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IED SCIENTIFIC RESEARCH CORPORATION OF THAILAND

APPRAISAL REPORT NO. 8
CONSTRUCTION AND
THE BUILDING MATERIAL INDUSTRY OF THAILAND

PART I
CONTRIBUTION OF THE CONSTRUCTION SECTOR
TO THE ECONOMIC DEVELOPMENT OF THAILAND

PREPARED FOR
ECAFE SEMINAR ON THE DEVELOPMENT OF BUILDING MATERIALS
BANGKOK, JANUARY 1968

BY
MILAN M. PAJEVIC
UNITED NATIONS EXPERT
MATERIALS OF CONSTRUCTION GROUP
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F O R E W O R D

The importance of the construction sector as part of the economy of Thailand is rapidly increasing. Developing economy which is almost visibly changing Thailand from an idyllic, basically agricultural country into a modern state, requires adequate means of communications, dams, housing projects, schools, factories, etc. Gross domestic product originating from construction was in 1966, 15 per cent above the year 1965 and from all signs 1967 will be at least that much and probably even higher than 1966. It is estimated that in 1967 construction work in the public sector alone will reach the 4,000 million baht mark.

A precondition for the balanced progress of the construction sector is a simultaneous development of all other related activities such as, development of the building material industries, modernization of building techniques and designs, rationalization and standardization.

Development of the building material industry which is the main subject of the report "Construction and the Building Materials Industry of Thailand" is an integral part of all mentioned activities. This report, the first in the series of four is dedicated to the contribution of the construction sector to the economic development in Thailand. The second part is giving a survey of building material industry of Thailand, the third suggests some measures for the development of building materials and the fourth gives a brief survey of the housing situation and an estimate of building material requirements.

CONSTRUCTION AND THE BUILDING MATERIAL INDUSTRY OF THAILAND

PART I. CONTRIBUTION OF THE CONSTRUCTION SECTOR TO THE ECONOMIC DEVELOPMENT OF THAILAND

By Milan M. Pajevic*

1. "CONSTRUCTION COMPONENT" OF THE GROSS FIXED CAPITAL FORMATION

Building activity accounts for about one half of the estimated gross fixed capital formation (Office of the National Economic Development Board, Office of the Prime Minister (1966).—"National Income of Thailand, 1965 Edition."). During the first stage of the First Economic Development Plan, building and construction constituted the largest component and accounted for 50.4 per cent of the total in 1957 and 50.7 per cent in 1965. The proportion of public building to total construction was estimated at 27.5 per cent and 38.0 per cent in 1957 and 1965, respectively, as against 72.5 and 62.0 per cent for building in the private sector in the same years. (See Figures 1 and 2, and Table 1.)

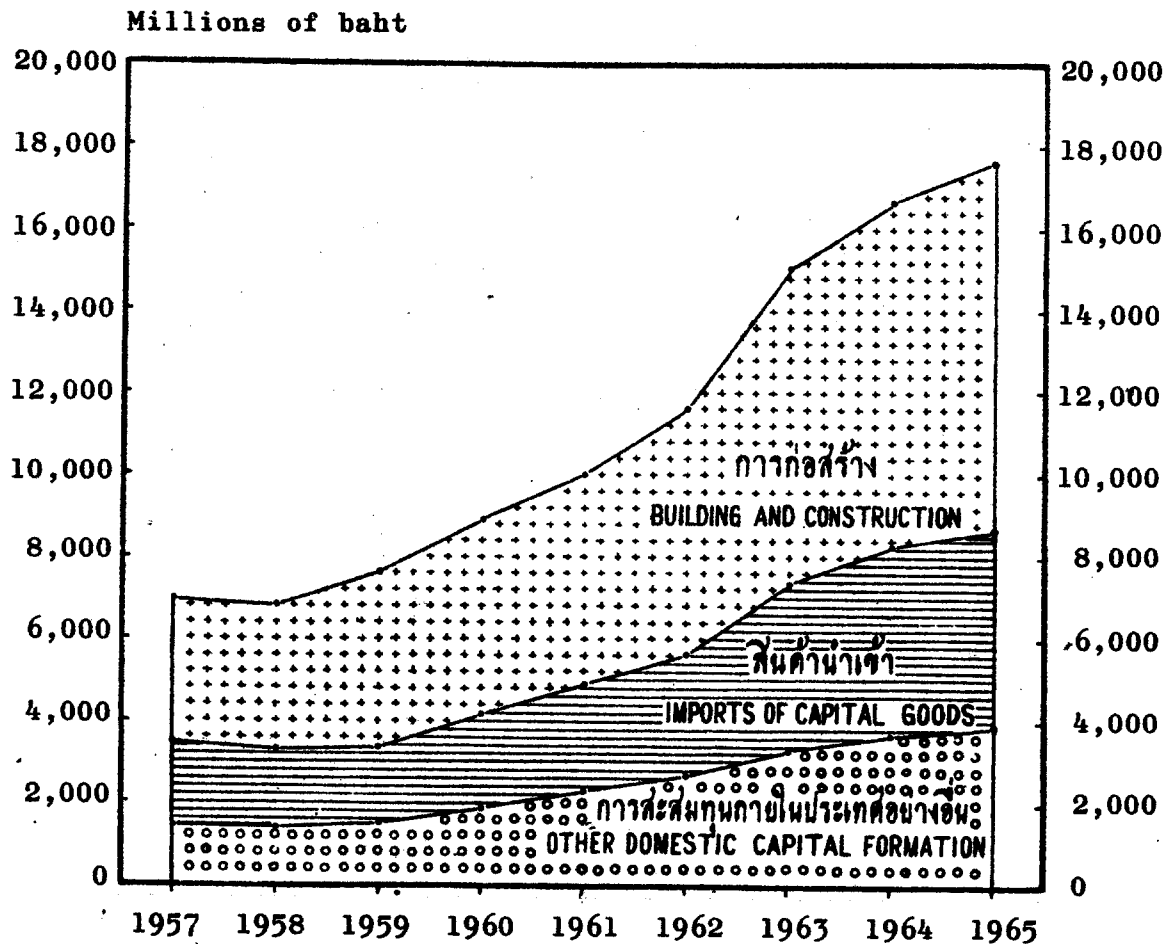
The estimate for building activity in the private sector was made on the basis of data on building permits which are issued only for municipal areas. The estimate of capital formation in the form of the building and construction for the remainder of the economy was made utilizing various sources of information, including the computed value of private construction in the rural sector as well as the cost of opening new land. Government building activity was estimated separately on the basis of responses to questionnaires sent to the various government departments and enterprises concerned.

