each (including land and public facilities, but adjusting for the enhanced value of the land). Tenants selected by balloting pay 600 baht a month on a 15-year hire-purchase scheme; rentals thus aggregate 108,000 baht, allowing nothing for interest. The monthly figure is well above the total salary of many of the lower ranks of civil servants. It certainly cannot be called low-cost housing, and it is at least doubtful if the hire-purchase acquisition of this class of housing should be subsidized.

Another illustration is that of the Pibulvatana project of the Housing Bank, which is lending for the construction of 225 houses, including 23 costing 242,000 baht each and involving monthly payments of 2,200 baht. Even its middle-size houses are to cost 172,000 baht each and require monthly payments of 1,400 baht. It is hard to justify the inclusion of dwellings of this class in a public housing project.

These criticisms, however, apply only to a minority of the housing schemes. The great bulk of the construction undertaken—some 4,132 units—has been for the benefit of groups other than civil servants, and appears to have been low-cost. For four projects including over a thousand houses or apartments, the cost has ranged from 4,900 to 35,000 baht per unit (construction costs alone).

Not being based on a careful preliminary survey, however, the schemes give evidence of having been haphazard in character. Those in Bangkok (the great majority) have been located on the fringes of the city. Accommodating perhaps 20,000 to 30,000 persons, they have provided very modest facilities to absorb a small part of the overflow of a rapidly growing urban population. But they have resulted in very little demolition, and the crowded slums in the center of the city remain untouched. There appears to have been no attempt to fit the housing schemes into broader plans of the Bangkok Planning Commission. As so often in Thailand, one agency of government seems not to have known or cared about the intentions of another agency.

loans for public housing. It should direct its loans to or through the municipalities, making relatively large loans for relatively long periods at low interest rates. As repayments come in on loans made out of the two funds now devoted to housing, they should be transferred to the Housing Bank for its use.

When its current operations are concluded or transferred to the Housing Bank, the Welfare Housing Office should be abolished. The Housing Division of the Department of Public Welfare would then have no important function, and should likewise go out of existence.

If a problem of housing civil servants exists, it should be treated as a whole and not left to be administered in a haphazard fashion that inevitably suggests favoritism. This is a matter that might well be studied by a special committee. If it is decided that a real need exists, and if resources can be found to meet it, any program undertaken should be under a single administration.

Departments should no longer be permitted to borrow from one another, and all finances should be provided by the Welfare Housing Bank to ensure proper budgetary control. Full annual reports from the latter to the Ministry of Finance are a "must". (Not a single such report has reached the Ministry in the past, either from the Welfare Housing Office or from the Welfare Housing Bank, although the Housing Act explicitly requires such reports.)

In 1946, an Emergency Rent Control Act was adopted, effective in all municipalities. It is still in force, and stands as a bar to any housing project requiring prior demolition. A tenant cannot be evicted if he fulfills the terms of his contract, unless the landlord himself wants to occupy the property. Protection against arbitrary eviction is justified, but this law is too sweeping. It should be amended to permit the acquisition of land for public housing projects, parks, playgrounds and other public purposes.

## SOCIAL ASSISTANCE

*Social Insurance*<sup>1</sup>

In the Social Insurance Act of 1954, Thailand enacted its first social insurance legislation. This Act establishes a general framework for social insurance, coverage of maternity, large families, illness, invalidism, old-age and burial. Subject to certain specified exceptions, all persons aged 16 to 60 who are regularly employed and who receive wages of 500 baht a month or more could be covered. The law specifies no scale of benefits, however, nor does it establish definite rights to benefits. And in practice the law has been inoperative.

The obstacles to implementing a comprehensive scheme such as provided for under this Act are in fact practically insuperable at present. Since 85% of the population of Thailand is engaged in agriculture, mostly as self-employed farmers, while a large proportion of city workers are also self-employed, universal application would be very difficult. In practice the scheme could only apply to the wage-earning employees in industry, commerce and government. And even here, it would be administratively impossible to cover employees in the thousands of firms with only a few workers. Even for this relatively small portion of the population, moreover, the scheme would require a far larger staff of trained manpower than can be mustered at present. Given these considerations, and the total ineffectiveness of the Act to date, the Mission recommends that it be repealed.

As a first step in the creation of an effective social insurance system, the Mission recommends that a scheme of workmen's compensation insurance be adopted. Such a scheme would

<sup>1</sup>This section draws heavily on the Report to the Government of Thailand on the *Application of the Social Insurance Act*, prepared by Mrs. Ida C. Merriam of the U.S. Social Security Administration (International Labour Office, Geneva, 1956).

suggested will contribute most to Thailand's further economic development. Indeed, if the targets we have recommended prove excessive, we would feel it might be best to delay carrying out the Lomsak-Khon Kaen stretch of the east-west route to permit the use of additional U.S. resources on the routes which in our view should have top priority. We suggest this, however, entirely on economic grounds. On the same grounds, we would urge against diverting resources in this five-year period to work on the route to Ubol, although we recognize there has occasionally been considerable pressure for starting this project.

TABLE 10 Summary of Recommended Highway Program

(Million baht)

	1959	1960	1961	1962	1963
<i>Government budget<sup>1</sup></i>					
Maintenance . . . . .	150	170	200	210	220
Feeder roads . . . . .	60	70	80	100	120
Main highways . . . . .	90	90	110	150	170
Sub-total . . . . .	300	330	390	460	510
<i>ICA program assumed</i>					
Main highways . . . . .	325	325	250	200	150
Grand total . . . . .	625	655	640	660	660

<sup>1</sup> Exclusive of road expenditures by provincial governments from their own funds.

## PORTS AND HARBORS

The Port of Bangkok handles about 95% of the country's import trade and 70% of its export trade. The remainder of Thai foreign trade, plus a modest amount of coastal shipping, is handled by a number of small ports on the Kra Peninsula. The most important of these are Songkla, Kantang and Puket.

*The Port of Bangkok*

The present Port of Bangkok was developed between 1939 and 1954 at Klong Toi on the Chao Phya River, about 30 kilometers upstream from the mouth. Its facilities consist of 1,660 meters of modern wharf with transit sheds, sufficient to accommodate nine average-size ocean-going cargo ships. This wharf is rail- and road-served, and is well equipped by modern standards. Ships up to 565 feet in length and 27 feet in draft can now enter the port through the dredged channel across the bar at the mouth of the river. Besides this wharf, both the private oil companies and the Government's Fuel Oil Organization have nearby oil jetties.

Traffic has been growing at an average rate of 4% to 5% over the past five years and may well continue at that rate for some time into the future. In any case, the basic facilities of the port could handle a 50% increase in traffic above the record 1957 level without further large-scale investment. Thus, there is no economic justification at the present time for entertaining the suggestion that a new deep water port be built on the Gulf of Siam. The saving in dredging costs that would be realized by moving the port to a deep water site would certainly not begin to justify the very large investment required.

If the Port of Bangkok is to take full advantage of its present facilities, however, a number of capital outlays will have to be made very soon. As a river port, Bangkok provides excellent shelter, but it suffers from all the deficiencies of such a port. To maintain depths alongside and in the channel through the bar at the mouth of the river, constant dredging is necessary. In the past several years, the rate of silting has increased substantially and there have been recurrent complaints by shippers about the state of the channel. The Port Authority now operates a fleet of five dredges, two of which are old and inefficient. If either one of these were to be put out of

RECOMMENDED DEVELOPMENT EXPENDITURES

The development expenditures recommended in the various sectors of transport and communication are summarized in Table 15.

TABLE 15 Recommended Development Expenditure in Transport and Communications and Means of Financing

(Million baht)

	1959	1960	1961	1962	1963
<i>Total expenditures</i>					
Recurrent expenditure . . . . .	225	260	300	320	330
Capital expenditure . . . . .	965	1,015	985	1,005	925
Total . . . . .	1,190	1,275	1,285	1,325	1,255
<i>Financed by:</i>					
Agencies' operating surpluses . . . . .	210	210	210	220	220
Government budget and reserves . . . . .	530	600	685	795	885
Foreign loans and grants . . . . .	450	465	390	310	150
<i>Recommended recurrent expenditures by main category</i>					
Highway maintenance . . . . .	150	170	200	210	220
Port maintenance . . . . .	25	30	30	30	30
All other . . . . .	50	60	70	80	80
Total <sup>1</sup> . . . . .	225	260	300	320	330
<i>Recommended capital expenditures by main projects</i>					
<i>Highways:</i> . . . . .	475	485	440	450	440
Government budget . . . . .	150	160	190	250	290
ICA aid . . . . .	325	325	250	200	150
<i>Railways:</i> . . . . .	310	310	320	340	360
Operating surplus . . . . .	180	180	180	190	190
Reserves and government budget . . . . .	125	130	140	150	170
World Bank loan . . . . .	5	—	—	—	—

TABLE 15—continued

(Million baht)

	1959	1960	1961	1962	1963
<i>Ports and Harbors:</i> . . . . .	40	60	55	45	45
Operating surplus . . . . .	30	30	30	30	30
Reserves and government budget . . . . .	—	10	15	15	15
DLF loan . . . . .	10	20	10	—	—
<i>Air Transport:</i> . . . . .	60	60	50	50	60
Government budget . . . . .	10	20	20	40	60
ICA aid <sup>2</sup> . . . . .	50	40	30	10	—
<i>Telecommunications and Postal</i>					
<i>Services:</i> . . . . .	80	100	120	120	20
Government budget . . . . .	20	20	20	20	20
ICA aid <sup>2</sup> . . . . .	60	80	100	100	—

<sup>1</sup> All financed from government budget.<sup>2</sup> Includes loan component, repayable in local currency.

meet one of the most urgent needs now existing among employees in manufacturing and commerce. It should also be feasible to administer, and could help provide the experience which will be necessary for any successful extension of social insurance.

It is recommended that, initially, this coverage be limited to workers in firms of over ten employees, but that studies be made to determine whether it could not be extended to a wider range of workers within a year or two.

For this type of insurance, it is felt that the full premium should be borne by the employer, although it might prove desirable for the Government to help cover a part of the administrative expenses. The scheme should provide for medical care for workers disabled or made ill as a result of their work. There should be no limit on the duration of medical benefits, and no charge for necessary medicine or appliances. Those temporarily incapacitated should be paid cash benefits while unable to work, and any worker permanently disabled should receive a monthly pension. Close relations of workers who die as a consequence of their employment should receive cash payments. It might be appropriate to choose a limited number of industries for the first application of such an insurance program, including especially those where danger and risk are highest.

Consideration should be given to establishing, in connection with the workmen's compensation insurance scheme, a program of medical and vocational rehabilitation of disabled workers. This would have the advantage of restoring injured workers to productive activity and of substantially reducing the cost of employment injury benefits. The insurance premiums charged could include a small levy to cover the specific costs of rehabilitation.

The Labor Act of 1956 contains provisions for improving the standards of safety, health and welfare of workers. If these provisions were effectively enforced, they would tend to reduce appreciably the cost of workmen's compensation.

The Act is administered by the Labor Division of the Department of Public Welfare, whose duties include the accumulation of statistical data for determining the scope of workmen's compensation insurance. It is recommended that the Labor Division be charged with preparing the details of the proposed scheme.

Looking toward the future, it is probable that when finances and administrative capacity permit, the Government will wish to expand the scope of social insurance. To lay the foundation for such later action, it would be well to prepare a new and more carefully considered Act to replace the present one. It could be drawn up on the basis of the work of the ILO Social Security Mission to Thailand, which is now conducting a comprehensive review of social insurance. This Mission could also furnish advice on the technical details of legislation embodying an interim program of workmen's compensation insurance.

#### *Family Allowances*

Thailand's first venture into family allowances began in 1948 and continued through 1956. It involved payments totaling up to 8 million baht annually to families with large numbers of children. In 1957 an even more costly scheme was introduced although the International Labour Office<sup>2</sup> had raised serious questions about the wisdom of such a course.

The Mission is of the opinion that the present family allowance system is unsuitable and should be abandoned. Benefits of 120 baht a year for a fifth child and of 80 baht for additional ones can provide relatively little help to a poor family, but would be a severe drain on the budget. Unless a means test were applied, sizable sums would be paid to claimants not in real need. But even countries with a highly developed

<sup>2</sup> See footnote 1, above.

Any sizable housing project must provide for schools, police and fire protection and the like. There is evidence that this kind of coordination has been lacking, too. Two projects on Din Daeng Road illustrate this point. The first, of 673 low-cost apartments, includes an elaborate and expensive school: it is attended by over 1,500 children in classes from kindergarten through general and vocational secondary grades, and offers such additional features as lunch for kindergarten children, medical care and supervision by social workers. Yet the children living nearby in some 1,700 more recently constructed houses had no school provided for them, and cannot be accommodated at the model Pibulprachasan school.

### *Suggestions for Improvement*

Although there is need for more adequate housing in rural districts as well as in the cities, it is the urban aspect of the problem which can be tackled with the best prospects of success at this stage in the country's development. Improvement of urban housing, moreover, is intimately connected with numerous aspects of city government—the provision of educational and other public facilities, traffic regulation, control of disease, property values and tax assessments and so on almost without end. If these inter-related problems are to be dealt with in a rational, coordinated manner, they should all be handled by the authority directly responsible for them—the city government.

For this overriding reason, the Mission recommends that the provision of public housing be the function of the municipalities. As part of a general program of urban development, they should do the construction work, or arrange to have it done through housing cooperatives, and make the necessary arrangements for renting or selling via hire-purchase the housing units erected. This will, of course, require the recruit-

ment and training of a staff to carry out the program, especially in Bangkok, where the principal need for low-cost housing exists.

With very limited financial resources, but confronted with ever-increasing demands for a more adequate water supply, a better drainage system, modern sewage facilities and expanded street construction, Bangkok cannot do much unaided to improve housing conditions. With somewhat less emphasis, the same could be said of most other municipalities. The Mission therefore recommends that the national government provide funds for public housing to be matched by the municipalities. To keep the program within bounds, some upper limit would have to be set; to begin with, it might be fixed at a total of 30 million baht a year. This figure is somewhat arbitrary, but reflects a conviction that at this stage of Thailand's development, large expenditures should be confined to such fields as power, irrigation and transport which contribute most importantly and directly to raising productivity and income. As the effects of investment in these fields are registered, a larger share of resources can be devoted to direct betterment of living conditions.

To ensure that the money allocated is spent on low-cost housing, there would have to be a limit on the cost per housing unit. To determine what this should be will require study, but some such figure as between 10,000 and 20,000 baht might be reasonable. The rent charged would doubtless have to be below going commercial rates, but it should be sufficient at least to cover maintenance and to repay the cost of the housing within its life.

The Welfare Housing Office should undertake no more construction, and should wind up its hire-purchase and rental projects as rapidly as possible, transferring the administration of those outstanding to the Welfare Housing Bank or—for rental houses—to the municipalities. The Housing Bank should become the sole central government agency making

social administration have had great difficulty in enforcing a means test. Thailand totally lacks essential local administrative establishments. Moreover, even if the necessary machinery could be created, its difficulties would be compounded by the fact that the greater part of Thai families receive part of their income in kind, and that the composition of family units is made unstable by the habit of rural families of placing children in the homes of relatives. It should also be borne in mind that the fact that local officials will be called upon to discriminate among families on the basis of uncertain estimates of income is bound to be socially divisive.<sup>9</sup>

### *Assistance to the Needy*

In preference to family allowances, it would be better to enact a scheme of assistance to the needy. Even in a country like Thailand, where family ties are strong enough to engender widespread mutual assistance, there will always be some families so plagued by misfortune as to need outside support to ensure their survival.

Though not directly specified in legislation, several types of social assistance are currently carried on by different divisions of the Department of Public Welfare. These include aid to victims of disaster, to unemployed workers and for the care of the children of poor families, as well as aid for other miscellaneous purposes. In 1956 expenditures on these various kinds of public assistance amounted to 14.6 million baht.

Administration of this aid would be more effective and simpler if all the types provided were handled by a single responsible division. After further study, especially of the possible participation of local and municipal authorities, all forms of public assistance should be defined and regulated

<sup>9</sup> The scheme was abolished by a proclamation of the Revolutionary Party on August 12, 1958.

through a Social Assistance Act. The Act should provide for aid in cash or in kind according to circumstances, and will need to provide for some effective means of establishing the validity of claims.

### *Child Care*

Children generally have the first call on welfare arrangements. For orphan children or those neglected by irresponsible parents, the Department of Public Welfare has five public institutions caring for 935 children ranging in age from infancy to 17 years. But only 30 children receive care in foster homes.

Because a family atmosphere is better for the child, and because it is much less expensive than institutional care, the Mission recommends that as rapidly as possible carefully supervised foster homes be found for all normal children now in institutions. Moreover, since the necessary supervisions must be undertaken by a staff familiar with local conditions, child welfare programs of this type should be carried out by the municipal and local authorities. Two out of the five existing institutions that are schools (one for delinquent boys) might well be continued, although they should probably be transferred to the Ministry of Education. The others, in the nature of institutional homes, could be turned over to the Bangkok municipality for administration and gradual replacement by the recommended foster home system. The city government will need to prepare for this by recruiting and training suitable staff.

An Act of 1951 established a Juvenile Court and a Central Observation and Protection Center in Bangkok. It also provided for other juvenile courts to be set up in the provinces, but this provision remains a dead letter. In these outlying jurisdictions, little distinction is made between juvenile and adult offenders against the law. Children are given no special benefits or treatment, tried in the same manner as adults,

sentenced to the same prisons and jailed with adult criminals.

In Bangkok, however, juvenile offenders are tried in the Juvenile Court, where their interests can be safeguarded. This protection is reinforced by the Observation and Protection Center, which investigates cases, keeps records and furnishes psychiatric, psychological and medical care for children brought before the Court. It also administers a probation system, although only a small proportion of the children are placed on probation.

The Mission recommends that similar centers or committees be set up outside Bangkok-Thonburi, and that they be required to assist children, supervise their treatment and ensure that they do not mingle in prison with hardened adult criminals.

#### *Care of the Aged*

The Department of Public Welfare has made provisions for the aged, similar in many ways to those for the young. Three homes, one relatively large, on the outskirts of Bangkok, and two in the provinces, care for some 382 aged people.

In Thailand, care of the aged is mainly an urban problem, since in the villages families continue to carry this responsibility. It also resembles the problem of child care in many respects: life in private homes is generally more congenial than life in an institution, and home care is much less expensive than institutional care. The Mission recommends that the responsibility for the aged be transferred to the municipalities, which should develop a plan of supervised home care.

#### *Treatment of Crime*

In its treatment of criminals, Thailand relies mainly upon imprisonment. It has done little to develop methods of proba-

tion and parole. Rather than going ahead with plans to construct additional costly prison buildings, the alternative of probation and parole should be carefully studied. If more prisons are judged necessary, they should be small simple camps, constructed so far as possible with prison labor.

### *Training of Social Workers*

The training of social workers, now undertaken by the Social Training Institute and by the Faculty of Social Administration of Thammasart University, has not been carefully planned. The curricula and amount of field experience are inadequate, and graduates are not professionally qualified for their work.<sup>4</sup> The present course of training either should be thoroughly revamped and upgraded or should be abolished, for present outlays cannot be justified by the results.

Research in the field of social welfare is a duty of the Division of Social Studies of the Department of Public Welfare. Work now being done is scarcely of professional quality, which means that the investment in this Division yields a negligible return. Until professional standards can be attained, it would be preferable to abolish this Division and to seek expert aid from abroad for the study of special problems.

## FINANCIAL REQUIREMENTS— RECURRING AND CAPITAL EXPENDITURES

To provide for the social services discussed in previous sections, we recommend annual allocations for recurring expenditures rising from 200 million baht in 1959 to 250 million

<sup>4</sup>For details, see *Training of Social Workers in Thailand*, by Eileen M. Davidson and Deborah B. Pentz (United Nations Technical Assistance Program, Report No. TAA/THA/4, November 14, 1956).

in 1963. These outlays will exceed those incurred in recent years. Yet they have been pared to the minimum necessary to keep pace with the increasing requirements of a growing population. Almost the entire increase is actually accounted for by public health—to provide more doctors and nurses for existing and proposed new hospitals, to expand and improve the rural health service and to establish better administration arrangements in the two medical schools. No significant allowance has been made for an increase in recurring expenditures for welfare schemes administered by the Department of Public Welfare. In fact, we believe that some of the functions or services recently performed by this Department should be either abandoned or postponed to the time when finances and administrative capacity will permit a useful expansion in the scope of welfare programs.

The principal claim on capital expenditures for health will come from construction of the new medical school at Chiang-mai. It will be substantial through 1961, and then taper off rapidly. An annual outlay of 8 million baht on improvement of existing hospitals and construction of infirmaries is very modest, but is in line with the need for prior training of additional staff. The same may be said of expenditure on health centers.

Suggested investment in welfare activities is held to relatively small amounts, largely because of the Mission's recommendation that their most expensive component—the land settlement schemes—be suspended (see Chapter II). If, after a thorough review, outlays are resumed on projects of this kind, they should be at a greatly reduced rate.

With respect to public housing, it is suggested that central government grants for this purpose should not commence until 1960 in order to permit time for the necessary organization of the program. After an initial allocation of 15 million baht in that year, increases to 40 million by 1963 are projected.

These financial recommendations are summarized in the following table:

TABLE 16 Recommended Public Development Expenditure Proposed for Social Services and Means of Financing, 1959-63

(Million baht)

	1959	1960	1961	1962	1963
<i>Total expenditures</i>					
Recurring expenditures . . . . .	200	210	230	250	250
Capital expenditures . . . . .	50	95	110	90	110
Total expenditures . . . . .	250	305	340	340	360
<i>Financed by:</i>					
Government budget . . . . .	235	270	295	300	310
Municipal funds . . . . .	—	15	20	30	40
ICA aid assumed . . . . .	15	20	25	10	10
<i>Recommended recurring expenditures by major category</i>					
Health . . . . .	160	170	185	205	205
Welfare . . . . .	40	40	45	45	45
Total recurring expenditures . . . . .	200	210	230	250	250
<i>Financed by:</i>					
Government budget . . . . .	200	210	230	250	250
<i>Recommended capital expenditures by major project</i>					
<i>Health</i> . . . . .	35	52	50	25	24
Chiengmai Medical School and Hospital . . . . .	16	32	33	9	9
Improvement of hospitals . . . . .	8	8	8	8	8
Health centers . . . . .	5	5	5	5	5
Malaria eradication . . . . .	5	6	3	2	1
Research . . . . .	1	1	1	1	1
<i>Welfare</i> . . . . .	15	13	20	5	6
<i>Housing</i> . . . . .	—	30	40	60	80
Total capital expenditures . . . . .	50	95	110	90	110
<i>Financed by:</i>					
Government budget . . . . .	35	60	65	50	60
Municipal funds . . . . .	—	15	20	30	40
ICA aid assumed . . . . .	15	20	25	10	10

## CHAPTER VI EDUCATION IN THAILAND

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Education occupies an important place in Thailand's economy. Its Ministry ranks third, after Defense and Interior, in terms of appropriations, and has accounted for 15% of total government expenditures in recent years. The share of gross national product devoted to education averaged a little over 2½% from 1952 to 1956. Over this period expenditures rose by almost 50%.

Compared with neighboring countries at a roughly similar stage of development, Thailand's outlay on education does not appear to be excessive. In per capita terms, it is higher than that of Burma, but much lower than that of Ceylon or the Philippines.

If expenditures are large already, they are bound to increase, at least keeping pace with the increase in the school-age population. They will increase more rapidly if the demand for wider educational opportunities is to be met, and in particular if the quality of the service is to be improved. The importance of education in reducing illiteracy and in equipping the people to lead a more productive life is so great that expansion of facilities can readily be justified. Yet the competing claims on the Government's budget are so large that all projects must be carefully scrutinized to see that they realize their objective in the most economical way.

### PRIMARY AND SECONDARY EDUCATION

#### *Description*

Since 1937, the foundation of Thailand's school system has consisted of the four elementary grades (Pratom I-IV). Chil-

dren must attend school from the age of eight until the age of fifteen, or until they complete the work of Pratom IV. The country is amply provided with Pratom schools; between 1945 and 1954, 90% or more of children in the compulsory age group were in attendance.

Above the Pratom level, the pupil may choose one of two distinct educational ladders. The first and much the more popular comprises six years of secondary school (Matayom) of the traditional academic type. Beyond this lie two years of pre-university school, followed by the universities. The second ladder is vocational. Three years of junior vocational school lead to senior vocational school, also offering a three-year course. Those who complete the latter are eligible to go either to three more years of higher vocational school or to the Technical Institute (located in Bangkok, but with branches in Korat, Songkla and Chiangmai) for three to five years of work. Graduates of Matayom VI may also enter the Technical Institute rather than prepare for a university.

Ninety per cent of pupils who seek education beyond the elementary grades choose the academic ladder, which alone provides admission to a university. The 10% who enter vocational schools spend most of the first three years on carpentry, in addition to academic subjects. In the succeeding three years, vocational subjects include metal work, building construction, drawing, mechanics and business training, as well as tailoring, dress-making and home economics. Vocational training in agriculture is provided in specialized schools in the country (see Chapter II). Standards in the senior vocational schools are substantially higher than in the junior schools. They are highest of all in the Technical Institute, which has expanded rapidly since its inception in 1952, with help from ICA. This Institute, with its three up-country branches, promises to be a first-rate source of highly skilled and supervisory workers for industry and various government departments.

Most children, especially in the primary grades, go to government schools. Yet even in these grades a modest proportion

(7.7% in 1956) attended private schools. The role of the latter is much more important at the secondary level; here private schools account for 58% of total attendance. Curricula of private schools are prescribed by the Government, which contributes some 70 million baht in subsidies to their support.

### *Recent Changes*

In 1953, the Ministry of Education began to replace the junior vocational schools with primary extension schools. The curriculum of the latter lays greater stress on academic subjects, and although some vocational work is given, it demands less of the pupil's time than does the junior vocational course, and is more varied in character. By 1957, there were 569 primary extension schools, with at least one in each of the country's 448 administrative districts (amphurs).

This change is probably all to the good, for the junior vocational schools have little educational value. Their vocational content amounts only to the most elementary carpentry, and the academic work is inferior.

Toward the end of 1957, the Minister of Education proposed a further change that would, in effect, replace *both* the junior vocational schools and the first three years of Matayom with the primary extension schools. The present sequence of elementary, secondary and college preparatory schooling, 4 + (3+3) + 2, is to give way to a new sequence of 4 + 3 years elementary and junior secondary plus 3 + 2 years of senior secondary and college preparatory. The junior secondary would become, in effect, a continuation of the primary curriculum, being of the same general type and being "written, however, in such a way as to allow some flexibility in training and to create love of professional work for the graduates who may have no chance of further education."<sup>1</sup>

Even before this recent proposal, the growing demand for

<sup>1</sup> Letter from Minister of Education to the Council of Ministers, December 17, 1957.

more education than that provided by Pratom I-IV had in part been met by easing the policy of admitting pupils to Matayom I. In 1955, enrollment in Matayom years I-III was 19% above 1954, and in Matayom IV-VI, 25% higher. In 1956, Matayom I-III enrollment remained virtually unchanged over the preceding year, while in Matayom IV-VI it increased a further 20%.

### *School Problems and Needs*

#### (I) THE REPEATERS

Although Thailand has succeeded in providing free elementary education for virtually all its children, the present system has certain glaring shortcomings. One of the more striking is the high proportion of failures, especially in the Pratom years. Between 1950 and 1955, half of those enrolling in Pratom I completed the year's work. In this same period, just over half of those enrolled in this grade were "repeaters." (The percentage of repeaters did decline steadily each year, from 59% to 45%.)

Unfortunately much of the repeater problem may be attributable to poor instruction and the failure of the system to communicate the materials adequately. Nevertheless, there appears to be little justification for permitting a pupil to repeat a given grade more than twice; if he fails in his second attempt he should be dropped from school. To allow a pupil a third or even more opportunities to accomplish what other children can do in a single year simply encourages laziness, crowds the classrooms, slows down the progress of the class and disrupts the process of instruction. Moreover, not much is apt to be gained from attending a class after two consecutive failures. As soon as possible, separate classes should be established to provide specially designed instruction and guidance for the retarded.

Despite the large proportion of repeaters, both in Pratom I and later years, the rate at which students are eliminated, mostly because of failures, is quite high. Since the war, of every hundred who entered Pratom I, only 38 completed the four-year elementary sequence, and of these, 18 went on to Matayom I while approximately two entered the junior vocational schools. Of the 18 entering Matayom I, only two survived Matayom VI, and one of these went on to the pre-university school.

## (2) TEACHER TRAINING

These conditions — a large proportion of failures and the presence of a large number of repeaters, especially in the lowest grades — are closely related to a second major deficiency of the educational system: a high proportion of inadequately trained teachers. In the terminology used in Thailand, a “qualified” teacher is one who has completed Matayom VI and at least two years of Teachers’ Training College.<sup>2</sup> Since the war, the proportion of untrained teachers has been over 70%. Few of these teachers have more than a Matayom VI, or secondary, education, many of them have completed only Matayom III, and some have only an elementary (four-year) education.

