

# GOVERNMENT OF THAILAND

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## EVALUATION

OF

## THE FIRST SIX-YEAR PLAN 1961-1966



THE NATIONAL ECONOMIC DEVELOPMENT BOARD  
OFFICE OF THE PRIME MINISTER

BANGKOK, THAILAND  
JUNE, 1967

## FOREWORD

Thailand's First Six-Year National Economic Development Plan ( 1961 - 1966 ) came to a close in September, 1966. This evaluation report by the Office of the National Economic Development Board on the performance of the economy and the Plan's implementation of major developments indicates that the progress achieved in the past six years has been most encouraging.

Thailand's economy has demonstrated its dynamic capacity and its ability to expand and maintain, with relative price stability, a growth rate of over 7 per cent<sup>per</sup> annum. In agriculture, the rate of almost 5 per cent was sustained and the agricultural base had been enlarged and diversified. Even more striking achievement was in industry, where the growth rate was over 10 per cent per annum. The growth of the economy was, as might be expected, accompanied by significant structural changes as a result of increasing contribution of the non-agricultural sectors to the Gross Domestic Product, including manufacturing, construction, trade and services. The advance made towards the attainment of a more regional economic balance has been significant.

The Government's pragmatic approach to development planning, the existence of political, financial and monetary stability, the availability of external technical and financial assistance, and above all the dynamic private sector, together with the generally favorable climate and a receptive marketing condition were the principal factors in this achievement.

The implementation of major development programs and projects in various sectors, somewhat slow to start moving, was accelerated and improved towards the final years of the Plan period. However, a few projects were behind schedule. An encouraging feature has been the ability of the Government to mobilize a much larger proportion of

financial resources internally than was anticipated in the Plan. The proportion of external financing to total planned expenditure was approximately 28 per cent as against 33 per cent originally envisaged.

On the whole, it may be concluded that inspite of inexperience, imperfection in the planning process, project formulation and implementation and the many problems encountered, the main purposes of the Plan were accomplished and the overall development progress made was, in the words of foreign observers, an impressive record of economic achievement. This progress and the relative prosperity which came with it during this First Plan has not only given hope for a sustained growth at a higher rate in the Second Plan, but it has also lent support to the soundness of our development policies. However, many difficulties still lie ahead on the challenging journey to reach national aspiration. We must face this challenge and overcome all problems and difficulties with determination to strive for more rapid economic and social progress. The gain already made must not go to waste and there should be no room for complacency.

Finally, in submitting this report, I wish to record my deep appreciation to the Ministries and operating agencies for their close cooperation in carrying out the Plan and the recognition that the credit for its accomplishment are shared by all sectors of the economy.

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Bangkok  
June, 1967

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## PART I GENERAL REVIEW

## CHAPTER 1

# OVERALL PERFORMANCE OF THE ECONOMY

1.1 Thailand's First Six-Year Plan ( 1961 - 1966 ) has been successful in attaining its major objectives and targets. The Gross Domestic Product over the Plan period increased by more than 53 per cent against the planned target of 30 per cent. The economic expansion was at a faster rate during the last three years, when the real growth rate averaged 7.8 per cent per annum compared with the 6.5 per cent average during the first three years. For the entire Plan period the average was 7.2 per cent, exceeding the net growth in population of around 3.2 per cent per annum by 5 per cent. As a result, per capita income rose from 2,137 baht in 1961 to 2,787 baht in 1966, or in terms of real income per person it was almost one-third higher than in 1961.

1.2 In implementing the Plan, the actual spending of total development expenditure indicated some shortfalls, and was estimated at 27,680 million baht against the Plan target of 32,657 million baht. The export earnings over the six year period totalled 67.8 billion baht, thus 2.0 billion baht less than projected in the Plan. Total imports for the same period were 81.0 billion baht, which was about 1.1 billion baht below the Plan's projection. The deficit in the balance of trade of approximately 13.2 billion baht meant that export earnings only covered about 84 per cent of imports, but net capital inflow, transfer payments, as well as net surplus on invisibles and other receipts more than offset the trade gap to provide the overall balance of international payments surpluses every year since 1961. Thailand's international reserves of gold and foreign exchange increased at the average of U.S.\$ 80 million annually since 1961. At the end of October 1966 the reserves reached the very sound level of U.S.\$ 825 million, an amount equivalent to about 12 month imports.

1.3 The completion of the First Plan marks the close of the early phase of economic and social development which concentrated mainly on the

creation of the basic infra-structure facilities and a conducive framework for the future economic growth. The Plan's targets for the key sectors were either achieved or exceeded. Almost all sectors of the economy contributed to the accelerated growth of output witnessed during the First Plan period. The agricultural sector which provided the impetus to growth expanded at the average annual rate of about 5 per cent as compared to the target of 4 per cent, and developed a more diversified base. Its share of Gross Domestic Product, however, declined from 38.3 per cent in 1961 to 33.7 per cent in 1966. About two-thirds of the growth was generated by the non-agricultural sectors whose share became increasingly larger in the GDP. The manufacturing sector which, with an average annual growth rate of 10.5 per cent, accounted for 11.4 per cent of GDP in 1961 rose to nearly 14 per cent in 1966. The trade sector, the second largest contributor, increased as a percentage of the GDP from 17.4 in 1961 to 18.7 in 1966. The growth of construction activity was on an average 11.3 per cent annually, resulting to a large extent from heavy demand in the private sector for commercial buildings, combined with the government-financed construction of infrastructure facilities over the Plan period.

1.4 These high growth rates were made possible by a sharp increase in both private and government investment. Consequently, the rate of gross fixed capital formation, or fixed investment, increased from 16 per cent of the GDP in 1961 to 21.8 per cent in 1966, compared with only 14.4 per cent in 1957. The rate of fixed investment during the Plan period had been growing at about 14.3 per cent per year. In absolute terms, total gross fixed capital formation rose from 9,220 million baht in 1961 to 20,331 million baht in 1966. As indicated earlier, there was a shortfall of financial implementation in the government-financed sector, but the private investment expanded much faster than expected, so the share of the private sector in total investment was almost triple that of the public sector. Private investment was 67,500 million baht or about 15.5 per cent of Gross Domestic Product, compared to public investment of 25,000 million baht or 5.8 per cent of GDP. This was due partly to the Government policy of private investment promotion since it has been a key to development and industrialization. The rapid expansion of financial institutions, particularly the private commercial banks, contributed significantly to the financing of private investment. The Government also played an important role in

making agricultural and industrial credits available to support rapidly expanding private investment.

1.5 In the financing of public development expenditures, dependence on external sources—both loans and grants—was significantly lower than forecast in the Plan. Whereas the Plan projected foreign financing of 10,638 million baht, the actual utilization of foreign sources amounted to 7,653 million baht in a total public development expenditure of 27,680 million baht. The foreign financing therefore represented only 27.6 per cent of the Plan expenditures instead of the expected 32.6 per cent. The increased share of domestic financing reflects the fiscal effort in mobilizing domestic savings for financing economic development, and considerable improvement along the direction of organizing the flow of savings. At the same time, the basic development strategy of the Plan was fairly well maintained, and no significant departures were made from the sectoral allocations. The only exception was in the transport and communication sector. There were some changes and modifications, particularly in the case of the highway development program, with the result that the expenditure in this sub-sector indicated some shortfalls. However, acceleration in implementation took place toward the final year of the Plan.

1.6 Monetary developments were stable and the money supply for the period 1961 - 1966 increased about 50 per cent, which was in line with the increase of the GDP of 53 per cent for the same period. The consumer price index rose by less than 2 per cent since 1961. However the trend of wholesale price level appeared to be rising during 1965 and 1966 compared to stability in the first four years, with price increase concentrated on certain agricultural products, especially rice. Price increases were also widespread for construction materials and services. The overall inflationary pressure during 1966 was over 4.5 per cent. To prevent a shortage in the domestic supply of rice and the rise of its price, the Government tightened the licensing requirements for rice exports in March, 1966 with a view to prevent the economy from getting over-heated.

1.7 On the whole, the First Six-Year Plan may be said to have been successfully implemented. It is now the task for this report to assess and identify several basic problems of the economy.



1.8 Even though the Thai economy has established an impressive record of economic growth, the income distribution is quite uneven and geographical imbalance still exists. The incomes in the urban areas are generally about twice higher than those in the rural communities, and the average income in the metropolitan area of Bangkok is more than triple those in villages in the Northeast. This disparity raises the potential danger not only of an economic nature but of political subversion as well. The Second Plan is primarily aimed at reducing the degree of income inequality and regional imbalance by more emphasis on rural development.

1.9 Another basic problem is that Thailand's population growth has been increasing at a very high rate. If the country permits the current rate of over three per cent per annum to continue, the population of Thailand will be double in about 20 years. Such rapid increase will aggravate several problems, especially its adverse effect on the level of per capita national income, education, and employment opportunities. In order to combat the long-term problem, a definite population policy will have to be decided by the Government in the near future.

1.10 The growth in agricultural output has been an important element in the success of the First Plan. While considerable scope for further development of this sector still exists, more attention will have to be paid toward comprehensive planning for agriculture development with a more concerted effort since it involves several government departments and agencies. In addition to the increasing utilization of the key inputs such as water and fertilizer, promotional efforts as well as extension services need to be strengthened. At present, the number of agricultural extension officers is very small, one per 5,000 farm units, which has proved to be inadequate. At the same time research activities need to be reorganized, since many of the smaller research and experimental stations are ineffective. Expansion of agricultural credit and market research related to production potential would also be essential.