Capital formation financed by grants and loans was estimated independently on the basis of available data from foreign and international organizations.

Table 2 gives a more detailed breakdown of building activity for

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for main categories of buildings in 1964 and 1965. In order to derive the value of each type of building and other construction, data on floor space obtained from building permits were multiplied by relevant information on cost per square metre supplied by technicians of the Department of Public and Municipal Works.



Source: Office of the National Economic Development Board, Office of the Prime Minister (1966).—"National Income of Thailand, 1965 Edition." (Bangkok.)

Figure 1.—Gross fixed capital formation classified by main types of capital goods 1957-1965 at 1962 prices.

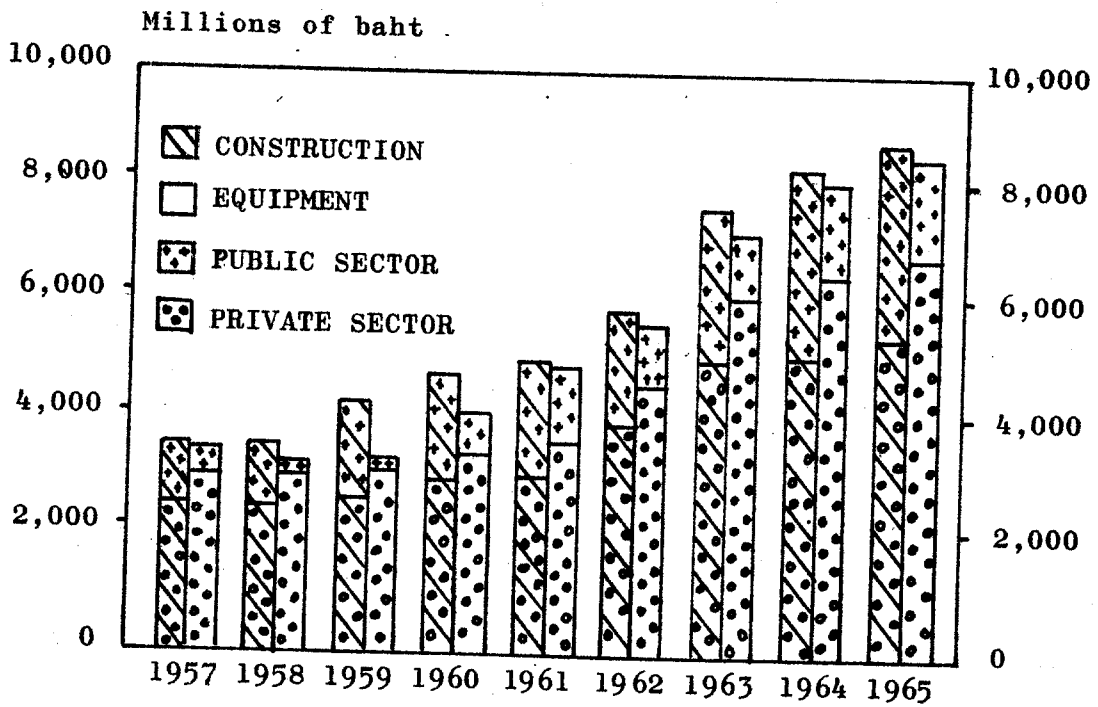


Figure 2.—Gross fixed capital formation in the public and private sectors at 1962 prices.