Provision of better trained teachers, and of more of them to deal with the steadily increasing school population, is Thailand’s most pressing educational need. According to recent revised estimates by Dr. William Fox of the Indiana University Contract Staff, growth of the school population alone will require, over the 11 years from 1957 to 1967, the training of 48,000 teachers, or an average of about 4,400 a year.<sup>3</sup> With

<sup>2</sup> Before 1955, the requirement was only one year of Teachers’ Training College.

<sup>3</sup> This includes Pratom I-IV and Matayom I-VIII in both public and private schools. It assumes a slightly improved teacher-pupil ratio of 1:35 in the Pratom years, and of 1:30 for Matayom I-III. In Matayom IV-VI the ratio is assumed to be increased from the present 1:24 to 1:25, and in Matayom VII-VIII from 1:15 to 1:20.

100,000 teachers in the Pratom and Matayom schools in 1957, the necessary increase to 148,000 by 1967 can only occur if due allowance is made for replacements. A 2% rate does not seem unduly low for Thailand, owing to the relative youth of a large proportion of the teachers, but even this rate will require the training, from 1957 to 1967, of around 27,000 or 2,500 a year on the average. Added to those required to accommodate an increased school population, the average number to be trained annually comes to 6,900.

In 1957 the Teachers' Training Colleges, with a total trainee enrollment of 8,100, graduated 3,000 with two or more years of training. The number of graduates must thus be more than doubled. It should not be too difficult to reach this goal fairly soon. Plans are ready for a major expansion of facilities at 19 of 28 training colleges. As for staff, in 1957 there were about 565 teaching in these colleges (705 staff, of which 20% were engaged in administration), which gives a teacher-student ratio of about 1:14. New staff for these colleges is trained at the three colleges of education<sup>4</sup> and at Chulalongkorn University. Together, they graduated 216 with the B.S. degree in 1957, and another 291 with a one-year diploma. Recruits for training college staff should be, but are not, confined to those with the B.S. degree.

Since enrollment in these four institutions is expanding rapidly, the number of B.S. graduates should soon rise to 300 or more. Even if only half of these can be reserved for the training colleges, it should be possible to increase the teaching staff at these colleges as rapidly as their student body. This assumes a conservative program of expansion to provide the trained teachers needed.

Such a program, it is clear, makes no direct attack on the problem of reducing the proportion of untrained teachers. Yet it does make an indirect contribution. In 1957, approximately 70% of all teachers, or 70,000 out of 100,000 were "unqualified". If all vacancies arising from retirement, death

<sup>4</sup> At Prasarnmitr, Patumwan and Bangsaen.

and change of occupation are filled with qualified teachers, the proportion of unqualified teachers will gradually be reduced. The number of unqualified teachers should fall by 1967 from the present 70,000 to 56,000, only 38% of the 1967 estimated total of 148,000 teachers.

There remain two cheap and relatively easy ways of further reducing the proportion of untrained teachers. One is to provide in-service training to prepare unqualified teachers to take the examination for teaching certificates. Such a program is being prepared. The other is to permit qualified teachers who want to continue teaching after the retirement age of 60 to do so. Both alternatives should be encouraged.

### (3) TEACHING MATERIALS

Besides the poor training of many teachers, the teaching materials in use leave much to be desired. In the words of a Thai educator, "most local and village schools are absolutely deprived of comforts. The children sit in an uncomfortable position on the floor, listening to the teachers asking them to repeat their lessons in unison and memorize them from the blackboard. How dry the lessons are. There are no pictures, no models; and the textbooks printed on cheap paper contain no attractive colored illustrations. The teachers themselves have no handbooks, no details for a working program, no suggestions of any kind to give the details of the subjects to be taught and the methods to be used. The curriculum tends towards fact-cramming, and is entirely academic."

A particular case illustrating both poor materials and inadequate teacher training may be seen in the teaching of English in the Matayom years. Few of the instructors have more than a bowing acquaintance with the language, and few classes have suitable texts or handbooks. The result is that after nominally studying English for six years, accomplishment is negligible and the time spent on the language largely wasted.

Improved teaching materials are being prepared in the Col-

lege of Education at Prasarnmitr and supplied to the Teachers' Training Colleges. This program should be continued, with the objective of providing pupils with modern texts and teachers with suitable handbooks and other teaching aids. UNESCO has completed English textbooks and handbooks suitable for use in Matayom I and II; others are being prepared, including those of the ICA Regional English Project. These or similar materials, together with a program now under way at Prasarnmitr and Chulalongkorn to improve the training of English teachers, should go far toward raising the standards of English instruction.

#### (4) BUILDINGS

With increasing student enrollment and larger numbers of teachers and classes, additional classroom space will have to be provided. This problem may be eased somewhat by the more rapid elimination of repeaters. More careful attention to the scheduling of classes than appears to be given at present would also help. It is essential that any school building be closely coordinated with the provision of additional teaching staff, for there is no point in building schools before teachers are available to staff them.

School buildings, moreover, are expensive. Local participation in their erection, both physical and financial, has been common in the North of Thailand. Such participation should be actively encouraged, especially until tax reforms provide more ample finances to the Government.

The Ministry of Education has proposed, as an economy measure, that a greater share of the teaching burden be shifted to the private schools. Although the Government subsidizes these schools, its contribution per child is less than a third of the cost per pupil in government Matayom schools and less than half that in Pratom schools. There would therefore be a substantial saving if private schools carried a larger share of the growing teaching load.

It is not made clear, however, how this additional burden can be forced on to the private schools. Are pupils to be refused admittance to public institutions? Moreover, additional teachers and additional funds for building will be necessary, whoever carries the increased load. The Government alone can provide additional trained teachers, so there is really no economy on this score. And if the private schools must erect more buildings, where are they to get the money? It is true that they have been expanding in recent years, and in all likelihood continued expansion will occur, but fuller information is needed on this proposal.

Another economy suggestion of the Ministry is that teachers with no teacher's diploma be allowed to teach, and then become qualified through in-service training. Provided this supplementary training is good, it should help to ameliorate the problem of excessive numbers of unqualified teachers. It is, however, at best a second-rate substitute for more prolonged and intensive training, which should not be sacrificed.

#### *A Development Program for Primary and Secondary Education*

##### (1) TRAINING OF TEACHERS

The Ministry of Education has a program for increasing the supply of trained teachers. It has two main features:

- (a) an expansion of the facilities of the three Colleges of Education so as to raise the number of graduates from 222 in 1958 to 1,170 in 1963. Some of the graduates would provide additional staff for the Teachers' Training Colleges (TTC), others would be employed in secondary schools and in supervisory and administrative positions.
- (b) expansion of the facilities of the Teachers' Training Colleges. These facilities, together with the additional

staff from (a), would permit a rapid increase in the number of trained teachers (two-year graduates of TTC's), from about 4,100 in 1959 to about 7,800 in 1963.

The addition to payrolls involved in this program would rise from some 34 million baht in 1959 to 242 million in 1963.<sup>5</sup> Moreover, capital costs would be quite heavy. The following table gives the figures provided by the Ministry of Education; they include meeting halls to be used in connection with the projected in-service training program:

TABLE 17 Total Cost of Proposed Teacher Training Program

(Million baht)

	Capital expenditures				Addition to payroll and depreciation charges	Grand total
	At 19 TTC's	At the colleges of education	Meeting halls	Total		
1959 . .	19	36	18	73	38	111
1960 . .	38	22	4	64	78	142
1961 . .	85	25	4	114	132	246
1962 . .	61	24	4	89	194	283
1963 . .	54	25	4	83	263	346

This is an expensive program. In view of the rising demands on the budget and the large volume of commitments to major development projects, every effort must be made to keep additional claims as low as possible. While granting that the training of sufficient teachers to keep pace with the rising school population merits a very high priority, the Mission believes

<sup>5</sup> This assumes the going salaries for the various grades: two-year graduates of TTC's at 600 baht a month, four-year graduates at 750 a month, and graduates of the Colleges of Education at 1,100 a month. The teacher-student ratio in the TTC's is assumed to remain at its present figure of 1:14.

that this objective can be attained with a substantially smaller expenditure.

Three modifications in the Ministry's plan are suggested in the light of financial realities:

- (a) The size of the classes in the Teachers' Training Colleges should be allowed to rise from the present ratio of one teacher for each 14 students to 1:25. This change would reduce the need for additional staff for TTC's. (The maximum number of recruits needed would be 100 in 1958.)
- (b) The expansion of the Colleges of Education should be stopped. The basic facilities are already installed. These will suffice to increase enrollment gradually over the next three years, with 250 graduates in 1959 and 300 beginning in 1961. These graduates can supply the additional staff required for the training colleges, with 112 to 278 available each year to 1963 to take supervisory or administrative posts.
- (c) With larger classes at the training colleges, the projected outlay on buildings, and to a lesser extent on equipment can be cut. A reduction of 25% would seem feasible.

Table 18 summarizes the total outlays to be incurred for the project after taking into account the suggested economies for capital expenditures and those resulting from a corresponding reduction in payroll allowance. The Mission recommends that this revised program be given a first order of priority.

TABLE 18 Revised Teacher Training Program as Recommended by Mission

(Million baht)

	1959	1960	1961	1962	1963
Total capital expenditures . . . . .	33	32	68	49	45
Additional recurring expenditures . . . . .	30	62	105	155	202
Total expenditures . . . . .	63	94	173	204	247

## (2) PROVISION OF CLASSROOMS

Using Dr. Fox's estimate<sup>6</sup> of the probable increase in school enrollment over the next five years, we have computed the number of classrooms needed to accommodate the rising number of pupils<sup>7</sup>. The total for the entire period is 20,588. Over the same five-year period, we have calculated the number of additional teachers (net of replacement) that could be trained with the proposed increase in training facilities to be 21,942. The two figures are not far apart; there is a surplus of some 1,350 teachers over schoolroom accommodation needed for increasing numbers of pupils. The surplus, if it turns out in fact to exist, could be used to replace unqualified teachers, or for specialized types of instruction.

But owing to an unavoidable lag in the provision of teacher training facilities, the number of teachers available will increase at first less rapidly than the number of pupils, though after 1960 their increase will overtake the rise in the school population. Therefore, to avoid having empty classrooms at first, the rate at which they should be provided has been scaled down in 1959 and 1960. (This means some unavoidable crowding of classrooms in these years, though it should not be excessive).

The rate at which it is suggested that total classroom space be provided is shown in column (1) of the following table. Column (2) gives the number of classrooms that private schools may be expected to provide, on the assumption that, as in recent years, 7% of Pratom enrollment and 58% of Matayom enrollment will be in these schools. Subtracting column (2) from column (1), we get column (3), the number of classrooms to be provided by the Government. Using the figure of 44,000 baht per classroom (provided by the Ministry

<sup>6</sup> Dr. William Fox of the Indiana University Contract Staff—see previous section on "Teacher Training."

<sup>7</sup> It is assumed that each Pratom classroom will contain 35 pupils, each Matayom I-III will have 30 pupils, and each Matayom IV-VI, 25 pupils.

of Education) as the average cost of a room equipped with desks and blackboards, we arrive at column (4), the estimated cost of the new government schools needed.

TABLE 19 Number and Cost of Classrooms Needed, 1959-63

(Pratom I-IV and Matayom I-VI)

	(1) Total rooms to be provided	(2) Provided by private schools	(3) Provided by government	(4) Cost of government schools
	<i>(Million baht)</i>			
1959 . . . . .	2,178	823	1,355	60
1960 . . . . .	3,600	1,361	2,239	99
1961 . . . . .	4,560	1,724	2,836	125
1962 . . . . .	5,560	2,102	3,458	152
1963 . . . . .	4,660	1,761	2,899	128
<b>Total . . . . .</b>	<b>20,558</b>	<b>7,771</b>	<b>12,787</b>	<b>564</b>

The Mission believes that these construction expenditures should have priority. They are essential to avoid serious overcrowding and to ensure that newly trained teachers will have a place to work.

(3) VOCATIONAL EDUCATION

With the rapid replacement of junior vocational by primary extension schools (there are only about 150 of the former left), a large share of the cost of continuing and expanding this useful form of education has been shifted to another area. Since the Mission recommends (see Chapter II) that the agricultural schools be transferred to the Ministry of Agriculture, this further reduces the budgetary claims of the Vocational Department. To ensure reasonable expansion of the facilities in this field, capital expenditures of the order of 3-5 million baht in the next five years should be sufficient.

## HIGHER EDUCATION

Stated very broadly, the principal need of higher education in Thailand is a rise in its quality, so as to provide the opportunity for developing the talents of the numerous able young Thai who cannot afford to attend foreign universities or who cannot share in the limited program of assistance for foreign study. Higher quality at home would also reduce the cost of that program.

Other sections of this report call attention to the need in Thailand for trained administrators, engineers, agricultural experts, economists, statisticians and other types of technically skilled personnel. At present, these needs for special training are being met largely by sending Thai nationals abroad. This solution is expensive, as well as self-perpetuating.

Although the Government began sending students abroad for study about 100 years ago, the number of such students has been increasing rapidly since 1932. In 1937-38, there were 81 government scholars overseas; by 1957 there were 516 (plus some from the Ministry of Defense). Many more have gone abroad at family expense or with some form of foreign assistance. In 1937, the total of Thai students abroad was 720; by 1957 it had increased to 1,956. The Thai Government not only spends about 20 million baht a year to support government scholars for three to five years or more abroad, but also large sums representing the salaries of government servants participating in study programs financed by foreign aid; it also contributes to the cost of travel. These costs have in recent years aggregated around 35 million baht annually. This is well over twice the annual operating cost of Chulalongkorn University, and would suffice to pay for four years of education at Chulalongkorn for 3,365 students.

While the development of Thailand's own universities would not and should not eliminate the need for foreign study, especially by students requiring specialized or advanced train-

ing, it could greatly reduce that need. Even more important, it would help provide educational opportunities that are now so conspicuously lacking.

Thailand possesses four universities, all located in Bangkok. Chulalongkorn University, the oldest, includes seven schools or faculties providing instruction in the humanities and the social and physical sciences, as well as engineering, architecture, education, commerce and accountancy. Its rival, Thammasart University, or the University of Moral and Political Science, specializes—as its name implies—in the social studies, with separate faculties of law, political science, economics, commerce and social works. Kasetsart University is devoted to agriculture; it has separate faculties of agriculture, veterinary science, economics and co-operatives, forestry, fisheries and irrigation. In addition to these, there is the University of Medical Sciences, with two separate medical schools, as well as schools of dentistry, pharmacy and public health.

The level of accomplishment at these institutions (possibly excepting the medical schools) is much lower than it should be. There are a number of reasons for this state of affairs.

The standards maintained and the range of subject matter taught at the four universities are inadequate. The Medical University is really a group of schools concerned with medical and related studies. Kasetsart is limited to agriculture and related subjects; elsewhere it would be called an agricultural college. Chulalongkorn comes closest to university stature so far as the variety of its faculties is concerned.

It would certainly be more logical, and more consistent with practice in other countries, if each of the present universities became a constituent college in a single University of Bangkok.

Far more than logic and consistency, however, would be served by such a reorganization. One of the weaknesses of the present arrangement is that it permits, and perhaps even actively encourages, a wasteful duplication of work and a corresponding insulation. Thus economics, political science, social studies and commerce are taught both at Chulalongkorn

and at Thammasart. Not only this: economics courses, for example, are offered in two faculties at the same university, at Chulalongkorn—in the Faculty of Commerce and in the Faculty of Political Science.

Such duplication could, of course, be avoided were there a will to do so on the part of the existing administrations. Separatism, however, appears to be in control. Establishment of a common central administration could subdue these tendencies and bring about a more orderly and economic allocation of subjects. Moreover, a single administration could more effectively exert pressure toward making standards in the member colleges more uniform.

Unification raises many problems. Some are due to the fact that the Ministry of Education administers Chulalongkorn and Thammasart, whereas the Ministry of Agriculture has the responsibility for Kasetsart and the Ministry of Health for the Medical University. Others arise from the differing traditions and purposes of the four institutions. There is no ready-made solution; all these problems require study. The Mission was therefore gratified to learn that the National University Council is already studying the question of unifying Thailand's higher educational institutions; the Mission can only stress the need for a practical solution.

### *Particular Problems*

Some of the major problems of the existing university system are discussed below.

#### (1) LARGE CLASSES

One of the first things to be noted is the high student-faculty ratio. At Chulalongkorn University, in 1956/57, there were 4,224 students and an academic staff of 234 (full-time or equivalent), giving a ratio of 18:1, which is about twice

that of the representative American or European university. Thammasart, with 21,228 students, has a staff of only 269, giving a student-faculty ratio of 79:1. Most of the staff is part-time, but so too are the great majority of the students. Only Kasetsart University with 1,005 students and 154 faculty members (full-time equivalent) has a markedly low student-faculty ratio—6.5:1.

## (2) LOW PAY

A second noteworthy feature is the low pay of the staff (both academic and non-academic). Civil service scales apply, with assistant lecturers (third-grade officers) receiving, in 1958, from 750 to 1,200 baht a month, lecturers (second-grade) from 1,200 to 2,300, and professors (first-grade) from 2,300 to 3,650 baht. The starting salaries of those comparatively few university teachers with foreign qualifications are about double the scale given above.

As with other civil service positions, these salaries are far below those paid in commerce and industry, making it extremely difficult to hold able people, especially those whose training fits them for private employment. This is even more true of many of the non-academic staff, especially typists. At a starting wage of 450 baht a month, apprentices, or typists who cannot type, are virtually the only job applicants. They are strongly impelled to use their slack periods to perfect their skills, and after a few months, to obtain employment with a private firm at greatly enhanced wages. Those who remain in university teaching are under great pressure to supplement their income by outside employment, to the detriment of their academic work.

It was not always thus. Before the war, university salaries were more nearly in line with those in other occupations. To restore university incomes to equality in purchasing power

with those of 1938, the salary of an assistant lecturer would have to be a little more than doubled, that of a lecturer would have to be increased by about 140%, and of a professor by 176%.

Both equity and effective recruitment call for a sharp increase in salaries. The problem, however, is one that extends to the whole civil service. As Chapter IX shows, claims on the budget, especially for development purposes, are likely to increase at least as rapidly as government revenues in the next few years. Only by a determined stand against adding even more redundant civil servants, by eliminating unnecessary divisions or sections, and by not filling vacancies created by normal losses from death, retirement, and change of occupation, is there any hope of raising government salaries, including those of university teachers. To a limited extent, the incomes of the latter might be supplemented by allotting to faculty members such extra paid employment as translating texts, student counseling, library work and the like.

### (3) STAFFING PROBLEMS

Another serious deficiency, probably traceable in part to the low postwar salary scale, is the extensive use made of part-time instructors. At Chulalongkorn, in 1956/57, the full-time staff numbered 179, and the special or part-time staff 195. (The latter received, incidentally, only 30 baht an hour for their work.) These 195 special instructors carried a teaching load equal to that of 55 full-time staff members. At Thammasart, there were only seven regular full-time academic staff members; the remaining 262 were special, although some taught as many hours as the regular staff, while holding other positions simultaneously. Kasetsart is better off; in 1956 its regular and special staff were about equal in numbers, with 113 and 123 respectively. (Three special lecturers were the equivalent of one full-time staff member.)

There can be no objection to using part-time instructors on

a limited basis, such as in cases where some person outside the university has special knowledge or unusual attainments in a specialized field. But to rely heavily upon this kind of instruction can only lower a university's standards. Part-time instructors are usually less well qualified than persons specifically trained for the job, their work is more difficult to supervise, and because teaching is for them a secondary (and ill-remunerated) occupation, they cannot be expected to give it the single-minded and concentrated attention it needs and deserves.

Although generally the full-time staff is better trained than the special staff, many are far from adequately qualified. This is due partly to the extreme youth and recent rapid growth of Thailand's universities. It has been impossible to provide trained people fast enough to cope with rising enrollments.

Chulalongkorn University was first founded in 1917, but it was not until 1935 that the first bachelor's degrees, based on four full years of study, were conferred. And after the war, enrollment shot up from 2,499 in 1946 to 4,224 ten years later. The story is similar at the other institutions. Thammasart had only 1,452 students in 1946; in 1956 they numbered 9,513.\* Kasetsart's enrollment rose in the same period from 270 to 1,005.

There is general agreement among university and other people consulted that there is much less progression in the content of courses than there should be. Expressed differently, there is too much repetition. This is partly due to lack of effective arrangements for supervising and coordinating the materials presented in different but related courses, partly to excessive reliance upon part-time instruction, partly to the nature of the national examination system, and partly to lack of imagination and initiative generally.

Solution of the related problems of poor quality of staff, excessive reliance on part-time lecturers and overlapping of courses can only be attained by a resolute and continuing effort

\* Bona fide students, not the much larger number whose names were on the record books.

to improve the calibre of the faculty. Methods now in use should be extended and intensified. These include the employment of well-qualified foreign staff to strengthen one department after another, together with a carefully prepared and supervised program of sending abroad for advanced training selected graduates of these newly strengthened departments. Assuming their preparation in Thailand has been sound, as it has rarely been in the past, these trainee students can gradually replace the imported foreign professors.

Such a program will not yield sudden and spectacular results, partly because many departments are involved and partly because raising standards of teaching, and especially of learning, is a many-sided task. But within a given department, improvement should be clearly visible within three to five years, and ten years should see the department largely staffed by well-trained Thai instructors.

It is in this task of creating a home-based source of high standard advanced education, both general and technical, that foreign technical aid can make its greatest contribution to Thailand's future. For, as we have noted, one of the nation's chief shortcomings is a lack of sufficient well-trained administrators, engineers and technical workers of many kinds to deal with the complex problems of a developing economy. Building the educational base for training at home will not only reduce the cost of that training, but will also make it available to far greater numbers. And once Thailand's universities are raised to first-class status, they should contribute independently to the country's technical and scientific advance.

Since this particular task for foreign aid is bound to be long-enduring, agencies engaged in this type of assistance should be prepared to adopt a long-range program. First in need of attention are fields of study closely related to national economic development, such as engineering, agriculture, education, science, economics and statistics. In some cases suitable programs are already under way, notably in education, but in others programs need to be started or strengthened.

Shortage of qualified foreign personnel to help raise university standards is unavoidable, in view of the rapid rise in enrollments and of the existence of a considerable number of educational assistance programs. Even so, great care should be exercised by grantors of aid in selecting faculty members for this important work, even if this means proceeding with programs of this type more slowly. If the people chosen are mediocre or worse, this can only reflect adversely on the nation that sends them and retard or even dislocate the process of educational improvement in Thailand.

#### (4) READING ABILITY AND READING FACILITIES

At least as serious as any of the aforementioned deficiencies is a curious combination of circumstances that results in ineffectual education. First, the student spends far too many hours in the classroom instead of in reading, thinking and writing. At Chulalongkorn and the teacher training institutions, from 25 to 30 hours per week of classroom attendance is common. At Kasetsart, the average is 20 hours. Second, library facilities, in the form of books, comfortable and well-lighted reading accommodations and clerical assistance, are highly inadequate. And third, the student's ability to read English, the language he must use for most assigned reading, is so poorly developed that he cannot reasonably be asked to read extensively.

The last two factors go far to explain the first, great reliance upon lectures. The outcome of all three is a "spoon-fed" system of education that emphasizes memory, exposes the student to a limited number of points of view and consequently discourages critical or original thinking.

Unless and until the vicious circle of poor comprehension of English, poor library facilities and excessive demands for classroom attendance is broken, raising the standards of teach-

ing with foreign help can come to grips with only one aspect of the problem. The present "spoon-feeding" will inevitably continue, though the ingredients fed may be more digestible and more nourishing. Active student participation in the educational process cannot come until the student learns to read English with reasonable speed and understanding. Very few translations into Thai are available, even of textbooks. Although some improvement would result from additional translations and from the preparation of original texts in Thai, these possibilities are limited to large classes, owing to the high cost of small editions. The cost element precludes entirely the publication of translations of reference books, journal articles and the huge body of literature falling in the category of "outside reading." Since it will be many years before the current program to improve English teaching in the Matayom grades bears fruit, every effort should be made to get better results where it will do the most immediate good—in the pre-university schools and in the universities themselves.

Concurrently with the improvement of English-language instruction, attention should be turned toward acquiring more library books, starting with duplicate copies of those used for classroom assignments, and toward providing adequate library staff and establishing suitable arrangements to make the expanded resources easily accessible. Expert advice may well be needed. Both the employment of a library consultant and the purchase of additional books should qualify as objects of technical assistance.

As the capacity of students to read English improves, and as the range and availability of reading materials increases, the hours of classroom attendance required should be drastically reduced, ultimately to an average of not over 15 hours a week. With more free time outside the classroom, the student could reasonably be required to read more widely, do more independent thinking and prepare more frequent essays. In the classroom itself discussions might well replace in part the monotony and one-sidedness of lectures.

FINANCIAL RECOMMENDATIONS

The recommendations of the Mission with regard to public outlays on education are summarized in the following table.

TABLE 20 Recommended Public Development Expenditure Program for Education, 1959-1963

	<i>(Million baht)</i>				
	1959	1960	1961	1962	1963
<i>Recurring expenditures . . . . .</i>	900	930	980	1040	1100
<i>Capital expenditure: . . . . .</i>	102	141	205	213	186
a. Teacher training . . . . .	33	32	68	49	45
b. School buildings . . . . .	60	99	125	152	128
c. Vocational education . . . . .	3	4	5	5	5
d. Universities . . . . .	4	4	5	5	5
e. Miscellaneous . . . . .	2	2	2	2	3
<b>Total . . . . .</b>	<b>1002</b>	<b>1071</b>	<b>1185</b>	<b>1253</b>	<b>1286</b>

## CHAPTER VII *FINANCIAL MANAGEMENT*

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Previous chapters contain the Mission's main recommendations on expenditures and administrative policy for each of the main sectors of public development. There remain to be considered certain problems of government financial management, planning and administration which, if unsolved, could jeopardize the successful execution of the entire development program. This and the next chapter are devoted to an examination of these problems and to a discussion of the Mission's recommendations on them. Chapter IX will deal with the principal economic and financial implications of the development program.

### FINANCIAL CONTROLS AND PROCEDURES

In Thailand there is much room for improvement not only in the revenue system and its administration but also in the management of government finances. If financial management is to be effective, the government must be able to exert effective control over public funds. Such control in Thailand is far from complete.

#### *Points of Inadequate Control*

It is frequently the case that budgeted appropriations for particular purposes are not strictly adhered to. Expenditures in excess of appropriations are usually debited against a suspense account until they receive legal authorization, long after the fact, in a future budget. It would be preferable, when ap-

appropriations prove inadequate, for the additional funds to be provided in the current year, either through a supplementary budget or from a budgeted contingency fund in accordance with specific approval of the Council of Ministers. Cost of living allowances for government officials have been one of the main sources of such excess expenditure in the past and it is a substantial advance in financial management that budgeting for these allowances has recently been put on a more realistic basis.

Another weakness of control is that various sources of public revenue are not included in the budgeting operation. This has recently been corrected in the case of special taxes earmarked for health and education purposes. But other substantial public receipts and disbursements remain outside the budget, the most important of which are the financial operations of the State Lottery and numerous special funds operated by various government departments for a variety of income producing purposes. Central budgetary control over the large financial operations of the State Lottery is assured only for that part of lottery revenue which represents taxes on the sale of lottery tickets. Of the net receipts of the lottery after prizes, commissions, taxes and administrative expenses, only part is available for budgetary purposes and in practice this part, even as a relative share of the total, is variable and uncertain from year to year. The balance is distributed for charities and welfare, housing and other purposes in accordance with resolutions of the Cabinet. Yet it seems anomalous that financial provision for these particular purposes should be outside the budgetary framework. It would be preferable and is recommended that all of the net lottery proceeds and their disbursements be brought within the central budgeting process.

With regard to the special funds, of which forty-three were active during the period 1954-56, the problem is again one of adequate supervision to ensure priority use of the sums involved in relation to other spending requirements of the Government. Except where a definite advantage can be clearly

established, it is recommended that the practice of maintaining special departmental funds be discontinued and that the receipts and expenditures of these funds be incorporated in the central budget and subjected to the normal controls.

A further area of inadequate financial control is among the 80 or more quasi-independent government organizations which are engaged in various commercial, industrial and financial activities. The scale of financial transactions of many of these is very large. Among the most important are the Tobacco Monopoly and other state monopolies, the State Railway, the Port Authority of Thailand, the Express Transportation Organization, the Fuel Oil Organization and the State Savings Bank. Some of these organizations contribute each year, out of their earnings, to the general revenue. Others depend on budgetary appropriations to cover losses or to provide capital. In most of these latter cases there is central financial supervision in varying degree. But for the majority of these organizations supervision does not go beyond a routine audit of accounts.

It is not suggested that the central government interfere in the operations of these agencies so long as they are well administered and conform to prescribed government policies, nor is it proposed that their gross receipts or even all of their net earnings after provision for depreciation and reserves should be allocated through the budget.

What is suggested is that where the Government has a controlling interest in an agency engaged in commercial operations, it should require what would be required by any major stockholder in a similar private corporation—namely, prior review of the agency's capital budget and proper accounting of its fiscal operations. Furthermore, if results would justify the declaration of dividends, such dividends should be declared, and paid in the form of contributions to budgetary receipts. Surplus funds should not be retained by the agency or invested elsewhere by the agency without proper justification relative to the agency's purpose.