1.11 The growth of manufacturing output in Thailand has been rising more than 10 per cent a year in 1961 - 1966, a rate which is double that of the agriculture sector. The growth impulses in this sector reflected both the rapid increase of agriculture-based industries as well as the establishment of new industries which expanded the scope of manufacturing in Thailand,

particularly those industries which were granted investment privileges. However, future development of manufacturing should not only be based on its role of import substitution, but also aim at maximum utilization of indigenous raw materials. Among many promoted industries, the import component of raw materials, machinery and spare parts is still predominant in the installation and operation of industrial capacity, and minimum research has gone into the use of alternative domestic raw materials. The cost of many manufacturing products has not come down after more than half a decade of production experience and generous tax concession. Consumer benefit from pricing of these locally manufactured products is very little compared with the quality and price of imported products. Besides, the problem of concentration of industrial factories in certain parts of the metropolitan area of Bangkok suggests that the development of industrial estates is essential to ensure high growth rate and industrial efficiency in the future.

1.12 During the past six years the transportation sector has developed remarkably, particularly in the field of road transport. Other modes, such as railroad, air transport and ports, were greatly improved and expanded to meet the need for increasing mobility as a result of the fast growing economy. It appears that closer coordination in the development program of different modes of transport is needed in order to ensure that the capital investment is fully utilized. More attention should also be given to the development and fuller utilization of existing inland waterways. Bangkok port has now become increasingly congested to the point that a new supplementary deep-water port should be immediately constructed.

1.13 In sum, while impressive progress has been achieved, there are still several weaknesses in the framework of the economy which remain to be strengthened in the Second Plan. The experiences which have been gained and the existing institutions which have been developed will enable the country to cope with the already-stated problems and to develop its economic and social potential to meet the expectation of the people. To some extent, these problems are the results of a rapid rate of economic progress, but there are also problems peculiar to Thailand which can be avoided if appropriate actions are taken. The Office of the National Economic Development Board with the full cooperation from Ministries and government agencies, has prepared and launched the Second Five-Year Plan (1967-1971) which will require resolution and hard work.

## CHAPTER 2

# THE GROWTH OF THE ECONOMY AS VIEWED THROUGH THE NATIONAL INCOME ACCOUNTS

2.1 The development during the Plan period has brought about a high rate of economic growth and significant structural changes in the Thai economy. The increase in Gross Domestic Product ( which is a measure of the value of all goods and services produced in a country in a given period ) permitted a substantial improvement in per capita income and raised the average standard of living as well as diverted a growing share of rising income levels to saving and investment.

### Growth Rate

2.2 The substantial increase in GDP, over 53 per cent during the entire Plan period ( 1961 - 1966 ), indicates an average growth rate of 7.2 per cent per annum in real terms. In the First Phase (1961-1963) the annual rate was 6.5 per cent against the target of 4.5 per cent rising to the average of 8 per cent against a target of 6 per cent in the Second Phase ( 1964 - 1966 ) In absolute terms, the GDP increased from 59.9 billion baht in 1961 to 92.1 billion baht in 1966. The growth trend during the Plan period was favorably higher than the realized average rate in the pre-Plan period of the 1950's. Per capita income at the end of 1966 amounted to 2,787 baht which was almost one third higher than that of 1961 which stood around 2,137 baht per person. The average annual increase in per capita income during the First Plan period was 5.2 per cent as compared with the annual average increase in per capita private consumption expenditure of 7.3 per cent.

**Indicators of Economic Growth in the First Plan (at current prices)**

	First Six-Year Plan		Annual Compound Growth Rate 1961 to 1966
	1961	1966	
Gross National Product (GNP) (Millions of Baht)	59,876.0	92,230.8	7.2 %
Per Capita Income (Baht)	2,137.2	2,786.8	5.2 %
Private Consumption Expenditures (Millions of Baht)	43,861.4	61,630.2	7.3 %
Gross Fixed Capital Formation (Millions of Baht)	9,220.2	20,331.5	16.7 %

### **Economic Structure**

2.3 The acceleration in overall economic growth was accompanied by a significant change in the structure of the economy towards a better sectoral balance in development. The relative importance of agriculture declined as a result of faster expansion of output in the non-agricultural sectors, particularly manufacturing, trade and services whose share in the GDP became larger. This structural change reflects the early success of Government's policy of economic diversification with the objective of ultimately attaining a more balanced economy.

2.4 During the Plan period, the agricultural sector contributed about one-third of the GDP though its share in GDP declined from 38.3 per cent 1961 to 33.7 per cent in 1966. However, agricultural output increased at an average rate of 4.9 per cent against the Plan target of 4 per cent as a result of complementary development in irrigation, use of key agricultural inputs such as fertilizers and pesticides, crop diversification combined with the international market demand, and improvement of the road network which have a sustaining influence on the total production. The expansion of output in this sector is vital since over two-thirds, or about 79 per cent, of the labor force earns its livelihood off agriculture.

2.5 The manufacturing sector led the pace of growth by an increase in output of 10.6 per cent per annum, and increased its share in GDP from 11.4 per cent in 1961 to nearly 14 per cent in 1966. The expansion of manufacturing output has been associated to a considerable extent with the increase in agricultural production. These agriculture-based industries included rice milling, sugar milling, saw milling, slaughtering, cotton spinning and weaving, tobacco manufacturing, distilleries, vegetable oil, and

leather tanning. At the same time, establishment of new industries through the government promotion policies has become a dynamic source which contributed substantially to the growth of this sector and broadened the scope of manufacturing in Thailand. These industries included manufacturing of construction materials, tires, pharmaceuticals, gunny bags, plastic and rubber products, cotton textiles, metal products, oil refining and automobile assemblies. A modern and expanding group of Thai industrial entrepreneurs together with Thailand's attractiveness for foreign investment have increased the basic strength of this sector of the GNP.

2.6 The rising tempo of economic activities naturally resulted in a rapid expansion of the sector. Wholesale and retail trade sector, the second largest component of GDP, increased its share from 17.4 per cent in 1961 to 18.7 per cent in 1966 with an average growth rate of 8.0 per cent per year over the Plan period. This sector experienced considerable year to year growth as a result of rapid expansion of agriculture, manufacturing industries, foreign and tourism, especially during 1964-1966. The remaining sectors, with the exception of construction and banking, indicated only marginal change in their contribution to GDP.

**Structural Changes in Gross National Product for the First Six-Year Plan  
(1961-1966)**

Sector	Percentage Distribution 1961	Percentage Distribution 1966
Agriculture	38.3	33.7
Manufacturing	11.4	13.9
Mining & Quarrying	1.5	1.7
Construction	3.8	4.6
Electricity and Water Supply	0.5	0.9
Transportation and Communication	6.5	6.9
Wholesale and Retail Trade	17.4	18.7
Banking, Insurance & Real Estate	2.5	3.2
Ownership of Dwellings	4.5	3.7
Public Administration and Defence	4.9	4.4
Services	8.7	8.3
	100.0	100.0

### **Saving and Investment**

2.7 Over the First Plan period, a rapid growth of investment was maintained. Fixed capital formation had grown at an average annual

rate of 14.3 per cent. Due to increasing investment activity, the share of capital formation in the national product increased sharply, from 16.0 per cent in 1961 to 21.8 per cent in 1966, as compared with only 14.3 per cent in 1957. Part of this increase was the result of the expanding public sector development program, especially the construction of major infrastructure projects which were highly capital-intensive in nature and in turn induced private investment. At the same time, development of the road network and railways accelerated the imports of transport equipment, particularly trucks, automobiles, locomotives and rolling stock to meet the growing demand for transport services. Imports of industrial equipment, machinery and immediate raw materials were also major components of private investment in fixed assets. However, over one-half of capital formation during the entire Plan period was for construction, with 64.3 per cent private sector composing of construction of residential, commercial, and industrial buildings as well as hotel construction. Public construction included major highway, irrigation, and power projects as well as administrative and school buildings.

**Gross Capital Formation  
During the First Plan  
(1961-1966)**

(Millions of Baht)

Item	1961	1966	1961 — 1966 Accumulated
I. Construction	4,553.4	10,191.2	46,405.4
II. Equipment	4,666.8	10,140.3	45,215.3
Gross Fixed Capital Formation	9,220.2	20,331.5	91,620.7
III. Change in Inventories	425.4	679.7	3,162.1
Gross Capital Formation	9,645.6	21,011.2	94,782.8
Public Sector	2,978.5	6,038.0	25,538.4
Private Sector	6,667.1	14,973.2	69,244.4
Total	9,645.6	21,011.2	94,782.8

## CHAPTER 3

# DEVELOPMENT EXPENDITURES AND BALANCE OF PAYMENTS

3.1 The overall financial target for public development expenditure of 32.7 billion baht was proposed for the Plan. It was envisaged that about 17.0 billion baht of the financing of the public sector would be forthcoming from the national budget appropriation, 7.2 billion baht from foreign loans, 3.5 billion baht from foreign grants, and 4.9 billion baht from the self-financing of public enterprises and local governments.

### Development Spending

32. Despite considerable acceleration in the implementation of public development programs in various sectors toward the end of the Plan period, the actual public development disbursement was approximately 27.7 billion baht against the projected outlays of 32.7 billion baht, or about 84.8 per cent. The actual development expenditure in the government-financed sector constituted only 6.3 per cent of the GDP for the same period. The shortfall of about 15 per cent in the financial implementation could be attributable to several factors, particularly those programs and projects which involved external financing. This was due to the relative slowness in concluding loan negotiations, the terms of certain bilateral foreign loans which became bottlenecks to the execution of some projects, and lengthy process of bidding and finalizing of contracts. However, some changes and modifications of some projects and programs, shortage of certain types of technical manpower as well as limitation of technical and administrative capacity in certain operating agencies, and inadequate project preparation also slowed down the rate of implementation of many projects.