TABLE 1

THAILAND: BUILDING AND CONSTRUCTION AS PART
OF GROSS FIXED CAPITAL FORMATION

Line	Type of activity	(Millions of baht)										
		1957	1958	1959	1960	1961	1962	1963	1964	1965	Line	
1	1. Private construction activity	2,311.6	2,181.8	2,315.7	2,689.4	2,800.2	4,001.3	5,053.6	5,197.5	5,468.3	1	
2	1) Construction in urban area	1,707.0	1,496.0	1,532.8	1,715.7	1,772.9	2,932.4	4,012.9	4,128.7	4,368.2	2	
3	2) Construction in rural area	531.6	563.8	597.2	632.4	668.9	706.8	746.7	788.4	831.8	3	
4	3) New lands	73.0	122.0	185.7	341.3	358.4	362.1	294.0	280.4	268.3	4	
5	2. Public construction activity	875.2	982.0	1,537.9	1,588.4	1,753.2	1,980.7	2,639.2	3,138.0	3,366.7	5	
6	1) Public construction	871.6	978.3	1,534.0	1,584.4	1,747.0	1,971.9	2,629.8	3,128.3	3,357.7	6	
7	2) Cost of reafforestation	3.6	3.7	3.9	4.0	6.2	8.8	9.4	9.7	9.0	7	
	Total	1,213.2	1,192.0	3,853.6	4,277.8	4,553.4	5,982.0	7,692.8	8,335.5	8,835.0		

TABLE 2
PUBLIC AND PRIVATE BUILDING ACTIVITIES 1964-1965

	<u>1964</u>	<u>1965</u>
	(Value in thousands of baht)	
<u>Public construction</u>		
1. New construction		
1) Dwellings	162,424	249,359
2) Office and commercial buildings	466,194	319,326
3) Road and bridges	1,426,506	1,012,567
4) Runway and passenger's rooms	128	3,087
5) School	198,130	285,454
6) Hospital	367,166	64,082
7) Other construction	555,180	795,417
2. Maintenance and expansion of construction	270,505	218,310
<u>Private construction</u>		
Dwellings	1,119,794	1,578,301
Commercial buildings	2,745,136	2,684,130
Manufacturing	82,772	20,827
Communications	-	6,857
Services	121,835	256,491
Other works and construction	125,078	9,734

Source: Office of the National Economic Development Board.

2. CONSTRUCTION AND GROSS DOMESTIC PRODUCT

Thailand's gross national product (GNP) reached in 1965 an all time high of 80,292 million baht. Growth rates of GNP, have since 1957, although fluctuating, been always positive and averaged over 7 per cent per year (growth in population estimated at 3.2 per cent per year). Per capita GNP in 1965 was over 2,500 baht (1,800 baht in 1957).

During the 1960-1963 period of the First Economic Development Plan, construction sector averaged one of the highest annual growth rates, of 15.4 per cent (the only higher rates were achieved by banking insurance and real estate-16.2 per cent, electricity and water supply-17.0 per cent, and fisheries-19 per cent). Between 1963 and 1965, average annual growth rate was 8.2 per cent. Exact data for 1966 and 1967 are not available, but according to some informed sources the growth in 1966 was 15 per cent higher than in 1965, and at least that much in 1967. Construction sector as well as manufacturing are still contributing very little to the Gross Domestic Product (4.8 and 12.12 per cent, respectively in 1965), in comparison with sectors like agriculture (40.5 per cent) and wholesale and retail trade (19.18 per cent), this structure is rapidly changing, particularly since 1962, and it is expected that construction will further gain in importance in the future.

Private construction contributed the larger share of the value added. In 1965 it accounted for about 64.8 per cent of the total or 2,487.9 million baht. Of that amount construction in urban areas accounted for 45.5 per cent or 1,747 million baht. During the period between 1962 and 1965 the share of private construction in urban areas was 43-47 per cent compared with only 33-35 per cent between 1959 and 1961. The greatest growth of the construction value occurred in 1963. The growth of the private construction in urban area for that year was 36.8 per cent and the value of public construction rose 33.3 per cent.