*Budgetary Deficiencies*

There exist numerous shortcomings in the form of the Thai budget which limit its usefulness as a tool of financial analysis, control and planning. A firm of specialists in fiscal administration has recently completed detailed study of the forms and techniques of the Thai budget and has made detailed recommendations which, if adopted, will correct many of these deficiencies.<sup>1</sup> Some of the proposals are already being followed. It will be of great advantage to the Government if these reforms are carried to the point of making the budget a really effective guide to financial and economic administration.

Budgetary accounting and fiscal reporting functions also leave much to be desired. Existing procedures do not fully ensure that authorized disbursements are all properly and efficiently utilized, and there is undoubtedly scope for considerable saving through closer scrutiny and supervision. As for fiscal reporting, the accounts of the Government are now available only after a delay of several years. Even when ready, they do not provide an accurate picture of cash flows, one of the main reasons being wide and numerous lags between the time when expenditures take place and when they are recorded in the accounts. Nor are the data adequate to permit a satisfactory reconciliation of receipts and disbursements on a cash basis. In general, it is not a great exaggeration to say that the shortcomings of fiscal accounting and reporting leave legislative and government bodies, as well as the public, largely in the dark on what actual expenditures have been and for what purpose they have been used.

Finally, the procedure for preparing the annual budget is deficient. Government departments request appropriations

<sup>1</sup>*Budget Administration in the Government of Thailand, Report No. B-1, Public Administration Services, Bangkok, 1956 (mimeographed).*

with only vague justification and in amounts that are consciously set beyond any expectation of achievement. These requests are then transmitted by the Ministry within which they originate without sufficient screening and coordination. And the Ministry of Finance lacks personnel with the necessary competence and detailed knowledge of departmental requirements to evaluate adequately the reasonableness and priority of request. In these circumstances it is almost axiomatic that requests for appropriations will be cut; but the nature and extent of cutting involves substantial elements of arbitrary judgment and political pressure. Hence some appropriations may be unrealistically low and in important cases almost certain to be exceeded, while others may be well in excess of any reasonable justification. The result has invariably been the enactment of total appropriations substantially beyond the available non-inflationary sources of financing.

Fortunately, inflationary spending has, in fact, been avoided in recent years. This has been achieved by holding disbursements below appropriations. But this introduces expediency and political pressure into the disbursement as well as the budgeting process. The consequence is not only serious year-to-year discontinuity and uncertainty as to appropriations for particular functions and services, but additional uncertainty whether funds appropriated will be actually forthcoming.

Measures to improve budget preparation have been recently approved in principle by the Government, and the first steps have been taken toward their adoption. The aim is to develop, over a period of a few years a satisfactory Budget Department within the Ministry of Finance<sup>2</sup> in accordance with recommendations of the Ministry's advisers on fiscal administration. This Budget Department would be aided, as far as the financ-

<sup>2</sup> Responsibility for budget preparation was transferred in early 1959 from the Ministry of Finance to a newly created separate office directly under the Prime Minister.

ing and allocation of funds for economic and social development are concerned, by the advice of the Planning Secretariat of the proposed National Development Board discussed in Chapter VIII.

The Budget Department would consist of several divisions, each dealing with a broad group of governmental functions, including general administrative services, social services, economic services and provincial services. Each division would maintain close staff relations with its group through budget units in all the Ministries and other major operating branches of the Government. The hope is that such liaison will result in request for appropriations being prepared in a more realistic manner while at the same time providing the financial authorities with detailed knowledge of the reasonableness of requests. The Budget Department would also include a Plans and Procedures Division, which would guide the other budget divisions and the various agencies of Government in the preparation of estimates. With the assistance of the Planning Secretariat, this Division would combine the individual estimates into a final budget in accordance with priorities and prospects of available funds. It is urged that the Government continue to follow through with this plan for developing a really effective budget administration as rapidly as practicable.

Along with improvements in the budgeting administration, however, there is also a need for progressive strengthening of the Comptroller General's Department in the Ministry of Finance. This will be necessary if the Department's efficiency is to be improved in supervising, accounting for and reporting on the receipts and disbursements of the Government. It will also be necessary if the Department is to follow more closely, as it should, the financial affairs of the numerous commercial and financial enterprises of the Government.

Finally, the Audit Council, which conducts the post-audit of the transactions of government departments and agencies, should be strengthened in order that it have adequate staff to carry on its work more promptly and effectively.

## BANKING AND OTHER LENDING FACILITIES

*Commercial Banking*

The role of commercial bank credit in Thailand, has been, on the whole, a relatively passive one. It is largely confined to financing external and internal trade. The banks can, however, provide the means for financing a boom arising from external causes, as they did during the Korean war period. They can also reinforce an inflationary stimulus from fiscal sources and thereby prevent such a stimulus from being kept within calculated bounds.

For this reason, and also in the interest of protecting depositors from unsound banking practices, we believe that the commercial banking system should be more effectively controlled than at present. Consideration has been given within the Government to a revision of banking legislation to require higher standards of banking practices and provide greater authority to enforce banking regulations and control bank credits.

The more immediate need appears, however, to be not so much for additional banking legislation as for effective exercise of the powers of supervision and control of the banking system that already exist.

Political connections of some of the commercial banks are undoubtedly conducive to lax standards in both the extension of bank credits and the enforcement of bank regulations. Reserve requirements, though fixed at almost the legal minimum, have been violated frequently and without penalty. Required reporting by individual banks has been long delayed. And action by the Government to shore up weak banks tends to relieve them of the necessity for sound management in the interest of survival.

From the standpoints both of logic and of independence, we recommend that the authority for bank regulation and credit

control be transferred from the Ministry of Finance to the Bank of Thailand. The Bank of Thailand now conducts regular inspections of commercial banks, but the intervals between inspections should be shortened; and the Bank should accelerate the training of its staff accordingly. The Government should support its efforts to enforce banking regulations and to penalize their violation—objectives which may be unrealistic so long as official participation in commercial banking activities is allowed.

The Bank of Thailand could also play a more active role in the credit operations of commercial banks. Up to now the rediscount powers of the Central Bank have been practically inoperative. To some extent, this is due to the reluctance of the commercial banks to use official channels of financing and to depend instead on inter-bank discounting and borrowing. Another factor has been the limited capacity of the Central Bank for rediscounting, due to the restrictive effects of the 100% currency reserve requirement and to the fact that the Government has utilized most of the Central Bank's lending capacity. Recently, however, the currency reserve requirements have been reduced to 60%, and the Central Bank should now be able to develop closer and more active relations with the commercial banks, assuming of course that the Government maintains prudent fiscal policies and does not take advantage of the greater credit flexibility that the Central Bank has now acquired. Given such closer relations, if it can reasonably be assumed that the Central Bank will rediscount to the extent that monetary conditions warrant, it should be possible for the banks to liberalize somewhat the scale and terms of their credit outside as well as within commercial trade channels.

#### *Other Lending Facilities*

At present there is no organized capital market in Thailand and to the extent that the money market is organized, it is

largely confined to commercial bank credit for short-term trading purposes. Interest rates are high, with very little credit available at less than 12%, even from the commercial banks. Most financing is done at far higher rates. Government bonds, which pay up to 8% free of taxation if held for ten years, find a very narrow market outside the Central Bank. Very little medium- or long-term credit is available from organized institutional sources. It has to be found largely through personal and family contacts with private financiers, and often at very high rates. Most of the resources of the State Savings Bank are used for loans to government enterprises and agencies, and for the purchase of government bonds.

The situation, however, is not one which can be corrected by short-run measures or easy formulas. Basically, a solution depends on increased saving in financial institutions and better allocation of capital. But there are a number of measures that should improve matters. One is the recent proposal to create an Industrial Finance Corporation. This institution would advance long-term credit to private industry at reasonable rates, in part out of funds provided through U.S. aid. Although the initial resources of this development bank would be small, we believe that, given good management, its scale of lending operations could be steadily expanded. (See also Chapter III).

There are other measures which could stimulate saving and perhaps ease credit conditions. We suggest that interest paid on deposits in the State Savings Bank should be raised to a more realistic level—from the present 3½% to at least 6% and possibly higher. Such action should be widely publicized, and extensive facilities should be made available for easy deposit and withdrawal. The deposit of small savings should then be actively encouraged by a campaign stressing the income to be earned and the ease of withdrawing deposits. Where there are no branches of this bank, deposit facilities could be provided through the postal system and amphur and changwad treasuries. At the same time, institutional facilities for saving should be widened. As a first step, it would seem advisable to

permit the commercial banks to conduct a savings deposit business; this is now a monopoly of the State Savings Bank except for six-month time deposits. Since it is not uncommon for commercial banks to borrow funds from one another at 7% or 8%, they should be able to pay at least 6% on savings deposits.

Proposals which have been advanced for the creation of specialized institutional facilities for agricultural credit should, we believe, be viewed with caution in present circumstances. The aim of these proposals is a laudable one. But the obstacles to a practicable and effective rural credit program are formidable. The widespread provision of credit to small-scale cultivators involves high risks and difficult, complex and expensive administrative arrangements for evaluation of applications and supervision of loans. Successful rural credit programs in other countries have generally been dependent on well-developed farm cooperatives with extensive facilities for agricultural marketing and storage. The farm cooperatives in Thailand are still far too limited to serve as a basis for such a system, and no alternative institutional arrangements exist at present. The farm credit situation in Thailand, though unsatisfactory, appears less serious than in many other Asian countries. Hence, in view of the high risks and the administrative hurdles which exist, it would not appear justified to make any substantial financial outlay on a rural credit program in the near future. However, it might be worthwhile to invest a token amount in the establishment of a pilot rural credit institution which could serve as a training center with a view to possible later expansion if the necessary institutional and administrative base can be developed.

## CHAPTER VIII *THE ADMINISTRATION OF ECONOMIC DEVELOPMENT*

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If the process of economic planning is to be effective, a program of development expenditure, such as recommended in this report, is only the first stage. These expenditure proposals indicate only orders of magnitude, both of the totals and of many individual items for which precise estimation is not yet possible. Consequently actual expenditures on development will differ in amount and timing by more or less wide margins from the figures here proposed. Furthermore, changing circumstances may invalidate the assumptions made about trends of non-development spending and of revenues and other financial resources available. Revisions of priorities may also be necessary as a result of more detailed investigation of projects, unforeseen shortages of supplies or trained personnel, substantial divergence in prices and costs from the figures assumed, and opportunities for more rapid development in certain fields than appear likely at present. In short, changing circumstances will necessitate a continuing review and revision of the proposed development program. In order to ensure that this process is carried on in an effective manner, some form of permanent central planning organization within the Government is clearly needed.

### PROPOSED CENTRAL PLANNING ORGANIZATION

The Mission has therefore proposed to the Government the establishment of a planning organization. Its directing body would be a National Development Board, consisting of the

Prime Minister as Chairman, and the Ministers of Finance, Economic Affairs, Interior, Agriculture, Industries, Communications and Education. This Board would have primary responsibility for the determination of plans and policies relating to Thailand's economic development. We believe a small group composed of the Ministers with the greatest interest in problems of economic growth would be a more effective forum than the Council of Ministers as a whole for the discussion and determination of programs and policies in this area. The Board's decision would of course be subject to approval by the Council.

To establish the right priorities in an investment program and to study and reach sound conclusions on development policies will of course require special technical qualifications of a high order. To undertake the necessary work of analysis and appraisal and to make concrete recommendations embodying the results, the Mission has suggested the creation of a professional Secretariat as the technical arm of the National Development Board. It should be headed by an officer with the rank of Permanent Ministerial Undersecretary, with the title of Secretary-General, who could also serve as Executive Secretary of the Development Board. Besides directing the work of the Planning Secretariat, he would be responsible for submitting its recommendations and evaluations on economic development to the Development Board, including the results of professional study of the priorities, of coordination and the financing of development, and of policies influencing either public or private activities in this area.

Authority over the Planning Secretariat should not be vague or diffused. It should be the clear and direct responsibility of the Prime Minister; this responsibility should not be divided among or shared by other members of the National Development Board.

The complementary nature of development planning and the annual budgeting functions will of course require close cooperation and a continuing exchange of views between the

Planning Secretariat and the Budget Division or Department of the Ministry of Finance. It would be a mistake, however, to make the Secretariat a subordinate entity in that Ministry, which is concerned primarily with financing the immediate needs of government and may be subject to strong pressures for current rather than developmental outlays. These will be ensured a more adequate hearing and a more forceful presentation if responsibility for their preparation is vested in an independent agency. Moreover, the Development Board's Secretariat must be free to be critical not only of the proposals and plans of the operating Ministries but also of the views of the Ministry of Finance on each year's development financing.

Because of the interdependence of development planning and economic statistics and research generally, the Mission has proposed that the Central Statistical Office and the National Income Division of the National Economic Council also be placed under the jurisdiction of the Secretary-General in charge of the Planning Secretariat, and that the National Economic Council be dissolved.

#### *Duties of the Planning Secretariat*

Probably the most useful initial contribution of the Secretariat will be to give guidance in coordinating the annual budgetary allocations for development. Such annual allocations should of course be considered in the light of future as well as current development needs and priorities. But it is not envisaged that initially the Secretariat would attempt to work out, say, a comprehensive and detailed five-year plan. Its first concern should be to put annual budgeting for development on a more rational basis before proceeding to longer-run planning in detail—in other words, to prepare each year a recommended development budget for the following year.

To perform this task effectively, the Secretariat will need to obtain from the operating Ministries accurate estimates of the

costs of their proposed projects, and a justification in terms of the benefits to be derived from them. Where the benefit is calculable, as with increased crop yields resulting from irrigation or lowered costs accompanying improvement in transportation equipment, the Secretariat can and should insist that the calculation be made. Most often, however, as with education and other social services, benefits—though definite—cannot be measured. Reliance will then have to be placed on qualitative evidence. In making up a total program, judgment as to what qualitative gains are more important than others will entail a considerable element of judgment. This can be guided by keeping in mind the need for a balanced use of resources, by considering the relation of projects to national objectives and by studying the experience of other countries.

As an integral part of its function of budgeting for development, the Secretariat can and should look into the question of raising money to finance development. It should exchange views with the Treasury on the possibility of increasing taxes, of introducing new forms and tapping new sources of public borrowing, and of reallocating appropriations between development and other kinds of expenditure. Guidance of this kind is needed as a counter to the frequent tendency to limit capital outlays to what is left over after demands for current purposes have been met.

The Secretariat would also be well suited to keep watch on programs under way. It should keep them under constant review, stimulate laggard departments into greater activity, restrain the over-eager and report regularly on progress.

It is also essential to the execution of its planning functions that the Secretariat keep fairly close watch on the course of the nation's economy—on production trends and on changes affecting the money supply, prices, trade, government revenue, and the balance of payments. These indicators reflect the performance of the economy and, as they vary, the Secretariat must decide whether the pace of development expenditures as a whole should be accelerated or slowed down.

Finally, the Secretariat can help to stimulate economic development in the private sector by suggesting appropriate policies to the Government. It should keep under review and recommend suitable changes in such matters as the incidence of particular taxes, the classification of customs duties, regulation of foreign and domestic trade, policies affecting the establishment and operation of private industry, labor regulations—in sum, all the measures that stimulate or retard economic activity by their impact on production and on purchasing power.

#### *Personnel of the Planning Secretariat*

Because of its concern with the economic aspects of the nation's development, the Secretariat will need its complement of well-trained economists. But to deal adequately with problems of agriculture, industry and transportation, it will also need people with specialized knowledge of these fields. The senior staff should thus include, in addition to two or three experienced economists, an agriculturist with wide experience in the development of crop and livestock production in climatic and social conditions comparable to those of Thailand, a man with wide knowledge of industrial operations, and a transportation expert well acquainted with the problems of rail, highway and water transport. Since these staff members would have to deal with all aspects of their respective fields, they should be persons of broad though specialized competence.

It will be most difficult, if not impossible, to find suitably trained and sufficiently experienced Thai personnel who can be spared from present assignments to fill all these important senior positions. So far as this is true, it is suggested that foreign experts be employed. There are plenty of able young Thai with foreign training who could serve as their assistants. As they acquire experience and maturity, they will become

candidates for the senior positions.

It is not expected that the Planning Secretariat would be a large body— certainly not at first. Initially, a total of seven or eight senior officers (the Secretary-General, two or three general economists, the three specialists mentioned above, and one other to supervise aspects of development related to foreign aid) should be sufficient. To aid them, and to prepare themselves for larger future responsibilities, additional professional staff of intermediate to junior rank would be needed. If the volume of work became burdensome, or if the scope of the Secretariat's duties were widened, the staff could be increased as needed. But at the outset, it should be kept to the minimum, with the emphasis on quality.

#### *Some Procedural Matters*

To perform its duties adequately, the Secretariat must cooperate closely with the operating Ministries responsible for initiating and carrying out development projects, as well as with the Ministry of Finance. And of course it must be able to get the information it needs. The authority to require the submission of such information, which will be wide in scope, should be given to the Planning Secretariat by law.

To ensure adequate discussion and exchange of views between the Secretariat staff and the operating Ministries, as well as that the development projects of each Ministry receive adequate attention, the Mission has recommended the following arrangements. Each Ministry and major department concerned with economic planning on any appreciable scale should appoint an officer to be in charge of its developmental activities. In addition to supervising and coordinating those activities within his Ministry or department, he would act as its liaison officer with the Secretariat, presenting his agency's views and projects and discussing them with the Secretary-General and other planning officers. If broader discussions

should be necessary, involving several agencies, these could take place in ad hoc meetings of the liaison and planning officers.

On the basis of the information obtained from the Ministries and elsewhere, the Secretariat should prepare estimates of the financing required in the next year for development activities already under way, as well as a recommended schedule of priorities of new development proposals. In consultation with the Ministry of Finance, the Secretariat would prepare a proposed development budget. This would be submitted to the National Development Board for approval or amendment. Capital expenditure for development would not be eligible for inclusion in the budget unless it appeared in the development budget approved by the National Development Board.

The Secretariat would also have the duty of reviewing the amounts included in the budget by the Ministry of Finance for the maintenance of capital assets related to development and for economic and social services, and of recommending such changes in these allocations as it deems necessary.

#### *Planning and External Aid*

External technical and economic aid are of course closely related to the country's development. The Secretariat could play a useful role in this area if it took over the duties of the Thai Technical and Economic Committee (TTEC)<sup>1</sup>, which now formulates the requests of the Government for foreign aid. This Committee is unwieldy in size and has no adequate secretariat to review, screen or assign priorities to proposals

<sup>1</sup> Except for the procurement and supply functions performed by TTEC. It would be inappropriate to place responsibility for these functions in a planning body. It is suggested, rather, that they be transferred to the Government Purchasing Bureau, and that this Bureau be further developed as a general procurement agency of the Thai Government.

for foreign financial assistance. Consequently, requests for foreign aid are not so coordinated as to reflect the relative importance of different national needs.

Assumption by the Secretariat of the duties of the TTEC might require that a special unit be set up to handle this work. But it need not be large, since it would be able to draw upon the entire membership of the Secretariat for technical services. This arrangement would have the advantage of assigning responsibility for the appraisal of requests for foreign aid to a body regularly concerned with the development plans and proposals of individual Ministries, where most requests for foreign aid originate.

After reviewing and evaluating requests for foreign aid, including proposals originating in the Secretariat itself, the Secretariat would recommend annual programs to the National Development Board. No request for foreign aid should be authorized unless included in the program approved by this Board.

## TOWARD THE IMPROVEMENT OF THAILAND'S STATISTICAL SERVICES

### *Information and the Determination of Policy*

To perform effectively, the Secretariat must have at its command many kinds of information. It will need technical data on projects proposed by the various Ministries, well supported estimates of their cost and evidence regarding the benefits to be expected from them. Most of this information will have to be supplied by the Ministries in question. As the experience of this Mission has shown, the collection and preparation of such data will need to be vastly improved if the Secretariat is to have a firm basis for evaluating competing projects and establishing priorities.

Equally essential to the work of the Secretariat, however, and to many other agencies of government as well, is a wide range of more general information. This includes statistics on national income, capital formation, production, prices and employment; data on foreign trade and the balance of payments; and a wide variety of financial and monetary statistics. These data are needed to establish goals for the economy, to measure the results of an investment program and its component parts, and to determine the effects of such a program on prices, employment, the distribution of labor, the growth of industry and other economic variables.

#### *Statistics and Statistical Services in Thailand*

Some of the kinds of information specified are collected and processed in Thailand. But much of the required statistical data is lacking or is in need of qualitative improvement. There has been little official appreciation of the need for statistics, and this in turn has meant failure to develop the statistical services beyond a rudimentary level. Thus in the principal agency in this field, the Central Statistical Office (CSO), there is no single individual trained specifically for the career of statistician. Those in supervisory positions in the CSO have received only incidental statistical training, and have been employed as statisticians because they, at least, had some training. The remainder of the CSO staff of some 50 persons, except for two or three with some mathematical competence, are simply clerks assigned to statistical work. As for the statistical units set up in some 20 Ministries and government agencies, there are 370 employees whose claim to the title "statistician" rests upon the completion of rather elementary in-service training. Few if any of these have had any formal academic instruction in their subject.

According to a recent report by Mr. Philip M. Hauser of the United Nations, Thailand's statistical situation was critical

in the sense that after five years of U.N. technical assistance, the CSO was still unable "to conduct modern censuses, sample surveys, or statistical analytical work without the assistance of outside experts."

#### *Action Needed*

No new legislation is required for the improvement of Thailand's statistical services. As Mr. Hauser also pointed out, Thailand's Statistical Act of 1952 is "one of the most comprehensive Acts in the world for providing a strong, coordinated statistical system." What is required is a carefully planned approach to the extension of coverage and improvement of quality of statistical data, and the training of a competent statistical staff.

For the planning of a statistical program, at least three thoroughly trained and experienced statisticians should be employed for a period of three to five years. They should be assigned to the CSO where it would be their task to: (1) survey the available statistical materials and the practicable possibilities for collection of additional data; (2) survey essential needs for economics, financial and social statistics; (3) prepare a program of statistical priorities based on (1) and (2) above; (4) prepare an administrative plan for the allocation of statistical responsibilities among the CSO and other government agencies; and (5) inaugurate and supervise the collection and processing of data to provide the kinds of statistical end-products desired.

To deal with the parallel problem of staff improvement, a combination of foreign training and in-service training is essential. Over a period of six years, from 15 to 20 officers of the CSO should be sent abroad for advanced training. Most of these officers should be required to obtain a first-class M.A. in statistics and economics (involving in most cases two years of study), though some could more profitably go to Calcutta or Manila for a practical training in modern statistical pro-

cedures. In addition, at least two officers from the statistical units of each of the Ministries most concerned with economic matters should be included in this program.

Great care should be taken in selecting candidates for foreign training. If their intellectual ability and their previous education are inadequate, the investment of their own time and the Government's money in this education will be largely wasted. It would be far better in that event to recruit young and aspiring graduates of the universities.

The course of training agreed between the candidates selected and the Government should be carefully supervised, to ensure that the trainees come back with the qualifications they were sent abroad to acquire. Should a student make an unauthorized change in his program (as has occurred in the past), the Government should cease to support him.<sup>2</sup>

To raise the level of competence of other statistical officers, in-service training should be provided. The School of Statistics already established by the CSO is admirable for this, and its program should be continued and expanded.

The foreign experts brought in to reorganize and improve current operations could be of great help in the training program. It should be their duty to serve on the staff of the School of Statistics and to select trainees for foreign study.

### *Costs*

The cost of the proposed reorganization in terms of salaries would be only slightly higher (at the existing salary scale) than at present. This increase would be attributable mainly to the up-grading that should accompany the improved technical competence of statistical officers. The salary budget of

<sup>2</sup>This does not mean that a student's program should be completely rigid, for adjustments from time to time may be necessary. But a student should not be permitted to break faith with the Government by shifting from the study of statistics and economics to business management, for example.

the CSO would rise gradually to perhaps 2 million baht a year, or some 300,000 baht above the present level.

Since ICA earlier indicated a willingness to provide the funds for the employment of foreign experts to assist in reorganizing the statistical services, it is to be hoped that this offer will be repeated. The cost of overseas training for some 30 statistical officers (extending over a period of six years, with about half spending two years abroad, the others six months to a year) would be about 900,000 baht a year. Here, too, there is every prospect that at least half of the cost would be provided by one or another of the foreign aid agencies.

In addition to building up a trained professional staff, the creation of an effective statistical service would require the purchase of equipment to process data automatically, and the recruitment of teams to obtain important data, such as price information, by sample surveys. The total cost would be moderate, and the Mission is convinced that few areas of expenditure would yield a higher return than improvement in the statistical services. It strongly recommends that a program such as that suggested here be inaugurated promptly and carried through to completion.

## PUBLIC ADMINISTRATION

A decision on policy is the first step toward its execution. But a top-level decision remains only a declaration of intent until it is effectively followed through. In Thailand there are a number of factors which have tended to diminish the effectiveness with which public policy is administered.

### *Lack of Trained Personnel*

At the beginning of this report, we stressed the fact that Thailand suffers, in common with most underdeveloped coun-

tries, from a shortage of trained and qualified personnel in its public services. This deficiency can be and is being remedied by training programs in a number of fields—education, statistics, agriculture, police, etc. In 1957, the Government financed the education or training of some 2,000 Thais in approximately 40 countries. In addition, technical assistance programs of the United States, the Colombo Plan, the United Nations, and others provided for the foreign training of another 300 to 400. These training programs should be continued; there is even room for expansion in some areas, at least for the time being.

What needs to be emphasized, however, is not the quantity of the training provided, but its quality and its suitability to the particular jobs individuals are going to fill. In Thailand today there is far too much stress on academic degrees as such, and far too little on the caliber of the degree-granting institution. Foreign university bulletins look much alike, and descriptions of courses in one sound very much like those of similar courses in another. But the thoroughness of the work and the intellectual level that is attained may range from not much better than a secondary school in one institution to very high standards in another. Foreign universities need to be evaluated, not only on quality, but also on the suitability of the work they offer for the needs of prospective Thai students. Aid in making such an evaluation can be obtained, in the case of the United States from the International Institute of Education in New York, and for the Commonwealth countries from the Inter-University Council in London, as well as from returning students.

A misplaced sympathy has led some institutions abroad to lower standards for the student from underdeveloped countries, while maintaining them for their own nationals. Such behavior is a great disservice, both to the individual student and to the nation from which he comes. Countries like Thailand desperately need highly qualified and well-trained persons to tackle difficult jobs. It would be better both for Thai-

land, and for the individual student, for him to fail an examination than fail later on the job. Universities or departments that cater to weakness in this manner should be avoided.

Patently, not all the Thai officials who need training of one sort or another can be or should be sent abroad. Such training is most suitable where highly specialized skills are involved. But the efficient performance of such duties as book-keeping, filing, maintaining records and supervising also calls for definite skills. These are not taught in the schools, nor is there any systematic provision for acquiring them anywhere else in Thailand. The result is that in general these duties are most inefficiently performed.

The need for a vigorous in-service training program is obvious. An encouraging move in this direction is the program now being offered at the Institute of Public Administration at Thammasart University.

Official recognition should be given to employees so trained. The Civil Service Commission should reward competence thus acquired by appropriate adjustments in the salary scales.

### *Placement Policy*

So long as there is a shortage of people trained for technical jobs—and this will be for some time—it is essential that the scarce supply be carefully allocated. This means that persons with special training should be appointed only to positions that require that particular kind of training.

Under present policies of the Civil Service Commission and the operating Ministries, this is not done. As already noted, great stress is laid on foreign degrees as such, without much regard to the kind or quality of the training they represent. Job descriptions, which outline the responsibilities and qualifications of various positions, are virtually non-existent. Government agencies needing technically trained people accord-

ingly now put in a request stated in terms of university degrees, not in terms of the functions to be performed and the training and experience needed. The employing agency's only protection is to line up a candidate in advance, but this practice is limited to a relatively small number of appointments. It is not surprising, therefore, that a large proportion of Thais trained abroad end up in positions for which they are either under-qualified, over-qualified, or completely unsuited.

Parenthetically, there is another side to this. Far too frequently, unskilled individuals are assigned tasks whose performance requires highly developed skills. This practice has been conspicuous in the government-run industries, where men with little or no experience in management have been put in charge of factories. That the results have been almost uniformly bad is hardly surprising. A safe rule to follow would be to refrain from undertaking tasks that require special qualifications until trained people are available. If pressing need demands that such a job be done, foreign technicians can fill the gap temporarily.

The need for economy in the use of skilled personnel is reinforced when a Government accepts responsibility for economic development, for this imposes an administrative burden additional to the ordinary tasks of government.

It is simple in principle to ensure that scarce skills are put to their most important uses. All that is required is a rational placement policy. Each civil service position that demands special qualifications should be carefully analyzed, then described in terms of the skills needed. Only candidates who meet these specifications should be appointed. Until the supply of trained, and for upper echelon jobs, especially experienced, personnel is more adequate, it will be impossible to apply rigorous job analyses very extensively. But a start can and should be made.