**Summary of Development Plan Expenditures and Actual Development Spending  
During the First Plan (1961-1966) by Source.**

(Millions of Baht)

Planned Targets		%	Actual Spending	%	Percentage of Actual Financial Implementation Compared to Targets
Domestic Finance	22,019.48	67.4	20,027.29	72.4	90.0 %
Foreign Loans	7,186.44	22.0	4,772.18	17.2	66.4 %
Foreign Grants	3,451.98	10.6	2,880.82	10.4	83.5 %
	32,657.90	100.0	27,680.29	100.0	84.8 %

**Development Expenditure from Domestic Sources and Sectoral Implementation**

3.3 The actual development expenditure of 20.0 billion baht, or about 72.4 per cent of the total development expenditure, was from domestic sources consisting of 15.5 billion baht financed by the Central Government from budget appropriation, and the remaining 4.5 billion from self-financing by the State enterprises and the local governments.

3.4 The Central Government-financed development expenditures in various sectors are summarized in the table below:—

**Sectoral Distribution of Development Expenditure in the Central Government-Financed Sector from Budget Appropriation (1961—1966)**

(Millions of Baht)

Sector	Planned	Budget Appropriation	Actual Expenditure	Planned Percentage Distribution by Sector
Agriculture & Cooperatives	3,456.98	3,634.05	3,395.97	21.8 %
Industry & Mining	889.62	1,534.62	1,326.34	8.5 %
Power	810.36	1,476.95	1,456.95	9.3 %
Transport & Communications	5,424.62	4,944.71	4,433.20	28.6 %
Community Facilities & Social Welfare	2,246.11	2,524.47	2,299.70	14.8 %
Public Health	849.04	896.75	799.14	5.1 %
Education	1,901.24	1,903.70	1,845.99	11.9 %
Total	15,577.97*	16,915.25	15,557.29	100.0 %

\* Excluding counterpart fund.



3.5 For the sectoral implementation, the financial targets of the Plan were exceeded in the Power and Industry and Mining sectors where the actual development expenditures combined were more than double the projected targets. Substantial shortfalls occurred in the Transport and Communications sector, amounting to about 1.0 billion baht. The implementation of the Agriculture and Cooperatives, Public Health, and Education sectors were only moderately behind the targets while Community Facilities and Social Welfare sector exceeded the targets slightly.

3.6 The development expenditure in the Industry and Mining sector exceeded the Plan estimates by a sizeable margin. To a great extent this reflects the increased level of investments of the state enterprises, particularly the National Economic Development Corporation, Bangjak Oil Refinery, Pitsanulok Textile Factory and the Preserved Food Organization. In the Power sector, the overspending reflects the acceleration in building up public generating capacity, particularly the Yanhee, Nam Pong, and Nam Pung multi-purpose projects, and the expansion of the distribution facilities in the Bangkok metropolitan and provincial areas where the demand for power has been increasing at a very rapid rate and recorded over 25 and 16 per cent per annum respectively in 1966.

3.7 Although the Transport and Communications sector took the largest share of development expenditures, or almost 27 per cent of the Central Government-financed sector, the actual financial implementation indicated substantial shortfall of approximately 1,000 million baht. To a great extent, the shortfall was in the highway development program which was slow to get under way owing to the revision of the highway program, administrative problems, and delays in bidding process, particularly the foreign-financed projects. In addition, the shortfall was also caused by the lengthy process in loan negotiations for the railway development program as well as for the construction of the microwave telecommunication system in Zones 4 and 5.

3.8 On the whole, there were few departures from the pattern of sectoral implementation in the First Plan, such as the Power and Industry and Mining Sectors which exceeded the targets, and a substantial shortfall in the Transport and Communications sector. The implementation in the remaining sectors, particularly the Agriculture and Community Facilities and Social Welfare sectors was very close to the projected targets. The sectoral distribution of actual development expenditures of the Central Government-financed sector also indicated very small departure from the pattern suggested in the Plan.

## Financing of Public Development Program

3.9 The share of domestic financing was greater than was estimated at the time the Plan was formulated. About 72 per cent of the total public investment programs in the Plan was financed from domestic sources as compared with the projected target of 67 per cent. Revenue surplus—surplus of total revenue over non-development expenditure—came very close to the target set in the Plan as a result of the higher rate of increase in government revenue than anticipated. This was due mainly to the continued improvement in the level of economic activity and tightening of the collection machinery. Domestic borrowing amounted to 6.9 billion baht which was about 36 per cent higher than the amount envisaged in the Plan. Domestic borrowing was mainly from the Government Savings Bank, Commercial Banks, and the public.

3.10 The Plan had envisaged that about 33 per cent of the financing of the public sector development programs would be required from foreign loans and grants. Actually it amounted for only 27.6 per cent and only because delays in the implementation of certain projects mentioned earlier. The details of the availability of foreign loans and grants are discussed in the next section. The relative importance of domestic and foreign sources of financing is shown below:

**Financing of the Public Development Expenditure in the First Plan (1961-1966)**  
(Millions of Baht)

Development Expenditure Financed by:	Planned	Actual
<b>I. Domestic Resources</b>		
Revenue Surplus	9,411	9,116
Government Bonds & Treasury Bills	5,045	6,868
Borrowing from the Bank of Thailand	3,712	2,294
State Enterprises and Local Governments' own resources	4,945	4,500
Treasury Balance (surplus -)	— 1,094	— 2,751
Sub - Total	22,019	20,027
<b>II. Foreign Resources</b>		
Loans	7,187	4,772
Grants	3,452	2,881
<b>III. Total Resources</b>	32,658	27,680
Domestic Resources as percentage of total:	67.4%	72.4 %
Foreign Resources as percentage of total:	32.6	27.6 %

## Foreign Financing of the Plan

3.11 The actual development expenditure during the First Plan was 27.68 billion baht as against projected expenditure of 32.66 billion baht, of which 10.6 per cent or 3.4 billion baht was to be derived from foreign grants, and 22 per cent or 7.2 billion baht from foreign loans. At the end of the Plan period both the actual loans and grants used in financing of the Plan fell short of their targets, in particular foreign loans in which the actual disbursement amounted to only 66 per cent of the Plan projection, and foreign grants received were only 84 per cent of the amount envisaged in the Plan.

## Foreign Grants

3.12 Major contributors of the grants and technical assistance of 2.88 billion baht, or equivalent to 10.4 per cent of total actual development expenditure, were the United States, the United Nations Specialized Agencies, and the Colombo Plan member nations. Other countries together provided only 4 per cent of the total. The United States was the largest donor, contributing 74 per cent of total grants, the United Nations Specialized Agencies and Colombo Plan members each provided approximately 11 per cent as shown in the table below.

**Grant and Technical Assistance by Donor  
During First Six-Year Plan 1961—1966**

(Millions of Baht)

	1961	1962	1963	1964	1965	1966	1961-1966	%
U.S.A	309.99	364.84	496.91	178.50	215.71	564.66	2,130.62	74.0
U.N.	32.48	55.75	31.65	66.41	65.96	68.01	320.27	11.1
Colombo Plan	24.64	22.24	48.88	53.08	76.46	91.99	317.29	11.0
Others	9.66	12.74	14.36	14.99	29.92	30.94	112.62	3.9
	376.77	455.57	591.80	312.98	388.05	755.60	2,880.80	100.0

3.13 Project assistance absorbed 63 per cent of total grant while the remaining 37 per cent was classified as non-project assistance in the form of scholarships for studies and training abroad, foreign expert services and equipment not incorporated in the project assistance program. The United States contributed the largest amount to all sectors except industry where United Nations assistance predominated. Education was a field to which all countries gave substantial amounts, whereas in community and social development, and power, the United States was almost the only donor.

3.14 The table below shows that the 22 per cent allotted to communication was the largest share of total grants while agriculture, public health, education, community and social development received between six and ten per cent under the classification of project assistance.

**Grant and Technical Assistance by Sectors  
1961—1966**

<b>Project Assistance</b>	<b>(Millions of Bant) %</b>	
1. Agriculture & Cooperatives	224.16	7.8
2. Industry & Mining	76.63	2.7
3. Power	56.56	1.9
4. Transport & Communications	636.65	22.1
5. Community Facilities & Social Welfare	290.54	10.1
6. Public Health	233.86	8.1
7. Education	283.73	9.8
<b>Non Project Assistance</b>	<b>1,078.68</b>	<b>37.5</b>
<b>Total</b>	<b>2,880.81</b>	<b>100.0</b>

3.15 United States grants to Thailand during the period under review had been an important source of finance but the actual amount tapered off in the Second Phase of the Plan. However, the total U.S. grant aid in 1966 double that of the previous year brought about by the political developments in Southeast Asia. Colombo Plan and United Nations aid had been steadily increasing during the Plan period, while aid from other countries though small had also played an important role in specialized field of development activities.

### Foreign Loans

3.16 The projected foreign loan requirement was at 7,186.4 million baht, but actual disbursement at the conclusion of the Plan period was only 4,772.2 million baht, or 66 per cent of the projected requirements. The gap between planned and actual loan disbursement indicated the extent of delay in carrying out some of these projects for which external finance was intended to be used. The shortfalls in loan disbursement are shown in the table below, where three sectors in particular were responsible, namely, Agriculture, Transport and Communications, Public Health and Education.