TABLE 3

GROSS NATIONAL PRODUCT BY INDUSTRIAL ORIGIN AND NATIONAL INCOME

(Millions of baht)

Line	Industrial Origin	1957	1958	1959	1960	1961	1962	1963	1964	1965	Line
1	Agriculture	16,989.8	19,099.1	18,964.1	21,688.8	23,165.7	24,306.8	25,109.6	25,368.4	26,293.8	1
2	Crops	11,068.6	13,262.8	12,529.1	14,985.4	16,202.0	17,399.8	17,400.1	17,406.1	17,721.4	2
3	Livestock	3,485.2	3,512.8	4,039.9	3,919.8	3,956.6	3,809.8	3,937.2	3,812.9	4,152.7	3
4	Fisheries	834.5	725.0	834.8	978.6	1,174.9	1,163.2	1,739.1	2,063.5	2,236.8	4
5	Forestry	1,601.5	1,598.5	1,560.3	1,805.0	1,832.2	1,934.0	2,031.2	2,085.9	2,182.9	5
6	Mining and quarrying	698.5	525.0	644.1	765.3	902.5	978.9	1,062.2	1,398.7	1,676.0	6
7	Manufacturing	5,509.6	5,229.1	5,830.5	5,882.0	6,642.0	7,437.2	7,874.3	8,569.4	9,684.3	7
8	Construction	1,419.3	1,441.1	1,755.6	2,010.3	2,137.5	2,719.7	3,378.2	3,636.9	3,839.1	8
9	Electricity and water supply	138.4	169.2	200.2	227.1	290.1	371.1	421.0	527.7	576.9	9
10	Transportation and communication	2,658.7	2,637.7	3,336.9	3,948.5	4,048.1	4,445.7	4,567.3	5,293.9	5,997.3	10
11	Wholesale and retail trade	8,684.5	8,146.9	8,807.1	9,660.2	10,307.8	11,573.9	12,034.4	14,350.9	14,928.7	11
12	Banking, insurance and real estate	785.0	879.6	1,045.5	1,275.6	1,519.4	1,887.2	2,087.6	2,461.9	2,934.6	12
13	Ownership of dwellings	1,985.0	2,051.9	2,472.9	2,556.9	2,696.3	2,856.7	3,018.7	3,261.6	3,394.0	13
14	Public administration and defence	2,469.0	2,533.9	2,495.1	2,706.6	2,949.9	3,031.7	3,302.8	3,484.1	3,922.0	14
15	Services	4,110.3	4,457.8	4,893.6	5,094.6	5,310.0	5,698.1	6,105.7	6,463.4	6,938.5	15
16	Gross domestic product, (GDP)	45,448.1	47,171.3	50,445.6	55,815.9	59,949.3	65,307.0	68,961.8	74,816.9	80,185.2	16
17	Plus : Net income from abroad	- 252.8	- 150.2	- 136.2	- 99.1	- 93.3	- 98.4	- 40.4	- 78.7	- 13.5	17
18	Gross national product (GNP)	45,195.3	47,021.1	50,309.4	55,716.8	59,856.0	65,208.6	68,921.4	74,738.2	80,171.7	18
19	Less : Indirect taxes	3,329.4	3,612.1	4,021.1	4,648.0	5,110.0	5,337.9	6,364.8	7,168.9	8,061.9	19
20	Capital consumption allowances	1,782.8	1,829.9	1,929.7	2,158.2	2,457.8	3,007.2	3,737.9	4,558.5	5,465.5	20
21	National income	40,083.1	41,579.1	44,358.6	48,910.6	52,308.2	56,863.5	58,818.7	63,010.8	66,644.3	21
22	Per capita GNP (Baht)	1,843.4	1,855.2	1,919.9	2,056.4	2,137.3	2,251.0	2,301.0	2,413.3	2,504.1	22

Source: National Income of Thailand 1965

Office of the National Economic Development Board.

TABLE 4

THAILAND: GROSS DOMESTIC PRODUCT
ORIGINATING FROM CONSTRUCTION

(Millions of baht)

	1959	1960	1961	1962	1963	1964	1965
Government	617.1	637.4	704.4	796.7	1,060.5	1,260.0	1,351.2
Private	1,138.5	1,372.9	1,433.1	1,923.0	2,317.8	2,376.9	2,487.9
Total value added	1,755.6	2,010.3	2,137.5	2,719.7	3,378.2	3,636.9	3,839.1

Source: Office of the National Economic Development Board, Office of the Prime Minister (1966).—"National Income of Thailand, 1965 Edition

TABLE 5

THAILAND: BUILDING AND CONSTRUCTION (AT 1962 PRICES)

(Millions of baht)