Clearly, these are tasks that should be performed by the Civil Service Commission. But at present this agency has no technical staff. Hence there is no one who can write a satis-

factory job description or who can appraise applicants for positions. There are no well-formulated techniques of placement, and the Commission, like so many government agencies in Thailand, exercises little independence of judgment. Not only difficult decisions, but also even minor ones, are passed on to the Council of Ministers for determination.

The Mission therefore recommends that a much-needed reform of the Civil Service Commission be promptly undertaken. This reform should concentrate upon turning the Commission into a professional body, by providing it with a staff adequate in size and, in particular, adequate in professional competence to perform the tasks outlined above. No reorganization will ensure independence of judgment, but this might come as a by-product of increased technical competence.

### *Organization*

Even given civil servants of the right skills, public business will be inefficiently conducted if it is badly organized. Effective organization should concentrate, not disperse, the responsibility for getting particular jobs done.

This principle of organization is not sufficiently observed in Thailand. Too many Ministries are trying to do the same thing. Both the Ministry of Cooperatives and the Department of Public Welfare (Interior) have elaborate land settlement schemes, government industries are scattered among several Ministries, and in some Ministries there are two or three small statistical units with no apparent connection. On the other hand, in the Northeast of Thailand, two parts of a single function--the provision of irrigation water--were allocated to separate Ministries. Tanks were built by the Royal Department of Irrigation, but the construction of canals was left to the Ministry of Cooperatives. Since the latter lacked the engineering competence to do the job, it was not done.

This situation is now being corrected by transferring canal construction to the Department of Irrigation.

In general, dispersal of functions leads to a duplication of staff, thus to extra expense, and usually to less than optimum results. It also tends to breed a senseless rivalry, dedicated to "empire building" rather than getting on with the job.

Good organization requires, that, as a general rule, where a particular function needs to be performed, a specific governmental unit be made responsible for it. Otherwise (unless the task in question is quite minor), either the work will not get done, or it will be intermingled with other tasks and be done half-heartedly. Thus we have already stressed the planning function, and recommended an organization to perform it. A corollary to the need for a specific agency to perform a complex function is the need to abolish organizations that have little or nothing to do.

### *Management*

Establishing a well-designed agency to do a job, however, does not mean that it will be done properly. An "agency" is simply a group of people with definite duties and responsibilities, and unless they are energetic rather than lazy, responsible instead of irresponsible, and competent as opposed to incompetent, their performance will be poor. Better recruitment practices can help remedy these defects.

Quite as important for efficient administration as the personal qualities of the administrator and his staff, however, are the intangibles of the environment. By these are meant the attitude toward public employment, the value judgments applied to the performance of work, and the relations between the administrator and the administered.

In Thailand, as in many countries, security of tenure is regarded as an important feature of government employment and as one of its main attractions in recruitment. Unless care

is taken, however, this very feature can result in great loss of efficiency, since one of the chief incentives to efficient performance to be found in private business is lacking. The Government should counteract this tendency by better promotion practices—by making efficiency and industry the main criteria for advancement and not mere length of service.

Perhaps the only effective counter to these intangible forces is the long run antidote of an education that inculcates a different set of attitudes and values. In the meantime, those who return from abroad often bring back a changed viewpoint, and in-service training improves the competence and may influence the outlook of those trained. And as more and more people acquire the skills needed for efficient performance, they are going to want to use them. Thus although it appears certain that ineffectual administration will for some time impede the execution of development plans, corrective tendencies have been set in motion that should gradually improve matters. Needless to say, government leaders who recognize the situation and wish to change it can hasten this improvement by action in their own departments.

A further cause of inefficiency in the public service is the habit of passing all questions upwards for decision. This results in great delays. Even Ministers have been known to refuse to decide matters that are clearly within their jurisdiction, preferring instead to pass them on to the Cabinet for collective resolution. The result is an inordinate volume of work for that body, including a large proportion of petty matters with which it should not be bothered—such as civil service promotions, foreign leave for subordinate officers and other issues that should in many instances be decided by heads of departments.

Just as good organization usually requires a specific agency to perform a specific function, so good management requires that someone supervise the work of different agencies, and, in particular, that he prevent them from working at cross purposes. Such coordination is inadequate in Thailand. We have

stressed the need for it in connection with the Government's development program, and suggested ways and means of meeting this particular problem.

The principal coordinating body is of course the Cabinet. If the Cabinet were to draw up a list of matters it would refuse to consider, as being insufficiently important to warrant its attention, and would then abide by this policy, it would have much more time for the exercise of its primary function of coordination. Moreover, a start would have been made toward forcing decisions to be taken at the appropriate level.

Within each Ministry, it is the duty of the Permanent Undersecretary to coordinate the activities of the different departments. The performance in this regard is very uneven. If each Undersecretary were to refuse to act on, or to pass on to his superior, decisions that should be taken by department heads, he, too, would have more time to do his real job, and it would be easier for his Minister to hold him to account for it. His department heads might also become more effective administrators—or resign.

### *Motivation*

Low morale is a potent cause of slackness and poor work, and an important contribution to low morale in Thailand's civil service is the level of pay. For comparable jobs in private employment, salaries are typically two to three times as high. It is therefore not surprising that many of the ablest of the nation's young men and women tend to shun government employment, or that many leave the civil service at the first opportunity. Only the long-standing prestige of government service, and the extra security it offers, enable it to attract and hold as many good persons as it does.

Conditions were very different before the war. Then, government salaries were close to those in industry and commerce.

The inflation of the war and post-war years created a serious disparity. A cost-of-living adjustment made in 1952 attempted to bring civil service salaries into line with those in the private sector, but since then the latter have doubled and tripled. Since the civil servant's basic salary is only about 10% of his total pay including the cost-of-living adjustment and since his retirement pension is based upon that 10%, being in most cases not more than 20% of the total adjusted salary, a very real problem is created for officials retiring at the mandatory retirement age of 60.

An attack on this problem of low pay should not be delayed. For as the nation's economic development gathers momentum, opportunities for employment at good wages in private enterprise are going to multiply. Therefore inaction can only make matters worse.

Rather than make piecemeal adjustments to the present salary structure, the Government should undertake a thorough study of the whole problem. The study should lead to the preparation of a plan to standardize and adjust salaries that would take into account salary levels in the private sector and also recognize the growing need to provide adequate pay to attract the engineers, economists, statisticians, educators and administrators the Government needs now and will need increasingly in the future.

A conscious effort to reduce the redundant number of government employees could help hasten the day when more adequate salaries will be paid. Positions vacated by resignation, death or retirement should not be filled if—as would often be the case—the work could be assigned to the remaining employees without overburdening them. Moreover, as the Government has to provide new services, employees with the needed qualifications should be transferred from overstaffed agencies or from offices whose work is of low priority. To ensure that this is done, it is recommended that a central office be established to undertake the management analysis necessary to develop a program of administrative reforms. Its most

advantageous location would be in the Office of the Prime Minister and its work should be closely tied with the budget process. The necessary staff, both for this office and for representatives to be assigned to the different Ministries, would have to be trained. This office should study the re-grouping of government functions, the precise nature of work objectives and the existing assignment of work, and should prepare plans to deal with these matters.

## CHAPTER IX *FINANCING THE PROGRAM AND ECONOMIC STABILITY*

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In drawing up the recommendations on expenditure which have been set out in Chapters I-VI, the Mission has had to consider not only the development needs of the various sectors of the economy, but also the question of how much Thailand can afford to spend for these purposes without upsetting the country's financial stability. The size of these development expenditures will be subject to two main types of limits: the most general are those imposed by the size of total available economic resources, as reflected in the national product and the balance of international payments; the second—and more specific—are those imposed by political and institutional factors on the share of total resources that can—or should—be allocated to government uses, taking into account the competing claims of the private sector. This chapter discusses these limiting factors and the relationship of the proposed development program to them.

### TOTAL RESOURCES

The growth in real national product averaged 5% annually between 1952 and 1957. Even discounting the exceptionally great increase in output during 1957 resulting from a record harvest in that year, the annual average rate of growth since 1952 has been very close to 5%.

The growth of agricultural production at an average rate of around 4% a year has been by far the most important single

TABLE 21 Gross National Product and Total Resources at Constant Prices

*(Billion baht, 1956 prices)*

	1952	1954	1956	1957 <sup>1</sup>
Gross national product at market prices . . . . .	32.8	36.6	38.9	(41.3)
Plus: Imports of goods and services . . . . .	6.8	7.9	8.3	9.0
Less: Exports of goods and services . . . . .	6.7	6.3	8.1	9.0
Resources available for national expenditure . . . . .	32.9	38.2	39.1	(41.3)

<sup>1</sup> Estimates in parentheses are rough approximations based on partial information.

element in the over-all increase in output. Within the agricultural sector, the main contribution has come from the sharp expansion of crops other than rice. While rice output (which accounts for about 40% of the value of total agricultural production) has been increasing at an average rate of only around 2%, all other crops have, in total, shown an average growth rate of around 6%. As mentioned in Chapter II, the most important of these have been rubber, coconuts and oilseeds, sugar cane, tapioca, maize, cotton and tobacco.

For most of the other sectors of economic activity, statistical data are much less reliable than in the case of agriculture. There are, however, strong indications of substantial increases in the output of various light manufacturing industries, of construction materials and of the construction trades themselves, and of the transport industries. Government services have grown by about 50% in real terms over the past 5 years, while the private service sectors have also expanded substantially with the growth in foreign and domestic commerce.

A factor of key importance in stimulating the growth in production—both directly and indirectly—has been the strong expansion of export demand. It may be seen from Table 21 above that between 1952 and 1957 total exports increased in real terms by about one-third, reflecting mainly the growth in sales of rubber and minor agricultural products, and also a

what from 1957—was still four times that available in the earlier years, and reserves dropped only moderately.

### *Future Growth Prospects*

For the future, in the absence of severely adverse crop and market conditions, it is a reasonable assumption that something like recent rates of growth and investment can be sustained, given the public development program that is proposed and the improvements in government contributions and services to the economy which it involves. Of course, much of the broad improvement in the organization and administration of government assistance to the economy will take time, and its full effect can hardly be expected in the next five years. On the other hand, conditions conducive to economic growth can be expected to continue in this period. Substantial benefits are expected from recent irrigation programs and highway and railway improvements. Further benefits can be expected from early additions to power capacity in advance of completion of the Yanhee project. Export availabilities should continue to increase with the expected growth in output of rice, rubber and other agricultural products. These should offset by far the prospective decline in teak shipments. Prices which Thailand receives for this increased export volume appear likely to remain, on the whole, about as favorable as they were in 1958. While future rice prices may tend to decline somewhat, rubber prices will probably be above the depressed level prevailing during most of 1958. Furthermore, it is more likely than not that demand for tin will begin to rise again and permit some increase in the volume of exports over the recent levels, which have been restricted under the International Tin Agreement. The expected expansion of total export demand should, as in the past, be an important factor in fostering total economic growth, not only through its direct stimulus to agricultural (and possibly mineral) production, but also through

maintaining at a high level the foreign exchange earnings needed to purchase capital goods and raw materials on which much of domestic production is dependent.

In addition, substantial foreign financial resources will be available in the period 1959-63, and these will permit the maintenance of a substantially higher level of imports than can be financed from current export earnings. Net resources in this form (i.e., the import surplus) should continue to be available through 1962 at about the 1958 rate without involving any significant further use of reserves. Details of prospective foreign financial resources are discussed later in this chapter.

All this suggests generally favorable conditions during the next five years for a continuation of the recent progress shown by the Thai economy, assuming an adequate and appropriate public development program and maintenance of private investment somewhere near recent rates. The question remains whether the expenditures required for the recommended development program can be financed without adverse monetary or balance of payments effects and without curtailing capacities for private saving and investment.

## FINANCIAL REQUIREMENTS AND SOURCES

### *Total Requirements*

As noted in Chapter I, the proposed program calls for total recurring and capital expenditures which increase from about 3.6 billion baht in 1958 to about 4.6 billion in 1963. In total, the recommended expenditure for the five-year period 1959-63 comes to 22.9 billion baht.

To these expenditures must be added the funds needed for such other normal governmental functions as general administration, defense, law enforcement, service of the public debt,

sharp expansion in invisible receipts. The substantial increase in public sector expenditures during this period has also clearly been of importance in helping to stimulate the rise in total activity.

Between 1952 and 1957, import volume increased by the same extent as exports despite a deterioration in the terms of trade during the period 1954-1957. This was possible without a net loss of foreign exchange after 1953 because of a rising inflow of foreign funds in the form of credit and grant assistance. The growing importance of such assistance in financing Thailand's import surpluses may be seen from the summary of Thailand's balance of payments since 1952, shown in Table 22, p. 232.

As this table shows, the foreign deficits incurred in the 1952-54 period were financed in large part by a substantial reduction in foreign exchange reserves—about 1.76 billion baht (\$85 million) in the three-year period. Starting in 1955, however, net receipts of foreign official capital (line 5 in Table 22) began to increase substantially, reaching a post-war peak of nearly 1.2 billion baht (\$60 million) in 1957. At the same time the current deficits were reduced below the high levels of 1953 and 1954<sup>1</sup>, permitting reserves to be replenished. In this connection, it should be noted that a significant part of the grants received in the period 1955-57 were temporarily sterilized in the form of rising counterpart balances and therefore contributed to an increase in foreign exchange reserves rather than to import demand in that period.

During the first part of 1958, export earnings dropped because of a poor rice crop and the contraction of foreign demand for rubber and tin, but import demand was maintained at high levels. As a result, the current deficit in the first half of the year approached the rate experienced in 1953 and 1954. However, the rate of foreign financing—although down some-

<sup>1</sup>It is probable that the current deficits shown for 1954 and 1955 in Table 22 are overstated because of an undervaluation of rice and rubber exports in the officially reported data. This would help explain the large errors and omissions items in those years.

TABLE 22 Summary Balance of Payments, 1952-58

(Billion baht at current prices)

	1952	1953	1954	1955	1956	1957	1st half 1958
1. Balance on goods and services . . . . .	-0.33	-1.05	-1.30	-0.36	-0.32	-0.61	-0.54
2. Private transfers (net) . . . . .	—	-0.09	-0.14	-0.16	-0.18	-0.19	-0.02
3. Reported current account balance . . . . .	-0.33	-1.14	-1.44	-0.52	-0.50	-0.80	-0.56
<i>Financed by:</i>							
4. Private long-term capital . . . . .	—	—	—	0.05	0.06	0.05	0.02
5. Official loans and grants (net) . . . . .	0.21	0.25	0.17	0.70	0.91	1.17	0.41
6. Use of reserves . . . . .	0.41	0.91	0.44	-0.52	-0.46	-0.19	0.15
7. Total reported financing . . . . .	0.62	1.16	0.61	0.23	0.51	1.03	0.58
8. Errors and omissions . . . . .	-0.29	-0.02	0.33	0.29	-0.01	-0.23	-0.02

SOURCE: IMF Balance of Payments Yearbooks (data converted into baht at average effective exchange rates), except for official loans and grants in 1955, which reflect revised data on U. S. aid.

etc. These requirements amounted in 1958 to roughly 3.6 billion baht. Allowance must be made for further increases during the coming five years. Our projections, however, include no detailed estimates for these non-developmental purposes, except in the case of public debt service. Rather, it has been somewhat arbitrarily assumed that these requirements (other than debt service) would increase at an annual average rate of about 4% (see also Chapter I, page 24).

Adding these to proposed development outlays, the total finances needed for central and subordinate government activities and for investment of the major government-owned utilities would, as noted in Chapter I, amount to 8.1 billion baht in 1959 and increase to 9.2 billion by 1963. The total for the period would be 44.4 billion baht. On the basis of reasonable assumptions of future growth in the national product, these levels of public expenditure would correspond to about 18% of GNP. This compares with about 17% in 1958 and would certainly not seem excessive by comparison with other countries at a similar stage of economic development.

#### *"Normal" Revenues*

Among prospective means of financing for these requirements, probable receipts of revenue at existing rates of taxation and under present conditions of tax administration may be considered first. The trend of these receipts will be determined mainly by the course of foreign trade and by levels of economic activity generally. In the light of general economic prospects previously discussed it appears reasonable to assume an annual average growth in revenue of about 4% without significant changes in taxation or improvements in administration. On this assumption total revenue would rise from about the estimated annual level of 5.9 billion baht in 1958 to about 7.2 billion in 1963. The total for the five-year period would provide about 33 billion of the required financing of 44 billion baht.

*Borrowing from Domestic Savings*

Aside from additional taxation the two remaining domestic financial sources which would not involve monetary expansion are: (a) government borrowing from the public; and (b) net current earnings of the major public utilities. With respect to the former, allowance is made for 150 million baht in 1959 with increases to 250 million in 1963. In 1957 sales of government bonds to the public were about 115 million baht, and in 1958 they were probably higher. It is believed that there is ample opportunity for substantial increases in such sales. As noted in Chapter VII, the State Savings Bank could become a more important channel to this end if interest rates on savings deposits were increased to more realistic levels and if up-country deposit and withdrawal facilities were extended and improved. More effective control should also be exercised over the investment activities of the State Savings Bank to ensure better allocation of its resources. The market for government securities could be further expanded through more active campaigns to stimulate sales to the public and to private financial institutions, including Thai and foreign insurance companies. A reduction in the ten-year period for which bonds must be held to realize the present maximum yield would also be advisable. It would also be of advantage to permit commercial banks to accept savings deposits as a means of encouraging greater interest in government security purchases without net additions to the total money supply. On the assumption that measures along these lines will be adopted, an allowance of about 1.0 billion baht is made for such sources of financing during 1959-63.

Operating surpluses of the State Railway and of the Port Authority, expected to be available for the investment needs of these bodies, are estimated at about 200 million baht a year or about 1 billion during the five-year period. Most of this amount would be from the railway on the assumption that the

proposed moderate increases in the railway freight tariff schedule (recommended in Chapter IV) will be adopted.

### *External Assistance*

External technical and financial assistance has made an important contribution to Thailand's development efforts in recent years. The two principal sources of this assistance have been the U.S. Government and the World Bank. Valuable technical assistance has also been provided by the United Nations and its specialized agencies including the FAO, the WHO, the U.N. Children's Fund, the ILO, and UNESCO. Additional assistance has also been received under the Colombo Plan. Table 23 shows in detail the net foreign grants and loans received by the public sector since 1952.

One qualification to this table should be noted: the data on "other loans and grants" for 1955-58 consist largely of suppliers' credits and other medium term loans used in this period. The greater part of these were used by semi-private institutions—mainly NEDCOL—whose outlays are not included in the government budget for those years. They were, however, guaranteed by the Government, and since the Government had to take over NEDCOL in 1958, debt service on those credits will probably have to be met from budget resources. Allowance for prospective repayments on this account as well as other foreign debts are included in the current financial requirements which have been projected for the 1959-63 period.

With respect to other sources of external financial assistance, it should be noted that large existing commitments which have been made by the U.S. Government, under its ICA program, and by the World Bank will become available during the 1959-63 period. As of June 30, 1958, the ICA "pipeline" of committed but undisbursed funds for civilian use in Thailand amounted to \$55 million (1,100 million baht). The undisbursed portion of World Bank loans, mainly for the

TABLE 23 Use of Official Foreign Grants and Loans, 1952-58

*(Billion baht)*

	1952	1953	1954	1955	1956	1957	1st half 1958
U.S. government grants and loans . . . . .	0.08	0.13	0.16	0.33	0.70	0.77	0.25
World Bank loans . . . . .	0.17	0.16	0.04	0.04	0.08	0.18	0.08
Japanese war debt settlement . . . . .	—	—	—	0.06	0.06	0.06	0.06
U.N. and Colombo Plan . . . . .	—	—	—	—	0.01	0.01	0.01
Other loans and grants . . . . .	-0.01	-0.01	—	0.32	0.16	0.28	0.06
Sub-total of above . . . . .	0.24	0.28	0.20	0.75	1.01	1.30	0.46
Less: Repayment of loans . . . . .	-0.03	-0.03	-0.03	-0.05	-0.10	-0.13	-0.05
<b>Total</b> . . . . .	<b>0.21</b>	<b>0.25</b>	<b>0.17</b>	<b>0.70</b>	<b>0.91</b>	<b>1.17</b>	<b>0.41</b>

SOURCE: Same as Table 22, revised data on U. S. Government grants and loans in 1955 was provided by USOM/Bangkok.

Yanhee project, came to \$63 million (1,260 million baht) as of that date. It may be estimated that starting in 1959, total committed funds of about \$110 million (2,200 million baht) will remain undisbursed from these sources.

It is, of course, impossible to say with any certainty what amount of new external financial assistance will be made available to Thailand for the period 1959-63. New commitments of ICA aid may well continue at around recent levels, but this is uncertain. And in view of the uncertainty it is deemed prudent for planning purposes to allow for a decline in this source of aid. Therefore, the Mission has rather arbitrarily assumed that new ICA aid commitments will be gradually reduced in the next five years to a level 40% below the \$20.0 million<sup>3</sup> in new aid extended in the U.S. fiscal year 1958. (This represented a cut of some \$6 million below the rate of the two preceding fiscal years.) Assuming also that the "pipeline" would be drawn down to \$12 million by the end of the period, a total of about \$120 million (2,400 million baht) in new and already committed ICA funds would be available for disbursement over the five-year period 1959-63. It is further assumed that these funds would for the most part be used in support of projects in which the ICA is already actively engaged and for which substantial commitments have already been made in most cases: e.g., highways, air transport, power generation, telecommunications, irrigation, agriculture, water supply development, health and welfare.

Beyond the ICA program, considerable U.S. assistance is likely to be received in the form of loans from the Export-Import Bank and Development Loan Fund. Three loan proposals are now in advanced stages of negotiation: a \$14.0 million Eximbank loan for the Bangkok thermal power plant; a \$20.0 million DLF loan for the Bangkok distribution system; and a \$2.0 million DLF loan for a new dredge for the Port

<sup>3</sup>This excludes about \$4 million in technical assistance aid. For purposes of these projections, most technical assistance expenditures are omitted from both the development outlays and the financial resources.

of Bangkok. These are all included in the projected financial resources.

No attempt is made here to allow for possible further loans from the World Bank or from U.S. lending agencies, although some new lending might take place, especially toward the end of the five-year period. But it is important that any such increase in external financial assistance be regarded not as a substitute for the domestic financial resources projected here, but rather as a resource to be used for additional development projects. (See also discussion of "Alternatives" at the end of this chapter.)

Receipts of about \$3.0 million under the Japanese war debt settlement are also expected in 1959. This will complete the total payment of \$15.0 million due under this agreement. It should be noted that these funds are due to the Central Bank and will go into its foreign exchange assets. They will, therefore, help offset the effect domestic monetary expansion may have on foreign assets during 1959.

### *The Prospective Financial Gap*

The prospective resources discussed in the foregoing paragraphs are summarized in Table 24.

In considering how to meet the sizeable gap shown in this table, the practical possibilities narrow down to: (a) financing through bank credit and consequent monetary expansion; and (b) increasing tax revenues by the introduction of new fiscal measures.

### *Central Bank Borrowing*

The extent of bank credit financing is, of course, the key to whether the proposed development program can be carried out without disrupting internal and external financial stability.

TABLE 24 The Financial Gap

(Billion baht)

	1959	1960	1961	1962	1963	Total
<i>Financial requirements</i> . . . . .	8.1	8.6	9.1	9.3	9.2	44.4
<i>Prospective resources</i>						
Revenue at present revenue structure . . . . .	6.1	6.4	6.7	6.9	7.2	33.3
Domestic borrowing other than from Central Bank . . . . .	0.2	0.2	0.2	0.2	0.3	1.1
Government enterprise resources . . . . .	0.2	0.2	0.2	0.2	0.2	1.0
External assistance . . . . .	0.9	1.0	1.0	0.9	0.4	4.2
Total . . . . .	7.4	7.7	8.1	8.2	8.2	39.6
Balance required . . . . .	0.7	0.9	1.0	1.1	1.1	4.8

NOTE: Totals differ from the sum of individual items because of rounding.

Excessive injections of bank credit in Thailand are quickly translated into balance of payments deficits and losses of foreign exchange reserves, or into latent balance of payments pressures. A dramatic example of this tendency occurred in the two years 1953-54, when net public sector borrowing from the Central Bank totaled about 1.8 billion baht and foreign exchange reserves dropped by the equivalent of about U.S. \$80 million.

It is important to emphasize the necessity of maintaining a high level of foreign exchange reserves in Thailand. These reserves are now at the fairly comfortable figure of U.S. \$300 million—the equivalent of about 75% of annual imports. Any substantial use of reserves under normal economic circumstances would, however, be ill advised in view of the ever-present possibility of crop failures or adverse shifts in export market conditions with consequent losses of export earnings.

Nor can a restrictive trade policy, such as that pursued during 1955, be considered a satisfactory alternative to stable

monetary and fiscal practices, in view of the administrative abuses and domestic price increases which have tended to result from the extensive use of import controls under conditions of latent balance of payments pressures.

For all these reasons caution and prudence are strongly urged in borrowing by the Government from the Central Bank. The only course which will protect Thailand's reserves and prevent inflationary price movements is one of stable monetary policy.

Monetary and price data are inadequate in Thailand for any precise analysis or conclusion about the extent to which the economy can absorb domestic monetary expansion,<sup>3</sup> without pushing up prices or draining foreign exchange assets. However, partial information does indicate that in the recent past, a rate of domestic monetary expansion slightly greater than the growth rate in real output has been consistent with price and exchange stability. Thus, in 1956 and 1957, a period of relative price stability,<sup>4</sup> the average annual increase in real output was a little over 6%, while the money supply increased by slightly more than 9% on the average. Domestic monetary expansion in these years accounted for only about half of the growth in the money supply; the remainder was the result of increases in foreign exchange reserves. During 1958, this pattern was reversed. While domestic monetary expansion probably amounted to 6-7% of the money supply, real output leveled off or perhaps even fell because of poor crops, and net foreign exchange reserves dropped by \$15-20 million.

What this suggests is that the economy requires funds not only to meet the needs of expanded real output but also a

<sup>3</sup> By "domestic monetary expansion" we mean the net injection into the money stream of funds from the domestic banking system and from government cash balances. In other words, it is equal to the difference between changes in the total money supply and changes in foreign exchange reserves.

<sup>4</sup> The cost of living index of the Ministry of Economic Affairs shows significant increases in these years, but this index is clearly unreliable; estimates of the Mission, derived from its computations of GNP at constant prices (Appendix Table 5), indicate that price increases in this period were slight.

small additional amount which is probably attributable to the widening use of money in the economy. For the future, therefore, it appears reasonable to assume that with a growth rate in real output of around 5%, a rate of monetary expansion of about 6% would be consistent with internal and external financial stability.

It must be emphasized that any figure taken as a guide to the use of bank credit can only be very tentative. Sound policy in this respect requires flexibility to meet constantly changing circumstances. The rate of economic growth is bound to fluctuate. Should it fall below recent levels, the scope we have assumed for bank credit expansion would undoubtedly create excessive monetary pressures and adverse movements in prices or reserves. Changes in prices and reserves, as well as trends in bank credit to the private sector, should, therefore, be watched closely for adverse movements of more than seasonal character.<sup>5</sup> And when these are detected appropriate adjustments should be made in bank borrowing by the Government and in the regulation of private credit.

In absolute amounts, an increase in domestic credit corresponding to 6% of the money supply would be about 500 million baht in 1959, rising to perhaps 600 million by 1963. Within this total, some allowance must be made for annual increases in commercial bank credit to the private sector. Available data indicate that such credit increased by 150-200 million baht in the period 1955-1957. Starting from an estimated 200 million baht for 1959, an allowance should be made for an increase in net credit expansion in the private sector to approximately 250 or 300 million baht by 1963. The balance, representing our best present estimate for the amount of government borrowing from the Central Bank consistent with financial stability and adequate private credit, would be about 300 million baht annually.

<sup>5</sup>This emphasizes the need for an early and substantial improvement in Thailand's statistics on commercial bank credit and price movements. Present data do not permit an adequate check on changes in these important indicators.

These projections do not allow for probable net drawings in 1959 and 1960 on the counterpart fund balances generated from past U.S. financial aid. Such drawings would have an inflationary influence additional to that from increases in bank credit. However, repayments on Japanese obligations from World War II can be expected to offset most of the effect on foreign exchange reserves of counterpart drawings in 1959 (see page 240). In 1960 total domestic monetary expansion, including the use of counterpart, might amount to about 600 million baht if credit expansion by the Central Bank and commercial banks were to reach the projected levels.<sup>6</sup> This might lead to a moderate reduction in reserves. Any such reduction should, however, be regarded as temporary. Thus, in projecting the use of Central Bank borrowing, we have allowed for a somewhat lower figure in the later years, reflecting our recommendation that, for the period as a whole, there be no net reduction of foreign exchange reserves.

#### *Additional Taxation*

Allowing 300 million baht a year for tolerable Central Bank borrowing by the Government, the financial gap remaining to be met in mobilizing financial resources for prospective government requirements, including those of the proposed development program, is likely to be in the order of 300 million baht in 1959 with an annual increase to about 900 million in 1961-63. It should be possible to meet this prospective gap through additional taxation and improvements in tax administration.