**Projected and Actual Disbursement of Loans  
during the First Six-Year Plan 1961-1966**

(Millions of Baht)

Sectors	Projected	Actual	Actual Disbursement as Percentage of Projected Loan
Agriculture & Cooperatives	730.41	406.87	55.70
Industry & Mining	254.50	389.15	152.90
Power	2,478.02	2,254.87	90.99
Transport & Communications	2,228.60	812.46	36.45
Community Facilities & Social Welfare	917.25	908.84	99.08
Public Health & Education	577.66	—	—
Grand Total	7,186.44	4,772.18	66.40

3.17 The causes of the considerable shortfall in loan disbursements were not attributable to one factor, but several. Modifications in programs and projects played a major role in causing the shortfall, especially the delay in the highway development program, which was responsible for the loan disbursements in the transport and communications sector to be only 36 per cent of the projected amount. The second factor was the excessive length of time required in completing loan negotiations which left little time for disbursement within the time limit of the First Plan. For example,

it took almost two years before the loan negotiation for the power distribution system for the Yanhee Area Second Stage could be finalized with the consequence that the project could not be implemented in the Plan period. Similarly, after having been promised a loan for financing the power distribution system in the Krabi area, the Provincial Electricity Authority was advised some eighteen months later, by the foreign government involved that the offer had been cancelled, consequently it became necessary to finance the scheme from domestic sources, resulting in further delay of the project's commencement. The third factor was the problem of tied-in loans which could only be utilized for payment of supplies and services originating from the lending country. The difficulty arose where the cost of such supply and services exceeded the maximum cost estimates of the project. New tenders had to be called for, but invariably the cost remained excessive, and ultimately resulted in cancellation of the loan, thus forcing the government to seek other source of finance. The fourth factor was the slowness and inadequacy of project preparation and formulation illustrated by the projected loan of 577.7 million baht for the Public Health and Education sectors which resulted in no disbursements at all. The malaria eradication program loan negotiations were unsuccessful, as the credit country was not prepared to give loans for social development projects of this nature, and the program was reduced in magnitude and financed by grants and counterpart fund. The University education program to upgrade the teaching standard and the vocational education programs were not implemented during the First Plan due to the lengthy project preparation. In Agriculture, projected loans were mainly for the development of irrigation where the actual disbursement was only 55 per cent of the target mainly due to postponement of three irrigation projects, the Nan River, Lam Chee and Lam Oon projects whose preparations were not ready for their implementation in the First Plan.

3.18 In the Community Facilities and Social Welfare sector, the construction of Bangkok's waterwork system was the the only project for which foreign finance was required and fully utilized. Industry and Mining sector experienced a disbursement in excess of projected loans, due to the incorporation in the Plan of two additional projects, preserved food and chemical fertilizer, after the loan projections were estimated.

## BALANCE OF PAYMENTS

3.19 Throughout the Plan period Thailand's balance of payments was in a surplus position, while the foreign reserves, increasing at an annual average rate of 1.7 billion baht, had increased by 10.32 billion, raising the total reserves to 17 billion baht or equivalent to twelve months imports by the end of 1966. However, during this period the country experienced a balance of trade deficit even though exports increased significantly at an annual rate of 7.7 per cent. Export earnings totaled 67.81 billion baht while imports, increasing at an annual average rate of 11.3 per cent, amounted to 81.06 billion baht. The total trade gap of 13.25 billion baht, or an average of 2.43 billion baht per year, was partly offset by the surplus of invisible receipts over payments consisting mostly of tourist spending and the rise in foreign government expenditure associated with construction work and U.S. military personnel spending, amounting to 7.19 billion baht. After adding net transfer payments of 5.2 billion baht and net capital inflow of 8.8 billion baht the current account deficit was removed, creating additional reserves totaling 10.32 billion during the Plan period as illustrated below.

### Balance of Payments 1961 - 1966

	(Millions of Baht)
1. Merchandise	
Exports	67,812
Imports	<u>81,060<sup>1/</sup></u>
Trade Balance	— 13,248
2. Services (Net)	7,187
3. Transfer Payments (Net)	
Private	827
Official	<u>4,332</u>
Current Account	— <u>802</u>
4. Capital Movements (Net)	
Private	5,622
Official	3,180
Net Errors and Omission	<u>2,420</u>
5. International Reserves Movement	<u><u>10,320</u></u>
<sup>1/</sup> Excluding military imports	

**Table A**  
**Value of Imports and Exports 1961-1966**

(Millions of Baht)

Year	Imports <sup>1/</sup>	Increment	% Increase	Exports	Increment	% Increase
1961	10,287			9,923	— 489	— 4.93
1962	11,504	1,217	11.83	9,434	144	1.52
1963	12,802	1,298	11.28	9,578	2,587	27.00
1964	14,254	1,452	11.34	12,165	499	4.10
1965	15,433	1,179	8.27	12,664	1,384	10.92
1966	17,590	2,159	13.97	14,048		
	81,060	Annual Average Increase	11.3%	67,812	Annual Average Increase	7.7%

<sup>1/</sup> Excluding military imports

## Exports

3.20 Thailand's agricultural production is responsible for almost half of the nation's gross domestic product and together with mining provides the main source of export earnings. During the Plan period almost 70 per cent of the increase in agricultural output was channelled into exports, which, as previously mentioned, increased at an average annual rate of 7.7 per cent, providing foreign exchange amounting to 67.81 billion baht. Major export components are set out in table B, but it is important to examine the behaviour of the leading items. With uncertain weather condition the exports of rice fluctuated somewhat with domestic production, but in the latter years of the Plan period the export value was increasing. Rice, as in past years, remains the country's major export item, and with increasing world demand its earning should continue to increase in the next few years.

3.21 A notable feature of Thailand's export trade has been the predominance of agricultural components and the rapid rise in importance of maize, kenaf and tapioca products as foreign exchange earners. It is the fruit of crop diversification policy. The extraordinary increase in the



production of these crops in response to world demand, illustrates the adaptability of the agricultural sector to a changing world market. As indicated in Table B in the last six years the export of maize, mostly to Japan, has almost trebled, jute and kenaf exports more than doubled, and tapioca products increased by 66 per cent. On the unfavourable side was the steady decline in the export value of rubber due to declining world prices through competition of synthetic material and the slow replanting of high yield rubber variety. The more intensified effort in tin mining, including the opening of a smelting plant in 1965, greatly stimulated by the increase to 14 per cent of the world tin quota for Thailand have doubled the value of the exports of tin.

**Table B**  
**Thailand's Major Export Products 1961-1966**

(Millionsof Baht)

	1961	1962	1963	1964	1965	1966	Annual Average Rate of Growth %
Rice	3,598	3,240	3,424	4,389	4,334	4,002	3.0
Rubber	2,130	2,111	1,903	2,060	1,999	1,856	— 2.5
Tin	617	685	741	962	1,166	1,316	18.6
Maize	597	502	828	1,346	969	1,530	28.2
Jute & Kenaf	626	579	358	495	1,102	1,653	33.6
Tapioca Products	446	423	439	653	676	686	10.4
Teak	252	170	137	179	201	242	2.2
Others	1,697	1,724	1,748	2,081	2,217	2,763	11.1
Total	9,923	9,434	9,578	12,165	12,664	14,048	7.7

**Table C**  
**Thailand's Foreign Exchange Earnings from Visible**  
**and Invisible Exports 1961 - 1966**

(Millions of Baht)

	1961	%	1966	%	1961- 1966	%
Merchandise Exports Services Receipts (Invisible)	9,923 1,333	88.16 11.84	14,048 5,652	71.31 28.69	67,812 15,962	80.94 19.06
Total Receipts for Goods and Services	11,256	100.00	19,700	100.00	83,774	100.00

3.22 Destination of Thai exports has not greatly changed but over the six years there has been a shift away from members of the European Economic Community whose special preference for similar export products from other countries has diverted a greater amount of Thailand's exports to the Asian intraregional trade area, in particular Japan, Malaysia and India.

3.23 Thailand's foreign exchange earnings during the Plan period provided a stimulus to the development effort of the country. Exports of merchandise, although increasing at 7.7 per cent annually, declined as a percentage of total receipts of goods and services. Table C shows the increase in foreign exchange earning capacity of services receipts (or invisible exports) which in 1961 were 11.84 per cent of total receipts and 28.65 per cent in 1966. The components responsible for this change were the substantial increase in tourist expenditure in Thailand, the upsurge of investment inflow, and the steep rise in foreign government expenditures and purchases associated with construction of military installations works and increased spending by United States military personnel in the country.

**Table D**  
**Thailand's Major Trading Partners**

(Millions of Baht)

	1961				1965				1966 (Six Months)	
	Export	%	Import *	%	Export	%	Import *	%	Export	Import *
Japan	1,481	14.9	2,953	28.7	2,357	18.6	5,200	33.6	1,491	2,967
Hongkong	928	9.3	608	5.9	857	6.7	403	2.6	574	191
Taiwan	209	2.1	185	1.7	80	0.6	372	2.4	60	214
Singapore	883	8.8	601	5.8	799	6.3	139	0.9	581	95
Indonesia	729	7.3	313	8.8	216	1.7	361	2.3	330	242
Malaysia	1,517	15.3	191	1.9	1,887	14.9	168	1.1	682	92
United States	859	8.6	1,477	14.3	837	6.6	3,015	19.5	341	3,627
United Kingdom	781	7.8	954	9.2	547	4.3	1,506	9.7	262	740
France	69	0.6	223	2.1	194	1.5	164	1.0	91	102
West Germany	515	5.1	733	7.1	637	5.0	1,550	10.0	298	623
Italy	69	0.6	154	1.4	250	1.9	324	2.0	132	159
Netherlands	241	2.4	458	4.4	513	4.0	501	3.2	177	262
Others	1,642	17.2	1,437	8.7	3,488	27.9	1,730	11.7	2,855	1,413
	9,923	100.0	10,287	100.0	12,664	100.0	15,433	100.0	7,874	10,727

\* Excluding military imports

## Imports

3.24 While other components of trade were undergoing change, imports were also increasing rapidly at an annual average rate of 11.3 per cent amounting to 81.87 billion baht during the Plan period. The main reason behind this rapid growth was the higher imports of capital goods as a result of the increased magnitude of public development expenditure as well as private investment in Thailand. In 1961 capital and transport equipment imports accounted for 42.4 per cent of total imports, but by 1966 had reached 50.1 per cent. Raw material imports rose slightly from 15.7 per cent to 18.8 per cent during the same period. Government policy of encouraging investment and industrial promotion, and the increasing number of import substituting industries reflected the fall of consumer goods as a share of total imports. Table E shows that between 1961 and 1966 consumer goods share of the total had fallen from 39.9 per cent to 29.3 per cent. As in 1961, Japan remained the largest source of Thai imports accounting for 33.6

per cent of the total. Throughout the period under review government import policy was comparatively liberal, with restrictions placed on very few products.