	Gross values	Gross values as % of gross fixed capital formation	Value added	Value added as % of gross domestic product
1959	3,853.6	55.4	1,957.0	3.9
1960	4,277.8	52.5	2,231.4	4.0
1961	4,553.4	49.4	2,369.5	4.0
1962	5,982.0	51.3	2,719.7	4.2
1963	7,692.8	51.6	3,410.3	4.9
1964	8,335.5	50.5	3,649.3	4.9
1965	8,835.0	50.7	3,857.6	4.8

3. INDUSTRIAL POLICY-PROMOTION OF INDUSTRIAL INVESTMENT ACT

In order to encourage investment, local as well as foreign, in industries, the Government of Thailand has enacted a number of promotion laws. The first one called the "Act on the Promotion of Industries, B.E. 2497" was enacted in 1954. This act was replaced in 1960 by the "Promotion of Industrial Investment Act, B.E. 2503" with the Board of Investment becoming administrator of the new act. Two revisions of this act have been made. First one in 1962 and the second one in 1965 under the name "The Promotion of Industrial Investment Act. (No. 2) B.E. 2508" (1965). Promoted industries receive the guarantee that the State will not engage in any new industrial activity in competition with that of the promoted industry and that the State will not nationalize any private industrial activity.

In addition to the above mentioned, the promotion includes the following rights and benefits:-

- Permission to own land;
- Exception from import duties and business tax on the machinery, component parts and accessories required for the industrial activity;
- Exception, in the case when a promoted person is a juristic person, from taxes on income derived from the industrial activity for five fiscal periods;
- Taking or remitting abroad of money in foreign currency, if it represents investment capital derived by a promoted person from a foreign country, foreign loan, profit derived from such investment capital, interest on foreign loan, or obligations assumed by the promoted person;
- Bringing of skilled workers and experts who are aliens into the country; and
- Permission to export the products.

Promoted industrial activities (or industries) defined by ministerial regulations or by announcement of the Board of Investment under the provision of the Act of 1962 are classified into three groups.

Group A includes industrial activities which are vital and necessary to the economy of the country, group B are those which are less vital and necessary to the economy of the country than those under group A, and group C are those other than the industries classified under groups A and B.

Main difference between the groups is in the exemption from import duties and business tax. In the case of industries classified under group A the exemption applies to a full value, for those under group B for one half of the value, and for those under group C for one third of the value of import duties and income taxes collectable on raw or necessary materials used or estimated to be used for production within a period of five years.

Originally, cast iron, steel, asbestos cement, plastic pipe, and household electrical appliances industry were designated under group A. In August 1964, however, these industries were withdrawn, while calcium carbide and kraft paper industry were added to this group.

Electric wire or cable industry, electric accessories industry and household electrical appliances assembling industry were designated under group B. In August 1964 two of them, i.e. electric cable and household electrical appliances industries, were withdrawn.

The majority of building material industries belong to group C. During the period between 1962 and 1965 the following industries were added to the group: wire net for protection of insects industry, glass sheet industry, galvanized iron sheet industry, stone quarry industry, prefabricated building and prefabricated factory of iron structure industry, fibre board industry, and welding electrode industry.

Table 6 gives a list of building materials and related industries for which promotion certificates have been issued in the period between 1957-1965. Of the total of 347 business establishments which received promotion certificates during the 1957-1965 period, 85 or about 40 per cent belong to the building materials industry group. The total registered capital for this group was 821,598,000 baht (approximately US\$ 40 million) or about 35 per cent of the total capital registered for all industries. About 27 per cent of the registered capital was foreign.

TABLE 6

LIST OF PROMOTED BUILDING MATERIAL INDUSTRIES
FOR WHICH PROMOTION CERTIFICATES HAVE BEEN ISSUED, 1957-1965

Year in which certificates were issued	Type of industry	Number of business establishments	Registered capital (baht)		Total
			Domestic	Foreign	
1959	1. Galvanized iron sheet	1	5,100,000	4,900,000	10,000,000
	2. Wood parquet flooring	1	1,000,000	-	1,000,000
	3. Aluminium products	1	3,000,000	-	3,000,000
	4. Ceramics	1	6,000,000	-	6,000,000
1960	1. Galvanized iron sheet	1	3,298,500	4,201,500	7,500,000
	2. Shaving-board	1	30,000,000	-	30,000,000
	3. Cement	2	144,584,000	7,416,000	152,000,000
	4. Gypsum	1	2,000,000	-	2,000,000
	5. Nails	3	11,000,000	-	11,000,000
1961	1. Wood parquet flooring	1	-	-	-
	2. Aluminium products	2	17,590,000	298,000	17,888,000
	3. Cement	1	19,862,000	138,000	20,000,000
	4. Ceramics	1	3,000,000	-	3,000,000
	5. Metal rolling mill, and iron transfiguring such as bolts and nuts and nails	4	7,410,000	590,000	8,000,000
	6. Glass products	1	3,000,000	-	3,000,000
	7. Electric appliances and electric bulbs	2	2,004,000	9,996,000	12,000,000