<sup>6</sup> The problem of achieving overall financial balance in 1959 and 1960 may in fact be even more difficult than these estimates suggest, since net counterpart use in those years will probably total about 330 million instead of the 200 million baht projected in Table 25. This change results from the fact that net use of counterpart balances for the full year 1958 fell substantially short of the 200 million baht that was foreseen for that year in July 1958.

Thailand's present tax burden is lower than that of many countries at the same stage of development. Recent government revenues have been around 14% of the gross national product, which is not a particularly high figure and less than that of many other Far Eastern countries. Furthermore, Thailand is behind most other countries of the Far East in imposing and collecting direct taxes on individual and company incomes. Such taxes provide only about 7% of total government revenue while more than 90% comes from indirect taxes. This makes the system more regressive than necessary because of the relatively light burden of actual tax collections from individual and company incomes.

In part, it is the rate structure and the nature of legal exemptions that cause direct taxation to make such a poor showing. But a major part of the problem is one of tax administration and tax enforcement. Evasion of income taxes is commonplace. The Mission recognizes that it is especially difficult to enforce an income tax in Thailand. But similar difficulties exist in other countries of Southeast Asia, where direct taxation is a much more important part of the revenue system. One cannot escape the conclusion that the poor yield from income taxes is largely attributable to inefficiency and under-staffing of the tax administration.

It will probably be some time before the income tax can be adequately enforced, but unless a start is made, its enforcement will always remain weak. Many changes are needed. At present, tax returns are examined only for arithmetical correctness — no attempt is made to see if the dependents claimed are alive, let alone to verify if the income reported even approximates actuality. Nor is there any effort to ensure that returns are actually made, although this would be an easy matter at least for taxpayers who are registered members of a professional body (doctors, lawyers, engineers) or of a business association.

These illustrations point to the need for a regular and thorough auditing program. A sizeable but changing sample of returns should be carefully examined each year. Even this

could not be undertaken with the present staff, which is too small and untrained to do the job. At least 10 to 20 tax officials should be sent abroad to receive training in modern methods of assessment and auditing. With them as a nucleus, sufficient additional officers should be assigned to the task of auditing to ensure its effective performance.

In addition, the income tax laws themselves need to be changed. The use of simple methods, such as a flat percentage tax on gross business receipts less standard deductions, is made necessary by the large proportion of small industrial and commercial firms. But the minimum tax actually applied to business profits (0.3% of gross receipts) is very low, while the deductions applied to business profits and professional incomes are inordinately high.

Improving the law and strengthening the enforcement of income taxes is only one way in which revenues can be increased and the revenue system made sounder and more equitable. There are many taxes, common to most modern tax systems, that are not levied at all in Thailand or, if levied, are much less productive than they should be. Thus there is a general land tax, but it is only nominal, rates and assessments being so low that outside urban areas the yield averages little more than 1 baht a rai (about 12¢ an acre). Unlike many other countries, Thailand does not impose any charge for the improvement of land irrigated through state works. As stated in Chapter II, we strongly recommend the introduction of such a charge.

Another anomaly in the Thai revenue system is that there is no tax on owner-occupied housing and other real estate improvements, but only on rented premises. In most countries, such property taxes provide the major part of local revenues. Institution of such a tax would permit the central government gradually to reduce the present subsidies to municipalities, and would encourage the latter in adopting a more vigorous and independent attitude toward their problems.

Thailand has no inheritance or gift tax. And although turn-

over and sales taxes are levied in the form of the so-called business and purchase taxes, their enforcement, like that of income taxes, is lax. Many luxury goods could well bear much heavier excise or customs duties than at present. And the import duty schedule needs to be thoroughly examined and revised, not only to raise more revenue, but also to eliminate inconsistencies and disincentives to industrial development.

Using this analysis as a base, the following additions to revenue, beyond that to be expected from normal growth, should be realizable without serious difficulty or undue burden on the economy:

- (1) revision of the personal income tax schedules and steady improvement in income tax enforcement which should yield an additional 50 million baht in the first year, and should make it possible within a period of five years to double present personal income tax revenue;
- (2) increases in company income taxes and revisions of deductions to add annually about 50 million baht of additional revenue;
- (3) additional customs and excise duties, mainly on petroleum and luxury products, to produce at the outset an increase in revenue of about 200 million baht;
- (4) doubling of the present nominal land tax rates which should add 50 million baht a year to revenues of provincial governments;
- (5) imposition of the charges recommended in Chapter II on lands improved by state irrigation works. Because of the time required for classification of irrigated lands and for completion of irrigation works now under construction it is doubtful that the full potential of this tax could be realized in the next five years. It should be possible, however, to begin collections in 1960 and to bring them up to 50 or 60 million baht a year by 1963. After 1963, with the completion of the major irrigation works now in progress, revenue from this tax

- should increase to 150 million baht or more;
- (6) development of substantially larger independent revenues of municipalities. The most important possibility for this is through taxation of owner-occupied housing and other real estate improvements. It is difficult to estimate the practicable revenue possibilities for such sources but at least 30 million baht a year should be a reasonable expectation within a year or two and eventually 120 million or more; and,
  - (7) adoption of an estate duty, the possible revenues from which are again difficult to estimate but which should rise to around 50 million baht as administrative and enforcement procedures are worked out.

These are moderate tax proposals which could be imposed without involving really heavy tax burdens. Yet the proposals, with allowance for the growth in revenue they would produce over time, should be quite adequate to fill the remaining gap between the estimated financial requirements of the Government and the other prospective resources for meeting these requirements during 1959-63.

*The Financial Projections: Summary*

The total financial picture for these years, based on the estimates discussed in the preceding sections of this chapter, is summarized in Table 25 on the next page. This table consolidates the finances of the central and local governments and of government agencies. Accounts for each of these three main government entities covering the period 1952-1957, are shown separately in Appendix Tables 24 and 25. A detailed breakdown of total recommended capital development expenditures and of their prospective financing by major project is shown in Table 27 at the end of this chapter.

TABLE 25 Summary of Past Government Finances, and Prospective Finances during 1959-63 in Accordance with Mission Projections and Recommendations

(Billion baht)

	Past approximations		Projections				
	1952	1958	1959	1960	1961	1962	1963
<i>Expenditures:</i>							
1. Admin., police and defense, misc. transfers, etc. . . . .	2.25	3.30	3.43	3.57	3.71	3.86	4.01
2. Debt service . . . . .	0.10	0.30	0.55	0.58	0.58	0.59	0.60
3. Development expenditures							
a. Recurring . . . . .	1.00	1.60	1.70	1.80	2.00	2.10	2.20
b. Capital . . . . .	1.20	2.00	2.45	2.68	2.83	2.77	2.42
4. Total expenditures . . . . .	4.55	7.20	8.13	8.63	9.12	9.32	9.23
<i>Financed by:</i>							
1. Revenue at present rates . . . . .	4.10 <sup>1</sup>	5.90 <sup>2</sup>	6.14	6.39	6.65	6.92	7.20
2. Revenue from new taxes . . . . .	—	—	0.30	0.50	0.70	0.80	0.90
3. Public utility net earnings . . . . .	0.10	0.20	0.20	0.21	0.21	0.22	0.22
4. Borrowing from public . . . . .	—	0.15	0.16	0.20	0.22	0.23	0.25
5. Sub-total domestic non-bank funds . . . . .	4.20	6.25	6.81	7.30	7.78	8.17	8.57
6. Arrivals of U.S. ICA aid . . . . .	0.10	0.35	0.54	0.54	0.51	0.41	0.25
7. Borrowing from World Bank . . . . .	0.10	0.10	0.10	0.22	0.41	0.38	0.17
8. Borrowing from U.S. Eximbank and Development Loan Fund . . . . .	—	—	0.28	0.21	0.12	0.06	0.01
9. Foreign suppliers' credits . . . . .	—	0.10	—	—	—	—	—
10. Sub-total foreign resources . . . . .	0.20	0.55	0.92	0.97	1.04	0.85	0.43
11. Use of counterpart balances (net) <sup>3</sup> . . . . .	—	0.20	0.10	0.10	—	—	—
12. Use of domestic bank credit (net) . . . . .	0.15	0.20 <sup>2</sup>	0.30	0.26	0.30	0.30	0.23
13. Sub-total domestic monetary expansion by public sector . . . . .	0.15	0.40	0.40	0.36	0.30	0.30	0.23
14. Total all financing . . . . .	4.55	7.20	8.13	8.63	9.12	9.32	9.23

For footnotes, see next page.

## FOOTNOTES TO TABLE 25

<sup>1</sup> Includes exchange profits. See also appendix Table 24.

<sup>2</sup> The 5.9 billion baht revenue is an approximate "normal" figure based on estimated actual revenues of about 5.8 billion in 1958 plus an allowance of 100 million to adjust for the fact that the revenue measures put into effect in 1958 were applicable for only the latter two-thirds of the year, whereas they will apply on a full year basis in 1959. The gap in 1958 resulting from this "short-fall" in actual revenues below the trend was met in practice by borrowings from the Central Bank of 100 million baht more than is shown.

<sup>3</sup> See also footnote 6 above.

## RESOURCE ALLOCATION BETWEEN THE PUBLIC AND PRIVATE SECTORS

Between 1952 and 1957, total expenditures by the public sector—excluding debt service and other transfer payments—increased in real terms by over 40%, while private sector expenditures grew by less than 25%. As a result the relative share of total resources absorbed by the private sector declined slightly—from 87% to 84%.

Within the public sector, the rise in investment was proportionally the most important element in the expansion of total expenditures. And, even though the growth in total resources available to the private sector was somewhat less than in the public sector, the expansion of private investment by nearly 60% in the five-year period was significantly faster than that of public investment—just over 50%. Private consumption, on the other hand, rose by less than 20%—or about 2% annually on a per capita basis.

Specific indications of the sharp growth in private investment in manufacturing, commerce and agriculture have already been cited in Chapters I-III. Largely because of this relatively high and increasing level of private investment, total fixed investment had grown to about 15% of the national product by 1957.<sup>7</sup>

<sup>7</sup> A comparison of Thai ratios of investment to national product with those of other countries may be misleading unless it is borne in mind that the absolute level of the national product estimates for Thailand tend to be understated relative to those in many—if not most—other countries when measured at official rates of exchange. The reason for this is that prices of the main consumption goods—and particularly for rice—are substantially lower in Thailand (at official exchange rates) than in many other countries. On the other hand, prices for investment goods in Thailand are probably roughly comparable with investment goods' prices in most other countries because such a large part of them is imported. The result is that if the Thai national product estimates were revalued at prices prevailing, say, in a rice importing country, the ratio of investment to GNP for Thailand would certainly be somewhat lower than the 15% referred to above.

TABLE 26 Gross National Product and Expenditure at Constant Prices

*(Billion baht, 1956 prices)*

	1952	1954	1956	1957 <sup>1</sup>
Public sector expenditure . . . . .	4.5	6.1	6.1	6.5
Consumption . . . . .	3.2	4.2	4.4	4.5
Fixed investment . . . . .	1.3	1.9	1.7	2.0
Private sector expenditure . . . . .	28.4	32.1	33.0	(34.8)
Consumption (including stock changes) . . . . .	25.8	29.1	29.6	(30.7)
Fixed investment . . . . .	2.6	3.0	3.6	(4.1)
National expenditure . . . . .	33.9	38.2	39.1	(41.3)
Less: Import surplus . . . . .	0.1	1.6	0.2	—
Gross national product at market prices . . . . .	32.8	36.6	38.9	(41.3)

<sup>1</sup> Figures in parentheses are rough approximations based on partial information.

For the future, the projections in Table 25 imply that the resources absorbed by the public sector (less transfer payments) should grow from around 6.6 billion baht in 1958 (comparable to the 6.5 billion for 1957 shown in Table 26) to about 8.4 billion in 1963. This would represent an annual average growth rate of over 5%. On the other hand, should total output expand at a somewhat slower rate, the resources available to the private sector would not increase quite as fast as the growth in real output. It is expected, however, that even in these circumstances there would still be ample room for both continued increases in per capita consumption and in private savings and investment.<sup>8</sup>

These quantitative indications are intended to provide only a very general illustration of the pattern of resource-use that might emerge in the next five years, and should not be con-

<sup>8</sup> It is worth noting that private savings in the 1952-57 period accounted for around 80% of total savings. The greater part of these savings undoubtedly was used for self-financed investment, a pattern which may be expected to continue in the future.

strued as specific economic "targets". There is, however, every reason to expect that the recommended public development policies and programs will in fact be conducive to sustained or even increased rates of private economic expansion. Proposed additions to and improvements of basic economic facilities by the Government should enhance the resource opportunities for profitable private investment. Important cases in point include the stimulus to further productive investment by farmers that will be provided by the expansion of irrigation facilities and rural access roads, and the incentive to increased investment in manufacturing and commercial activities provided by more ample supplies of electric power, improved rail and road transport, and better telecommunications. Improvements in government services should have a similar effect, although much of the benefit from this will probably accrue in periods beyond the next five years. In this connection, the recommended increases in agricultural extension and research activities should be of particular importance, as would the recommended expansion of education and health facilities. Proposed changes in government policy, particularly in foregoing new industrial ventures and in providing additional inducements and facilities for domestic and foreign private investment in industry, should also create a more favorable climate for private initiative than in recent years.

These benefits to the private sector should more than outweigh the effects of the proposed increases in taxation and the recommendations for mobilization of additional private saving for the purpose of government investment. In the first place, the additional taxation recommended is relatively small and would add only about 12% to the revenue which might be expected from normal growth at existing tax rates. In relation to probable trends in national income and disposable private income, the amounts of additional taxation recommended are so small as to be of only minor significance in their effect on private saving and investment. Proposed additional borrowing by the Government from private savings are of a

similar minor order of magnitude.

On balance, any adverse impact of the financial recommendations on the private sector would appear likely to be so moderate and so far outweighed by the proposed contributions to private development that it would be preferable under reasonably normal crop and market conditions to impose somewhat heavier new taxes than proposed here if this were necessary to avoid curtailment of public development activity or excessive borrowing from the banking system.

### *Alternatives*

The recommended program of development expenditure, as noted in Chapter VIII, is indicative only of orders of magnitude, not only in total but also with respect to the many individual items of expenditure for which precise estimation is not yet possible. Furthermore, changing circumstances will necessitate a continuing review and revision of the development program here proposed.

Some broad suggestions may be made with regard to possible revisions, should particular conditions differ from the assumptions and forecasts that have been made. It is to be strongly emphasized, however, that the suggestions are made to cover discrepancies due to unforeseen developments beyond the control of the Government and not due to a less than adequate effort of the Government in organizing, administering and financing public development activity.

In the first place, the assumptions underlying the projections of domestic and foreign financial resources are in some degree arbitrary; the sums actually raised may exceed or fall below the estimates. In event of the former it is strongly advocated that the program be expanded, rather than that efforts to mobilize additional resources be relaxed.

It may develop, for example, that foreign financial assistance

will be larger than has been assumed. Should this happen, it would be shortsighted indeed to treat such a windfall as a substitute for the mobilization of domestic resources. Instead it should be used to increase expenditures for such high priorities as road and irrigation programs (including increased maintenance) and municipal improvements. If necessary, additional foreign technical capacity could be utilized to accomplish this in order to overcome shortages of domestic technical personnel. Should resources fall below the projected estimates it is urged that additional taxation and economies in non-development expenditure be carefully considered first, before resorting to cuts in the proposed recurring or capital outlays on development.

Adverse movements in revenue that are attributable to clearly temporary factors such as crop failure should not be considered a cause for a major curtailment of development activity. It is to meet such adverse contingencies that a high level of foreign exchange reserves is advocated, and in this event alone Central Bank borrowing beyond a level consistent with reserve stability would be justified. Subsequent financial measures and policies, should, however, be adjusted as necessary to recoup the temporary loss of reserves. As previously noted, a small decline in reserves is implied in the preceding financial projections for 1960 because of proposed Central Bank borrowing in that year in combination with prospective net withdrawals from counterpart deposits at the Central Bank. The effect on reserves will, however, be quite small in relation to the total. In the projections, provision has been made to compensate for this and to reestablish the reserve level by 1963 through proposed use of Central Bank credit at a level that should result in some net accumulations of foreign exchange.

Should circumstances develop which would leave the Government no reasonable alternative but to plan for development expenditures at a somewhat lower level than here proposed, it

is urged that reductions be made on a carefully selective basis consistent with considerations of priority and balance. In such circumstances it is suggested that the places for possible economies are in a somewhat slower rate of increase in recurring expenditures on education and health, a delay in the completion of the proposed additional rail line (the so-called Korat cut-off), an extension of the recommended program of railway investment over a longer period in order to reduce the required contributions from the Government, and some reduction in the recommended provisions from the central budget for working capital of government industrial enterprises, administrative building, air transport and school construction. It seems improbable, however, that such reductions would become necessary, barring unforeseen adverse developments of a severe and extended nature in Thailand's export markets, provided the recommended effort is made to strengthen the revenue system and its administration.

TABLE 27 Detail of Financing of the Recommended Public Investment Program by Main Projects, 1959-1963

(Million baht)

Purpose and source of funds	1959	1960	1961	1962	1963	1959-1963 total
<i>1. Agriculture, forestry and fisheries</i>						
Proposed capital expenditures, total . . . . .	35	65	50	45	45	240
Financed by:						
a. Government budget . . . . .	35	65	50	45	45	240
<i>2. Irrigation</i>						
Proposed capital expenditures, total . . . . .	225	230	190	210	265	1120
Financed by:						
a. Government budget . . . . .	200	205	165	185	240	995
b. ICA financing assumed . . . . .	25	25	25	25	25	125

TABLE 27—continued

Purpose and source of funds	1959	1960	1961	1962	1963	1959-1963 total
<i>3. Industry</i>						
Proposed capital expenditures:						
Working capital . . . . .	100	30	30	30	30	220
Industrial bank . . . . .	—	—	10	10	10	30
Industrial sites . . . . .	—	—	—	10	20	30
Total . . . . .	100	30	40	50	60	280
Financed by:						
a. Government budget . . . . .	100	30	40	50	60	280
<i>4. Power</i>						
Proposed capital expenditures:						
Yanhee Dam . . . . .	185	375	560	500	235	1855
Bangkok "Interim" Power Plant . . . . .	200	100	20	—	—	320
Distribution systems . . . . .	115	130	160	120	45	570
Bangkok "Diesel" and Mae Moh Project . . . . .	60	55	—	—	—	115
Total . . . . .	560	660	740	620	280	2860
Financed by:						
a. Government budget . . . . .	150	215	220	175	100	860
b. ICA financing assumed . . . . .	50	35	—	—	—	85
c. Eximbank and DLF loans . . . . .	275	185	110	65	10	645
d. World Bank loan . . . . .	85	225	410	380	170	1270
<i>5. Highway</i>						
Proposed capital expenditures (new construction), total . . . . .						
	475	485	440	450	440	2290
Financed by:						
a. Government budget . . . . .	150	160	190	250	290	1040
b. ICA financing assumed . . . . .	325	325	250	200	150	1250
<i>6. Other transportation and communications</i>						
<i>A. Railways</i>						
Proposed capital expenditures, total . . . . .						
	310	310	320	340	360	1640

TABLE 27—continued

Purpose and source of funds	1959	1960	1961	1962	1963	1959-1963 total
Financed by:						
a. Government budget and reserves . . . . .	125	130	140	150	170	715
b. Railways' operating surplus . . . . .	180	180	180	190	190	920
c. World Bank loan . . . . .	5	—	—	—	—	5
<i>B. Port</i>						
Proposed capital expendi- tures, total . . . . .	65	90	85	75	75	390
Financed by:						
a. Government budget and reserves . . . . .	25	40	45	45	45	200
b. Port operating surplus . . . . .	30	30	30	30	30	150
c. DLF loan . . . . .	10	20	10	—	—	40
<i>C. Air transport</i>						
Proposed capital expendi- tures, total . . . . .	60	60	50	50	60	280
Financed by:						
a. Government budget . . . . .	10	20	20	40	60	150
b. ICA financing assumed. . . . .	50	40	30	10	—	130
<i>D. Telecommunication and postal services</i>						
Proposed capital expendi- tures, total . . . . .	80	100	120	120	20	440
Financed by:						
a. Government budget . . . . .	20	20	20	20	20	100
b. ICA financing assumed. . . . .	60	80	100	100	—	340
<i>7. Local development</i>						
Proposed capital expenditures:						
Provincial projects . . . . .	100	100	105	105	105	515
Bangkok water works . . . . .	40	30	50	70	70	260
Municipal projects . . . . .	110	140	150	155	160	715
Total . . . . .	250	270	305	330	335	1490

TABLE 27—continued

Purpose and source of funds	1959	1960	1961	1962	1963	1959-1963 total
<i>Financed by:</i>						
a. Government budget . . . . .	15	20	30	50	40	155
b. ICA financing assumed. . . . .	60	60	40	30	35	225
c. Provincial and municipal funds . . . . .	175	190	235	250	260	1110
<i>8. Education</i>						
Proposed capital expenditures, total . . . . .	100	140	205	215	185	845
<i>Financed by:</i>						
a. Government budget . . . . .	100	140	205	215	185	845
<i>9. Health and welfare</i>						
Proposed capital expenditures, total . . . . .	50	65	70	30	30	245
<i>Financed by:</i>						
a. Government budget . . . . .	35	45	45	20	20	165
b. ICA financing assumed. . . . .	15	20	25	10	10	80
<i>10. Housing</i>						
Proposed capital expenditures, total . . . . .	—	30	40	60	80	210
<i>Financed by:</i>						
a. Government budget . . . . .	—	15	20	30	40	105
b. Municipal funds . . . . .	—	15	20	30	40	105
<i>11. Administration, buildings and miscellaneous</i>						
Proposed capital expenditures, total . . . . .	135	140	170	175	185	805
<i>Financed by:</i>						
a. Government budget . . . . .	80	90	125	135	150	580
b. ICA financing assumed. . . . .	55	50	45	40	35	225

TABLE 27—continued

Purpose and source of funds	1959	1960	1961	1962	1963	1959-1963 total
<b>TOTAL BY FINANCIAL SOURCES:</b>						
<b>A. Domestic:</b>						
Government budget . . . . .	1045	1195	1315	1410	1465	6430
Provincial and municipal funds . . . . .	175	205	255	280	300	1215
Public utilities own resources	210	210	210	220	220	1070
<i>Domestic, Total</i> . . . . .	1430	1610	1780	1910	1985	8715
<b>B. External:</b>						
ICA financing assumed . . . . .	640	635	515	415	255	2460
U.S. Eximbank and DLF loans . . . . .	285	205	120	65	10	685
World Bank loans . . . . .	90	225	410	380	170	1275
<i>External, total</i> . . . . .	1015	1065	1045	860	435	4420
<i>Grand total</i> . . . . .	2445	2675	2825	2770	2420	13135

NOTE: For details of recommended recurrent development expenditures, see Table 2 in Chapter I and the summary tables at the conclusion of Chapters II-VI. It is assumed that all recurrent expenditures will be financed from the government budget.

## STATISTICAL APPENDIX

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### List of Tables

1. Thailand: Population .....	262
2. Occupied Population by Industrial Group, 1947 ...	262
3. Gross National Product by Industry of Origin .....	263
4. Gross National Product and Expenditure .....	264
5. Gross National Product and Expenditure at Constant Prices .....	265
6. Land Utilization by Region, 1956 .....	267
7. Annual Rainfall by Region .....	268
8. Indices of Agricultural Output .....	269
9. Agricultural Production at Wholesale or Farm Value, 1956 .....	269
10. Output of Major Crops .....	271
11. Rice (Paddy): Harvested Area and Average Yields	272
12. Livestock: Number on Farms .....	272
13. Output of Main Forestry Products .....	273
14. Commercial Fish Catch .....	273
15. Mineral Output and Selected Industrial Indicators..	273
16. State Railways of Thailand .....	274
17. Balance of Payments on Current Account .....	275
18. Value of Exports by Commodity .....	276
19. Volume of Exports by Commodity .....	278
20. Value of Imports by Commodity .....	279
21. Volume of Selected Imports .....	282
22. Foreign Exchange Reserves .....	283
23. Central Government Revenue .....	284
24. Central Government Expenditures and Deficit Financing .....	285
25. Accounts of Local Governments and Government Enterprises .....	287
26. Factors Affecting the Money Supply .....	288

TABLE 1 Thailand: Population

(thousands)

Mid-year	1929	1937	1947	1958
Population .....	11,506	14,464	17,443	21,414

NOTE: 1929, 1937 and 1947 were census years.

SOURCES: 1958 estimate for U.N. *Bulletin of Statistics*; other data from *Statistical Yearbook of Thailand*, No. 22 (Vol. 1).

TABLE 2 Occupied Population by Industrial Group, 1947

	Number employed (in thousands)	Percent of total
Agriculture and livestock production .....	7,562	84.10
Forestry and logging .....	8	0.09
Fishing .....	53	0.59
Mining and quarrying .....	5	0.05
Manufacturing of food products .....	32	0.36
Manufacturing of beverages and tobacco .....	11	0.12
Manufacturing of wood products .....	24	0.27
Manufacturing of textiles and clothing .....	53	0.58
All other manufacturing .....	76	0.85
Construction and utilities .....	10	0.11
Wholesale and retail trade and other commerce ..	705	7.86
Transport and communications .....	66	0.73
Government service .....	204	2.27
Personal service .....	43	0.48
Other services .....	26	0.29
Activities not adequately described .....	111	1.24
<b>Total employed population .....</b>	<b>8,992</b>	<b>100.00</b>

SOURCE: *Statistical Yearbook of Thailand* No. 22 (Vol. 1).

TABLE 3 Gross National Product by Industry of Origin

(billion baht at current prices)

	Calendar Year					
	1952	1953	1954	1955	1956	1957 <sup>1</sup>
Agriculture, forestry & fishing . . . .	15.4	14.2	15.7	15.0	16.1	(17.5)
Mining . . . . .	0.6	0.5	0.5	0.6	0.7	(0.7)
Manufacturing . . . . .	3.4	4.0	4.1	5.0	5.3	
Construction . . . . .	0.9	1.0	1.0	1.1	1.4	(1.7)
Transport, communication and utilities . . . . .	1.2	1.7	1.8	2.1	2.3	
Wholesale & retail trade . . . . .	5.2	5.5	6.3	8.0	8.0	
Public administration and defense . . .	1.3	1.7	1.6	1.9	2.4	(2.5)
Other services . . . . .	3.0	3.7	3.8	4.2	4.3	
Gross domestic products at market prices . . . . .	31.0	32.3	34.8	37.9	40.5	(43.1)
Net income from abroad . . . . .	—	—0.1	—0.1	—0.2	—0.2	—0.3
Gross national product at market prices . . . . .	31.0	32.2	34.7	37.7	40.3	(42.8)

<sup>1</sup>1957 estimates are rough approximations by the Mission, based on partial data; allowance for the missing sectors is included in the total.

SOURCES FOR OTHER YEARS: Estimates prepared by the Thai National Economic Council, as published in the *Economic Survey for Asia and the Far East 1958*, except as noted below:

1) The estimates for agriculture have been adjusted by the Mission so that the value added by rice production is attributed to the year in which the main crop is harvested, rather than as in the original data, the year in which it is planted. This involved shifting the estimated net value of rice output forward by one year, as follows (in billions of baht):

	1952	1953	1954	1955	1956	1957
Original data on value of rice . . . .	4.5	5.5	3.7	6.0	6.5	
As revised . . . . .	5.7	4.5	5.5	3.7	6.0	6.5

2) The estimates for wholesale and retail trade have been adjusted to include profits on exchange earned in the 1952-1955 period when differential rates were in effect for exports and imports. The economic effect of these profits was virtually identical with export taxes (which are already included in this item) and consistency with the later years (and with the valuation of exports in Table 4) requires that this adjustment be made. The amounts involved are (in billions of baht):

1952	1953	1954	1955
0.7	0.6	0.7	0.2

TABLE 3—continued

3) Net income from abroad was estimated by the Mission on the basis of balance of payments estimates for investment income and transfers of salaries by migrant workers.

TABLE 4 Gross National Product and Expenditure

(billion baht at current prices)

	1952	1953	1954	1955	1956	1957 <sup>1</sup>
Public sector expenditure .....	4.3	5.3	5.8	5.9	6.1	6.7
Consumption .....	3.1	3.6	4.0	4.1	4.4	4.6
Gross fixed investment .....	1.2	1.7	1.8	1.8	1.7	2.1
Private sector expenditure .....	26.7	27.4	29.7	29.9	33.0	(35.2)
Consumption (incl. stock changes) .....	24.2	24.6	26.8	26.8	29.4	(31.0)
Gross fixed investment .....	2.5	2.8	2.9	3.1	3.6	(4.2)
National expenditure .....	31.0	32.7	35.5	35.8	39.1	(41.9)
Exports of goods and services .....	6.3	6.0	6.2	7.7	8.1	8.9
Less: Imports of goods and services .....	6.6	7.1	7.6	8.1	8.3	9.5
Gross national product at market prices .....	30.7	31.6	34.1	35.4	38.9	(41.3)

<sup>1</sup> Estimates in brackets are rough approximations based on partial data.