**Table E**  
**Components of Imports during the Plan period**  
**1961—1966**

(Millions of Baht)

	1961	%	1962	1963	1964	1965 <u>1/</u>	1966 <u>1/</u>	%
<b>Consumer Goods</b>	4,101	39.9	4,129	4,165	4,480	4,753	5,147	29.3
<b>Raw Materials</b>	1,616	15.7	1,661	1,859	2,342	2,758	3,313	18.8
<b>Capital &amp; Transport Goods</b>	4,361	42.4	5,489	6,561	7,154	7,582	8,815	50.1
<b>Miscellaneous</b>	209	2.0	225	217	278	340	315	1.8
<b>Grand Total</b>	10,287	100.0	11,504	12,802	14,254	15,433	17,590	100.0
<b>Adjustment for Balance of Payments</b>	— 225		— 263	— 255	— 239	— 351	— 286	
<b>Merchandise Imports C.I.F.</b>	10,062		11,241	12,547	14,015	15,082	17,304	

1/ Excluding Military Imports.

**PROJECTED AND ACTUAL DISBURSEMENT OF LOANS  
DURING THE FIRST SIX—YEAR PLAN 1961—1966**

(Millions of Baht)

	1961		1962		1963		1964		1965		1966		Total	
	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual
<b>AGRICULTURE &amp; COOPERATIVES</b>	—	—	—	—	1.49	20.10	98.10	96.45	399.50	118.90	231.42	171.42	730.41	406.86
1. Kaeng Kracharn (IBRD)	—	—	—	—	1.39	20.10	29.73	22.32	2.23	10.53	1.61	.68	34.96	53.63
2. Ditches & Dykes (IBRD)	—	—	—	—	—	—	7.23	64.83	3.63	20.45	2.76	12.41	13.67	47.69
3. Lam Pao (AID)	—	—	—	—	—	—	23.56	—	16.47	—	5.10	—	45.13	—
4. Lam Praplerng (AID)	—	—	—	—	—	—	19.59	9.30	13.71	85.84	3.64	35.85	36.94	130.99
5. Mae Tang (AID)	—	—	—	—	—	—	17.94	—	10.24	—	1.38	—	29.56	—
6. Mae Klong Yai (IBRD)	—	—	—	—	—	—	—	—	168.00	2.08	84.00	122.47	252.00	124.55
7. Mae Nam Nan (Ta-Pla) (IBRD)	—	—	—	—	—	—	—	—	168.00	—	84.00	—	252.00	—
8. Lam chee (AID)	—	—	—	—	—	—	—	—	—	—	35.60	—	33.60	—
9. Lam Oon (AID)	—	—	—	—	—	—	—	—	17.22	—	15.33	—	32.55	—
<b>INDUSTRIAL &amp; MINING</b>	15.00	4.20	—	63.57	10.00	16.59	151.00	57.01	78.50	55.61	—	192.17	254.50	389.15
1. Preserve Food Organization	—	4.20	—	37.49	—	—	—	—	—	—	—	—	—	41.59
2. Weaving Organizatton (Suppliers Credit) (Japan)	—	—	—	—	10.00	16.59	98.50	57.01	26.00	39.23	—	—	134.50	112.83
3. Bangkok Jute Mill Co. Ltd. (PL 480)	15.00	—	—	26.08	—	—	—	—	—	2.58	—	—	15.00	28.66
4. Industrial Finance Coperation of Thailand (IBRD)	—	—	—	—	—	—	—	—	—	5.85	—	12.53	—	—
5. Industrial Finance Coperation of Thailand (KFW)	—	—	—	—	—	—	52.50	—	52.50	7.95	—	6.78	105.00	33.11
6. Chemical Fertilizer Co. Ltd. (KFW)	—	—	—	—	—	—	—	—	—	—	—	172.86	—	172.86
<b>POWER</b>	330.97	398.98	581.74	541.26	602.80	500.21	551.99	413.17	300.38	206.08	110.14	145.17	2,478.20	2,254.87
1. Yanhee Project 1st. Stage (IBRD)	207.47	256.35	348.05	337.70	244.58	207.61	197.59	119.58	35.70	2.56	—	.10	1,033.39	923.90
2. Yanhee Project 2nd. Stage (IBRD)	29.31	—	133.12	—	90.30	35.28	—	26.25	—	51.63	—	19.43	252.73	132.59
3. Metropolitan Eclectricity Authority (DLF)	94.19	110.18	73.12	72.53	100.80	54.69	82.77	68.29	—	49.90	—	4.60	350.88	360.19
4. Krabi Power Plant (Suppliers Credit) (Austria)	—	—	27.45	49.99	157.84	116.14	85.09	87.88	2.80	2.79	—	—	273.18	256.80
5. Nam Pong Multipurpose Project (KFW)	—	—	—	—	9.28	9.17	89.31	106.39	88.26	98.38	23.18	25.97	210.03	239.91
6. Dist. System in Yanhee Area 1st. Stage (KFW)	—	—	—	—	—	—	39.69	—	26.47	—	—	28.50	66.16	28.50
7. Dist. System in Yanhee Area 2nd. Stage (KFW)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
8. Dist. System in Krabi Area (KFW)	—	—	—	—	—	—	32.54	—	45.78	—	20.37	—	98.69	—
9. Dist. System in Nam Pong Area (KFW)	—	—	—	—	—	—	25.00	—	41.37	—	16.59	12.23	82.96	12.23
10. Yanhee Project 3rd. Stage (IBRD)	—	—	—	—	—	—	—	—	—	.47	—	54.34	—	54.81
11. Pattani Project	—	—	—	—	—	—	—	—	60.00	—	50.00	—	110.00	—
12. Thermal Power Plants (1 & 2) (Bangkruoy) (EXIM)	—	32.45	—	131.04	—	77.32	—	4.78	—	.35	—	—	—	245.94

	1961		1962		1963		1964		1965		1966		Total	
	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual
<b>TRANSPORTATION &amp; COMMUNICATIONS</b>	115.00	74.29	91.00	49.31	9.00	4.27	473.40	139.28	677.10	211.75	863.10	333.56	2,228.60	812.46
1. Roads Construction (AID)	80.00	—	6.50	—	5.00	—	—	—	—	—	—	6.56	91.50	6.56
2. Roads Construction (EXIM)	—	—	—	—	—	—	96.70	—	72.37	39.11	224.97	3.63	394.04	42.76
3. Roads Construction (IBRD)	—	—	—	—	—	—	61.00	—	179.03	23.17	313.53	146.15	553.56	169.32
4. Feeder Roads Construction (IBRD)	—	—	—	—	—	—	—	—	100.00	—	150.00	92.97	250.00	—
5. Railway System Improvements (IBRD)	—	—	—	—	—	—	36.10	66.71	165.90	100.84	104.60	—	306.60	260.52
6. State Railways Improvements (PL 480)	—	39.80	35.00	—	—	—	—	—	—	—	—	47.11	35.00	39.80
7. Kaengkoi - Buayai Railroad Construction (KFW)	—	—	—	—	4.00	4.27	195.60	26.00	24.30	35.94	12.50	—	236.40	113.32
8. Port, Purchase of Dredgers (DLF)	35.00	34.49	2.00	2.23	—	—	—	—	—	—	—	37.14	37.00	36.72
9. Microwave System Construction (Zone 1, 2, 3,) (EXIM)	—	—	47.50	47.08	—	—	63.00	46.57	—	12.67	—	—	110.50	143.46
10. Microwave System Construction (Zone 4, 5,) (KFW)	—	—	—	—	—	—	21.00	—	57.50	—	57.50	—	136.00	—
11. Purchase of Ocean-Going Vessels (Japan)	—	—	—	—	—	—	—	—	78.00	—	—	—	78.00	—
<b>COMMUNITY FACILITIES &amp; SOCIAL WELFARE</b>	12.00	62.97	91.00	249.04	339.00	252.20	407.25	171.06	68.00	173.57	—	—	917.25	908.84
1. Dagremont 1 & 2 (Supplier's Credit) (France)	12.00	62.97	91.0	249.04	339.00	252.20	407.25	171.06	68.00	—	—	—	917.25	908.84
<b>PUBLIC HEALTH &amp; EDUCATION</b>	—	—	—	—	—	—	—	—	192.14	—	385.52	—	577.66	—
1. Malaria Eradication	—	—	—	—	—	—	—	—	69.64	—	75.42	—	145.06	—
2. University Education (IBRD)	—	—	—	—	—	—	—	—	65.50	—	64.50	—	130.00	—
3. Vocational Education (IBRD)	—	—	—	—	—	—	—	—	57.00	—	245.60	—	302.60	—
<b>Grand Total</b>	<b>472.97</b>	<b>540.44</b>	<b>763.74</b>	<b>953.18</b>	<b>962.19</b>	<b>793.37</b>	<b>1,681.74</b>	<b>876.97</b>	<b>1,715.62</b>	<b>765.91</b>	<b>1,590.18</b>	<b>842.32</b>	<b>7,186.44</b>	<b>4,772.18</b>

Source : Bank of Thailand & Comptroller - General's Department (1966)



## CHAPTER 4

# POPULATION AND MANPOWER DEVELOPMENT

4.1 The basic development problems facing Thailand as in other developing countries, are the rapid growth of population which tends to retard the pace of economic growth, and the shortage of trained manpower which has to a considerable extent adversely affected the implementation of some development programs during the course of the First Plan. Although the initial steps in manpower planning was begun in 1965, it still needed a great deal of improvements to provide the guidance required in the reorientation of the country's educational system to meet the economic and social needs. Agricultural diversification and productivity gains have been deferred in many areas because of lack of research specialists and trained extension workers. Several key development projects continued to rely to some extent on external technical expertise. The shortage of specialized know-how in technology and management remained one of the important limiting factors in the past development process. At the same time, the rapid growth of population resulted in underemployment in the rural areas.