TABLE 6
(Continued)

Year in which certificates were issued	Type of industry	Number of business establishments	Registered capital (baht)		
			Domestic	Foreign	Total
1962	1. Galvanized iron sheet	2	5,100,000	4,900,000	10,000,000
	2. Wood curing	1	5,000,000	-	5,000,000
	3. Cement	1	96,876,000	11,124,000	108,000,000
	4. Ceramics	1	-	-	-
	5. Steel making and iron transfiguring	3	3,000,000	2,000,000	5,000,000
	6. Electric accessories, electric cable and wire and television sets	4	17,214,750	14,785,250	32,000,000
	7. Plastic pipe	1	11,000,000	-	11,000,000
1963	1. Galvanized iron sheet	1	420,000	980,000	1,400,000
	2. Wood parquet flooring and wood curing	4	7,295,000	205,000	7,500,000
	3. Aluminium products	1	100,000	1,400,000	1,500,000
	4. Ceramics	1	5,000,000	5,000,000	10,000,000
	5. Steel making, metal rolling mill and iron transfiguring such as bolts and nuts	4	31,600,000	22,400,000	54,000,000
	6. Glass products (sheet glass)	1	6,000,000	6,000,000	12,000,000
	7. Paint	2	900,000	9,500,000	10,400,000

TABLE 6
(Continued)

Year in which certificates were issued	Type of industry	Number of business establishments	Registered capital (baht)		
			Domestic	Foreign	Total
1964	8. Plastic pipe, asbestos-cement pipe, iron and galvanized iron pipe	4	48,600,000	23,400,000	72,000,000
	1. Galvanized iron and barbed wire	1	3,500,000	-	3,500,000
	2. Cement	2	-	-	-
	3. Steel making and metal rolling mills	4	21,884,000	52,116,000	74,000,000
	4. Iron and galvanized iron pipe	1	5,000,000	15,000,000	20,000,000
1965	5. Stone quarry	3	39,015,000	14,985,000	54,000,000
	1. Steel making and metal rolling mill, iron transfiguring such as bolts and nuts and nails	7	20,616,000	7,384,000	28,000,000
	2. Wood parquet flooring and wood curing	5	3,780,000	1,120,000	4,900,000
	3. Ceramics	4	3,260,000	2,340,000	5,600,000
	4. Stone quarry	1	1,000,000	-	1,000,000
	5. Paint	2	2,250,000	2,750,000	5,000,000
	Total	85	597,259,250	224,338,250	821,598,000

Source: Board of Investment.

4. CAPITAL INVESTMENT

The industrial sector plays a minor role in the Thai economy. It accounts for 12-13 per cent of the Gross Domestic Product. Most of the manufacturing industries are in private hands and cater mainly for domestic production. With a few exceptions (one plywood factory, marble quarry), most of the building material industries are private. Private investment amounted for all industries in the period between 1957-1965 between 80 and 90 per cent. This proportion fell sharply after 1961 mainly as a result of increased public expenditures on electricity.

Breakdown by type of building materials and related industry (for manufacturing only) in the private sector is indicated to some extent in Table 7.

Available data are incomplete and can only be used to show trends. Figures on actual investment are not available and although there is no precise relation between them and the size of registered capital it is estimated that the total capital investment of all "promoted" building material industries in operation amounts to approximately triple the amount of the total registered capital.

Registered capital of the building materials and related promoted industries in operation during the period 1955 amounts to 358 million baht (an equivalent of US\$ 17.2 million) of the total registered. About 20 per cent of the total registered capital is foreign. In terms of number, electric appliances and accessories, wood curing and impregnating, and galvanized iron sheet industries come first, followed by cement. In terms of capital, cement industry is by far the most important.

In Thailand, as in the case of other developing countries, the sources of financing come from internal savings and internal sources, foreign sources in the form of grants and loans, and in making use of those mechanism in the international monetary world whereby certain short-term financing can be made.