## GENERAL NOTE:

These estimates were prepared by the Mission with assistance from Dr. Joseph Gould and Miss Lumduan Maprasert in determining the value of imported investment goods (including domestic margins). Because of differences in methodology and in bases for estimation, the totals for the gross national product differ somewhat from those prepared by the National Economic Council as shown in Table 3.

Public sector expenditure estimates are based on compilation of government and government agency accounts prepared by the Mission. Estimates of total fixed investment are based on data on imports of capital goods (plus estimated trade and transport margins) and on estimates of domestic construction activity and of domestic production of other investment goods; private investment was derived by deducting public investment from the estimated total. Private consumption (plus changes in stocks) was estimated mainly on the basis of i) production plus imports minus exports for all main consumption goods and ii) family expenditure estimates for 1957 extrapolated to other years on the basis of population and price information. Exports and imports of goods and services are from balance of payments information supplied by the Bank of Thailand.

TABLE 5 Gross National Product and Expenditure  
 at Constant Prices

(billion baht, 1956 prices)

	1952	1953	1954	1955	1956	1957 <sup>1</sup>
Public sector expenditure . . . . .	4.5	5.6	6.1	6.2	6.1	6.5
Consumption . . . . .	3.2	3.8	4.2	4.3	4.4	4.5
Gross fixed investment . . . . .	1.3	1.8	1.9	1.9	1.7	2.0
Private sector expenditure . . . . .	28.4	28.5	32.1	30.4	33.0	(34.8)
Consumption (incl. stock changes)	25.8	25.7	29.1	27.2	29.4	(30.7)
Gross fixed investment . . . . .	2.6	2.9	3.0	3.2	3.6	(4.1)
National expenditure . . . . .	32.9	34.1	38.2	36.6	39.1	(41.3)
Exports of goods and services . . . . .	6.7	6.5	6.3	7.7	8.1	9.0
Less: Imports of goods and services . . . . .	6.8	7.5	7.9	8.0	8.3	9.0
Gross national product at market prices . . . . .	32.8	33.1	36.6	36.3	38.9	(41.3)
Effect of change in terms of trade . . . . .	-0.3	-0.1	+0.2	-0.1	-	-0.5
Real national income at 1956 prices . . . . .	32.5	33.0	36.8	36.2	38.9	(40.8)

<sup>1</sup> Estimates in brackets are rough approximations based on partial data.

## GENERAL NOTE:

The constant price estimates in Table 5 are based partly on the underlying volume indicators from which the Table 4 estimates were derived. In these cases, the possibility of errors in the Table 5 estimates is less than Table 4—where rather uncertain price estimates had to be used in conjunction with the volume data. On the other hand, for those estimates derived from basic data in current values, the Table 5 estimates are subject to a larger margin of error because deflation to constant values involves the introduction of rather uncertain price data. On balance, the Table 5 estimates, at least for the total GNP, are probably subject to about the same possibility of error as the current price estimates in Table 3 and 4. While this margin is undoubtedly fairly substantial, the growth trend indicated by the Table 5 GNP estimates does seem reasonably consistent with other available indicators of real output; eg: agricultural production has increased at an annual average rate of about 4% over the past six or seven years, as compared with the growth rate of about 4½% to 5% indicated above for the GNP as a whole.

## NOTES BY LINE:

 1. *Public consumption* was deflated with an average of the cost of living

TABLE 5—continued

indices for five Changwads prepared by the National Economic Council on the basis of revised weights for 1957. This average was combined by the Mission with the unit value index for imports on a 90-10 weighting basis to give somewhat greater weight to imported goods. The resulting index was:

1952	1953	1954	1955	1956	1957
97	95	95	96	100	101

2. *Private consumption* was estimated at constant prices by three main techniques: a) actual volumes of estimated consumption (and stock changes) for a number of major commodities were valued in all years at 1956 prices; b) population change was used as the volume indicator for those items initially estimated in current prices on the assumption of constant per capita consumption plus price changes; and c) the remainder was deflated with the same adjusted cost of living index as government consumption. The average deflator for all personal consumption works out as:

1952	1953	1954	1955	1956	1957
94	96	92	98	100	101

3. *Fixed capital formation (public and private)*: For domestic construction, underlying physical quantities were valued at 1956 prices; for imported capital goods, a price index was constructed partly on the basis of unit values for imported construction materials as implied by the volume and value data in the customs statistics, and partly on the basis of export price indices of engineering products for the countries supplying Thailand with the major part of its machinery and equipment (the U.S., to U.K. and Germany). These export price indices were adjusted for estimated movements in effective freight rates. The average deflator was:

1952	1953	1954	1955	1956	1957
95	97	95	97	100	103

4. The deflator for *exports* was based on unit values for commodities comprising 90-95% of total Thai exports. The items covered are shown in Tables 18 and 19.

5. The deflator for *imports* was based on unit values for consumers goods and raw materials comprising about 40% of Thai imports, together with the index of capital goods import prices referred to in item 3 above. The items for which unit values were obtained are shown in Table 21. The indices were as follows:

	1952	1953	1954	1955	1956	1957
Exports .....	94	93	98	100	100	99
Imports .....	98	95	96	101	100	105

6. Gross national expenditure and gross national product at constant prices

were derived as the sum of the expenditure components (except for 1957 where the GNP estimate was derived initially in constant prices from indications of the change in physical output between 1956 and 1957). The implied deflators for these aggregates are:

	1952	1953	1954	1955	1956	1957
National expenditure .....	94	96	93	97	100	101
Gross national product .....	93	96	93	97	100	100

7. *Effect of change in terms of trade:* This is calculated as the difference between exports deflated with the export price index and exports deflated with the import price index. The result is a measure of the variations in the foreign resources over which the country had command resulting from changes in export prices relative to import prices.

8. *Real national income* therefore measures the real volume of output plus or minus the change in resource availability (relative to the base year) resulting from changes in the terms of trade.

TABLE 6 Land Utilization by Region, 1956

(Percentages)

	Northern	North-Eastern	Central Plain	Southern	Total
Rice .....	4.12	14.86	14.66	6.30	11.69
Tree crops .....	0.39	1.02	1.35	6.54	1.79
Upland crops .....	1.18	3.02	3.12	1.30	2.49
Farm woodland .....	0.02	2.40	1.86	1.35	1.67
Miscellaneous farm land .....	0.13	4.14	0.52	0.41	1.61
Sub-total farm land .....	6.02	25.44	21.51	15.90	19.25
Forest and grazing land .....	58.82	61.45	56.99	54.87	58.19
All other .....	35.16	13.11	21.50	31.12	22.56
Total .....	100.00	100.00	100.00	100.00	100.00
Total area (million rai) <sup>1</sup> .....	57.1	104.4	115.1	44.7	321.3

<sup>1</sup> One rai equals 0.4 acre.

SOURCE: *Agricultural Statistics of Thailand 1956* (Ministry of Agriculture, Bangkok, 1958).

TABLE 7 Annual Rainfall by Region

*(millimeters of rainfall)*

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1947/56 Average
Northern .....	5,460	5,622	5,963	6,044	7,107	5,755	6,888	5,331	5,994	6,201	6,037
North-Eastern .....	4,187	5,025	6,410	6,408	6,292	5,930	5,520	5,014	4,548	6,044	5,538
Central Plain .....	12,143	13,035	12,812	12,507	12,696	13,651	13,869	12,289	13,711	13,160	12,987
Southern .....	12,238	9,549	10,033	9,502	9,657	9,992	11,680	10,421	10,429	11,037	10,447
Average for country ..	8,507	8,308	8,805	8,615	8,893	8,814	9,489	8,264	8,686	9,111	8,752

SOURCE: *Agricultural Statistics of Thailand, 1956* (Ministry of Agriculture, Bangkok 1958).

TABLE 8 Indices of Agricultural Output

(1952 = 100)

	1935/39	1950	1951	1952	1953	1954	1955	1956	1957
Rice .....	60	91	92	100	90	113	79	100	110
Rubber .....	47	114	111	100	98	119	133	136	136
Other crops .....	n.a.	76	99	100	114	140	156	174	190
Forestry products .....	n.a.	117	111	100	127	124	123	95	n.a.
Fish catch .....	n.a.	82	96	100	105	118	112	116	n.a.
Total of above .....	(50)	91	96	100	97	118	99	114	(122)

SOURCE: Based on volume data shown in Tables 10, 13 and 14 and 1956 unit values derived from *Agricultural Statistics of Thailand, 1956* (Bangkok, 1958). Note that several important components of agricultural output are *not* covered by these indices, the principal ones being production of live-stock products, and the non-commercial fish catch. The 1956 estimates for the value of these components are shown in Table 9.

TABLE 9 Agricultural Production at Wholesale or Farm Value, 1956

(million baht)

<i>Paddy</i> .....	6,334 <sup>1</sup>
<i>Upland crops</i> .....	1,263
Maize .....	133
Mung beans .....	61
Cassava roots <sup>2</sup> .....	356
Sugar cane .....	437
Vegetables .....	132
Fruits, fresh .....	126
Other edible seeds .....	18
<i>Oil seeds &amp; coconut products</i> .....	1,224
Copra <sup>3</sup> .....	828
Castor beans .....	75
Ground nuts .....	222
Soy beans .....	42
Sesame .....	56
<i>Fibers</i> .....	373
Cotton .....	137
Kapok .....	79

TABLE 9—continued

(million baht)

Ramie .....	3
Raw silk .....	122
Kenaf & jute .....	31
<i>Condiments, etc.</i> .....	295
Cardamons .....	7
Chili, dry .....	37
Onions .....	18
Garlic .....	102
Medicinal plants .....	7
Tamarinds .....	64
Betel nuts .....	10
Tobacco .....	50
<i>Rubber</i> .....	1,522
<i>Forestry products</i> .....	1,162
Teak .....	230
Yang .....	143
Other timber .....	352
Lac & lac seed .....	257
Charcoal .....	103
Firewood .....	52
Bamboo & rattan .....	23
Other forestry products .....	3
<i>Livestock &amp; products</i> .....	2,361
Buffaloes <sup>1</sup> .....	122
Cattle <sup>2</sup> .....	156
Swine <sup>3</sup> .....	900
Poultry & others <sup>4</sup> .....	271
Eggs .....	912
<i>Fishery products</i> .....	2,482
Fresh water fish .....	462
Marine fish .....	684
Mussels .....	7
Non-commercial catch .....	1,329
<i>Grand total</i> .....	<u>17,015</u>

<sup>1</sup> Crop year 1955/56.

<sup>2</sup> Not comparable with quantity figure shown in Table 10; includes estimate for unreported production.

<sup>3</sup> Copra equivalent of all coconut products.

<sup>4</sup> Value exported or slaughtered.

SOURCE: *Agricultural Statistics of Thailand, 1956.*

TABLE 10 Output of Major Crops

(thousands of metric tons)

	1935/39 average	1950	1951	1952	1953	1954	1955	1956	1957	1958
Paddy <sup>1</sup> .....	4,351	6,684	6,782	7,325	6,602	8,239	5,709	7,334	8,066	5,729
Corn (maize) ..	4	27	42	45	51	62	68	115	136	
Mung beans ....	n.a.	32	26	24	26	28	34	37	41	
Cassava .....	n.a.	43	43	43	47	47	43	37	n.a.	
Sugar-cane .....	n.a.	839	1,291	1,476	1,820	2,437	2,699	3,830	4,147	
Copra <sup>2</sup> .....	40	105.1	121.9	126.0	152.0	206.8	224.5	238.6	237.8	175.0
Ground nuts										
(peanuts) ....	7	62.7	75.9	76.2	77.9	91.7	94.1	101.4	118.1	126.0
Castor beans ..	n.a.	3.2	12.5	10.0	9.2	16.2	15.5	23.9	32.5	
Soy beans .....	6	11.6	20.8	21.1	20.2	21.5	20.1	22.4	27.5	
Sesame .....	1	9.5	7.2	8.9	8.6	9.9	11.2	13.5	17.7	18.0
Cotton .....	2.0	20.3	25.7	23.8	25.5	22.7	25.0	32.3	36.4	
Jute .....	n.a.	2.5	3.0	1.0	1.8	1.3	1.3	2.5	2.8	
Kenaf .....	n.a.	4.7	20.0	13.1	14.0	8.2	9.8	17.0	20.9	
Ramie .....	n.a.	1.1	1.3	1.0	1.3	1.8	0.1	0.4	0.4	
Tobacco .....	12.0	21.3	41.6	42.4	49.8	52.6	55.9	58.2	66.0	
Rubber .....	47.0	114.5	111.1	100.4	98.1	119.6	133.3	136.7	136.0	145.0

<sup>1</sup> Data for paddy are for the crop year ending in the year indicated.

<sup>2</sup> Copra equivalent of nuts, coconut oil, etc.

SOURCE: 1935/39 data from *Statistical Yearbook for Thailand, 1955*.

1950/58 from *Agricultural Statistics of Thailand, 1956* and *N.E.C. Bulletin of Statistics*.

TABLE 11 Rice (Paddy): Harvested Area and Average Yields

	Five year averages <sup>1</sup>			
	1923/27	1938/42	1949/53	1954/58 <sup>2</sup>
Production (thousand metric tons)				
North .....	n.a.	n.a.	539	680
Northeast .....	n.a.	n.a.	1,903	2,100
Central Plain .....	n.a.	n.a.	3,782	3,600
South .....	n.a.	n.a.	622	640
Total production .....	4,600	4,700	6,846	7,020
Area harvested (thousand rai) .....	15,600	20,000	32,570	32,800
Average yield (kg. per rai) .....	295	237	210	214

<sup>1</sup> Crop years ending in year indicated.

<sup>2</sup> The average for this period is probably somewhat below the secular trend because of the exceptionally poor crop years in 1955 and 1958.

SOURCE: Data for 1923-1942 provided directly by the Ministry of Agriculture; data for 1949-1958 from *Agricultural Statistics of Thailand, 1956* and the National Economic Council's *Bulletin of Statistics* for the second quarter of 1958.

TABLE 12 Livestock: Number on Farms

(thousands of head)

	1950	1951	1952	1953	1954	1955	1956
Elephants .....	13	13	13	13	12	12	12
Horses .....	214	201	214	211	195	178	197
Buffaloes .....	5,422	5,417	5,402	5,671	5,586	5,960	5,743
Cattle .....	5,490	5,192	5,549	5,296	5,329	6,724	5,637
Swine .....	n.a.	n.a.	3,327	3,500	3,141	2,911	3,031
Chickens .....	36,207	38,105	39,758	45,000	48,036	50,587	54,270
Ducks .....	n.a.	6,171	6,104	7,000	11,935	18,177	18,470

SOURCE: *Agricultural Statistics of Thailand, 1956*.

TABLE 13 Output of Main Forestry Products

(thousand cubic meters)

	1950	1951	1952	1953	1954	1955	1956
Teak .....	245	274	261	346	359	306	200
Yang .....	213	222	253	259	291	386	340
Firewood .....	1,619	2,010	1,206	1,206	1,063	1,177	1,031
Charcoal .....	620	768	609	831	665	585	571

SOURCE: *Agricultural Statistics of Thailand, 1956.*

TABLE 14 Commercial Fish Catch, 1947-1956

(thousands of metric tons)

	1950	1951	1952	1953	1954	1955	1956
Marine fish .....	116	141	138	149	166	151	152
Fresh water fish .....	42	46	53	56	63	62	66

SOURCE: Same as Table 13.

TABLE 15 Mineral Output and Selected Industrial Indicators

(thousands of metric tons)

	1937-39 average	1950	1951	1952	1953	1954	1955	1956	1957
<b>Mining</b>									
Tin (72% concentrate) .	23.0	14.9	13.3	13.1	14.1	13.6	15.6	17.5	18.6
Wolfram ore .....	0.1	1.1	1.3	1.6	1.6	1.1	1.1	1.2	0.9
Lead ore .....	—	1.3	2.6	2.5	8.0	11.7	12.5	9.4	7.1
Antimony ore .....	—	0.17		0.13	0.09	0.14	0.05	0.07	—
Iron ore .....	—	2.7	6.5	2.9	7.7	2.8	5.0	6.8	9.0
<b>Industrial</b>									
Cement .....	—	165	229	247	288	333	386	398	402
Electricity <sup>1</sup> .....	n.a.	95	105	120	140	157	190	211	258

<sup>1</sup> Million kilowatt hours generated by public power stations in Bangkok only.

SOURCE: *Bulletin of Statistics*, National Economic Council, plus data for electricity made available directly to Mission.

TABLE 16 State Railways of Thailand

## A. Physical Plant

	Route Kilometers of Tracts	Locomotives		Freight Wagons	Passage Cars
		Steam	Diesel		
1920 .....	2215	n.a.	n.a.	n.a	n.a
1941 .....	3272	185	15	3915	342
1950 .....	3272	415	23	5842	596
1955 .....	3377	318	69	6212	660
1958 .....	3471	314	67	6912*	777*

\* 1957.

## B. Volume of Traffic

	1941	1950	1955	1956	1957
Freight tonnage (thousand metric tons)					
Parcels .....	208	473	625	649	653
Livestock .....	18	20	30	34	31
Bulk .....	1620	1578	2598	2738	2949
Passenger kilometers (million) .....	423	1436	2007	1862	1973

## C. Gross Revenue

*(million baht)*

	1941	1950	1955	1956	1957
Freight .....	13	63	205	224	256
Passenger .....	8	91	230	242	252
Other .....	1	20	17	20	22
Total .....	24	174	452	486	530

SOURCE: State Railways of Thailand.

TABLE 17 Balance of Payments on Current Account

(millions of baht)

	1952	1953	1954	1955	1956	1957
<b>Exports of goods &amp; services</b>						
Merchandise exports (f.o.b.) ..	5,983	5,801	6,022	7,160	7,495	8,140
Foreign travel .....	56	39	46	74	54	56
Transport and insurance .....	85	88	54	73	91	176
Investment income .....	69	28	12	64	88	118
Government n.i.e. ....	40	47	37	158	154	215
Miscellaneous .....	26	34	19	149	166	186
<b>Total goods and services ..</b>	<b>6,258</b>	<b>6,036</b>	<b>6,189</b>	<b>7,678</b>	<b>8,048</b>	<b>8,891</b>
<b>Imports of goods &amp; services</b>						
Merchandise imports (c.i.f.) ..	5,651	6,021	6,681	6,928	7,352	8,311
Non-monetary gold .....	476	454	362	228	80	104
Foreign travel .....	128	139	133	166	209	264
Transport and insurance .....	143	139	127	127	116	182
Investment remittances .....	41	92	58	178	248	357
Government n.i.e. ....	73	89	97	219	114	95
Miscellaneous .....	96	146	106	236	157	192
<b>Total goods and services ..</b>	<b>6,608</b>	<b>7,080</b>	<b>7,565</b>	<b>8,082</b>	<b>8,276</b>	<b>9,505</b>
<b>Current account balance</b>						
Merchandise trade .....	332	-220	-660	232	143	-171
Invisible trade .....	-682	-824	-916	-635	-371	-443
<b>Total current balance<sup>1</sup> ..</b>	<b>-350</b>	<b>-1,044</b>	<b>-1,376</b>	<b>-403</b>	<b>-228</b>	<b>-614</b>

<sup>1</sup> These figures for the current balance differ somewhat with those in Table 22 of the text because of differences in the conversion rates used. The Table 22 data were derived from data for the current balance in dollars as submitted by the Bank of Thailand to the IMF and the exchange rate for imports implied in the relationship between the above baht figures and the dollar figures for imports submitted to the IMF.

SOURCE OF ABOVE DATA: Bank of Thailand.

TABLE 18 Value of Exports by Commodity

*(million baht)*

	1935/39 Average	1952	1953	1954	1955	1956	1957
<b>Major exports</b>							
Rice .....	86.5	3,870	3,820	3,086	3,133	3,086	3,943
Rubber .....	18.8	900	675	937	1,802	1,868	1,689
Tin .....	29.6	410	365	373	441	507	531
Sub-total .....	134.9	5,180	4,860	4,397	5,376	5,461	6,163
<b>Other exports</b>							
Live cattle .....	0.3	—	1	40	61	79	58
Eggs .....	0.6	—	—	11	29	57	62
Fish .....	2.1	19	50	100	49	86	69
Maize .....	n.a.	28	47	56	80	96	74
Mung beans .....	n.a.	17	17	24	24	43	23
Tapioca .....	n.a.	28	38	60	57	98	138
Chillies .....	0.6	22	27	52	29	36	23
Tobacco .....	0.3	2	3	4	8	53	100
Peanuts .....	n.a.	68	77	68	77	82	54
Soybeans .....	n.a.	—	8	5	—	15	4
Castor beans .....	n.a.	51	52	42	36	63	87
Sesame .....	n.a.	3	7	17	15	25	13
Cotton seed .....	n.a.	3	3	3	4	6	6
Hides and skins .....	1.6	5	30	53	68	48	54
Teak .....	6.9	97	133	211	264	304	262
Other wood .....	0.8	—	9	33	76	77	89
Salt .....	n.a.	17	21	33	22	31	35
Tungsten .....	0.2	104	93	41	60	44	32
Kapok .....	n.a.	1	3	16	29	35	44
Lac and lac seed .....	1.3	43	78	157	214	147	81
All other domestic exports .....	24.9	195	199	511	433	400	418
Re-exports .....	3.3	68	78	71	111	207	248
Sub-total other .....	42.9	771	974	1,608	1,746	2,032	1,974
Total exports .....	177.8	5,951	5,834	6,005	7,122	5,493	8,137
Adjustments .....	n.a.	+32	-34	+17	+38	+2	+3
Adjusted Total .....	n.a.	5,983	5,800	6,022	7,160	7,495	8,140

See next page for notes.

## SOURCES AND ADJUSTMENTS USED IN DERIVING TABLE 18

The sources of the basic data are the *Annual Statements of Foreign Trade of Thailand* 1952-1957 (i.e. the customs returns); plus material compiled for the Mission by the Bank of Thailand from the customs returns for the years 1934/35 to 1938/39. The following adjustments to the trade data from these sources were made by the Mission:

a) The value given in the customs returns for rice, rubber and tin in 1952 and 1953 (and for rubber 1954) have been replaced by values determined on the basis of the dollar values reported to the IMF by the Bank of Thailand (and published in *International Financial Statistics*), multiplied by the average effective exchange rates for imports. These rates were derived by dividing the baht data on total imports provided to the Mission by comparable dollar data on total imports provided to the IMF by the BOT. (See also the country notes on Thailand in the December 1955 issue of the IFS). The reason for using the import rate, rather than the rates received by the exporters, is that the former measures the purchasing power of the foreign exchange earned by the exports; i.e. it measures the value of exports to the economy. From 1954 on in the case of rice and tin, and from 1955 on in the case of rubber, the customs statistics do record rice, rubber and tin on this basis. All other commodities in all years are also valued in this way.

b) The 1956 and 1957 value for rice and rubber as reported in the customs statistics have been adjusted by the Mission to include the amount of undervaluation as estimated by the Bank of Thailand and reported to the IMF for inclusion in the export data used in the balance of payments. The amounts of these adjustments as reported in the IMF Balance of Payments yearbook (in millions of dollars) are, for rice, 10.6 and 15.5, and for rubber, 16.3 and 13.6, in 1956 and 1957 respectively. No estimates for this undervaluation are available for prior years, but as indicated in footnote 1 to page 231 of the text, the existence of a substantial amount of undervaluation for 1954 and 1955 is suggested by the relatively large errors and omissions item in the balance of payments for these years.

c) The adjustments shown in the next to the last line reflect the minor statistical discrepancies existing between the customs data as derived in the manner explained above, and the export data used by the Bank of Thailand in its balance of payments.

TABLE 19 Volume of Exports by Commodity

*(thousand metric tons)*

	1935/1939 average	1952	1953	1954	1955	1956	1957
<b>Major exports</b>							
Rice .....	1,380.7	1,548.0 <sup>1</sup>	1,359.1	1,001.5	1,248.0	1,226.3	1,570.2
Rubber .....	34.8	99.0	101.4	119.0 <sup>1</sup>	132.5	135.6	135.5
Tin .....	18.1	12.9	14.2	13.9	15.7	17.6	18.4
<b>Other exports</b>							
<b>Live cattle</b>							
(thousands) ..	8.0	—	0.5	9.4	24.2	43.2	32.2
Eggs .....	2.2	—	—	1.1	2.9	6.3	8.2
Fish .....	26.4	21.0	18.7	29.6	22.9	24.6	19.3
Maize .....	n.a.	25.2	34.7	37.0	68.2	81.5	64.3
Mung .....	n.a.	9.5	7.2	7.5	10.5	21.7	10.5
Tapioca .....	n.a.	29.5	43.7	54.7	55.8	77.0	79.3
Chillies .....	1.5	4.8	6.0	6.2	5.0	7.0	3.2
Tobacco .....	0.4	0.3	0.3	0.3	0.8	4.9	6.7
Peanuts .....	—	21.2	25.3	14.4	20.3	21.2	12.6
Soybeans .....	—	—	2.9	1.2	0.01	7.1	1.4
Castor beans .....	—	18.7	20.9	14.4	13.5	22.2	26.0
Sesame .....	—	1.0	1.9	2.3	4.5	7.8	3.0
Cottonseed .....	—	3.6	3.2	2.1	3.3	5.0	4.9
Hides and skins..	6.3	—	3.1	4.9	6.5	5.6	6.2
Teak (thous. cu. meter) .....	57.1	59.0	68.0	79.0	88.0	78.0	78.0
Other wood (thou. cu. meter) .....	7.7	0.1	10.0	38.0	82.0	86.0	90.0
Salt .....	—	201.9	168.2	191.5	173.8	265.1	223.2
Tungsten .....	0.2	1.3	1.6	1.4	1.6	1.0	1.0
Kapok .....	—	0.7	0.3	1.3	2.2	3.3	4.4
Lack and lac seed	6.0	5.5	12.1	15.8	17.4	14.3	11.2

<sup>1</sup> Corrected figure.SOURCE: *Annual Statements of Foreign Trade* (customs returns).