### Population and Labour Force

4.2 The population of Thailand had been increasing steadily during the past six years at the average rate of around 3.2 per cent per annum. According to the 1960 Population Census, the total population of Thailand was 27.1 million. In 1963 it was estimated to be 29.9 million and at the end of 1966 it was about 33.2 million. At this rate, it will double in about 20 years and the rate of growth of national output is likely to be reduced, since a larger share of the increased income provided by economic growth will have to be used for consumption by the rapidly expanding population and less will remain for investment.

4.3 In 1960, the economically active population (15 years and over) was 14.9 million or 55.0 per cent of the total population; the corresponding

figure in 1966 was 18.0 million representing 54.2 per cent of the total population. An increase of population under 15 years of age puts a heavy burden on the educational system and a greater impact on employment.

## Employment

4.4 The rapid rate of economic growth during the First Plan period had satisfactorily absorbed the addition of approximately 2.1 million persons to the labour force. To a great extent, this was possible due to growth in the agricultural, manufacturing, and trade sectors. The dispersal of public development projects in different regions also improved the employment situation in the country. There were 12.5 million employed persons in 1960, and in 1966 the corresponding number was estimated at about 14.6 million. Although no serious unemployment problems was apparent, there was widespread seasonal underemployment throughout the agricultural communities. The distribution of employed persons by sectors was as follows:

Employed Persons by Economic Sectors

	1961*		1966**	
	Persons	%	Persons	%
Agriculture	10,341,857	83.1	11,618,752	79.9
Mining & Quarrying	28,443	0.2	41,486	0.3
Manufacturing	454,807	3.6	689,134	4.7
Construction	68,260	0.6	110,687	0.7
Electricity, gas & water	15,454	0.2	33,249	0.2
Transport & Communication	164,142	1.3	228,449	1.6
Commerce	744,424	5.9	1,027,574	7.1
Services	643,595	5.1	804,304	5.5
Total	12,460,982	100.0	14,554,135	100.0

Source : \* 1960 Population Census

\*\* NEDB



4.5 During the Plan period, the percentage of employed persons in the agricultural sector declined from 83.1 per cent in 1960 to 79.9 in 1966, although there was an increase in absolute number. However, the employed persons in commerce and manufacturing gradually increased both in percentage and in absolute number. This was in line with the Plan objective to shift the surplus manpower from agricultural to non-agricultural activities.

4.6 A recent survey conducted by the Department of Labour on the employment trends in the metropolitan area of Bangkok and Thonburi, indicated that the employment in the manufacturing sector grew at a faster rate than other sectors. The number of workers engaged in manufacturing increased its share in total employment from 23.9 per cent in 1960 to 26.1 per cent in 1964. The industrial expansion also led to an increasing demand and thus creating more employment opportunities, for professional and technical personnel than it could be adequately filled. The survey also revealed that the percentage of such employed personnel in Bangkok - Thonburi's labour force rose from 21.5 per cent to 24.5 per cent during the same period.

4.7 On the other hand, employment seekers continued to outnumber available opportunities to a certain extent. The unemployment rate in municipal areas of Thailand (a municipal area is defined as one inhabited by more than 20,000 people), according to the Labour Force Surveys of 1963, ranged between 4.6 - 6.2 per cent. In the municipal area of Bangkok-Thonburi, the unemployment rate was somewhat higher than other municipal areas, and varied between 5.8 to 7.5 per cent during 1964 - 1966. On the whole, the unemployment rate was higher in urban than in rural areas and underemployment remained a problem in rural agricultural communities. The Office of the National Economic Development Board is studying rural manpower problems which include both underemployment and seasonal unemployment.

### **Quality of Manpower**

4.8 In the First Plan period, there were 3.1 million new entrants to the labour force. At the same time, the educational system had produced the following number of graduates during 1960 - 1965.

### Graduates from the Education System between 1960 — 1965

Level of Education	Number of Graduates <sup>1/</sup> 1960 — 1965
Grade 10 (academic stream)	143,363
Grade 10 (vocational stream)	15,286
Grade 12 (academic stream)	58,259
Grade 13 (vocational stream)	32,004
Teacher training	34,022
Technical education	12,966
University	28,499 <sup>2/</sup>

<sup>1/</sup> Some persons may have graduated from more than one level of education.

<sup>2/</sup> Excludes graduates from foreign universities.

4.9 Although there was an increase in the number of graduates during the Plan period, the demand for personnel in some occupations had been exceeding the supply from the educational system. Some of these occupations were: medical personnel, engineers, nurses, scientists, teachers, technicians and skilled workers. Other factors which contributed to manpower shortages were poor quality of graduates from the educational institutions and uneven regional distribution of manpower movement due to lack of incentives, such as wages and promotion opportunities and less attractive surroundings, which tended to dampen any desire to work and live outside the Bangkok metropolitan area.

### Manpower Development

4.10 It was mentioned earlier that a start was made in 1965 to undertake manpower planning. Nevertheless, manpower development activities were being carried out during the Plan period. The most significant step was the assessment of education and human resources of the country by a joint Thai-USOM Human Resources Study Task Force. The National Economic Development Board, with technical assistance from AID and ILO, began a systematic studies of population growth, labour productivity, short-term and long-term manpower demand and supply by economic sectors and occupations. Studies completed in 1966 included the employment status

of SEATO technical school graduates and the number of civil servants requiring training abroad. An overall study of Thailand's secondary education was jointly made by the Ministry of Education and the National Economic Development Board, and the result submitted to a special conference held in Chiangmai, under the chairmanship of the NEDB. This study made many recommendations aimed at further improvements of the secondary education system.

4.11 Another major development in education which should have an impact on manpower development was the Vocational Education project with an estimated cost of US \$ 20 million which included a loan of US \$ 8 million from the World Bank. The project was designed to strengthen and expand fourteen trade and industrial schools and nine agricultural schools.

4.12 In order to increase activity in Employment Exchanges, to expand cooperation with industry for on-the-job training, to improve labour standards, and to promote labour welfare, the Labour Bureau was elevated to the status of a full-fledged Department in the Ministry of Interior during the Plan period. The National Economic Development Board also initiated a project to establish an Institute for Skill Promotion to upgrade the proficiency of workers who are already in the labour force and to train foremen and supervisors and instructors. This Institute will be operated by the Department of Labour.

4.13 Other agencies engaged in manpower development during the Plan period were the Thailand Management Development and Productivity Centre with assistance from United Nations Development Assistance Program (UNDP), the Accelerated Rural Development (ARD) program with AID assistance which involved training of heavy equipment operators, mechanics and construction crews, and the Mechanic Training Centres of the Highway Department with assistance from the Australian Government. Another UNDP assisted project was the Small Industry Service Institute (SISI) with the objective of providing advisory and consultative services to small industries including the training of workers and management skill.

4.14 On the whole, the manpower development programs were moving ahead satisfactory during the Plan period considering the apparent planning inexperience in this field and, thus, the limited objective for which each

program was designed. Some schemes could not be fully carried out according to schedule, particularly the SISI, because of delay in the recruitment and selection of qualified foreign specialists to assist their development. It may be concluded that there is urgent need for further acceleration and coordination of manpower development to provide a more effective direction for the development of education and training programs, but to meet the current and future need for skilled manpower at all levels and at successive stages of development, to avoid wastage of human resources, and to channel surplus manpower into more productive activities.

## CHAPTER 5

# DEVELOPMENT ADMINISTRATION

5.1 The implementation of the Plan has witnessed some improvements in terms of administrative capacity to execute public development projects in several key operating agencies. However, there is room for further improvement both in terms of institutional reorganization and administrative responsibility to bring about higher efficiency in the formulation of development projects and their implementation. At the same time, it is necessary to improve the communications among various operating agencies in order to secure the better coordination of several major development programs and projects, of which the responsibility for different aspects was often tend to be divided among several ministries and agencies, especially the agricultural, transport and power development programs. Close coordination is important in regard to such areas as the determination of priorities, technical requirements, maximum utilization of available skilled manpower resources, and economic allocation of development funds, and prevention of duplication. The Government must focus greater attention in developing its personnel policy and technical and administrative efficiency, and revising its salary structure which requires considerable overhauling in order to retain existing talents and to attract new ones. Otherwise during the next ten years increasing difficulty will be encountered to find qualified personnel to fill many important positions.

5.2 The following were some changes and improvements in the field of development administration and their impact on planning and development:—

## Planning Machinery at the National Level

5.3 The National Economic Development Board ( NEDB ), was created in July 1959 as the central economic development planning authority with the Prime Minister serving as Chairman and 33 other government and non-government members appointed by the Council of Ministers.<sup>1/</sup> Under the Board is the Executive Committee<sup>2/</sup> which has the authority to supervise the work of the Secretariat of the NEDB. The Executive Committee, at its weekly meeting and acting on behalf of the Board, actually has the responsibility of scrutinizing economic development policies, and plan, program, project proposals and making its recommendation to the Council of Ministers for final decision. The First Plan document which covered a period of six fiscal years ( 1961 - 1966 ) was completed hurriedly in four months and covered only the resources and expenditures of the Central Government, including foreign grants and loans to the public sector. The haste and lack of necessary data and information caused to be somewhat sketchy and limited in scope. Despite its incompleteness and inadequacies, it represented the first overall attempt at orderly investments of public funds in accordance with development policies and priorities. After the continued improvement of basic economic and financial statistics and increased understanding of the planning process among planning officials, the second three years period ( 1964 - 1966 ) was revised by broadening the scope of the Plan covering the entire public sector, introducing manpower planning and deeper economic, fiscal and monetary analysis. The overall annual target of economic growth was also raised from 5 to 6 per cent. In addition, the the NEDB initiated a system of progress reporting and performance evaluation.