Most businesses in Thailand are operated as private undertakings by a single person or a family. Since 1958 under the Governments policy of industrial promotion, public companies began to be formed in

TABLE 7

LIST OF PROMOTED BUILDING MATERIALS INDUSTRIES
IN OPERATION, 1955-1965

	Type of industry	Number of factories opened	Registered capital (baht)		
			Domestic	Foreign	Total
1	Metal rolling mill, iron transfiguring such as bolts and nuts and nails	8	21,410,000	4,590,000	26,000,000
2	Electric appliances and accessories, electric bulbs, cable and wire	4	17,004,000	19,996,000	37,000,000
3	Wood curing and impregnating and wood parquet flooring	4	9,300,000	200,000	9,500,000
4	Galvanized iron sheet	4	13,498,500	14,001,500	27,500,000
5	Cement	3	164,446,000	7,554,000	172,000,000
6	Ceramics	2	9,000,000	-	9,000,000
7	Glass products	2	5,100,000	3,900,000	9,000,000
8	Aluminium products	2	4,202,000	298,000	4,500,000
9	Shaving-board	1	30,000,000	-	30,000,000
10	Gypsum	1	2,000,000	-	2,000,000
11	Plastic pipe	1	8,000,000	2,000,000	10,000,000
12	Iron pipe	1	2,000,000	10,000,000	12,000,000
13	Paint	1	500,000	9,500,000	10,000,000
	Total	34	286,460,500	72,039,500	358,500,000

greater number. In spite of constant improvements the capital market in Thailand is still very inadequate. There is a scarcity of long-term funds and institutions which would provide long-term finance. In order to improve this situation, the government has set up the Industrial Finance Corporation of Thailand, a private institution to finance medium and long-term investments in industry. A fund to finance small scale industries is operated jointly by the Ministry of Industry and two state-owned commercial banks.

Interest rates for loans paid by local contractors in Thailand are very high (12-14 per cent per annum) in comparison with rates paid by foreign contractors in their respective countries, and as a result the majority of important construction projects are awarded to foreign construction companies. A petition by the Contractors Association of Thailand has been forwarded to the Ministry of National Development, which is investigating the measures for improving the present situation.

A possibility for advanced payment by the State Highways Department to Thai contractors guaranteed by the Association is being studied at present. The advanced payment would be ten per cent of the cost of each stage of work. In addition to this, the Ministry of National Development and the contractors are discussing with the Bank of Thailand the possibility of providing loans to local builders at half of the present interest rate.

5. THE SECOND FIVE YEAR PLAN

In order to accelerate the economic growth rate and further improve the living standard, the Second Five-Year National Economic and Social Development Plan (1966-1971) aims at an increase to 45 per cent in Gross Domestic Product over the plan period (See Table 8). The annual growth target is projected at 8.5 per cent per annum in the Second Plan as against 7 per cent achieved in the First Plan. After allowing for the increase in population at 3.3 per cent per year, this will mean more than 25 per cent increase per capital income by 1971.

The relative importance of construction will further expand and contribute greater share to the national output.

TABLE 8

GROSS DOMESTIC PRODUCT OF THAILAND (1965-1971)

(Millions of baht)

	Actual 1965		Target 1971		Annual Growth Rate 1966-1971
	G.D.P.	Percent Distribution	G.D.P.	Percent Distribution	
Agriculture	26,400.8	32.9	34,031.7	26.2	4.3
Mining & quarrying	1,676.0	2.1	2,659.6	2.0	8.0
Manufacturing	9,684.3	12.1	17,799.8	13.7	10.8
Construction	3,839.1	4.8	7,577.7	5.8	12.0
Electricity & water supply	576.9	0.7	1,369.6	1.1	15.5
Transportation & communications	5,997.3	7.4	11,217.4	8.6	11.0
Wholesale & retail trade	14,928.7	18.6	23,689.9	18.2	8.0
Banking, insurance, estate	2,934.6	3.7	7,527.7	5.8	17.0
Ownership of dwellings	3,394.0	4.2	4,548.3	3.5	5.0
Public administration and defence	3,922.2	4.9	7,741.2	5.9	12.0
Services	6,938.5	8.9	11,960.4	9.2	9.5
Gross Domestic Product	80,292.2	100.0	130,123.3	100.0	8.5

Table 9 indicates major production targets of the Plan. Expected expansion of industrial output includes considerable increase in the output of cement, steel, gypsum, and oil refinery products.

During the Plan period the labour force in the construction sector is expected to increase from 110,000 in 1966 (0.75 per cent of the total 14.55 million) to 160,000 in 1967 (0.95 per cent of the total 16.76). It is felt, however, that the figure of 14.55 million of persons given as a total employment potential for 1966 is lower and that the total labour force, total and employed in construction, is higher. The report

TABLE 9
MAJOR PRODUCTION TARGETS OF THE SECOND PLAN

Production	Unit	Actual Production 1965	Production Targets 1971
Mining: Tin concentrates	ton	26,419	32,000
Lignite	ton	125,000	417,000
Manganese	ton	30,265	50,000
Fluorite	ton	51,889	60,000
Gypsum	ton	11,240	50,000
Industry: Cement	ton	1,300,000	2,800,000
Gunny bags	unit	42,400,000	65,000,000
Paper	ton	22,300	60,000
Chemical fertilizer	ton	-	250,000
Car assembly	unit	8,692	250,000
Tires	unit	140,000	300,000
Steel	ton	100,000	400,000
Oil Refinery	milion barrel	13.0	18.0

"Industrial Development and Investment in Thailand 1966"* estimates the total labour force for 1965 at 16.7 million.