TABLE 20 Value of Imports by Commodity

(million baht)

	1952	1953	1954	1955	1956	1957
<b>Food &amp; tobacco products</b>						
Milk products .....	164	227	306	294	291	380
Fish products .....	30	62	8	10	26	26
Wheat flour & bakery products .....	74	89	78	75	82	82
Fruits & vegetables .....	69	115	19	22	44	37
Sugar & preparations .....	55	18	81	129	40	30
Coffee & tea .....	56	51	63	83	77	75
Beverages (mainly alcoholic) .....	41	34	28	24	23	20
Tobacco (mainly unmanufactured) .....	77	103	93	134	147	183
All other foods & tobacco .....	263	68	86	49	52	64
<b>Total food &amp; tobacco .....</b>	<b>829</b>	<b>767</b>	<b>762</b>	<b>820</b>	<b>782</b>	<b>897</b>
<b>Crude materials</b>						
Textile fibers (mainly cotton) .....	8	7	28	28	14	5
Crude fertilizers .....		15	24	10	12	26
Medicinal plants .....	74	17	13	14	25	23
All other crude materials .....		42	19	24	29	20
<b>Total crude materials .....</b>	<b>82</b>	<b>81</b>	<b>84</b>	<b>76</b>	<b>80</b>	<b>74</b>
<b>Mineral fuels &amp; lubricants</b>						
Gasoline .....	154	158	222	259	302	353
Kerosene .....	64	62	76	73	84	77
Fuel and diesel oils .....	103	147	162	228	263	323
Lubricants .....	56	76	74	91	91	126
All other (incl. coal & coke) .....	43	29	36	41	35	49
<b>Total mineral fuels &amp; lub. ....</b>	<b>420</b>	<b>472</b>	<b>570</b>	<b>692</b>	<b>775</b>	<b>928</b>
<b>Animal &amp; vegetable oils &amp; fats</b>						
<b>Total .....</b>	<b>18</b>	<b>24</b>	<b>27</b>	<b>28</b>	<b>28</b>	<b>19</b>
<b>Chemicals</b>						
Basic chemicals .....	64	57	89	70	69	64
Dyeing & tanning materials & paints .....	42	70	87	98	92	108
Medicinal & pharmaceutical products .....	109	140	230	213	249	268
Toilet goods & cleaning preparations .....	41	49	84	109	135	131
Manufactured fertilizers .....	2	4	7	29	34	62
All other (incl. explosives) .....	39	18	29	62	75	121
<b>Total chemical products .....</b>	<b>296</b>	<b>338</b>	<b>526</b>	<b>581</b>	<b>654</b>	<b>754</b>

TABLE 20—continued

(million baht)

	1952	1953	1954	1955	1956	1957
<b>Manufactured goods</b>						
Tires & tubes .....	85	66	109	141	128	171
Other rubber products .....	n.a.	45	22	27	32	16
Paper, paperboard, etc. ....	57	124	150	158	169	292
Textiles & clothing and footwear						
Thread & yarn .....	89	101	115	127	160	158
Yard goods, netc, etc. ....	902	725	931	916	951	845
Manufacture of jute, hemp, etc. }		17	26	28	23	24
Clothing .....	61	129	187	140	123	109
Footwear .....	26	63	51	19	19	22
Cement .....	22	26	29	29	15	26
Glass & products .....	71	66	62	59	61	59
Structural iron & steel products ....	246	332	384	329	431	505
Iron & steel rails, pipes & rods ....	22	87	91	78	138	106
Non-ferrous metal sheets, strips, etc.	42	46	57	55	72	89
Simple metal manufactures .....	238	340	324	304	291	370
Prefabricated building .....	n.a.	5	4	6	13	10
Light fixtures (incl. flashlights) ....	23	25	22	25	35	29
Watches, clocks, scientific equipment	103	115	121	124	118	110
All other (except mach. & eq.).....	705	621	599	1,112	751	699
<b>Total manufactured goods .....</b>	<b>2,692</b>	<b>2,933</b>	<b>3,284</b>	<b>3,677</b>	<b>3,530</b>	<b>3,640</b>
<b>Non-electrical machinery &amp; equipment</b>						
Steam powered engines .....	26	22	5	1	9	1
Internal combustion engines .....	69	109	105	57	101	133
Agricultural mach. except tractors..	n.a.	7	13	5	12	12
Tractors & parts .....	21	34	29	34	43	53
Office machinery .....	11	13	18	18	19	25
Metal working machinery .....	7	13	7	14	12	11
Pumps, industrial trucks & road						
const. mach. ....	211	41	44	55	41	100
Woodworking mach. & tools .....		4	1	7	2	5
Paper mill & printing mach. ....		3	6	9	8	15
Textile mach. (incl. sewing mach.)..		41	24	63	83	55
Air conditioning refrig. mach. ....		3	7	9	13	14
All other non-elect. machinery ....	235	264	172	190	208	
<b>Total non-electrical machinery...</b>	<b>345</b>	<b>525</b>	<b>523</b>	<b>444</b>	<b>533</b>	<b>632</b>

	1952	1953	1954	1955	1956	1957
<b>Electrical machinery &amp; equipment</b>						
Dynamos, motors, converters, transformers, generators, switchboards .....	32	47	63	60	44	63
Batteries, bulbs, tubes .....	5	64	76	64	63	61
Radio, television sending & receiving	40	50	63	84	94	105
Telephone, telegraph, electronics ..	n.a.	5	8	11	21	32
Portable elec. tools & household appliances .....	n.a.	11	18	37	38	42
Insulated wire & cables .....	23	29	39	39	55	46
All other elec. mach. ....	52	74	63	47	38	43
<b>Total electrical machinery ....</b>	<b>152</b>	<b>280</b>	<b>330</b>	<b>342</b>	<b>353</b>	<b>392</b>
<b>Transport equipment</b>						
Railway locomotives & rolling stock ..	n.a.	66	51	75	70	117
Automobiles, motorcycles, bicycles, parts and other vehicles not motorized .....	171	273	254	322	349	383
Busses, trucks, lorries & chassis ....	185	169	162	159	176	250
Aircraft & parts .....	n.a.	41	28	25	21	91
Ships and boats .....	n.a.	11	40	16	21	42
Other transport equipment .....	258	—	—	—	—	—
<b>Total transport equipment ....</b>	<b>614</b>	<b>560</b>	<b>535</b>	<b>597</b>	<b>637</b>	<b>883</b>
<b>Grand total imports .....</b>	<b>5,448</b>	<b>5,980</b>	<b>6,641</b>	<b>7,257</b>	<b>7,372</b>	<b>8,219</b>
Adjustments for balance of payments	+203	+41	+40	-329	-19	+92
<b>Imports as reported in balance of payments .....</b>	<b>5,651</b>	<b>6,021</b>	<b>6,681</b>	<b>6,928</b>	<b>7,353</b>	<b>8,311</b>

SOURCE: *Annual Statements of Foreign Trade* (customs returns) 1952-1957, except for last line which was supplied by the Bank of Thailand, and for the adjustment line which was derived by the Mission.

TABLE 21 Volume of Selected Imports

*(thousand metric tons, except where otherwise indicated)*

Commodity	1952	1953	1954	1955	1956	1957
<b>Food &amp; tobacco</b>						
Wheat flour .....	13.0	17.4	20.3	23.7	26.5	29.6
Sugar .....	17.6	2.6	27.1	38.3	12.5	8.0
Coffee .....	2.3	2.0	1.9	2.7	3.4	3.5
Tea .....	1.2	1.0	1.1	1.4	1.4	1.6
Tobacco, unmfr. ....	2.3	3.1	2.3	3.5	4.3	5.4
Tobacco, mfr. ....	0.3	0.1	0.1	0.06	0.02	0.04
<b>Petroleum products</b>						
Gasoline & benzine <sup>1</sup> .....	209.3	205.0	280.7 <sup>2</sup>	341.3 <sup>3</sup>	381.7	458.1
Kerosene <sup>1</sup> .....	94.5	93.8	105.9	99.1	118.9	106.9
Fuel and diesel oils <sup>1</sup> .....	194.2	276.9	300.0 <sup>3</sup>	404.2 <sup>3</sup>	472.8	527.7
Lubricants <sup>1</sup> .....	19.5	24.9	21.6	28.4	30.1	36.6
<b>Rubber products</b>						
Tires & tubes <sup>2</sup> .....	700.1	694.3	1,498.0	1,862.4	2,062.5	2,660.4
<b>Paper &amp; products</b>						
Cigarette paper .....	0.7	—	0.1	0.4	0.2	0.3
Newsprint .....	3.4	8.4	8.9	17.2	13.7	16.6
Printing & writing paper ...	4.7	14.2	11.3	4.2	6.8	11.1
Paperboard .....	6.6	5.1	8.6	6.8	7.7	8.0
<b>Yarns &amp; thread</b>						
Cotton .....	4.2	3.9	3.7	3.4	5.1	4.7
Rayon, silk, nylon, etc. ....	0.3	0.2	0.2	0.7	0.7	0.7
Wool .....	0.02	0.04	0.03	0.03	0.06	0.07
<b>Yard goods</b>						
Cotton (bolts) <sup>2</sup> .....	3.7	4.4	5.3	5.4	6.7	5.0
Silk, rayon, nylon .....	3.6	2.7	2.7	3.5	4.0	3.6
Wool .....	0.2	0.2	0.2	0.3	0.2	0.2
Linen .....	0.2	0.3	0.7	0.3	0.2	0.1
<b>Textile manufactures</b>						
Laces, ribbon etc. ....	0.04	0.1	0.1	0.06	0.07	0.06
Blankets .....	3.3	5.2	2.4	4.4	5.5	3.0
Household linens .....	0.6	0.9	0.7	0.7	0.9	0.9
<b>Miscellaneous raw materials</b>						
Rope, twine, cord .....	2.3	2.5	2.6	2.9	3.8	4.1
Gunny & canvas bag <sup>2</sup> .....	23.6	19.5	12.4	25.1	16.5	28.2
Cement .....	42.7	47.3	52.3	59.3	25.9	48.0

STATISTICAL APPENDIX 283

Commodity	1952	1953	1954	1955	1956	1957
<b>Iron &amp; steel (incl. tinplate)</b>						
Joists, girders, angles, etc. . .	34.0	49.3	46.0	53.9	50.8	59.1
Plates & sheets, coated . . . . .	42.0	56.4	61.5	59.1	63.1	62.8
Railway rails & accessories . .	9.3	10.0	11.0	14.5	37.5	5.8
Tubes, pipes & fittings . . . . .	5.1	11.3	10.3	8.8	13.3	19.0
<b>Non-ferrous metals</b>						
Copper & alloys . . . . .	0.7	1.3	1.1	0.8	1.1	1.6
Aluminum & alloys . . . . .	1.4	2.3	1.6	2.0	1.9	2.4
Lead & alloys . . . . .	0.5	0.5	0.4	0.5	0.3	0.6
Zinc & alloys . . . . .	0.8	0.8	1.0	0.8	1.4	1.3

<sup>1</sup> 1000 kiloliters.  
<sup>2</sup> million units.  
<sup>3</sup> corrected figure, partly estimated.

SOURCE: *Annual Statements of the Foreign Trade of Thailand, 1952-1957.*

TABLE 22 Foreign Exchange Reserves

(millions of dollars at end period)

	1951	1952	1953	1954	1955	1956	1957	1958
Gold . . . . .	114	114	114	113	112	112	112	112
Sterling held by								
Central Bank . . . . .	150	53	22	47	52	54	54	61
Dollars <sup>1</sup> . . . . .	97	181	168	123	138	148	157	134
Other foreign exchange	1	6	4	—	—	—	—	—
<b>Total . . . . .</b>	<b>362</b>	<b>354</b>	<b>308</b>	<b>283</b>	<b>302</b>	<b>314</b>	<b>323</b>	<b>307</b>

<sup>1</sup> As reported by U.S. banks; includes some commercial bank and private holdings.

SOURCE: *International Financial Statistics.*

TABLE 23 Central Government Revenue

(million baht)

	1953	1954	1955	1956	1957 <sup>1</sup>
Income taxes .....	241	245	281	320	331
Business taxes .....	250	342	432	437	461
Export & similar taxes on:					
Rice .....	816	825	589	981	1019
Rubber .....	50	55	140	196	167
Tin and other minerals .....	53	43	55	89	85
Teak and other wood .....	79	92	95	101	109
Other exports .....	33	45	42	50	41
Import taxes .....	1047	1145	1296	1414	1455
Profit on opium .....	116	116	110	74	—
Other indirect taxes <sup>2</sup> .....	698	738	691	805	818
Profit from lottery sales .....	63	73	73	73	118
Revenue from Govt. utilities <sup>3</sup> .....	92	120	102	139	128
Education & health stamp tax .....	80	124	128	132	120
Fees, fines & licenses .....	305	322	337	309	282
Miscellaneous income .....	91	105	136	104	165
Total reported revenue	4014	4390	4508	5224	5299
Adjustments to cash basis <sup>4</sup> .....	(-100)	+75	+433	-361	n.a.
Adjusted total revenue	(3914)	4465	4941	4863	(5300)

<sup>1</sup> Partially estimated.<sup>2</sup> In addition to taxes specified in the revenue accounts as excise taxes, this item includes profits of the government tobacco, playing card manufacturing and distillery monopolies and automobile taxes.<sup>3</sup> These are gross revenues of the post and telegraph department, the Samsen electricity works and the water works; current expenditures of these entities are included in consumption expenditures of the Government in Table 24.<sup>4</sup> The main adjustments required are for time lags in the posting of revenue vouchers. The adjustment for 1953 is quite uncertain, and no adjustment item is available for 1957.

SOURCE: Ministry of Finance, Bangkok.

TABLE 24 Central Government Expenditures  
and Deficit Financing

(billion baht)

	1952	1953	1954	1955	1956	1957
<i>A. Expenditure</i>						
Consumption <sup>1</sup>						
Defense and police .....	1.5	1.7	1.96	1.95	2.03	2.0
Civil administration .....	0.5	0.6	0.66	0.75	0.86	0.9
Recurring development .....	1.0	1.2	1.33	1.39	1.47	1.6
Sub-total .....	3.0	3.5	3.94	3.99	4.33	4.5
Transfer payments						
Public debt service .....	0.09	0.15	0.16	0.24	0.24	0.3
Transfers to local govt. ....	0.08	0.10	0.13	0.10	0.10	0.1
Transfers to govt. agencies ...	0.26	0.26	0.31	0.17	0.14	0.1
Other transfers .....	0.18	0.20	0.22	0.19	0.23	0.2
Sub-total .....	0.6	0.7	0.82	0.70	0.71	0.7
Capital expenditures <sup>2</sup>						
Agriculture and irrigation....	0.32	0.32	0.28	0.25	0.24	0.2
Power .....	0.05	0.06	0.04	0.02	0.03	0.1
Transport & communications...	0.24	0.38	0.37	0.37	0.37	0.6
Health, education & welfare....	0.11	0.23	0.24	0.24	0.17	0.2
Local development .....	0.02	0.08	0.18	0.11	0.06	0.1
Public buildings & other .....	0.04	0.08	0.06	0.05	0.11	0.1
Sub-total .....	0.8	1.2	1.17	1.04	0.98	1.3
Total expenditures .....	4.4	5.4	5.93	5.73	6.02	6.5
<i>B. Current revenue</i> .....						
	3.3	3.9	4.46	4.94	4.86	5.3
<i>C. Overall deficit</i> .....						
	1.1	1.5	1.47	0.79	1.16	1.2
<i>D. Financing the deficit</i>						
Borrowing from the public <sup>3</sup> .....	—	—	0.11	0.12	0.25	0.25
U.S. grants and loans <sup>3</sup> .....	0.05	0.06	0.05	0.16	0.24	0.50
World Bank loans .....	0.10	0.05	0.02	0.02	—	—
Other foreign borrowing <sup>4</sup> .....	—	—	—	—	0.02	0.04
Borrowing from BOT <sup>5</sup> .....	0.8	1.9	1.49	0.62	0.50	0.39
Net use of cash balances .....	—	-0.2	0.03	-0.08	0.01	-0.01
Total reported financing ...	1.0	1.8	1.70	0.84	1.02	1.2
Errors & omission .....	0.1	-0.3	-0.23	-0.05	0.14	—

For footnotes, see next page.

## Footnotes to Table 24

<sup>1</sup> Excludes expenditures on defense and current development purposes (technical assistance) financed by U. S. aid. These expenditures were approximately as follows (in billion baht):

	1952	1953	1954	1955	1956	1957
Defense .....	—	—	—	—	0.10	0.12
Development .....	0.03	0.05	0.02	0.04	0.06	0.05

The aid estimates include direct dollar disbursements of project aid and withdrawals of counterpart funds generated by non-project aid. Total aid disbursements as reported by fiscal sources, including those covered in Table 25B, below, differ somewhat from the total of U. S. government loans and grants figures reported in the balance of payments (cf. text Table 23) because of i) valuation differences (most of the aid in the earlier years is valued at 12.5:1 in the government accounts as against around 18 or 20:1 in the balance of payments); ii) recording lags; and iii) changes in counterpart balances; e.g. in the years 1955-1957, a substantial portion of the aid went to build up these balances. The amounts in billion baht were: 0.08; 0.25 and 0.10 for the three years respectively. Total counterpart balances outstanding at the end of 1957 were 450 million baht.

<sup>2</sup> Includes expenditures financed by U.S. aid, and other foreign financing sources.

<sup>3</sup> Data for 1956 and 1957 include use of about 120 million baht of funds deposited with the Treasury by government entities; remainder in all years is comprised mainly of bond purchases by the State Savings Bank.

<sup>4</sup> Represents use of supplier's credits.

<sup>5</sup> In the years 1952-1955, an important part of Central Government borrowings from the Bank of Thailand was compensated by profits accruing to the Central Bank from foreign exchange transactions. These amounts are as follows (in billion baht):

1952	1953	1954	1955
0.66	0.58	0.63	0.22

As indicated in the note to Table 3, these exchange profits are virtually identical to export taxes in their economic effect, and could well be treated as part of current revenue; if they were, the overall deficit and bank borrowing figures would be reduced correspondingly.

SOURCE: Derived by the Mission from information supplied directly by various Government departments.

## INDEX

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- Act on Factories of B.E. 2482, 101, 102  
Act on Promotion of Industries, 98-100  
Administration, public:  
  coordination, lack of, 162-63, 223-24, 225-26;  
  housing, 165;  
  independence of judgment, lack of, 223, 225, 226;  
  management, 224-26;  
  motivation, 226-28;  
  overseas training programs, 220-21;  
  placement policy, 221-23;  
  salaries, 226-27;  
  tenure, importance of, 224-25;  
  trained personnel, lack of, 13, 31-32, 219-21;  
  weaknesses in:  
    in financing, 12-13;  
    in organization, 13-15, 223-24;  
    in planning, 11-12  
Administration of economic development. *See* Administration, public;  
  Financial management; Planning;  
  Statistical services  
Agriculture:  
  community development, 76-78;  
  crop diversification, 74-76;  
  Department of, 56, 64, 74, 80;  
  double-cropping, 6-7, 18, 36;  
  education, 54-55, 176, 187;  
  expenditures for, total proposed, *Table*, 86-87;  
  extension services, 56-60, 75:  
    field experience, 58-59;  
    personnel, training of, 59-60;  
  farm credit, 207;  
  farms, size of, 33;  
  future program, recommendations for, 17-20;  
  land settlement, 78-82, 161, 173, 223;  
  land-use surveys, 74-75, 82;  
  land utilization, *Table*, 267;  
  large-scale enterprises, encouragement of, 76;  
  major crops, output of, *Table*, 271;  
  Ministry of, 14, 47, 54, 55, 58, 60, 72, 79-80, 82, 91, 187, 190, 209;  
  opportunities for expansion in, 4-7;  
  output, indices of, *Table*, 269;  
  policy objectives of, 35-36;  
  production, growth of, 7, 10, 229-30;  
  production, at wholesale or farm values, *Table*, 269-70;  
  research, 60-64, 75;  
  role of government in, 33;  
  shifting cultivation, 46-47, 61, 74, 79;  
  trained service, creation of, 53;  
  *see also* Cotton; Erosion control; Fishing; Forestry; Fruits; Irrigation; Kasetsart University; Livestock; Oilseeds; Pest and disease control; Rainfall; Rice; Rubber; Sisal; Soybeans; Sugar cane; Teak; Tobacco; Upland farming; Vegetables  
Air transport. *See under* Transport and communications  
Antimony, 112  
Aranyaprades, 136, 138  
Ayuthia, 38, 109  
Balance of payments, 231, *Tables*, 232, 275  
Bangkok, 9, 21, 22, 23, 54, 55, 72, 101, 107, 108, 109, 120, 124, 127, 131, 135, 136, 145; child care center in, 170-71; Don Muang Airport, 148; electric power distribution system, DLF loan for, 239; health services in, 154, 155, 157; housing in, 160, 161-62, 164; Siriraj Hospital, 157; Technical Institute, 176; telecommunication facilities, 148-49; thermal power

- plant, Export-Import loan for, 115, 239; thermal power stations in, 107, 113, 115, 116; total power generation in, 114, 114*n*; universities located in, 189; Women's Hospital, 159; *see also* Bangkok University, proposed; Port of Bangkok
- Bangkok-Chiangmai road, 135, 138
- Bangkok-Nongkai road, 137
- Bangkok Planning Commission, 162
- Bangkok University, proposed, 55, 189-90
- Bangsaen, 180*n*
- Bank of Thailand. *See* Central Bank
- Banking and credit. *See under* Financial management
- Bridges, highway, 137
- Bua Yai, 22, 124
- Burma, 41, 175
- Calcutta, 217
- Cambodia, 46, 147, 149
- Canals, construction of, 38, 39, 40, 44, 50, 51, 122, 223-24
- Central Bank, 128, 205, 206; government borrowing from, 27, 240-44, 255
- Central Plain, 18, 21, 117, 122, 134, 145; agricultural development in, 6; cropping patterns in, 60-61; irrigation in, 38-41; upland crop development in, 75, 76
- Central Statistical Office, 30, 210, 216-17, 218, 219
- Ceylon, 70, 73, 104, 175
- Chainat, 22, 138
- Chainat dam, 38, 49, 85
- Changwad Lampang, 107
- Chao Phya irrigation system, 134
- Chao Phya Plain, 34, 36, 85
- Chao Phya River, 6, 20, 140, 145; hydroelectric potential, 9; *see also* Greater Chao Phya project
- Charcoal burning, 106-7
- Chiangmai, 22, 41, 42, 109, 135, 138, 176; medical facilities, 157-58, 159, 173
- Chiengrai, 42
- Chinese initiative in industrial development, 95-96
- Cholburi, 62, 92
- Cholera, 154
- Chulalongkorn University, 180, 182, 188, 189, 190; enrollment at, 193; hours of classroom attendance at, 195; part-time instructors at, 192
- Chumporn, 135, 138
- Civil Service Commission, 32, 221, 222; reform of, need for, 223
- Clays, 113
- Coconuts, 75, 230
- Coffee, 75, 76
- Coir, 76
- Colombo Plan. *See* Consultative Committee on Economic Development in South and Southeast Asia
- Committee for Industrial Promotion, 99
- Construction, private, 10; *see also* Investment, private
- Consultative Committee on Economic Development in South and Southeast Asia (Colombo Plan), 220, 237
- Consumption, private, rise in, 251
- Copper, 112
- Cotton, 75, 230; research on, 62-63
- Credit facilities. *See under* Financial management, *s.v.* banking and credit
- Crime, treatment of, 170, 171-72
- CSO. *See* Central Statistical Office
- Dams, 43, 46, 117; at Chainat, 38, 49, 85; earth, 44, 45; importance of fish ladders in, 49, 85; on Lam Pao River, 45
- Dairying, 76
- Data and information. *See* Statistical services
- Davidson, Eileen M., 172*n*
- Debt service, 2, 24, 237
- Departments, government: Agriculture, 56, 64, 74, 80; Budget, 202-3; Fisheries, 82; Forestry, 42, 58, 74, 82, 84; Highway, 130*n*, 131, 132, 133, 134, 135, 136, 137; Industrial Promotion, 14, 105; Industrial Works, 105; Irrigation, 37, 41, 42, 43, 44, 48, 51, 52, 53, 56, 146, 161, 223, 224; Livestock Development, 56, 64; Metallurgical Works, 105; Mines, 105, 108, 112; Police, 161; Public Welfare, 78, 79, 80, 82, 161, 165, 168, 169, 170, 171, 172, 173, 223; Revenue, 14; Rice, 56, 64, 66; Science, 105

TABLE 25 Accounts of Local Government  
and Government Agencies

## A. Municipal and Provincial Governments

*(billion baht)*

	1952	1953	1954	1955	1956
Tax revenue .....	0.07	0.07	0.07	0.13	0.15
Transfers from Central Govt. ....	0.08	0.10	0.13	0.10	0.10
Total receipts .....	0.15	0.17	0.20	0.23	0.25
Current expenditure .....	0.08	0.08	0.09	0.10	0.11
Capital expenditure .....	0.07	0.08	0.08	0.11	0.13
Total expenditure .....	0.15	0.16	0.17	0.21	0.24
Implied surplus .....	—	0.01	0.03	0.02	0.01

## B. Fixed Capital Expenditures of Government Agencies and their Financing

*(billion baht)*

	1952	1953	1954	1955	1956
<b>Expenditures</b>					
State Railways .....	0.18	0.17	0.18	0.30	0.25
Port Authority .....	0.04	0.11	0.06	0.04	0.02
Telephone Organization .....	—	—	—	0.01	0.01
Other transport & communications.....	0.02	0.01	0.09	0.05	0.07
Bangkok Electric Works .....	0.01	0.05	0.07	0.06	0.03
Provincial Electrification Organization..	—	—	0.01	0.06	0.06
Other public utilities .....	0.01	0.01	0.01	—	0.01
Sub-total public utilities .....	0.26	0.35	0.42	0.52	0.45
Manufacturing & commercial enterprises .....	0.03	0.09	0.08	0.09	0.06
Fiscal monopolies .....	0.04	0.04	0.02	0.06	0.02
Financial institutions .....	0.01	0.03	0.06	0.05	0.05
Total expenditures .....	0.34	0.51	0.58	0.72	0.58
<b>Financing</b>					
Transfers from central government....	0.26	0.26	0.31	0.17	0.14
Earnings of SRT & PAT .....	0.08	0.11	0.14	0.14	0.14
World Bank loans .....	0.02	0.06	0.01	0.01	0.07
ICA aid .....	0.01	—	—	0.04	0.02
Suppliers' credits .....	—	—	—	0.10	0.10
Borrowing from savings banks .....	—	0.06	0.08	0.11	0.04
Other <sup>1</sup> .....	-0.03	0.02	0.04	0.15	0.08

For footnotes, see next page.

Footnotes to Table 25

<sup>1</sup> Self financing (other than State Railways and Port Authority), use of cash balances, borrowing from commercial banks and errors and omissions.

NOTE: Many of the above figures are rough estimates and subject to a considerable margin of error.

SOURCE: Information supplied by individual government agencies and the Ministries of Finance and Interior.

TABLE 26 Factors Affecting the Money Supply

(billion baht)

	Changes during period				
	1953	1954	1955	1956	1957
1. Government sector .....	2.09	1.54	0.68	0.48	0.36
2. Other public sector .....	-0.97	-0.81	-0.04	-0.50	-0.23
3. Private sector .....	0.22	0.06	0.15	0.20	0.14
4. Total domestic factors .....	1.34	0.79	0.79	0.18	0.27
5. International reserves .....	-0.61	-0.21	-0.12	-0.34	-0.10
6. Change in money supply .....	0.73	0.58	0.91	0.52	0.37
Total money supply (end period)	5.66	6.24	7.15	7.67	8.04

## NOTES BY LINE:

1. *Government sector* includes borrowing from Bank of Thailand and commercial banks less increases in treasury cash and deposits of government enterprises at the Bank of Thailand and other banks.

2. *Other public sector* includes changes in the exchange profits of the Bank of Thailand, the reserves of the BOT, counterpart fund balances the liabilities of the Exchange Equalization Fund and the currency reserve yield account.

3. *Private sector* includes the gross credit extended by private banks less increases in time and other non-money deposits and the reserves of the banks. It is felt that most of the errors and omissions in this monetary analysis (which are relatively important for some years) are attributable to the limitations of data for the commercial banks and hence all errors and omissions are included here.

5. *International reserves* include changes in the net assets of the Bank of Thailand, the Exchange Equalization Fund, commercial banks and the currency reserve yield account. Note that prior to mid-1955, these reserves are valued at 12:5 to one, and that the net monetary effect of transactions at different rates is included in "other public sector" transactions (line 2).

SOURCE: Bank of Thailand.