5.4 In revising the second phase of the Plan, the process of national planning was also better integrated with the working of the governmental machinery in general, through the various committees and the NEDB representation on most important committees functioning under several ministries and other decision making bodies. This included the representation of the NEDB's Secretary-General at the Cabinet meetings and his regular briefings with the Prime Minister on the latest development activities,

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<sup>1/</sup> The number of members was reduced from 46 to 33 in 1965.

<sup>2/</sup> The maximum number of members appointed by the Council of Ministers was increased by law from 11 to 15 in 1965, but only 13 were appointed.

their successes and problems. Closer collaboration between the NEDB and Budget Bureau in the consideration of the annual development budget was also established. At the same time the Secretariat of the NEDB strengthened its technical staff by recruiting more graduates from those trained in foreign universities, and a program of post-graduate overseas training with the assistance provided by the A.I.D., United Nations, and Colombo Plan and other foreign governments. The planning staff also had benefited a great deal from the experts assigned to the NEDB by the World Bank, A.I.D., and I.L.O. and the Colombo Plan.

### **Personnel Administration and Public Personnel Policies**

5.5 The implementation of several major programs and projects were satisfactory in regard to personnel administration in achieving the planned targets. There was, however, the problem of shortages of trained personnel and technical staff since the Government must rely heavily on its administrative apparatus to prepare and carry out development projects and programs. This problem still exists today. The character, volume, and the continuing nature of project and program preparation, execution and operation involved a great strain on the administrative machinery which could not adequately cope with the responsibilities with the result that there were certain shortfalls in the process of plan implementation. In many cases, the operating departments and agencies were overstaffed at the lower levels while vacancies for professionally trained personnel at the upper and middle levels could not be filled. Very low salary was one of the major causes in contrast with those employed in the private sector, where comparable jobs carry emolument two or three times as much as in the Government. But it must be recognized that the choice of employment is not solely guided by monetary factors but also prestige and status, and by perceptions of security which can be either real or altogether imaginary. Nevertheless, the upward revision of the salary structure of civil service has to be taken up for consideration and implementation immediately to keep pace with the increase in the cost of living and to bear relationship with the pay scales in the private sector in order to provide the necessary incentives to attract critical manpower that is needed. The recent trend indicates that the proportion of government expenditure on salaries and wages has declined compared with the rapid increase in public investment and other expenditures.

5.6 Close coordination between the Civil Service Commission and the NEDB is necessary in order to have a clear understanding of the significance and priorities fixed for various development programs and projects in the Plan. This is particularly important in regard to the manpower requirements and allocation of personnel in order to ensure that the personnel required are available to staff the projects. Such coordination will pave the way to the most effective public personnel policies in the context of national development and create better appreciation of the problems of recruitment and manpower utilization between the Civil Service Commission and operating agencies, and thereby ensure effective implementation and administration of development programs.

### **Improvement in Evaluation System of Project Implementation**

5.7 Another requirement of successful implementation of the national development plan is an improvement in the evaluation system of project implementation. A system of progress reporting was established and maintained during the second phase of the First Plan to assess the progress and bottlenecks arising out of the Plan implementation, but there is still much room for further improvement.

5.8 The NEDB together with the operating agencies will have to establish an effective machinery for evaluation of implementation of public development projects, and to establish a communication system to obtain complete and timely information on the status and progress of projects which can be promptly put together for evaluating the Plan's progress. The decision making bodies, particularly the Chairman of the NEDB, the NEDB's Executive Committee, the Cabinet, and the high echelons of the Government agencies, should be able to review all important aspects of project execution and clarify numerous issues and problems of emergency nature involving unexpected bottlenecks, and timely measures necessary to overcome them. This will permit the Budget Bureau/NEDB annual development budget preparation to be based on a realistic assessment of the status and effectiveness of on-going projects, and to link evaluation of the past performance with planning for the future, particularly the annual Plan; this is known as the process of feedback. This will keep the planning process dynamic and responsive to conditions and improve Plan implementation as well.



## **General Reorganization**

5.9 During the Plan period, a Ministry of National Development was created early in 1963 as an operating agency with a planning office of its own with the purpose of concentrating under a single ministerial responsibility those departments which were in charge of carrying out the major economic development programs. All departments of the Ministry of Cooperatives which was dissolved, the Irrigation Department and Land Development Division from Ministry of Agriculture, the Highway Department of Ministry of Communications, the National Energy Authority from the Office of the Prime Ministers, and the Thai Technical and Economic Committee ( TTEC ), which was formerly a part of NEDB, were incorporated into this new Ministry. It became responsible for the execution of a substantial proportion of the total public investment in the Plan, such as those for highways, irrigation, and power, and altogether accounted for approximately 60 - 70 per cent of total development expenditures. At the same time, the Central Statistic Office, a department of the NEDB secretariat, was raised to the status of National Statistical Office under the Prime Minister's Office. The name of the new Ministry, and its Minister, and Deputy Ministers, created considerable misunderstanding as to its planning responsibility vis-a-vis the NEDB and its secretariat. The NEDB, somewhat reduced its size, however, retained its sole responsibility as the central national authority in economic development planning and other economic matters directly responsible to the Prime Minister and the State Council of Ministers.

## PART II SECTORAL REVIEW

## CHAPTER 6

# DEVELOPMENT OF AGRICULTURE AND COOPERATIVES

6.1 The First Six-Year Plan gave relatively high priority to agricultural development programs, as approximately 80 per cent of the total working population is engaged in agricultural employment. Agriculture contributes the largest share to the country's national income, and is the principal source of supplies for domestic commerce and industries, and for exports.

### Plan Objectives and Policies

6.2 The Plan objectives in the agricultural sector were to expand output to diversify crop production, to improve productive techniques, to develop natural resources valuable to agriculture, to promote the status of agricultural employment and generally to increase productivity and income of the farm population. In implementing these policy objectives, several measures were taken including the building of agricultural infrastructure such as irrigation, power and transportation, the improvement and expansion of agricultural research and extension activities. The development of livestock, forestry, fishing, and the establishment of farmers cooperatives or associations were also important elements.

6.3 Under the Plan the projected outlay for the development of agriculture and cooperatives was 4,621.25 million baht, of which 3,641.04 million baht was expected to come from domestic sources and the remaining 985.52 million baht from foreign loans and grants. Approximately 50 per cent of the total development expenditures in this sector was proposed to be channelled into the development of irrigation. The actual financial

implementation in this sector amounted to 4,027 million baht excluding self-financed projects. The shortfall was mainly due to three irrigation projects for which foreign loans disbursement of 318 million baht was anticipated, namely the Nan Project, Lam Chee and Lam Oon Projects, but a longer time was required for land utilization study and detail engineering survey and design, while the World Bank loan negotiation for the Nan River Project only began late in 1966 and none took place yet for the other two projects.

## PLAN IMPLEMENTATION

### Irrigation and Flood Control

6.4 During the Plan period, considerable progress was made in the development of irrigation. The total irrigated area increased by 1.9 million rai from 9.8 million rai in 1961 to 11.7 million rai in 1966, and covered about one fourth of the total land under cultivation.

6.5 Breaking down regionally, the area under irrigation at present covers 64 per cent 14 per cent of the total cultivated land in the Central and Northern regions respectively. The lack of irrigation systems in the South and the Northeast is reflected in the fact that only 9.8 and 3.7 per cent respectively of the cultivated land is under irrigation. The problem is that in the Northeast there are few rivers which have irrigation potentials due to the unfavorable topographical conditions. The solution has been partly found by the construction of storage tanks and reservoirs. However, upon the completion of major irrigation projects, i.e. Lam Pao, Lam Praplerng, Lam Takong and Nong Wai, the irrigated area in this region will be further expanded by 500,000 rai.

Development of Irrigation during the First Six-Year Plan

	Irrigated Area 1961	Planned Target for 1966	Actual Irrigated Area 1966
State Irrigation	8,615,000 rai	8,972,000 rai	9,666,110 rai
People's Irrigation	971,500 rai	1,912,050 rai	1,174,900 rai
Water Storage	210,000 rai	424,829 rai	360,000 rai
Water Conservation	—	—	500,000 rai
Total	9,796,500 rai	11,308,879 rai	11,701,010 rai

### Irrigated Area by Region

	Total Paddy Cultivated Area	Total Irrigated Area	Percentage
Northern	8,475,222	1,170,700	13.8
Central	13,446,653	8,674,500	64.5
Northeastern	18,188,678	675,200	3.7
Southern	3,350,725	329,000	9.8

6.6 The following major construction of dams included in the irrigation and flood control programs were completed during the First Plan period: Phumiphol ( Yanhee ) and Ubolratana multipurpose projects, Mae Yom, Kang Krachan, Mae Tang and Nong Wai ( irrigation part of the Nam Pong Project ). Seven others still under construction were Kiew Lom, Lam Pao, Lam Takong, Lam Praplerng, Mae Klong Yai and Tha Chiad, while preparatory ground works on the Phasom Dam ( Nan River Project ) were under way. In addition to the large irrigation projects, the People's irrigation projects, the ditch and dike programs, and water storage projects made considerable progress in the Central plain and the Northeastern region.