An important part of the construction activities during the Plan period is expected to be in the realization of the major physical targets of the development in the community facilities and social welfare sector.

There will be 54 projects implemented during the Plan period and classified into two major programmes namely, rural development, urban development, social welfare, and labour.

* MINISTRY OF INDUSTRY (1966).— "Industrial Development and Investment in Thailand 1966." (Bangkok.)

TABLE 10

GROSS DOMESTIC PRODUCT FOR THE FIRST AND SECOND NATIONAL ECONOMIC DEVELOPMENT PLANS AT 1965 PRICES

(Millions of baht)

Line	Industrial origin	First Economic Development Plan						Second Economic Development Plan				Line
		First Phase			Second Phase			GDP	Percentage distribution	Average annual growth rate	1966—1971	
		Percentage distribution	Average annual growth rate	Gross domestic product (GDP)		Percentage distribution	Average annual growth rate					
				1961	1960—1963			1964	1965	1966	1966	
1	Agriculture	38.3	+ 5.3	25,892.0	26,293.8	27,477.0	31.8	+ 3.9	34,241.4	26.9	4.5	1
2	Crops	27.5	+ 5.7	17,854.3	17,721.4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2
3	Livestock	6.2	-0.1	4,004.9	4,152.7	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	3
4	Fibres	1.7	+ 19.0	1,973.5	2,236.8	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	4
5	Forestry	2.9	+ 4.7	2,059.3	2,182.9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	5
6	Mining and quarrying	1.5	+ 8.0	1,334.6	1,676.0	1,810.1	2.1	+ 11.6	2,659.6	2.1	8.0	6
7	Manufacturing	11.4	+ 7.9	8,520.2	9,684.3	10,553.4	12.2	+ 12.6	16,835.0	13.2	9.7	7
8	Construction	3.8	+ 15.4	3,619.9	3,839.1	4,299.8	5.0	+ 8.2	7,577.7	6.0	12.0	8
9	Electricity and water supply	0.5	+ 17.0	506.1	576.9	666.3	0.8	+ 17.8	1,369.6	1.1	15.5	9
10	Transportation and communication	6.5	+ 5.4	5,302.8	5,997.3	6,657.0	7.7	+ 12.6	11,217.4	8.8	11.0	10
11	Wholesale and retail trade	17.4	+ 6.5	13,880.7	14,928.7	16,123.0	18.7	+ 9.5	23,689.9	18.6	8.0	11
12	Banking, insurance and real estate	2.5	+ 16.2	2,398.2	2,934.6	3,433.5	4.0	+ 17.0	7,527.7	5.9	17.0	12
13	Ownership of dwellings	4.5	+ 3.4	3,279.3	3,394.0	3,563.7	4.1	+ 3.9	4,548.3	3.6	5.0	13
14	Public administration and defence	4.9	+ 5.3	3,463.1	3,922.0	4,255.8	4.9	+ 7.7	6,223.8	4.9	8.0	14
15	Services	8.7	+ 5.3	6,460.4	6,938.5	7,528.3	8.7	+ 6.4	11,320.0	8.9	8.5	15
16	Gross domestic product (GDP)	100.00	+ 6.5	74,657.3	80,185.2	86,347.9	100.0	+ 7.8	127,210.4	100.0	8.0	16

Source: National Income of Thailand 1965

Office of the National Economic Development Board.

Major targets of the rural and urban development programmes are given below.

Rural development

The rural development programme includes several projects which will help to accelerate overall rural development. By the end of 1971, the provision of rural water supply to 30,000 villages will cover about 60 per cent of all villages in Thailand. The self-help land settlement scheme will be expanded by allocating more land and improving the facilities in the existing settlements. Construction of rural roads will be further accelerated during the next five years. Other rural development programmes include an occupational promotion scheme, community development in the North-east and border provinces of the South, as well as the hill tribes development programme which emphasizes upon the expansion of hill tribes settlements and occupational promotion.

Urban development

The programme aims at providing low-income housing in the urban area, particularly in Bangkok and Thon Buri which have a great shortage of urban dwelling units for the low-income people. The Plan proposes the outlay of 100 million baht for urban housing development to supplement the housing investment by state enterprises, other agencies, and private housing projects. Another scheme concerning urban reconstruction is the construction of Bangkok-Thon Buri drainage and sewerage system. Other projects include the improvement of the metropolitan and provincial water supply and town planning for about 50 cities.