- Development Loan Fund: Bangkok power distribution facilities, 115, 239; Port of Bangkok, loan for, 141, 144, 239-40
- Din Paeng Road, 163
- DLF. *See* Development Loan Fund
- Don Muang Airport (Bangkok), 148
- Double cropping, 6-7, 18, 36
- Dysentery, 154
- Education, 14-15, 77-78; agricultural, 54-55, 176, 187; expenditures for, 23, 55, 58, 65, 175, 184-85, 187, 188, *Tables*, 184, 185, 187, 197; health, 160; higher: Chulalongkorn University, 180, 182, 188, 189, 190, 192, 193, 195; classes, size of, 190-91; colleges of education, 180, 180*n*, 185; duplication of work, 189-90, 193; English-language instruction, 195-96; enrollment, 193; foreign study, 188-89; Kasetsart University, 54-55, 58, 65, 74, 189, 190, 191, 192, 193, 195; part-time instructors, use of, 192-93; reading facilities, 195-96; staffing problems, 192-95; student-teacher ratios, 190-91; Teachers' Training Colleges, 179-80, 179*n*, 182, 183, 184*n*, 185; technical assistance, need for, 194-95; Technical Institute, 176; Thammasart University, 172, 189, 190, 191, 192, 193, 221; unification of institutions, proposed, 55, 189-90; University of Medical Sciences, 189, 190; and housing project planning, 163; Ministry of, 58, 82, 170, 177, 182, 183-85, 186-87, 190, 209; Pibulprachasan School, 163; primary and secondary, 175-77: buildings, 182-83; classrooms, provision of, 186-87, *Table*, 187; development program for, 183-87, *Tables*, 184, 185, 187; English, teaching of, 181-82; primary extension schools, 177, 187; private schools, 177, 182-83; recent changes in, 177-78; repeaters, problem of, 178-79; teacher-pupil ratios, 179*n*; teacher training, 179-81, 183-85, 186, *Tables*, 184, 185; teaching materials, 181-82; rural, 64-65; salaries: TTC graduates, 184*n*; university staff, 191-92; student-teacher ratios: primary and secondary, 179*n*; Teachers' Training Colleges, 184*n*, 185; universities, 190-91; vocational, 57-60, 176, 177, 187
- Electric power, 21-22, 45: benefits, prospective, 116-18; consumption, total, 114*n*; cost and price of, 117-19; distribution of, 115-16; expansion plans, 114-16; expenditures and means of financing, 113, *Table*, 118; generating capacity, 114, 114*n*; hydro power potential, 9; percent of gross national product, 88; shortage of, 114; *See also* Yanhee multi-purpose project
- Emergency Rent Control Act (1946), 165
- English-language instruction, 181-82, 195-96
- Erosion control, 83; in the North, 42; in the Northeast, 46-47, 61, 74
- ETO. *See* Express Transport Organization
- Export-Import Bank, 115, 239
- Exports. *See under* Trade
- Express Transport Organization, 128-29, 200
- FAO. *See* Food and Agriculture Organization
- Federation of Malaya. *See* Malaya, Federation of

## Finance:

- agriculture (*see also* irrigation, *infra*):
  - extension services, 60;
  - research, 64;
  - total program, *Table*, 86-87;
- balance of payments, 231, *Tables*, 232, 275;
- Chiengmai medical school, 157, 173;
- dam construction, 45;
- debt service, 2, 24, 237;
- domestic monetary expansion, rate of, 242-44, 242*n*;
- education:
  - classroom construction, *Table*, 187;
  - foreign study, 188;
  - Kasetsart University, 55;
  - as per cent of total expenditures, 175;
  - rural, 65;
  - teacher training, 184-85, *Tables*, 184, 185;
  - total program, *Table*, 197;
  - vocational, 58;
- electric power, total program, 113, *Table*, 118;
- expenditures, public:
  - alternatives to recommended program of, 254-56;
  - and deficit financing, *Table*, 285-86;
  - factors limiting, 229;
  - financing of program, by main projects, *Table*, 256-60;
  - increase in (1952-57), 251;
  - non-development, 24-26, 234-35;
  - and prospective finances (1959-63), *Table*, 249-50;
  - recent and proposed, total public sector, *Table*, 26;
  - total (1959-63), 16-17, 21-24, *Tables*, 18, 25, 256-60:
    - as per cent of GNP, 235;
- foreign exchange reserves, 240, 241, 242, 244, 255, *Table*, 283;
- future program, recommendations for, 16-17;
- industry, total program, *Table*, 118;
- investment-national product ratios, 251*n*;
- irrigation projects, 38, 39-40, 41-42, 45;
- kenaf, retting facilities for, 75;
- local development, 23-24;
- management (*see* Financial management);
- Ministry of, 31, 91, 161, 165, 202, 203, 209, 210, 213;
- money supply, factors affecting, *Table*, 288;
- price fluctuations, and bank credit expansion, 242-43;
- public housing, 161, 164, 173;
- research, agricultural, 64;
- resource allocation between public and private sectors, 251-54;
- resources, total available, 229-34:
  - agricultural production, growth of, 229-30;
  - and expansion of export demand, 230-31;
  - future growth prospects, 233-34;
  - gross national product and expenditures, *Tables*, 264-67;
  - gross national product and total resources at constant prices, *Table*, 230;
  - industrial output, growth in, 230;
  - real national product, growth in, 229-30;
- river diversion projects, 47;
- rubber development, 72, 73;
- social services, 23, 157, 168, 169, 172-73, *Table*, 174;
- sources of financing development program, 26-28:
  - additional taxation, 244-48, 253;
  - Central Bank borrowing, 27, 240-44, 255;
  - domestic savings, borrowing from, 236-37, 253-54;
  - external assistance, 27, 237-40, *Table*, 238;
  - government securities, 236;
  - Japanese war debt settlement, 240;
  - and prospective financial gap, 240, 244, *Table*, 241;
  - public utilities, net current earnings of, 236;
  - revenue receipts at existing tax rates, 235;
  - of total programs, *Table* 256-60;
- statistical services, 219;
- tank construction, 44;

- telecommunications program, *Table*, 150;
- transport and communications, 22-23:
- air transport, 147, 148, *Table*, 149;
  - main highways, 130, 130n, 136-37, *Table*, 139;
  - ports and harbors, 141-44, *Tables*, 143, 144;
  - railways, 127-28, *Tables*, 129;
  - roads, 132-33, 134;
  - telecommunications, 149, *Table*, 150;
  - total program, *Table*, 151-52;
- see also* Foreign aid; Gross national product; Investment, private; Investment, public; Planning; Revenue
- Financial management:
- banking and credit:
    - agricultural credit, 207;
    - Central Bank, 27, 128, 205, 206, 240-44, 255;
    - commercial banking, 204-5;
    - currency reserve requirements, 205;
    - Industrial Bank, 103;
    - Industrial Finance Corporation, proposed, 103-4, 206;
    - interest rates:
      - on loans, 206;
      - on savings deposits, 206-7, 236;
    - lending facilities, 205-7;
    - savings, stimulation of, 206-7, 236;
    - State Savings Bank, 200, 206, 207, 236;
  - controls and procedures:
    - budget preparation, measures to improve, 202-3;
    - budgetary deficiencies, 30-31, 201-3;
    - quasi-independent government agencies, 200;
    - State Lottery operations, 199;
    - weaknesses of control, 198-200;
- see also* Planning
- Fishing, 8, 20, 84-85; commercial catch, *Table*, 273; fish ladders, importance of, 49, 85
- Flood control: in Central Plain, 39; in North, 42; in Northeast, 43, 47
- Food and Agriculture Organization, 50, 61, 63, 82, 84, 237,
- Foreign aid, 254-55; grants and loans, 27, 231, 234, 237-40, *Table*, 238; role of proposed Planning Secretariat in, 214-15; to Thai students, 188; *see also* Development Loan Fund; Export-Import Bank; International Bank for Reconstruction and Development; International Cooperation Administration; Technical assistance; United Nations; *and under* United States
- Forestry, 8, 20, 82-84; forest products, value of, 82; output of main products, *Table*, 273; over-exploitation of resources, 83; reserved forests, total area of, 83; Royal Forest Department, 42, 58, 74, 82, 84
- Fox, William, 179, 186, 186n
- Fruits, 75, 76
- Fuel and mineral development:
  - lignite, 8, 107-8;
  - metallic minerals other than tin, 112-13;
  - mineral output, *Table*, 273;
  - mining activity, per cent of gross national product, 88;
  - oil, 8, 108-10;
  - salt, 113;
  - tin, 2, 3, 8, 111-12;
  - wood fuels, 106-7
- Fuel Oil Organization, 200
- Genkoi, 22, 124
- Gold, 112
- Gould, Joseph, 264n
- Government, Thailand: government agencies, accounts of, *Table*, 287-88; local governments, accounts of, *Table*, 287; and quasi-independent government agencies, 200; role of, in economic development, 1-3; role of, in industry, 20-21, 90-94, 96-97; *see also* Administration, public; Departments, government; Investment, public; Ministries
- Government Purchasing Bureau, 214n
- Greater Chao Phya project, 6, 38-39, 50
- Gross national product, 88; education as per cent of, 175; and expenditure,

- Table*, 264; and expenditure at constant prices, *Tables*, 252, 265-67; by industry of origin, *Table*, 263; ratios of investment to, 251*n*; total fixed investment as per cent of, 251, 251*n*; total public expenditures as per cent of, 235; and total resources at constant prices, *Table*, 230
- Groundnuts, 75
- Gulf of Siam, 40, 135, 138, 140
- Gypsum, 113
- Hauser, Philip M., 216, 217
- Health, public. *See* Pest and disease control *and under* Social services
- Highways. *See under* Transport and communications
- Hospital facilities. *See under* Social services
- Housing. *See under* Social services
- Housing Act, 165
- Huey Plahang River, 45
- Hydroelectric power. *See* Electric power; Yanhee multipurpose project
- ICA. *See* International Cooperation Administration
- ICAO. *See* International Civil Aviation Organization
- ILO. *See* International Labor Organization
- Imports. *See under* Trade
- Income, per capita, 1-2
- Income taxes, 69, 245-46, 247
- India, 104; power consumption in, 114*n*
- Indonesia, power consumption in, 114*n*
- Industrial Bank, 103
- Industrial development, 9-10, 12; Act on Factories of B.E. 2482, 101, 102; Act on Promotion of Industries, 98-100; and Chinese initiative, 95-96; Committee for Industrial Promotion, 99, 100; Department of Industrial Promotion, 14, 105; encouragement of, 21, 97-106; through elimination of unfair practices, 105-6; through improved credit facilities, 103-4; through provision of physical facilities, 104; through removal of restrictions, 100-102; through reorganization of Ministry of Industries, 105; special benefits, need for, 98-100; expenditures, public development, *Table*, 118; government industries, 90-94; government policy, future, 96-97; government role in, 20-21; and gross national product, *Table*, 263; increase in output of, 230; Industrial Finance Corporation, proposed, 103-4; and management, 13-14, 93-94; Ministry of Industries, 91, 98, 101, 102, 104, 105, 209; NEDCOL, 89, 91-92; new industries, protection of, 100; and population, 89, *Tables*, 90, 262; private investment, encouragement of, 21, 28, 95-96; private manufacturing capacity, 89; registration and licensing, 101-2; structure of, 88-90, *Table*, 90; sugar, 91-92; and tariff protection, 99-100; *see also* Investment, private
- Industrial Finance Corporation, proposed, 103-4
- Inland waterways. *See* Chao Phya River; Mekong River; *and under* Transport and communication
- Inter-University Council (London), 220
- International Bank for Reconstruction and Development, loans to Thailand, 38, 115, 121, 127, 237-39, 240
- International Civil Aviation Organization, 147
- International Cooperation Administration, 27; aid to Thailand (1959-63), 237-39; civil air transport projects, 147, 148; disease control activities, 153-54; highway assistance, 130*n*; and Industrial Finance Corporation,

- 103; livestock program, 63; medical education project, 157, 159; and power development in Bangkok, 115; railway program, 127; Regional English Project, 182; and road maintenance, 133-34; rural health services program, 155; and statistical services, 219; and Technical Institute, 176; telecommunications project, 149; transport survey, 123
- International Institute of Education (New York), 220
- International Labor Organization, 237; Social Security Mission to Thailand, 168
- International Labour Office, 168
- International Tin Agreement, 111, 233
- Intestinal parasites, 154
- Investment, private, 9-10, 12; in agriculture, 76; growth of (1952-57), 251; in industry, 21, 28, 89, 95-96, 98, 98*n*, 253; in oil, 110; and savings, 252, 252*n*
- Investment, public, 2, 10; rise in (1952-57), 251; in transport and communications, *Table*, 121; *see also* Finance
- Iron ore, 8, 112
- Irrigation, 19-20, 35, 233; in Central Plain, 38-41; expenditures for, 38, 39-40, 41-42, 44-45; laws, enforcement of, 51; in the North, 41-43; in the Northeast, 43-47; operation and maintenance, 50-51; planning, design, and construction, 48-50; Royal Irrigation Department, 37, 41, 42, 43, 44, 48, 51, 52, 53, 56, 146, 161, 223, 224; in the South, 47; taxation of benefits, 52-53, 246; *see also* Canal construction; Dams; Greater Chao Phya project; Meklong project; Rice; Tank construction; Wells; Yanhee multipurpose project
- Japanese war debt settlement, 240, 244
- Juvenile courts, 170-71
- Kalasin, 45
- Kam Paeng Petch project, 39-40, 134
- Kantang, 139; expenditures for, proposed, 142
- Kapok, 75
- Kasetsart University, 54-55, 58, 65, 74, 189, 190, 191; enrollment, 193; hours of classroom attendance at, 195; special and regular staff of, 192
- Kenaf, 19, 75
- Khon Kaen, 137, 139
- Klong Toi, 140
- Korat, 19, 45, 135, 136, 148, 176
- Korat cut-off line, 124, 256
- Korat-Nongkai road, 135, 136
- Korat Plateau, 113, 124
- Kra Peninsula, 111, 135; ports on, 139, 142
- Krabi, 108, 116
- Krachan River, 40
- Krung Krachan, 40
- Labor Act (1956), 167-68
- Lam Pao River, 45
- Lam Phra Plerng River, 45
- Lampoon, 41
- Land settlement, 78-82, 161, 173, 223
- Land-use surveys, 74-75, 82
- Laos, 41, 46, 147, 149
- Laws, irrigation: ban on shifting cultivation, proposed, 47; enforcement of, 51
- Lead, 112
- Leprosy, 154
- Lignite, 8, 107-8, 116
- Literacy, 14; *see also* Education
- Livestock, 75; number on farms, *Table*, 272; nutrition and management research, 63; veterinary research, 63-64
- Local development, expenditures for, 23-24
- Loei-Udorn, 64
- Lomsak, 136
- Lomsak-Khon Kaen road, 139
- Lower Mekong River, 46
- Mae Fang basin, oil exploration in, 109, 118*n*
- Mae Jo, 57
- Mae Moh, 113; lignite deposit at, 107; thermal power station, 108, 115, 117
- Mae Sod, 135
- Mae Sod basin, 109
- Maharakam, 45
- Maize, 75, 230
- Malaria, 78, 79, 82, 153, 154, 159; *see*

- also* Pest and disease control  
 Malaya, Federation of, 70, 73, 111, 131, 142; hospital beds, supply of, 155  
 Malayan Railways, 9  
 Manganese, 112  
 Manila, 217  
 Mapping, 48-49, 74  
 Maprasert, Lumduan. 264*n*  
 Marble, 113  
 Marls, 113  
 Me Lao River, 42  
 Me Tang River, 41  
 Me Yom River, 42  
 Medicine and medical services. *See* Pest and disease control; Veterinary medicine; *and under* Social services  
 Meklong project, 40, 134  
 Meklong River, 40  
 Mekong River, 9, 135; development of, 7, 19, 46, 116, 145; *see also* Lower Mekong River  
 Merriam, Ida C., 166*n*  
 Mining. *See* Fuel and mineral development  
 Ministries, government: Agriculture, 14, 47, 54, 55, 58, 60, 72, 79-80, 82, 91, 187, 190, 209; Communications, 123, 127, 146, 209; Cooperatives, 44, 78, 80, 223; Defense, 91, 109, 161, 188; Economic Affairs, 209, 242*n*; Education, 58, 82, 170, 177, 182, 183-85, 186-87, 190, 209; Finance, 31, 91, 161, 165, 202, 203, 209, 210, 213; Industries, 91, 98, 101, 102, 104, 105, 209; Interior, 42, 47, 51, 78, 101, 102, 209; Justice, 42, 47, 51; Public Health, 82, 91, 156, 190  
 Mulberry trees, research on, 62  
 Mung beans, 75  
  
 Nakorn Panom, 135  
 Nakorn Srithamarat, 57  
 Nakorn Srithamarat Province, 47  
 Nan River, 42  
 Nan River Valley, water control in, 42  
 National Development Board, proposed, 29, 72, 98, 203, 208-9, 210, 214, 215  
 National Economic Council, 210  
 National Economic Development Corporation Limited, 21, 21*n*, 89, 91-92, 118*n*, 237  
  
 National University Council, 190  
 NEDCOL. *See* National Economic Development Corporation Limited  
 Nitrogen, 67  
 Nongkai, 22, 124, 135, 136, 137  
 Northeastern Thailand, 34, 36, 50, 61, 77, 134, 135, 223; development problems, 6, 7, 11, 18-19; electric power development in, 116; fishponds in, 85; irrigation in, 43-47; land-use surveys for, 74-75; mulberry trees, growth of, 62; shifting cultivation in, 46-47, 61, 74; sisal nurseries, establishment of, 64; sugar cane research in, 61; tank construction in, 37, 44-45; upland crops, development of, 7, 19, 74, 75  
 Northern Thailand, 43; agricultural development in, 6-7; irrigation in, 41-43  
  
 Oil, 8, 108-10; refineries, foreign proposals for, 109, 110, 110*n*  
 Oil palm, 75, 76  
 Oilseeds, 75, 230  
  
 Pa Mong, 46  
 Pakistan, 104  
 PAT. *See* Port Authority of Thailand  
 Pattani Province, 47  
 Patumwan, 180*n*  
 Penang, 142, 147  
 Pentz, Deborah B., 172*n*  
 Pepper, 76  
 Pest and disease control, 20, 153-54; cotton, 62-63; livestock, 63; rice, 61  
 Petchburi, 40  
 Petchburi River, 40  
 Philippine Islands, 175; power consumption in, 114*n*  
 Phosphate, 67  
 Pibulprachasan School, 163  
 Ping River, 41, 42, 113  
 Ping Valley, 39, 75  
 Pitsanuloke, 136, 137  
 Plague, 153, 154  
 Planning:  
     Bangkok Planning Commission, 162; and budgeting for development, 210-11;  
     central agency, need for (*see also* National Development Board,

- infra*), 29-30;  
 coordination, need for, 11-12;  
 financial, 12-13, 28-29;  
 National Development Board, proposed, 29, 72, 98, 203, 208-9, 210, 214, 215;  
 Planning Secretariat, proposed, 29-30, 203, 209-10:  
   authority of Prime Minister over, 209;  
   data and information, submission of, 213, 215-16;  
   duties of, 210-12;  
   and foreign aid, 214-15;  
   Ministries, cooperation with, 213-14;  
   personnel of, 212-13;  
 in transport and communications, 122-23  
 Police Department, 161  
 Population: growth of, 3, 3*n*, 160. *Table*, 262; occupied, by industrial groups, *Table*, 262  
 Port Authority of Thailand, 140-41, 142-43, 200; financial position of, 143-44; operating surpluses, 143-44, 236  
 Port of Bangkok, 23, 120-121, 139, 140-42, 143-44; DLF loan for, 141, 144, 239-40  
 Port of Penang, 142  
 Ports and harbors. *See* Port of Bangkok; Port of Penang; and *under* Transport and communications  
 Potash, 67  
 Poultry products, 75  
 Power. *See* Electric power; Thermal power  
 Prae, 42  
 Prasarnmitr, 180*n*, 182  
 Prices: of consumption and investment goods, 251*n*; export, 2, 233; of rice, 233, 251*n*; *see also* Trade  
 Provincial General Hospital (Chieng-mai), 158  
 Puket, 22, 111, 135, 138, 139; expenditures for, proposed, 142  
 Rabies, 154  
 Rail transport. *See under* Transport and communications  
 Rainfall, 7, 37, *Table*, 268  
 Rangsit, 66  
 Research, agricultural, 60-64, 75  
 Revenues: additions to, proposed, 247-48; central government, *Table*, 284; government securities, 236; income taxes, 245-46, 247; increase in, sources of, 27-28; of municipalities, development of, 248; Planning Secretariat, role of, 211; public utilities, net current earnings of, 236; receipts at existing tax rates, 235; Revenue Department, 14; from rice export premiums, 68-69; from royalties and export duties, 84; total rise in (1959-63), estimated, 235; weakness of system, 13; *see also* Finance, *s.v.* sources of financing; Taxation  
 Revolutionary Party, 98*n*, 101*n*, 169*n*  
 Rice, 11-12, 17, 20; -breeding, research on, 61; crop patterns, 33-34, 46-47; cultivation standards, 66; domestic consumption of, 5; export of, 3, 4-5, 34-35, 233; exports, tax on, 68-69; fertilizer, use of, 67-68; harvested area and average yields, *Table*, 272; importance of, to economic development, 34; market incentives, 68-69; pest and disease control, 61, 68; prices, 233, 251*n*; production, 6, 7, 34-35, 230, 233; production, means of increasing 65-69; Rice Department, 56, 64, 66; seed improvement, 66; yields, improvement of, 35, 37, 66; *see also* Agriculture; Irrigation; River development  
 River development, Mekong River, 7, 19, 46, 116, 145; *see also* Water control programs; River diversion  
 River diversion, 43, 46  
 Road transport. *See under* Transport and communications  
 Royal Irrigation Department. *See under* Departments, government  
 Rubber, natural, 2, 11, 18, 20, 36, 76, 230, 233; and competition of synthetic rubber, 73*n*; development of, recommendations for, 69-73; export of, 2, 231, 233; private large-scale estates, encouragement of, 71; production of, expansion in, 5-6; small-holdings, 70, 71

- Rubber, synthetic, production costs in U. S., 73*n*
- Sakol Nakorn, 45
- Salt deposits, 113
- Samsen power station, 107
- Sao Dong river diversion project, 47
- Saraburi, 135, 136
- Saraburi-Bangkok road, 135, 136
- School of Nursing and Midwifery, 157
- School of Public Health, 156
- School of Public Health Nursing, 157, 159
- Schools. *See* Education
- Shifting cultivation, 46-47, 61, 74, 79
- Silk production, 62
- Silting, in Port of Bangkok, 140-41, 144
- Siracha, 54
- Siriraj Hospital (Bangkok), 157
- Sisal, 76; nurseries, establishment of, 64
- Sisamrong, 64
- Smallpox, 153, 154
- Social Assistance Act, proposed, 170
- Social Insurance Act (1954), 166
- Social services:  
 expenditures, 23, 157, 168, 169, 172-73, *Table*, 174;  
 health:  
 adult education, 160;  
 Chiangmai medical school, proposed, 157-58, 173;  
 disease control, 153-54;  
 expenditures for, 23, 157, 173;  
 future requirements, 158-60;  
 hospital beds, supply of, 155;  
 hospital facilities, 158, 159, 173;  
 medical and nursing personnel, 154-55, 158-59;  
 medical schools, 156, 157-58, 173;  
 mental hospitals, 155, 158;  
 nursing schools, 157;  
 nutrition, improvement of, 160;  
 preventive medicine, 159-60;  
 rural centers, 155-56;  
 housing, 23:  
 for civil servants, 161-62, 165;  
 financing of, 161;  
 improvement of, 163-65;  
 low-cost, 162, 164;  
 public housing, defects of, 161-63;  
 public housing program, 160-61;  
 role of municipalities in, 163-64;  
 and schools, provision for, 163;  
 medicine and medical services (*see under* health, *supra*);  
 welfare, 23:  
 aged, care of, 171;  
 child care, 170-71;  
 crime, treatment of, 171-72;  
 expenditures, 168, 169, 173;  
 family allowances, 168-69;  
 juvenile courts, 170-71;  
 needy persons, assistance to, 169-70;  
 social insurance, 166-68;  
 training of social workers, 172
- Social Training Institute, 172
- Songkla, 22, 138, 139, 176; expenditures for, proposed, 142
- Songkla Province, 47
- Southeastern Thailand, sugar cane research in, 61-62
- Southern Thailand, 11, 18, 36, 74, 108, 134; agricultural development in, 6; electric power development in, 116; irrigation in, 47; ports of, 139, 142, 144; upland crops in, 75
- Soybeans, 75
- SRT. *See* State Railways of Thailand
- State Lottery, 199
- State Railways of Thailand, 108, 123, 125-28, 143, 161, 200; operating surpluses, 128, 236; physical plant, volume of traffic, and gross revenue, *Table*, 274
- State Savings Bank, 200, 206, 207, 236
- Statistical Act (1952), 217
- Statistical services, 30; Central Statistical Office, 216-17, 218, 219; data and information, submission of, 215-16; expenditures for improvement of, 218-19; School of Statistics, 218; staff, overseas training for, 218, 218*n*, 219; staff improvement, need for, 216, 217-18; Statistical Act (1952), 217; statistical program, planning for, 217
- Stul Province, 47
- Sugar cane, 75, 230; research on, 61
- Supanburi, 61
- TAC. *See* Thai Airways Company

- Tak, 22, 138
- Tank construction, 48, 49, 50, 223; in Northeast, 37, 44-45
- Tapioca, 230
- Taxation, 27-28, 235; estate tax, proposed, 248; general land tax, 246, 247; income taxes, 69, 245-46, 247; on lands irrigated through state works, 52-53, 246, 247; luxury goods, excise or customs duties on, 247; property taxes, proposed, 246; on rice exports, 68-69; tariff protection for industry, proposed, 99-100; tax administration, need for improvement in, 244, 245-46; on tin mines, 112
- Tea, 75, 76
- Teachers' Training Colleges, 179-80, 179*n*, 182, 183; student-teacher ratios, 184*n*, 185
- Teak, 2, 3, 8, 145, 233; production of, 83
- Technical assistance, 66, 84, 132, 153-54, 220, 237, 239*n*; in higher education, 194-95
- Technical Institute (Bangkok), 176
- Telecommunications. *See under* Transport and communications
- Tenasserim Range, 41
- Tennessee Valley Authority, 117
- Tha Phra, 64
- Thai Airways Company, 146-48
- Thai Sugar Organization, 91
- Thai Technical and Economic Committee, 214-15, 214*n*
- Thai-UNESCO Fundamental Education Center, 76-78
- Thammasart University, 172, 189, 190, 191; enrollment at, 193; Institute of Public Administration, 221; special and regular staff of, 192
- Thay Pha river diversion project, 47
- Thermal power, 107-8, 113; Bangkok plant, Export-Import Bank loan for, 115, 239; Bangkok stations, 107, 113, 115, 116; Mae Moh station, 108, 115, 117
- Thonburi, 154, 171
- Tin, 2, 3, 8, 111-12; exports of, 2, 111, 231, 233
- Titanium, 112
- Tobacco, 75, 230; research on, 62; trade in, 62
- Tobacco Monopoly, 200
- Trad, 22, 135, 138
- Trade:
- balance of payments, 231, *Tables*, 232, 275;
  - export:
    - demand, expansion of, 230-31, 233-34;
    - and port development, 142;
    - prices, 2, 233;
    - rice, 3, 4-5, 34-35, 68-69, 233;
    - rubber, 2, 231, 233;
    - teak, 2, 233;
    - tin, 2, 111, 231, 233;
    - tobacco, 62;
    - value by commodity, *Table*, 276-77;
    - volume by commodity, *Table*, 278;
  - import:
    - duty schedule, need to revise, 247;
    - petroleum products, 108-9;
    - tobacco, 62;
    - value by commodity, *Table*, 279-81;
    - volume, increase in, 231;
    - volume of (selected products), *Table*, 282-83;
  - quantitative restrictions, 100, 241-42;
  - tariff protection, 99-100
- Transport and communications, 9, 120-22:
- air transport, 122, 146-48, *Table*, 149;
  - expenditures, proposed, 22-23, 132-33, 134, 136-37, 141-42, 147, *Tables*, 129, 139, 143, 149, 150, 151-52;
  - highway system (*see also* road transport, *infra*), 9, 12, 22, 120, 122, 135-39, *Table*, 139:
    - administrative shortcomings, 130-32;
    - bridge program, 137;
    - expenditures on, 130, 130*n*, 132-33, 134, 136-37, *Table*, 139;
    - main routes, 135-36;
    - U. S. aid for, 132, 133, 136-37;
  - inland water transport, 122, 145-46;
  - planning in, 122-23;

- ports and harbors, 23, 122:  
 administration and finance, 142-44, *Tables*, 143, 144;  
 minor ports, 142, 144;  
 Port of Bangkok, 139, 140-42, *Table*, 144;  
 public investment in, 121, *Table*, 121;  
 rail transport, 9, 10, 22, 27, 120-22:  
 financing of investment program, 127-29, *Table*, 129;  
 freight rates, 127-29, 237;  
 freight traffic growth, 124-25;  
 investment program, 123-27, *Table*, 126;  
 Korat cut-off line, 124, 256;  
 passenger travel, 125;  
 road transport (*see also* highways, *supra*), 12, 22, 120, 121, 122:  
 expenditures, total, since 1957, 130, 130*n*;  
 feeder roads, 134-35;  
 maintenance, 133-34;  
 road requirements, 132-33;  
 sources of development financing, 127-29, 136-37, 141, 144, 147, 148, 149, *Tables*, 129, 144, 149, 152;  
 telecommunications, 22-23, 120, 122, 148-50, *Table*, 150
- Tree crops, 6
- TTEC. *See* Thai Technical and Economic Committee
- Tuberculosis, 154
- TUFEC. *See* Thai-UNESCO Fundamental Education Center
- Tung Mahamek district (Bangkok), 161-62
- Tung Nui river diversion project, 47
- Tungsten, 112
- TVA. *See* Tennessee Valley Authority
- Ubol, 77, 136, 138, 139
- UNESCO. *See* United Nations Educational, Scientific and Cultural Organization
- United Nations, 216, 217, 220, 237
- United Nations Children's Fund, 153, 237
- United Nations Educational, Scientific and Cultural Organization, 182, 237
- United Nations Special Projects Fund, 144
- United States: financial aid to Thailand, 27, 45-46, 84, 107, 108, 121, 130, 133, 136-37, 237-40; technical assistance, 66, 84, 132, 220; *see also* Development Loan Fund; Export-Import Bank; International Cooperation Administration
- United States Army Corps of Engineers, 141
- Upland farming, 6-7, 64; in Northeast, 7, 19, 74, 75; in other areas, 75-76; research on, 60-61
- University of Bangkok, proposed, 55, 189-90
- University of Medical Sciences, 189, 190
- University of Moral and Political Science. *See* Thammasart University
- Uranium, 112
- Uttradit, 41
- Vegetables, 75, 76
- Venereal diseases, 154
- Veterinary medicine, 63-64
- Viet Nam, 46, 149
- Wat Lieb power station, 107
- Water control programs, 65; in North, 41, 42-43; in Northeast, 46-47
- Water resources, 3, 7; underground exploration, 45-46; *see also* River development; River diversion; Water control programs; Water storage; Water supplies
- Water storage, 37; *see also* Dams; Tank construction
- Water supplies, domestic, 23, 45
- Welfare, public. *See under* Departments, government *and* Social services
- Welfare Housing Bank, 161, 164-65; Pibulvatana project, 162
- Welfare Housing Office, 161, 164-65
- Wells, 45-46
- WHO. *See* World Health Organization
- Women's Hospital (Bangkok), 159

INDEX 301

Wood fuels, 106-7  
World Bank. *See* International Bank  
for Reconstruction and Develop-  
ment  
World Health Organization, 153, 237  
Yang River, 45  
Yanhee multipurpose project, 6, 7, 9,  
21-22, 24, 39, 42, 50, 52, 75, 76, 113,  
138, 145, 233, 239; benefits from,  
116-19; generating capacity and cost,  
115  
Yaws, 154, 160  
Zinc, 112  
Zircon, 112







*(continued from front flap)*

funds in accordance with its view of development priorities. Suggestions are also made on certain policies which the Mission believes the Thailand Government should follow in order to give maximum assistance to the development process.

This report will serve for many years as a basic reference work on the facts and problems of the economy of Thailand. The survey is supported by numerous charts, tables, and maps and is an invaluable source of information for public officials, private investors, economic historians, and students.

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