6.7 In the Central region, the construction of the storage dam at Kang Krachan by the Irrigation Department's work force was completed in 1966, eight months ahead of schedule. The second stage of this project provides for the expansion of water distribution system within the former Petchburi projects. At present the construction of distribution canals has been completed and the entire project is expected to be finished by 1969. Work on the first stage of the Greater Mae Klong project, which is the second largest after the Chao Phya project, was commenced in 1964 with the construction of the Vajiralongkorn diversion dam at Ta Muang district in Karnchanaburi Province. The distribution system will cover an area of one million rai. The construction of the first stage is scheduled to be completed in 1970. The second and third stages provide for the construction of storage dams at Kwae Yai and Kwae Noi which will help to eliminate the danger of flooding in the Mae Klong lower basin as well as provide irrigation for an additional 1.4 million rai. Both Kang Krachan and Greater Mae Klong projects received loans from the World Bank to cover the foreign exchange costs.

6.8 In the Northeast, construction work on the Lam Pao, Lam Ta Kong, Lam Praplerng and Nong Wai ( Nam Pong ) irrigation projects was well under way. By the end of 1966, about 59 per cent of construction work at the Lam Pao and 67 per cent at the Lam Praplerng were completed. Construction work on the dams and its component buildings at Lam Ta Kong was making progress satisfactory. The costly requirement encountered in this project was the necessity to relocate seventeen kilometers of railway lines and a section of the Friendship Highway. During 1965, the relocation of the railway lines was begun and by the end of 1966 earth work was completed. The construction of the section of the Friendship Highway was to be undertaken by the Irrigation Department and was scheduled to be completed in 1968. On the whole, work on this project was 53 per cent completed.

6.9 Substantial progress was made at the Nong Wai irrigation project which is irrigation part of the Ubolratana project in Khon Kaen Province. While work on the diversion dam was finished, the construction of the water distribution and canal system was slightly behind schedule, due largely to delay in replacing wornout equipment and the rugged terrain which made the construction work more difficult than at first anticipated.

6.10 In the North, preliminary work at the Phasom multi-purpose project ( Nan River Project ) had already started. However, the construction of the dam itself will not commence until the loan agreement is concluded with the IBRD in 1967. Preliminary work completed included the construction of roads, living quarters, and the bridges across Nan and Pad rivers. Work on the Mae Yom Project at Prae was about 47 per cent completed. Although the construction of the dam had been finished, work on the distribution system was still behind schedule. By the end of 1966, approximately 77 k.m. of work on the left bank main canal and 7 field canals were completed, while on the right bank main canal was started. Construction of the distribution and canal system at Mae Tang Project in Chiangmai had advanced considerably and 78 k.m. of work on the main canals will be finished in 1967. Preliminary work on the Kiew Lom Project at Lam Pang was also started during the Plan period.

6.11 In the South, the Tha Chiad project at Pattalung was still in the initial stage of construction, and about 8 per cent completed. Feasibility study for irrigation possibility of the Pattani River Project, originally surveyed for hydroelectric power source, was begun in 1966.

6.12 As a result of the implementation of many water storage projects in the Northeast during the Plan period, the irrigated area derived from the completed tank irrigation expanded to 360,000 rai compared with 210,000 rai in 1961. Additional storage dams were constructed during the Plan period.

6.13 The ditch and dike program was well under way covering a total area of 3.4 million rai in the Central plain. About 65 per cent of work in the Chao Phya and 95 per cent in the Petchbuti areas were completed by the end of 1966.

6.14 On the whole, substantial progress was made during the Plan period. However, delays in the implementation of some of the projects occurred because of the time lost in loan negotiation, the delay in the delivery of foreign procured equipment, problems of land expropriation and difficulties in the evacuation of people from the area of the dams' reservoirs. There was also a time lag between the availability of irrigation facilities and their utilization resulting from frequent delays in the construction of water courses and field canals. It should be also noted that the budget allocation for many of the irrigation development projects, particularly Mae Yom, Mae Tang, Lam Pao, Lam Ta Kong, Lam Praplerng, Nong Wai and Kang Krachan projects, was higher than projected in the Plan as a result of additional expenditure required for lining the distribution canals with concrete.

### **Agricultural Research**

6.15 In 1966 there were 102 research and experimental stations and units under the Department of Agriculture and the Department of Rice as follows:

	<b>Number</b>
Regional Agricultural Stations	2
Agricultural Stations	20
Seed Multiplication Stations	9
Silviculture Stations	5
Rubber Stations	10
Rice Experiment Stations	18
Crop Disease Eradication Centres	11
Rice Disease Eradication Centres	12
Rubber Experimental Plantations	4
Rubber Growing Plots	11
<b>Total</b>	<b>102</b>

6.16 The number of agricultural research stations in operation at present is quite adequate for immediate needs. During the Plan period special emphasis was placed on improving the efficiency of the existing stations. Along these lines two regional agricultural stations were established at Khon Kaen and Chainat. These stations are, as yet in the initial stages of operation, larger in size and better staffed with competent technicians. Upon the completion of the projects, these two regional centres will be for the research work in the field of agricultural crops, fisheries, and forestry in the Central and the Northeastern regions of the country.

### **Rice Research and Extension**

6.17 During the Plan period, research work on high yield varieties of rice suitable for any particular local soil was undertaken at 18 experimental stations. By the end of 1966, the Department of Rice had developed 32 improved varieties for distribution to farmers through the extension officers. The effectiveness of the research work could, however, be further improved by increasing the number of qualified technical staff and equipment. Moreover, as the result of poor choice of location in the past, many experimental stations at present are short of supply of water necessary for conducting research and demonstration work. To improve the operation of these stations, there appears no alternative but to allot the necessary budgetary fund for the construction of reservoirs or artesian wells. The establishment of experimental stations in areas proposed to be placed or already under irrigation would obviously facilitate the research and extension work and demonstration services to farmers in the proper utilization of the existing irrigation facilities.

### **Rubber Research**

6.18 Rubber research activities which included the development of high yield trees, the promotional services of re-planting and better method of maintenance of rubber estates were well under way at 25 rubber experiment units. With the assistance of the U.N. Special Fund and under the rubber



development program, the Rubber Research Centre was established at Koh Hong in Songkla province with the objective of developing and improving high-yield trees, carrying out research on rubber technology and training Thai officers to undertake these tasks. Work on the project began in 1965 and was to continue for five years through 1970. Since the Centre began, only limited progress has been achieved. The Centre, however, concentrates mainly on research and experiment with little attempt in popularizing new methods. Few rubber planters understand its role and hardly any had come to seek its advice. In view of the short time remaining before the U.N. expert services expire in 1970, the Ministry of Agriculture should consider whether there exists sufficient qualified rubber officers, and what further steps are to be taken to carry on the work of the Centre.

6.19 Research work on other principal crops, i.e. maize, sorghum, kenaf, cotton, and tapioca also witnessed considerable progress during the Plan period. In 1966, the Ministry of Agriculture had altogether 20 agricultural stations situated in various parts of the country.

### **Agricultural Extension**

6.20 The production of improved rice varieties and the introduction to the cultivators are still inadequate in relation to the needs and the total rice growing area of the country. More attention should also be given to evaluating the impact of these new varieties upon production. As a means to encourage farmers to utilize better techniques and services derived from the agricultural research efforts, 2,150 farmer associations were established with the total memberships of 95,915 farm families in 70 provinces covering farm area 3,057,633 rai during the Plan period.

6.21 The rubber replanting scheme which has been in operation since 1961, to assist planters was as a whole lagging. Up to May 1966 the Rubber Replanting Aid Funds Office had approved the allotment of funds for replanting to 19,725 planters having a total area of 215,319 rai, or about 21.5 per cent of the total area which needed replanting. However, only a total area of 158,661 rai owned by 14,345 planters were actually replanted. At this slow pace the present replanting scheme will take more than twenty years to complete. If the rate is not accelerated, in 10-12 years time product-

tion from much of the existing producing trees, now heavily overtapped, would be exhausted and the economic position of the South will be indeed serious. The acceleration of replanting in the past has been difficult partly because the size of average plantation was small and the subsidy funds (1,500 baht per rai) made available were insufficient for replanting and maintenance during the transitional period. To solve this problem, the Government has already raised the amount of subsidy to 1,850 baht per rai since the beginning of 1966. Although the existing small holdings hinders replanting to a certain extent, it is not impossible to accelerate the rate of replanting. At present, approximately 70 per cent of the rubber plantations averages 30 rai or over. Since holdings of 15 rai is considered minimum economic size, it would appear that an owner of 30 rai could replant half of his land with high yield trees and still find a living on the old trees until the new trees could be tapped. In conclusion, at least 1.5 million rai could be replanted immediately without undue hardship to their owners. The Ministry of Agriculture should intensify the replanting operation and exert greater effort on publicity campaign to acquaint the owners of the benefits derived from the high-yield trees. Moreover, the work of the Rubber Department should be concentrated more on the extension activities. It is felt that at present there is already adequate cultivation and availability of improved clones, and that rather than pouring manpower and unnecessary expenditure for their cultivation, extension work should be expanded.

6.22 The extension of important upland crops, which included maize, sorghum, kenaf, and oil bearing seeds also made good progress. The introduction and widening use of new and more sophisticated techniques of production, better varieties, and pesticides by the farmers were the major gains. The cultivation of improved maize varieties in particular had resulted in a 30 per cent increase in production. At present the area under maize cultivation covers 3.5 million rai.

6.23 Agricultural research and extension activities are major factors in the overall agricultural development. New land suitable for cultivation is gradually diminishing, relatively to the high growth rate of population. There is therefore an urgent need to increase productivity of the existing arable land through well conceived research and extension programs, and widespread application of new methods of cultivation, use of fertilizer, efficient utilization of the available irrigation system as well as pest and disease